

Vale of Glamorgan School -Whitmore High School

Preliminary Ecological Appraisal and BREEAM Ecology Report

July 2018

Quality information

Prepared by	Checl	ked by	Approved	l by	
LF	LN		KW KW Associate Director		
LF Ecologist	LN Princij	oal Ecologist			
Revision H	listory				
Revision	Revision date	Details	Authorized	Name	Position

Prepared for:

Vale of Glamorgan Council

Prepared by:

AECOM Limited 1 Callaghan Square Cardiff CF10 5BT United Kingdom

T: +44 29 2067 4600 aecom.com

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Executive Summary

AECOM was commissioned by Vale of Glamorgan Council to undertake a Preliminary Ecological Appraisal (PEA) and a BREEAM Assessment of the Site of the proposed Whitmore High School in Barry, South Wales.

The assessment is focussed towards specific BREEAM Land use and Ecology Credits LE02, LE03, LE04 and LE05. The assessment includes a desk study and an Extended Phase 1 Habitat Survey. The assessment has been undertaken using BREEAM 2014 criteria.

The Whitmore High School Site is located on the former Barry Comprehensive School Site in Barry, South Wales, OS grid reference ST 10531 6916045. The Site is located within a residential area on the northern outskirts of Barry.

The proposed works are for the demolition of the existing Barry Comprehensive School and construction of a new mixed sex 11-18 school called Whitmore High School. The school will accommodate 900 11-16 year old pupils and 200 Sixth Form pupils and will be comprised of the main school building, playing fields, car parking areas, and 3G sports pitches. The Site will include a habitat area and garden. Construction of the new school building is due to commence in August 2019. The old school building will be demolished once the new school is complete, demolition will commence in August/September 2021.

The majority of the Site comprises of amenity grassland, hardstanding and buildings with areas of parkland with scattered trees, ornamental planting, rows of trees, scattered trees, intact species poor hedgerows, fences and wall.

Within the Site Boundary there is potential for generalist invertebrates, breeding birds, foraging, commuting and roosting bats and hedgehog to be present. Based on Drawing Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), the works will involve complete removal of amenity grassland, parkland with scattered trees, ornamental planting, hardstanding and buildings and partial removal of a row of trees along the southern boundary. Rows of trees along the eastern boundary, standalone trees and hedgerows will be retained, however without mitigation these features may get damaged during construction. Without mitigation, there is potential for works to impact Protected and Priority species using the Site through habitat loss, injury and killing and disturbance (including external lighting disturbance). Recommendations for mitigation have been provided to avoid and reduce impacts on retained habitats and any Protected Species using the Site.

Buildings have been assessed as being suitable to support roosting bats. Bat surveys are required prior to demolition of the buildings to confirm the presence or likely absence of roosting bats. A European Protected Species License will be required if roosting bats are present and if the works will negatively impact on roosting bats.

The 'before development' BREEAM LE03 calculation is based on the Phase 1 Habitat plan (Figure 1). Calculations for 'after development' have not been calculated at this stage in the absence of a detailed development plan. The report can be used to guide Site design to achieve LE03 Credits.

As per BREEAM guidance, 'legal' mandatory recommendations are requirements for compliance with UK and EU legislation (Appendix A). Additional recommendations outline further measures which could be included to maximise the ecological value of the Site. All of the mandatory recommendations need to be completed as well as at least 6 of the 8 additional requirements to achieve the first credit under LE04. Liaison between ecologists and the architects will be required to achieve these. Some of the additional recommendations will increase species count and can count towards LE03.

Mandatory Requirements

- 1) Bats Surveys and Mitigation; and,
- 2) Breeding Birds Mitigation.

Additional Recommendations

- 1) Improving Grassland Diversity;
- 2) Swale Creation;

- 3) Invertebrate Houses and/or Insect Walls;
- 4) Bird and Bat Boxes;
- 5) Kitchen Garden;
- 6) Sensory Garden Creation;
- 7) Hedgehog Habitat; or,
- 8) Green Corridors.

Summary of Potential BREEAM Credits

Credit	Total available	Credits achievable under current landscaping proposals
LE02	2	1*
LE03	2	TBC**
LEO4*	2	2*
LE05*	2	2*
LE Total	8	5*

*Achieving this credit is dependent on recommendations being implemented by the client/contractor.

**LE03 will be confirmed once a detailed site plan including landscape design has been issued.

The executive summary is not a substitute for the full report. Please refer to the full text for further detail.

1. Introduction

1.1 Introduction

AECOM was commissioned by Vale of Glamorgan Council to undertake a Preliminary Ecological Appraisal (PEA) of the site of the proposed Whitmore High School Site in Barry, South Wales. The assessment is focussed towards specific BREEAM Land use and Ecology Credits LE02, LE03, LE04 and LE05. The assessment includes a desk study and an Extended Phase 1 Habitat Survey. The assessment has been undertaken using BREEAM 2014 criteria.

1.2 Site Location and Description

The proposed Whitmore High School site ("the Site") is located on the former Barry Comprehensive School Site in Barry Wales, OS grid reference ST 10531 6916045. The Site is located within a residential area on the northern outskirts of Barry.

The Site currently comprises buildings, hardstanding, amenity grassland, parkland with scattered trees, introduced shrub, rows of trees, intact species poor hedgerows, standalone trees, walls and fences (Figure 1).

1.3 Proposed Development

The proposed works are for the demolition of the existing Barry Comprehensive School and construction of a new mixed sex 11-18 school called Whitmore High School. The school will accommodate 900 11-16 year old pupils and 200 Sixth Form pupils and will be comprised of the main school building, playing fields, car parking areas, and 3G sports pitches. The site will include a habitat area and a garden. Construction of the new school building is due to commence in August 2019. The old school building will be demolished once the new school is complete, demolition will commence in August/September 2021.

1.4 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 proposed development 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 (LE02);
- To assess ecological impacts including potential change in diversity (LE03 & LE04);
- To outline requirements for further surveys, if required; and,
- To make suggestions for mitigation, compensation and enhancement of the natural features identified on the Site (LE03, LE04 and LE05).

1.5 Legislation

1.5.1 Habitats and Species

There are several different acts of legislation and regulations which refer to the protection of wildlife. These are summarised in Appendix A. In particular, the legislation relating to possible protected 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.

1.5.2 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 D 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.

1.6 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, 2013) when undertaking ecological work.

2. Methodology

2.1 Preliminary Ecological Appraisal

2.1.1 Desk Study

A desk study was undertaken in May 2018. The objectives of the desk study are to review the existing information available in the public domain concerning species and habitats to identify the following:

- Internationally and nationally designated sites, up to 2 km from the Site using the Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk);
- Protected and Priority Species records and records of locally designated sites up to 2 km from the Site, using South East Wales Biodiversity Record Centre (SEWBReC);
- Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI) designated for bats within a 5 km radius of the Site in accordance with Bat Conservation Trust (Collins, 2016) recommendations;
- Section 7 list of Species and Habitats of Principal Importance for Conservation of Biological Diversity 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 Ancient Woodland Inventory Data; (NRW 2011);
- Tree Protection Orders (TPO) from Vale of Glamorgan Council;
- Local/county recorders for birds, bats, reptile and amphibians, and the County Ecologist 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 (e.g. hedgerows, watercourses, railway lines).

2.1.2 Extended Phase 1 Habitat Survey

A Phase 1 Habitat Survey (JNCC, 2010) of the Site was undertaken by two Suitably Qualified Ecologists (BSc, MCIEEM) of AECOM on 08 May 2018.

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.

2.1.3 Assessment of Bat Suitability

During the Phase 1 Habitat Survey, subject to access, A Preliminary Ground Level Roost Assessment of trees, buildings and structures was completed. This assessment was undertaken by two experienced ecologists, one of which holds a NRW bat licence on 08 May 2018.

Trees, buildings and structures 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. Table 2.1 provides descriptions of the categories for buildings, structures and trees.

Habitats on Site were classified into categories dependent on the presence of features suitable for bats to commute and forage. Table 2.2 provides descriptions for commuting and foraging habitats.

Table 2.1: Building and Tree Bat Roost Suitability Categories

Roost Suitability	Descriptions for Buildings/Structures	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	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. 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 20 th century construction. Structures with large complicated and/or uncluttered roof spaces providing 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.	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potential for longer periods of time due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat.
Moderate	A 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. 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.	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. 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).	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.
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.

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

Commuting and Foraging Suitability	Descriptions
High	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated 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.

Table 2.2: Commuting and Foraging Habitat Suitability Categories

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

2.2 BREEAM Assessment

The Land Use and Ecology BREEAM (2014) criteria were used for this report. The assessment of these criteria 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 (LEO2). Recommendations for site protection and mitigation were based on these observations (LEO3, LEO5). In addition, conditions on site were used to provide recommendations on enhancing site ecology (LEO4). Species lists of native plants in different vegetation plots were made and this information was used for the change in ecological value calculations (LEO3, LEO4). The credit Criteria are detailed below and summarised in Table 2.3.

2.2.1 LE02 Ecological Value of Site and Protection of Ecological Features

This issue is split into two parts:

- Ecological value of site (1 credit); and,
- Protection of ecological features (1 credit).

The aim of the first credit is to encourage development on land that has a limited value to wildlife and to protect existing ecological features from substantial damage during Site preparation and completion of construction work.

One credit is available where evidence is provided to demonstrate that the construction zone is defined as land of low ecological value and any existing features of ecological interest are fully protected from damage during Site preparation and construction works.

Land of low ecological value is defined through:

- Use of the BREEAM checklist A4: or,
- A suitably qualified ecologist (SQE) who has identified the land as being of "low ecological value" within an ecological assessment report based on a Site survey.

A second credit is available where evidence is provided to demonstrate existing features of ecological value within the assessment zone are adequately protected from damage during clearance, Site preparation and construction

activities in line with BS42020: 2013. In all cases, the principal contractor is required to implement ecological protection recommended by the SQE, prior to any preliminary Site construction or preparation works (e.g. clearing of the Site or erection of temporary Site facilities).

2.2.2 LE03 Minimising Impact on Existing Site Ecology

The aim is to minimise the ecological impact of a building development project on existing Site ecology. The change in ecological value is calculated using the formula below which also takes in to account the area of the Site, the size of the area used for planting and the number of different species within it.

Two credits are available where evidence is provided to demonstrate the change in ecological value of the Site is equal to or greater than zero plant species, i.e. no negative change, using the methods outlined in either (a) or (b) below:

- a. Determine the following information and input this data in to the BREEAM LE 03/LE 04 calculator:
 - i. The broad habitat type(s) that define the landscape of the assessed Site in its existing predeveloped state and proposed state.
 - ii. Area (m²) of the existing and proposed broad habitat types.

OR

- b. Where a SQE has been appointed and, based on their Site survey, they confirm the following and either the assessor or ecologist inputs this data in to the BREEAM LE 03/LE 04 calculator:
 - i. The broad habitat types that define the landscape of the assessed Site in its existing predeveloped state and proposed state.
 - ii. Area (m2) of the existing and proposed broad habitat plot types.
 - iii. Average total taxon (plant species) richness within each habitat type.

One credit is available where evidence is provided to demonstrate that the change in ecological value of the Site is less than zero but equal to or greater than minus nine plant species i.e. a minimal change, use the methods outlined in either (a) or (b) above.

$$\frac{\sum_{1}^{n} (\text{Area plot type } N \times \text{Species plot type } N)}{\text{Total site area}}$$

$$\frac{\sum_{1}^{m} (\text{Area plot type } M \times \text{Species plot type } M)}{\text{Total site area}}$$

Species Change = Species After Development – Species Before Development

Where:

N = total number of types of plots before development

M = total number of types of plots after development

2.2.3 LE04 Enhancing Site Ecology

The aim of the LEO4 credits is to recognise and encourage actions taken to maintain and enhance the ecological value of the Site as a result of development and is split into two parts:

- Ecologist's report and recommendations (1 credit).
- Increase in ecological value (1 credit).

One credit is available where evidence is provided to demonstrate that the design team (or client) has:

• A SQE has been appointed by the client or their project representative by the end of the Preparation and Brief stage to advise on enhancing the ecology of the Site at an early stage.

- The SQE has provided an Ecology Report with appropriate recommendations for the enhancement of the Site's ecology at Concept Design stage. The report is based on a Site visit/survey by the SQE.
- The early stage advice and recommendations of the Ecology Report for the enhancement of Site ecology have been, or will be, implemented in the final design and build.

A second credit is available when in addition to the criteria of the first credit have been met and where evidence is provided to demonstrate:

- The recommendations of the Ecology Report for the enhancement of Site ecology have been implemented in the final design and build, and the SQE confirms that this will result in an increase in ecological value of the Site, with an increase of six plant species or greater.
- The increase in plant species has been calculated using the BREEAM LE 03/LE 04 calculator, using actual plant species numbers.

2.2.4 LE05 Long Term Impact on Biodiversity

This credit aims to minimise the long term impact of the development on the Site and surrounding area's biodiversity.

One credit is available where evidence is provided to demonstrate that the client has committed to achieving the following and at least two of the additional measures.

A second credit is available where evidence is provided to demonstrate that the client has committed to achieving the following and at least four of the additional measures.

- A SQE has been appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the design and construction process.
- Where a landscape and habitat management plan, appropriate to the Site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff.
- Where additional measures to improve the assessed Site's long term biodiversity are adopted.

Additional Measures

- 1. The principal contractor is required to nominate a 'Biodiversity Champion' with the authority to influence Site activities and ensure that detrimental impacts on Site biodiversity are minimised in line with the recommendations of a Suitably Qualified Ecologist.
- 2. The principal contractor is required to train all relevant Site work-force on how to protect the Site ecology during the project. Specific training should be carried out for all the Site work-force to ensure they are aware of how to avoid damaging site ecology. Training should be based on the findings and recommendations for protection of ecological features highlighted within a report prepared by a suitably qualified ecologist.
- 3. The principal contractor is required to record actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the construction process. The requirement commits the principal contractor to make such records available where publicly requested.
- 4. Where a new ecologically valuable habitat, appropriate to the local area, is created. This includes habitat that supports nationally, regionally or locally important biodiversity, and/or which is nationally, regionally or locally important itself; including any habitat listed in the UK Biodiversity Action Plan (BAP), Local BAP, those protected within statutory sites (e.g. SSSIs) or those within non-statutory sites identified in local plans.
- 5. Where flora and/or fauna exist on Site, the contractor programmes Site works to minimise disturbance to wildlife. For example, Site preparation, ground works and landscaping have been or will be scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination, amphibians etc. Actions such as phased clearance of vegetation may help to mitigate ecological impacts. This additional requirement will be achieved where a clear plan has been produced detailing how activities will be timed to avoid any impact on Site biodiversity in line with the recommendations of a suitably qualified ecologist.

Table 2.3: Summary of BREEAM LE02 to LE05 Credit Criteria

Column heading	Credits	Credit Criteria	
LE02 - Ecological value of site AND Protection of	1	Where evidence provided demonstrates that the Site's construction zone is defined as land of low ecological value.	
ecological features	2	Where evidence provided demonstrates that all existing features of ecological value will be fully protected from damage during Site preparation and construction works.	
LE03 – Mitigating ecological impact	1	Where evidence provided demonstrates that the change in the Site's existing ecological value, as a result of development is less than zero but equal to or greater than minus nine plant species i.e. a minimal change.	
	2	Where evidence provided demonstrates that the change in the Site's existing ecological value, as a result of development, is equal to or greater than zero plant species, i.e. no negative change.	
LEO4 – Enhancing site ecology	1	Where the design team (or client) has appointed a suitably qualified ecologist to advise and report on enhancing and protecting the ecological value of the Site; and implemented the professional's recommendations for general enhancement and protection of Site ecology.	
	2	Where the conditions of the criteria under the first credit have been met and there is a positive increase in the ecological value of the Site of 6 species or greater.	
LE05 – Long term impact on biodiversity	1	Where a SQE has been appointed prior to commencement of activities on-Site and they confirm that all relevant UK and EU legislation has been complied, where a landscape and habitat management plan is produced, and the client has committee to achieving at least two of the additional measures.	
	2	Where a SQE has been appointed prior to commencement of activities on-Site and they confirm that all relevant UK and EU legislation has been complied, where a landscape and habitat management plan is produced, and the client has committed to achieving at least four of the additional measures.	

2.3 Limitations

2.3.1 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 May 2018 and June 2018 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.

The Site Boundary has changed since the Phase 1 Habitat Survey was undertaken. Any additional areas were mapped using Site knowledge and data collected during the survey for the adjacent Site (Ysgol Gymraeg Bro Morgannwg).

It was not possible to view all sides of the caretakers house (Building 1) and was only viewed from two sides. The building was in good condition, with no bat features noted on visible sides. There is a low risk that bat roost

features could have gone unrecorded on the rear of the building, though if the whole of the building is in similar good condition this is unlikely.

There were no further limitations to the Phase 1 Habitat Survey.

2.3.2 BREEAM

The assessment of BREEAM credits 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 conclusions of the 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 LE03 calculation is based on the Phase 1 Habitat plan (Figure 1). Calculations for 'after development' have not been calculated at this stage in the absence of a detailed development plan. The report can be used to guide Site design to achieve LE03 Credits.

3. Baseline Conditions

3.1 Desk Study

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

Table 3.1: Desk Study Results

Designation / Feature	Description		
Designated Sites within 2 km	Fferm Walters SSSI Distance and Direction: 0.17 km south west Description: Fferm Walters is of special interest for its exceptionally large area of species-rick neutral grassland, most of which has a particularly calcicolous nature and is one of the rarest types of grassland in Wales. Part of this grassland is undergoing restoration. The grassland is associated with woodland, hedgerows and scrub and smaller areas of damp grassland. Several uncommon plants occur at Fferm Walters. Spiny restharrow Ononis spinosa; meadow barley Hordeum brachyantherum and pepper-saxifrage Silaum silaus are plants of southern lowland Britain which, in Wales, are most common in the Vale of Glamorgan. A small population of parsley water-dropwort Oenanthe lachenalii is present in the damp grassland (NRW, 2015)		
	Coedydd Y Barri/ Barry Woodland SSSI		
	Distance and Direction: comprised of 14 separate sites, closest located 0.6 km west		
	Description: Coedydd Y Barri/Barry Woodlands is of special interest for its semi-natural broadleaved woodland.		
	The site comprises a series of fourteen separate woodland blocks, some of which are connected by hedgerows. They are in two groups, about 3 km apart, centred on Pencoedtre Wood and Middleton Wood, on the northern and western outskirts of Barry, in the Vale of Glamorgan. Most of the woodlands are on gently sloping ground at an altitude of between 30 m and 70 m and associated with clayey, often waterlogged, moderately base rich lowland soils that in Wales are almost entirely restricted to the Vale of Glamorgan. Long-established woodland on this particular soil-type gives rise to ash-dominated woodland that supports a rich ground flora. This series of woodlands is the best example of this habitat in Wales (CCW, 2007).		
	Cliff Wood - Golden Stairs SSSI Distance and Direction: 2.0 km south Description: The best example of a mixed woodland in South Glamorgan which has a canopy of pedunculate oak Quercus robor, ash Fraxinus excelsior, maple acer sp. and yew Taxus baccata. The interesting, ungrazed ground flora and wooded cliff areas includes purple gromwell Lithospermum purpurocaeruleum which is restricted to a very small number of sites in the county (CCW, 1983).		
Locally Designated Sites	S <u>Cwm Talwg Woodlands Local Nature Reserve (LNR)</u>		
within 2 km	Distance and Direction: 0.17 km west		
	Description: 2.85 hectares of mature deciduous woods (Vale of Glamorgan Council, undated).		
	<u>Walter Farm Site of Importance for Nature Conservation (SINC)</u> Distance and Direction: 0.19 km west Description: Series of species-rich neutral grasslands, locally damp, with large anthills (Vale of Glamorgan Council,2013).		
	Field at Merthyr Dyfan SINC Distance and Direction: 0.52 km east Description: Series of small fields supporting a mosaic of species-moderate and species-rich semi improved neutral grassland and scrub (Vale of Glamorgan Council, 2013).		
	West of Barry College SINC Distance and Direction: 0.68 km west		

Designation / Feature	Description
	Description: Species-rich neutral grassland (Vale of Glamorgan Council, 2013).
	North West of Welsh Hawking Centre SINC
	Distance and Direction: 0.88 km west
	Description: Ancient semi-natural broadleaved woodland (Vale of Glamorgan Council, 2013).
	North of Highlight Farm SINC
	Distance and Direction: 0.95 km north
	Description : Three ponds supporting diverse emergent and aquatic flora, tall swamp vegetation and reedbed (Vale of Glamorgan Council, 2013).
	Brynhill SINC
	Distance and Direction: 1.0 km north
	Description: Semi-natural broadleaved woodland (Vale of Glamorgan Council, 2013).
	Land at Nant Bryhill SINC
	Distance and Direction: 1.1 km north
	Description : Series of species-rich purple moorgrass and rush pastures with tall herb and swamp vegetation (Vale of Glamorgan Council, 2013).
	North East of Knock Man Down Wood SINC
	Distance and Direction: 1.2 km west
	Description : Large area of predominantly ancient semi natural broadleaved woodland (Vale of Glamorgan Council, 2013).
	North Cwm Barri SINC
	Distance and Direction: 1.4 km south
	Description : Ancient semi-natural broadleaved woodland and semi-natural broadleaved woodland, part on an ancient woodland site (Vale of Glamorgan Council, 2013).
	Gladstone Road Pond SINC
	Distance and Direction: 1.4 km south
	Description : Pond supporting exceptional (100+) breeding population of smooth newts (Vale of Glamorgan Council, 2013).
	Bears Wood SINC
	Distance and Direction: 1.5 km north east
	Description : Ancient semi-natural broadleaved woodland (Vale of Glamorgan Council, 2013).
	South of Cwm Ciddy Farm SINC
	Distance and Direction: 1.6km south Description: Species-moderate neutral grassland (Vale of Glamorgan Council, 2013).
	Land North of Port News SINC
	Distance and Direction: 1.7km east
	Description : Semi-natural broadleaved woodland on an ancient woodland site (Vale of Glamorgan Council, 2013).
	Dyffryn Golwch SINC
	Distance and Direction: 1.8km north
	Description : A series of ponds, tall herb vegetation, reedbed and semi-natural broadleaved woodland (Vale of Glamorgan Council, 2013).

Sutton Wood SINC Distance and Direction: 1.8 km west Description: Semi-natural broadleaved woodland on an ancient woodland site (Vale of Glamorgan Council, 2013).

Designation / Feature	Description		
	East of Dyffryn Spring SINC		
	Distance and Direction: 2.0 km west		
	Description : Predominantly ancient semi-natural broadleaved woodland (Vale of Glamorgan Council, 2013).		
Designated Sites within 10 km designated for bats	There are no designated sites for bats within 10 km.		
Protected and Priority Species Records from the last	The following recent (last 10 years) species have been recorded within 2 km of the Site:		
10 years within 2 km	Plants:Bluebell Hyacinthoides non-scripta.		
	Invertebrates: Brown banded carder bee Bombus humilis.		
	Fish: European eel Anguilla Anguilla.		
	Amphibians :Common frog Rana temporaria, common toad Bufo bufo, smooth newt Lissotriton vulgaris		
	Reptiles : slow worm Anguis fragilis (nearest record 450 m south), common lizard, Zootoca vivipara (nearest record 1.8km west).		
	Birds : Barn owl Tyto alba, black redstart Phoenicurus ochruros, black headed gull Chroicocephalus ridibundus, bullfinch Pyrrhula pyrrhula, common scoter Melanitta nigra, dunnock Prunella modularis, great northern diver Gavia immer, house sparrow Passer domesticus, kestrel Falco tinnunculus, lapwing Vanellus vanellus, linnet Linaria cannabina, Mediterranean gull Larus melanocephalus, nightjar Caprimulgus europaeus, redwing Turdus iliacus, skylark Alauda arvensis, song thrush Turdus philomelos, spotted flycatcher Muscicapa striata, starling Sturnus vulgaris.		
	Bats : Brown long-eared bat Plecotus auritus (single record of injured bat 60 m north), common pipistrelle Pipistrellus pipistrellus (nearest record 160 m south), whiskered bat Myotis mystacinus (nearest record 1 km east, injured bat).		
	Other Mammals : Brown hare Lapus europaeus, otter Lutra lutra (nearest record 2 km east), hazel dormouse Muscardinus avellanarius (nearest record 1 km west), hedgehog Erinaceus europaeus (nearest record 750 m south).		
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	The Site is located in Barry. To the north of the Site are playing fields. Further north is the residential area of Colcot beyond which is a golf club with grassland and scattered woodland which extends into farmland beyond linked by hedgerows.		
	To the east of the Site is Barry Hospital. Further east are residential areas with some scattered parkland and greenspace including a recreational park, a cemetery and allotments located east of Colcot Road.		
	To the south of the Site is Ysgol Gymraeg Bro Morgannwg which includes buildings, hardstanding and playing fields. Beyond the school are residential areas. Industrial buildings are located further to the south towards Barry Docks.		
	To the west of the Site are the outskirts of Colcot. Beyond the residential areas are fields and scattered woodland blocks linked by hedgerows.		
Ancient Woodland	There is no ASNW, RAWS or PAWs within or adjacent to the Site Boundary.		
Tree Protection Orders (TPOs)	There are no trees with a TPO within or adjacent to the Site Boundary.		
Ponds within 500m	There are no visible ponds located within 500 m.		
Council Ecologist and Local	The County Ecologist responded stating all records are submitted to SEWBReC.		
Specialist Recorders	The county bird reorder responded stating all records are submitted to SEWBReC. The local Amphibian and Reptile Group responded stating that all records are submitted to SEWBReC		
	The local Bat Group were contacted, no response has been received to date.		

3.2 Extended Phase 1 Habitat Survey

3.2.1 Habitats

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

Table 3.2 Phase 1 Habitats and Descriptions

Habitat	Description	Section 7 Habitat
Parkland with Scattered Trees	Amenity grassland with scattered trees is located in the north west corner of the Site, near the school reception/main entrance. species include perennial rye grass Lolium perenne, daisy Bellis perennis, dandelion sp. Taraxacum sp., clover sp.Trifolium sp., cocksfoot Dactylis glomerata, lesser celandine Ranunculus ficaria, spear thistle Cirsium vulgare, annual meadow grass Poa annua, speedwell sp. Veronica sp., selfheal Prunella vulgaris, creeping cinquefoil Potentilla reptans, creeping buttercup Ranunculus repens, ribwort plantain Plantago lanceolata, broadleaf plantatin Plantago major, herb Robert Geranium robertianum, common ragwort Jacobaea vulgaris, woodavens Geum urbanum,. Trees include conifer sp., sycamore Acer pseudoplatanus, horse chestnut Aesculus hippocastanum, weeping willow Salix sp. and beech Fagus sylvatica and were approximately 8-10m in height. There is a memorial area with poppies Papaver sp and gravel (Appendix C: Target Note 2). Specles Count: 22	Yes
Amenity Grassland	Amenity grassland is located across the Site. This includes sports pitches, playing fields, amenity areas and strips of amenity grassland surrounding buildings and areas of hardstanding. Species include perennial rye grass, creeping bent Agrostis stolonifera, daisy, dandelion, creeping buttercup, lesser celandine, cuckoo flower Cardamine pratensis, ivy Hedera helix, creeping cinquefoil, ragwort, broad leaved dock Rumex obtusifolius, cleavers Galium aparine, ribwort plantain, Yorkshire fog Holcus lanatus, red clover Trifolium pratense and yarrow Achillea millefolium. A strip on amenity grassland adjacent to Building 11 is planted with ornamental bulbs, such as daffodil Narcissus sp. (Appendix A: Target Note 3). The ornamental bulbs are not included in this species count. Species Count: 16	No
Hedgerow Intact Species Poor	An intact species poor hedgerow runs along the north west boundary of the Site. Species include hawthorn Crataegus monogyna, sycamore, elder Sambucus nigra, bramble Rubus fruticosus, wood avens, , cleavers, nettle Urtica diocea, dock sp., ivy, cow parsley Anthriscus sylestris, cuckoo flower, broom Genisteae sp., travellers joy Clematis vitalba, garlic mustard Alliaria petiolata, colts foot Tussilago farfara, ragwort. Species Count: 16	Yes
Row of Trees	A row of trees runs partially along the southern boundary and along the entire eastern boundary of the Site. The trees are rooted outside the Site boundary but with branches overhanging the Site. Species include field maple Acer campestre, alexanders Smyrnium olusatrum, ivy, bindweed Convolvulus sp., cleavers, willowherb Epibolium sp., hawthorn, cherry Prunus sp., ash, dogwood Cornus sp., silver birch Betula pendula, sycamore, apple sp. Malus sp., cow parsley, bramble, rowan Sorbus aucuparia, ground ivy Glechoma hederacea and hazel Corylus avellana.	No

abitat Description		Section 7 Habitat	
	The row of trees will not be accounted for in the BREEAM calculations as it is located outside the Site Boundary.		
Standalone Trees	 Standalone trees are located along the north west and south west boundaries. Tree 1:Silver birch, 5 m high, 0.4 m Diameter at Breast Height (DBH) Tree 2: Sycamore, 13 m high, 0.45 m DBH. Tree 3: Silver birch, 4 m high, 0.35 m DBH Tree 4: Silver birch, 4 m high, 0.35 m DBH Tree 5: Sycamore, 15 m high, 0.5 m DBH Tree 6: Leylandii, 20 m high, 0.3 m DBH Tree 7: Beech, 13 m high, 0.4 m DBH Tree 8: Sycamore, 10 m high, 0.4 m DBH Tree 9: Hawthorn, 6 m high, 0.35 m DBH 	No	
Hardstanding	Areas of hardstanding including paths, parking areas and sports pitches are concentrated in the north of the Site. Species Count: 0	No	
Buildings	Buildings are concentrated in the north of the Site. Descriptions of these and an assessment of their suitability to support roosting bats are provided in Table 3.5. Species Count: 0	No	
Introduced Shrub	A planter of introduced ornamental shrubs is located along the south-west side of Building 10. Species Count: 0	No	
Brick Wall	A Brick walls is located on the north eats boundary. This is in good condition and has no ecological value. Species Count: 0	No	
Metal Fence	Metal fences are located along all boundaries Species Count: 0	No	

3.2.2 Protected or Priority Species

Details of Protected and Priority Species recorded on Site are shown in Table 3.3. A plan of the Site showing the location and distribution of features with potential for protected or priority species is shown in Figure 1. Target notes of Protected Species evidence or features that have potential to support Protected Species are shown in Figure 1 and Appendix C.

Table 3.3: Protected and Priority Species Potential

Species/Speci es Group	Associated Habitat	Description	Section 7 Species
Invertebrates	Amenity grassland, parkland with scattered trees, introduced shrub, rows of trees, standalone trees, hedgerows.	The Site provides common habitats suitable for supporting common terrestrial invertebrates.	Unlikely to be present at this Site
Breeding Birds	Parkland with scattered trees, buildings, rows of trees, standalone trees, hedgerows.	Parkland with trees, introduced shrub, hedgerows and trees provide suitable breeding habitat for a range of common passerine species. The flat roofs of buildings provide potential nesting opportunities for gulls. No nesting gulls were observed during the survey but not all roofs were visible.	Yes
Bats	Parkland with scattered trees, buildings, rows of trees, standalone trees, hedgerows.	The Site is assessed as having 'Moderate' suitability to support foraging and commuting bats. The site is dominated by hardstanding and amenity grassland which offer poor foraging habitat. Standalone trees, rows of trees and offer potential foraging habitat. The rows of trees and hedgerow provide commuting corridors and connectivity with the surrounding landscape. The Site is connected to adjacent areas of good habitat including a Fferm Walters SSSI and Cwm Talwg Woodlands LNR 0.17 km west. There are buildings and trees on Site with features suitable for roosting bats. An assessment of the suitability of buildings and trees on Site to support roosting bats is provided in Table 3.5.	Yes
Hedgehog	Amenity grassland, parkland with scattered trees, rows of trees, hedgerows.	Amenity grassland and parkland with scattered trees provides potential foraging habitat for hedgehogs. Hedgerows and trees provide shelter for hedgehogs and connect the Site with the surrounding landscape features suitable for hedgehogs, including adjacent Bro Morganwwg School grounds to the south and east, and playing fields to the north. A brash pile in the northern corner of the Site provides suitable shelter for resting for hibernating hedgehogs (Figure 1, Target Note 1).	Yes
Dormouse	Species Poor Hedgerow	Dormouse have been recorded within 1 km of the Site. The species poor hedgerow is not suitable to support dormouse due to the location of the hedgerow adjacent to the footpath and main A- road and being limited in overall length. The row of trees is not of a structure suitable to support dormice There is also a lack of direct connectivity with good quality dormouse habitat in the surrounding landscape. It is unlikely dormouse are present at the Site.	Yes, but unlikely to be present at this Site

3.2.3 Invasive Species Subject to Legal Control

The following plant species 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.

Table 3.4: Invasive Species on Site

Species	Invasive Species Point	Description
Cotoneaster	1	Within strip of ornamental bulb planting adjacent to Building 7. Appears to have been previously cut back and now re-growing.
Cotoneaster	2	1 m x 2 m area, climbing up wall (Appendix B: Photograph 35).
Cotoneaster	3	Part of ornamental planting.
Cotoneaster	4	Part of ornamental planting.

3.2.4 Bat Roost Assessment

Buildings and structures within and adjacent to the Site boundary were assessed for features suitable for supporting roosting bats and are shown in Table 3.4.

Feature	Description	Bat Roost Suitability Category
Building 1	Caretakers House – flat roofed house with plastic facia boards. Only surveyed from two sides but appeared to be in good condition with no features suitable to support roosting bats (Appendix A: Photographs 7-9).	Negligible
Building 2	Flat roofed brick buildings with rollers over windows, plastic facia boards and soffits. Building in good condition with no visible gaps (Appendix A: Photographs 10-11). There are no features with suitability to support roosting bats.	Negligible
Building 3	Glass covered conservatory (Appendix B: Photograph 12). There are no features with suitability to support roosting bats.	Negligible
Building 4	Yellow brick building with pitched roof. The roofing material and condition of the roof could not be seen from the surveyor's vantage point. There is a small gap above the door where the door seal is missing, this is below a security light so it's suitability to support roosting bats is reduced. Overall the building is well maintained and in good condition (Appendix B: Photograph 14-15). There are no features with suitability to support roosting bats.	Negligible
Building 5	Portacabin. There are no features with suitability to support roosting bats (Appendix B: Photograph 16).	Negligible
Building 6	Yellow brick building with a pitched roof and plastic soffits. Features are present with suitability to support roosting bats. There is gap in the lead flashing where Building 6 and Building 7 join. It was not possible to see from ground level if this opened into a cavity suitable for roosting. If it open up into a cavity, the feature is suitable to support individual bats roosting opportunistically but unlikely to support a large population of bats or a hibernation/maternity roost.	Low
Building 7	Brick building with concrete facias. There is a hole where Building 4 meets Building 7 at 3 rd storey height at the edge of the roof. There is no lighting nearby (Appendix B: Photograph 17-18).	Low

Table 3.5: Assessment of Suitability of Buildings to Support Roosting Bats

Feature	Description	Bat Roost Suitability Category
	There are gaps into the soffit box where the down pipe goes into it, this is at third storey height opposite to some trees (Appendix B: Photograph 17.	
	unlikely to support a large population of bats or a hibernation/maternity roost.	
Building 8	Brown brick building with plastic facia boards and a flat roof (Appendix B: Photograph 19). There are no features with suitability to support roosting bats.	Negligible
Building 9	Red brick building with flat roof. Single storey building with raised first storey in centre. Several features are present with suitability to support roosting bats. (Appendix B: Photographs 20-25).	Moderate
	A gap around down pipe offer possible access into the soffit boxes providing suitable roosting habitat for bats.	
	There is a gap between the facia and wall and a gap where the flashing joins the flat roof.	
	Where Building 9 joins Building 10 there is a gap in the bitumen facia and where gas pipes enter facia/soffit boards creating a gap.	
	The building has several features suitable to support roosting bats but is unlikely to support a roost of high conservation value.	
Building 10	Brown brick building with flat roof and plastic facia.	Low
	There is a roller shutter door with a gap at the top; an old birds nest is present on the right hand side. This gap provides possible opportunities to roosting bats but depends what is behind the door. The gap is unlikely to give access to the roof void or facias (Appendix B: Photograph 27-28).	
	The feature is possibly suitable to support individual bats roosting opportunistically but unlikely to support a large population of bats or a hibernation/maternity roost.	
Building 11	Brick tower with concrete facias and a flat roof.	Low
	The building has one feature with suitability to support roosting bats (Appendix B: Photograph 29).	
	There is a brick missing where cables and pipes enter the wall near the roof line, this may lead into a suitable roost feature.	
Building 12	Single storey brick building with flat roof and plastic facia boards (Appendix B: Photograph 30-31).	Moderate
	The building has two features with suitability to support roosting bats (Appendix B: Photographs 31 and 32).	
	There is a missing brick where a cavity wall vent has been removed; this may give access into the cavity wall.	
	Where the Building 7 is tied into to Building 12 there is a gap between the brick wall, facia and roof, this provides possible access into the soffit box or cavity wall.	
	The building offers potential access into the cavity walls.	
Building 13	Yellow brick building with pitched roost and plastic soffit boxes. There are several features present with suitability to support roosting bats (Appendix B: Photographs 33-34).	Moderate
	There is a gap behind the soffit box, but there is no gap up and under the roof so this is unlikely to be suitable for use by roosting bats.	
	An extractor fan cover is missing creating a hole into the building but this is constructed of metal reducing suitability for bats.	
	A louvered door into the plant room is present. This has no meshing. Gaps are approximately 3 cm wide so too narrow for horseshoe bats but offer suitable access to other bat species, if the internal conditions if the plant room are suitable for bats. It may be that it is lit inside during the night or that there are no suitable roost spaces inside.	
	There are holes in the facia boards which may give access into the roof. There is a flood light at the apex of the building but this may only be used for winter sports.	
	The building has several features suitable to support roosting bats but is unlikely to support a roost of high conservation value.	

Feature	Description	Bat Roost Suitability Category
Building 14	Bike shed. There are no features with suitability to support roosting bats.	Negligible
Building 15	Summer house. There are no features with suitability to support roosting bats.	Negligible
Bat Tree 1	15 m high, 0.5 m DBH willow with two split limbs, one potential upward leading feature which may be suitable to support roosting bats.	Low

3.3 Site Valuation According to BREEAM

The Site has natural habitats which include two Section 7 habitats of Principal Importance in Wales. The Site has the potential to support roosting bats, foraging and commuting bats, breeding birds and hedgehogs. It is concluded that there are features of ecological importance present within the Site as defined by the BREEAM Ecology Checklist and a SQE.

4. Potential Impacts

4.1 Development Proposal

The proposed works are for the demolition of the existing Barry Comprehensive School and construction of a new mixed sex 11-18 school called Whitmore High School. The school will accommodate 900 11-16 pupils and 200 6th form pupils and will be comprised of the main school building, playing fields, car parking areas, and 3G sports pitches. The Site will include a habitat area and garden.

A detailed Site plan is not currently available. Potential impacts are based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018).

4.2 Internationally and Nationally Designated Sites

There are no internationally designated sites within 2 km.

There are three SSSIs located within 2 km of the Site Boundary. These are all designated for habitats, the closest site is 0.17 km from the Site Boundary. The proposed works are unlikely to have any impact on these Sites due to the distance from the development and nature of the proposed works (i.e. no chemicals or gases being released) and no pollution pathways between the Site and the SSSIs. There are no SSSIs directly adjacent to the Site with the potential to be affected by light spill.

4.3 Locally Designated Sites

4.3.1 Sites of Importance for Nature Conservation (SINC)

There are sixteen SINCs within 2 km of the Site, the nearest is 0.16 km from the Site Boundary (Table 3.1). The development is unlikely to have any impact on any of these SINCs due to the distance from the Site and the nature of the development (i.e. no chemicals or gases being released) and no pollution pathways between the Site and the SINCs.

There are no SINCs directly adjacent to the Site with the potential to be affected by light spill.

4.3.2 Areas That Would Meet the Criteria of a SINC.

None of the habitats on Site meet the criteria of a SINC based on Welsh Biodiversity Partnership guidelines (WBP, 2008).

Further surveys will identify the presence/absence of roosting bats; if a significant maternity roost or a roost of rarer species is present the Site may meet the SINC criteria for bats defined as a 'significant roost site, vital flight/commuting route or priority feeding area' (WBP, 2008). At present, the assessment of bat roost suitability of buildings on Site is at highest Moderate which is defined as 'A structure with one or more potential roost sites that could be used by bats but unlikely to support a roost of high conservation status'. As present it seems unlikely the Site would meet the criteria of a SINC. This can be discussed further following completion of bat surveys.

4.4 Habitats

Table 4.1 shows the area cover of habitat pre-development. Post development calculations of habitat and habitat loss/gain cannot be calculated due to absence of detailed Site Plans at present.

The impacts on each of the habitats are discussed below, impacts are based Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018).

Table 2.1: Table of Habitat Loss

Habitat	S7 Habitat	Pre-Development Area (Estimate m ²)	
Parkland with Scattered Trees	Yes	1495.3	
Amenity Grassland	No	43516.8	
Hedgerow Intact Species Poor	Yes	202.6	
Row of Trees	Yes	Not been accounted for in this BREEAM assessment.	
Standalone Trees	No	9.0	
Hardstanding	No	11,618.0	
Buildings	No	6747.2	
Introduced Shrub	No	18.0	
Brick Wall	No	Not been accounted for as an area	
Metal Fence	No	Not been accounted for as an area	

4.4.1 Parkland with Scattered Trees

Based on the Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), the area of parkland with scattered trees will be completely removed and replaced by new playing fields. This will have a negative impact on any species using this habitat. Parkland and scattered trees and habitats with similar value to wildlife are available in the wider landscape. On a landscape scale the loss of this habitat will be negligible.

4.4.2 Amenity Grassland

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), all areas of existing amenity grassland will be lost during construction. These areas will be replaced by new playing fields, 3G sports pitches, new Whitmore High School buildings and new parking areas.

New areas of amenity grassland will be planted during construction but it is likely there will still be an overall net loss of amenity grassland post development.

Amenity grassland is typically of low ecological value and is widely available in the surrounding landscape. Removal and re-planting of a proportion of this habitat will have a low site-level impact and a negligible impact at the local level.

4.5 Hedgerow Intact Species Poor

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), all hedgerows will be retained.

During construction, if there is tracking of vehicles, site compounds or material storage areas near this habitat or ground breaking works such as new pipelines there is potential for impacts on retained hedgerows through root compaction by machinery tracking over the root zone or damage to hedgerow trees and shrubs by knocking off or damaging limbs. At present, no new development is proposed near this habitat.

Hedgerows are typically of high ecological value as they provide habitat connectivity through the wider landscape. The existing connectivity of hedgerows will be maintained.

Lighting plans are not currently available; lighting of hedgerows will have a negative impact on wildlife reducing their suitability as a commuting corridor to nocturnal species including bats.

4.5.1 Row of Trees

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), the row of trees along the southern boundary will be removed, the row of trees along the eastern boundary will be retained.

Partial removal of the row of trees will have a negative impact on species using this habitat through loss of foraging, commuting and nesting habitats. The loss of this linear feature will reduce connectivity with the surrounding landscape. If the row of trees can be retained, this will retain the existing connectivity and there will be no impact.

Without mitigation, during construction there is the potential for the retained rows of trees to be damaged or killed through root compaction by vehicles or machinery tracking over or repeated foot traffic over the roots, pollution and/or run off, and directly damaged by vehicles or machinery.

Rows of trees are typically of high ecological value as they provide habitat connectivity to the wider landscape and ideally would be retained. Where the rows of trees are removed or severed connectivity across the Site and to the wider landscape will be lost.

Lighting plans are not currently available. Lighting of retained rows of trees will have a negative impact on wildlife reducing their suitability as a commuting corridor to nocturnal species including bats. If lighting is designed well and there is no light spill, there will be no impact.

4.5.2 Hardstanding

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), all area of existing hardstanding will be removed. New areas of hardstanding are proposed. Hardstanding has no ecological value so loss of this habitat will have no ecological impact.

4.5.3 Buildings

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), all existing buildings will be demolished. New buildings are proposed under the current plans. Potential negative impacts on Protected Species (namely bats and birds) associated with the demolition of buildings is discussed in Section 4.5.

4.5.4 Introduced Shrub

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), the area of introduced shrub will be removed. Introduced shrub is of low ecological value. Loss of introduced shrub will have a negligible impact on the Site and no impact on a landscape scale.

4.5.5 Brick Wall

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), the boundary brick wall is likely to be retained.

4.5.6 Metal Fence

Based on Option 06b – Final Master Planning Concept provided in Whitmore High School - RIBA Stage 1 Report (issued 30/05/2018), all fences will likely be retained or modified to facilitate the new building and road layouts.. Removal will have no ecological impact.

4.6 Protected or Priority Species

4.6.1 Invertebrates

There is negligible potential for Protected or Priority Invertebrates on Site. There will be no impact on Protected or Priority Invertebrate species.

4.6.2 Breeding Birds

Based on Option 06b, parkland with scattered trees will be completely removed, the row of trees along the southern boundary will be removed, and this will have a negative impact on any species using these habitats. Hedgerows, the row of trees along the eastern boundary and standalone trees will be retained and there is habitat of similar of higher value to birds in the surrounding area.

Flat roofed buildings on Site provide suitable potential nesting habitat for breeding gulls. These breeding sites will be lost during demolition. There is potential for damage and destruction of nest sites and disturbance and possible injury to breeding birds if this is undertaken during the breeding bird season. Other roof tops are available for nesting birds in the wider landscape and the new school building will likely provide similar flat roof habitat in the longer term.

During construction there is potential for increased disturbance to breeding birds from machinery and human presence which may disturb breeding birds or deter them from using retained habitats on Site to breed.

4.6.3 Bats

4.6.3.1 Roosting

Buildings identified in Table 3.4 are suitable to support roosting bats. Further surveys will confirm if bats are present. If roosting bats are present then the demolition of the buildings will have a negative impact on bats. Demolition has the potential to destroy roosts and kill or injure bats. If bats are present a Natural Resources Wales (NRW) European Protected Species License and mitigation will be required.

There is one tree which has been assessed as having Low suitability to support roosting bats. Under current Site plans, this will be removed. This will have a negative impact on any bats using this feature.

4.6.3.2 Habitat Loss

Based on Option 06b, linear habitats suitable to support commuting bats including hedgerows and rows of trees will be partially retained, the row of trees along the southern boundary will be removed. Removal of the row of trees along the southern boundary will be removed. Removal of the row of trees along the southern boundary will be removed.

Amenity grassland, parkland with scattered trees and introduced shrub will be totally removed during construction. This will reduce the available foraging habitat on Site. Standalone trees, rows of trees and hedgerows will be retained, these provide foraging opportunities. Habitat of equal of greater value to foraging bats is available in the wider landscape. Development proposals include new areas of amenity grassland and depending on the diversity of the grassland planting and light spill this may provide alternate foraging in the longer term.

4.6.3.3 External Lighting and Vegetated Corridors

External lighting has not yet been confirmed, if the vegetated site boundaries, including rows of trees, hedgerows or standalone trees are illuminated this will have a negative impact on bats using these features for commuting or foraging.

4.6.4 Hedgehogs

Based on Option 06b, the row of trees along the southern boundary will be removed, this will impact any hedgehogs using this feature for commuting, foraging or shelter. Hedgerows and rows of trees along the eastern boundary will be retained. There will be loss of connectivity from east to west.

Amenity grassland will be completely removed, this has potential to provide foraging habitat for hedgehog and will result in a loss of habitat during construction. However, other suitable foraging habitat will available in the

surrounding landscape and connected to the Site via hedgerows and tree lines. Development proposals include new areas of amenity grassland and depending on the diversity of the grassland planting and light spill this may provide alternate foraging in the longer term.

During construction there will be increased on site traffic and machinery. There is the potential for hedgehogs to be killed by collision with vehicles or get trapped in excavations.

Lighting plans are currently unavailable. If hedgerows and tree lines and newly created habitats are illuminated, their suitability for hedgehogs will be reduced having a negative impact on any hedgehogs using the Site.

4.7 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 been designed to promote local landscape connectivity and create a mosaic of habitats on Site.

Green corridors should be created where possible and lighting of these corridors should be avoided. 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.

5. Further Surveys and Recommendations for Mitigation

5.1 Further Surveys

Recommendations for further surveys are discussed in combination with LE04.

5.1.1 Bat Surveys

Demolition of the buildings is due to commence in August/September 2021. Further surveys are required prior to demolition of these buildings. To inform the Site design and programme of construction works the project team have decided to complete bat surveys in 2018.

Ecological data is only valid for two years. Follow up bat surveys may be required in 2020 to guide demolition and inform planning.

5.1.1.1 Bat Roost Emergence/Re-entry Surveys

Bat surveys are recommended to confirm presence, or likely absence bat roosts at the Site. The following surveys are recommended:

Building No.	Bat Roost Suitability	Number of Survey Visits Required	Timing
Building 6	Low	One survey (dusk emergence or dawn re-entry)	May- August
Building 7	Low	One survey (dusk emergence or dawn re-entry)	May- August
Building 9	Moderate	Two separate surveys to include one dusk emergence and one dawn re-entry	May - September.
Building 10	Low	One survey (dusk emergence or dawn re-entry)	May- August
Building 11	Low	One survey (dusk emergence or dawn re-entry)	May- August
Building 12	Moderate	Two separate surveys to include one dusk emergence and one dawn re-entry	May - September.
Building 13	Moderate	Two separate surveys to include one dusk emergence and one dawn re-entry	May - September.

Table 3.1. Bat Roost Survey Effort

Surveys will pay due regard to guidelines provided in Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins, 2016).

If roosts are identified during surveys on the Low or Moderate suitability buildings then additional surveys will be undertaken so that a total of three separate surveys per building are undertaken. Three surveys are required to support a European Protected Species License (EPSL).

No further surveys are required on trees assessed as having Low suitability to support roosting bats. Trees with Low suitability to support roosting bats must be felled under a method statement and supervised by a licensed bat ecologist.

5.1.1.2 Bat Activity Surveys

Hedgerows and rows of trees are suitable for use by foraging and commuting bats and may be impacted by the proposed development.

Bat activity surveys are recommended to identify what species are using the Site and how bats are using the boundary features at the Site.

The Site has been assessed as having 'Moderate' suitability to support foraging and commuting bats. Collins, 2016 recommends for Moderate suitability that a walked activity transect is completed once a month between

April and October. However, given the local context of the Site and the dominance of the Site by low value amenity grassland, it is recommend that a combined approach is taken, comprising: 'Low' suitability methodology of one visit per season (spring, summer and autumn) is completed; and that static detector surveys will follow a Moderate Suitability methodology of one survey per month. This approach will be agreed with the LPA Ecologist, but we consider it proportionate for this Site.

5.1.1.3 Bat Activity - Walked Transect Survey

One walked transect survey route around both the Bro Morgannwg and Whitmore High Site will be undertaken. This will reduce survey costs, compared to a transect visit at each Site.

Surveys will be undertaken paying due regard to Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins 2016).

We recommend walked activity surveys in June, August and late September, in suitable weather.

All bat passes will be recorded and best effort will be made to record direction of flight and activity. Two surveyors per transect visit will be required for Health and Safety.

5.1.1.4 Bat Activity – Static Detector Survey

A total of four static detectors will be used covering both Bro Morannwg and Whitmore.

One static detector survey covering both the Bro Morgannwg and Whitmore High Site will be undertaken. This will reduce survey costs, compared to a static detector survey at each Site.

Each static detector will be deployed once per month between June and October 2018 and April and May 2019 recording for a minimum of five consecutive nights. The devices will be retrieved after each session and the data analysed for bat species and counts using Analook software.

5.2 Recommendations for Mitigation of Potential Impacts

The mitigation hierarchy should be considered and implemented when designing the new development. The ecological constraints at the Site should be considered at an early stage so the mitigation can be included by design. Recommendations for mitigation are discussed in combination with LEO4. A summary is provided below. Mitigation for bats will be discussed in more detail following completion of bat surveys.

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.

5.2.1 Habitats

All hedgerows and rows of trees should be retained where possible.

Hedgerows, the row of trees along the eastern boundary and standalone trees will be retained. These should be protected during construction to avoid damage to these features. Hedgerows 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.

Landscaping at the Site should be designed to include native species suitable for the area. Recommendations to enhance habitats on Site are provided in Section 9 LE04.

Creation of green corridors should be created along boundaries provide habitat for wildlife and connectivity across the Site and with the surrounding area. Planting should be of locally native hedgerow species, with occasional native standard trees. 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 any tree lines/hedgerows, to create a 'field margin' of at least 3m from the base of the hedgerow/tree line. This should be kept 'dark' and light spill onto the features should be avoided, to maximise its benefits.

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.

5.2.2 Invertebrates

There will be no long term impacts on invertebrates. There are no specific mitigation measures. Compensation for habitat loss will be included by design. Enhancement opportunities which benefit invertebrates are discussed in LE04.

5.2.3 Breeding Birds

To avoid impacts on breeding birds and nesting gulls removal of the row of vegetation and demolition of buildings should be undertaken outside of the breeding bird season (works to be undertaken between 1 September and end February).

If must be undertaken during of the nesting bird season then an ecologist must check these features a maximum of 48 hrs prior to removal/demolition. Any active nest will be left in-situ, with a suitable buffer zone, until chicks have fledged and do not return, this can be at least 6 weeks.

To avoid disturbance to nesting birds in retained habitats during construction, fences must be put up adjacent to hedgerows and around trees to create a buffer zone.

The mitigation for breeding birds is covered as a 'mandatory requirement' in Section 9.2 LE04.

5.2.4 Bats

Further detailed mitigation for bats will be provided following completion of bat surveys. Mitigation is likely to include retaining green corridors, mitigate lighting to avoid features used by bats and provide alternative bat roosts on Site.

The mitigation for bats is covered as a 'mandatory requirement' in Section 9.2 LE04.

The current plans include demolition of three buildings assessed as having Moderate suitability and five buildings assessed as having Low suitability to support roosting bats and felling of one tree assessed as having Low suitability to support roosting bats.

If roosting bats are confirmed and proposed works are to impact on the roosts, a EPSL must be gained prior to demolition of the buildings or felling of trees. Mitigation will be required to gain the EPSL (such as compensatory roost boxes/spaces, timing of works, supervision of works and mitigation of lighting). Results of the surveys and further requirements for mitigation will be detailed in the bat report following completion of bat surveys.

5.2.4.1 Foraging and Commuting Bats

The current plans require removal rows of trees along the southern boundary which may be used by foraging and commuting bats. These are located outside of the Site boundary and overhang the Site. The removal of this feature will be assessed in the report for Ysgol Gymraeg Bro Morgannwg.

5.2.4.1.1 Bat and Lighting

The following recommendations in line with the Bat Conservation Trust (BCT) (BCT, 2009, BCT 2014, and Gunnell et. al., 2012) best practice guidance should be incorporated into any new lighting scheme at the Site

Light spill onto sensitive areas such as the Site boundaries which have the potential to be used by commuting and foraging bats or foraging area should be limited to levels of 3 Lux or less.

Compensatory bat boxes may be a requirement at the Site, following the results of the bat surveys, lighting of these must be avoided as detailed below.

Suggestions for mitigating external lighting and achieving the lighting recommendations above are outlined in the best practice guidance by the BCT (BCT, 2009, BCT 2014 and Gunnell et. al., 2012). These include:

- Eliminate bare lamps and any upward pointing light;
- The spread of light should be at or near the horizontal. Flat cut off lanterns are best;
- Use narrow spectrum lamps. Using lamps with the lowest UV output possible, avoid white and blue spectrums of light;
- Lights should peak higher than 550nm or use glass lanterns to filter UV light;
- Reduce the height of lighting columns;
- Direct lighting to where needed and avoid spillage e.g. direct lighting towards the building front/road/car park/foot path and design the luminaire appropriately, including the use of hoods, cowls, shields etc to avoid spillage onto tree lines, mature trees or known roost location. Roadways, footways and car parks could, for example, be lit using bollards to keep the light below the tree canopy. Or use embedded lights within the surface to illuminate the roadway and only light high risk stretches and junctions;
- Where new lighting is proposed, use lighting modelling programs to indicate where the light spill will occur, if appropriate;
- 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);
- Use movement sensors or timers on security lighting;
- Limit the times that the lights are on, to provide some dark periods;
- 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.

5.2.5 Hedgehogs

Lighting should be avoided and controlled along hedgerows and rows of trees, as detailed in Section 9.2 LEO4 in relation to bats.

Where possible, excavations adjacent to hedgehog habitat should be covered over night or ramps installed so trapped hedgehogs can escape.

Landscaping at the Site should be designed to include native species suitable for the area and to create habitat of benefit to hedgehogs. Recommendations to enhance habitats on Site for hedgehogs are provided in Section 9 LE04.

5.2.6 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 designated sites and surrounding environment. This will be implemented via the Site Construction Management Plan (CMP).

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. Particular 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. BREEAM Landscape and Ecology Assessment

Opportunities for BREEAM Credits and Ecological Enhancement are discussed within Sections 7, 8, 9 and 10 along with recommendations for the mitigation and protection of legally protected species within the Site.

The credits covered by these sections are LE02, LE03, LE04 and LE05. The potential for gaining these credits is discussed.

7. BREEAM LE02: Ecological Value of Site and Protection of Ecological Features

7.1 LE02 Ecological Value of Site and Protection of Ecological Features

The Site has been assessed by a Suitably Qualified Ecologist (SQE) as having ecological value.

- Trees exceeding 10cm DBH within area of parkland and scattered trees and along the southern boundary are to be removed, standalone trees are to be retained. All retained trees exceeding 10cm DBH will need to be fenced and protected in accordance with British Standard 5387 Trees in Relation to Construction.
- Buildings are suitable to support roosting bats. Further surveys will confirm if buildings have ecological value. All buildings will be demolished during construction.
- One tree has Low suitability to support roosting bats.

LE02 – The Site has been classified as having ecological value. Habitats with ecological value and trees greater than 10cm DBH will be removed under current proposals. Therefore, the first credit available under LE02 cannot be awarded. Further surveys will determine whether a bat roost will be destroyed during demolition.

To enable the second credit under LEO2 to be awarded any ecological features on Site to be retained must be protected from damage, destruction and/or disturbance during construction.

8. BREEAM LE03: Mitigating Ecological Impact

8.1 Mitigating Ecological Impact

To achieve one credit under LE03, the change in species diversity must be less than zero but equal to or greater than minus nine species.

To achieve two credits under LE03, the change in diversity must be equal to or greater than zero species.

The Ecological Value before development is based on the Phase 1 Habitat Survey undertaken on 08 May 2018. The Ecological Value before development is **11.5**.

The Ecological Value after development will be calculated when a detailed site layout plan has been received.

The before development calculations can be used to help inform the final design of the scheme to help one or two credits to be achieved. AECOM can work alongside the landscape architect to advise on how to achieve this. The recommendations for enhancing the Site under LE04 will help to achieve LE03 if implemented.

Table 7.1 Shows the LEO3 pre development Calculation.

LE03 – Credits will be confirmed, following completion of post development calculations once a detailed landscape plan is received.

Plot/Habitat type	Total No. of Species	Area BEFORE development (m2)
Parkland with Scattered Trees	22	1495.3
Amenity grassland	16	43516.8
Hedgerow Intact Species Poor	16	202.6
Standalone Trees	4	9.0
Row of Trees	N/A	Not been accounted for as part of this assessment*
Hardstanding	0	11618.0
Buildings	0	6747.2
Introduced Shrub	0	18.00
Brick Wall	0	Not been accounted for as an area
Metal Fence	0	Not been accounted for as an area
TOTAL SITE AREA		63395.2
ECOLOGICAL VALUE (AREA WEIGHTED NO. PLANT SPECIES)		11.5

Table 7.1: LE03 Calculations

* Row of trees not included in BREEAM calculations for this Site as they are planted outside of the Site Boundary. The row of trees has been considered as part on the BREEAM assessment for Ysgol Gymraeg Bro Morgannwg.

9. BREEAM LE04: Enhancing Site Ecology

9.1 Enhancing Site Ecology

One credit will be achieved if the recommendations outlined below are implemented. This section includes recommendations to be acted upon by the client and/or principal contractors. These recommendations are based on the results of the Phase 1 Habitat Survey completed on 08 May 2018.

The recommendations are for the protection and enhancement of the Site's ecology categorised as 'legal', and 'additional'. Legal recommendations are requirements for compliance with UK and EU legislation (Appendix A). Additional recommendations outline further measures which could be included to maximise the ecological value of the Site.

All of the legal recommendations need to be completed as well as at least 6 of the 8 additional recommendations to achieve the first credit under LEO4. Liaison between ecologists and the architects will be required to achieve these.

The current Site plan includes provision of a 'Habitat Area'; the additional requirements can be used to aid design of these areas.

9.2 Legal Requirements

9.2.1 Bats

9.2.1.1 Roosting Bats

The current plans include removal of buildings assessed as having suitability to support roosting bats.

Bat surveys must be undertaken on these buildings as detailed in Section 5.2. If roosting bats are confirmed a EPSL must be gained prior to demolition of the buildings.

Mitigation will be required to gain the EPSL. Results of the surveys and further requirements for mitigation will be detailed in the bat report following completion of bat surveys.

9.2.1.2 Foraging and Commuting Bats

The current plans require partial removal of a tree line which may be used by foraging and commuting bats. Bat activity surveys are required, the results of the surveys will be used to guide mitigation for foraging and commuting bats.

Mitigation recommendations, based on current baseline information, are listed in Section 9 and must be followed, as appropriate, to achieve this credit. These relate to retention of boundary features and avoidance/mitigation of light spill.

9.2.2 Breeding Birds

Mitigation recommendations, based on current baseline information, are listed in Section 9 and must be followed, as appropriate, to achieve this credit.

9.3 Additional Requirements

1) Improving Grassland Diversity

A different management regime will be completed for areas of grassland which are not used for sports and play areas.

New areas of grassland could be planted and managed to enhance species diversity. These areas should be mown three times a year (April, August and once during winter). http://wildseed.co.uk/page/management-of-meadows-and-grassland has more details on how to manage species-rich grasslands.

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.

Wildflower planting will benefit invertebrates, birds, foraging bats and hedgehogs.

Leave grassland edges adjacent to hedgerows unmown to create corridors of suitable habitat for hedgehogs.

This will count as additional species on the Ecology Calculator.

2) Swale Creation

Swales could be created around parking areas; this can be considered in line with a Sustainable Drainage System (SuDS) scheme. Mini swales could be introduced within the car parking areas (at the ends of parking bays, for example). Swales provide areas for wildlife whilst managing rainwater and runoff. The swale should be seeded or planted with native species. Seed mixes such as EG8 (7 species), EM8 (24 species) or EM8F (17 species) should be used where soils are seasonally or occasionally wet.

As well as enhancing the biodiversity on Site, the pond or swale could be used in conjunction with an information board to inform building users of the SuDS in place and raise awareness of water management.

The ground staff or contractors should be instructed to avoid the use of any artificial pesticides, herbicides and fertilisers. Non residual alternatives suitable for use near water should be used if required.

This will count as additional species on the Ecology Calculator and provide habitat for invertebrates, nesting birds and foraging bats.

3) Insect Wall

An insect wall or insect boxes 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.

The success of the invertebrate wall should 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.

4) Bird and Bat Boxes

At least five bird boxes should be installed on trees along the boundaries or included within the building design. Boxes suitable for swifts and house sparrows 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.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. Advise on box design and locating boxes is provided by the British Trust of Ornithology https://www.bto.org/about-birds/nnbw/make-a-nest-box

Bird boxes should be appropriately located at least 4m above ground level, and out of reach of predators. Bird boxes should not be positioned to face south in order to avoid hot sun.

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 designed into the new building. Until the bat surveys are undertaken it is not possible to state how many boxes are required for the EPSL. By fitting a minimum of three boxes of various designs into the building at design stage, retro fitting of bat boxes to comply the EPSL may be avoided.

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 buildings. The choice of bat box should be guided by an ecologist.

Encouraging these species onto a site also provides an interesting educational opportunity. If bats are present, local bat groups may be willing to lead talks and walks in the school grounds, involving staff, student and the wider community.

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 4m 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.

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 will count as species on the Ecology Calculator.

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. Appendix G gives a list of native plants that are attractive to butterflies. 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 species listed 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 will count as species on the Ecology Calculator.

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 and leaf piles and 3 purpose built or purchased ready-made hedgehog houses. 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/Hedgehogsml.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 including 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.

8) Green Corridors

Green corridors should be created to provide habitat for wildlife and connectivity across the Site and within the surrounding area. Planting will be of hedgerow species, with occasional native standard trees. Planting will be a diverse mixture of locally native species of value to wildlife including plants which provide fruits, nuts or berries. A native species rich seed mix, suitable for the location (such as a woodland mix or verge mix) should be used at the base, to create a 'field margin' of at least 3m at from the base of the hedgerow. This should be kept 'dark' and light spill onto the features should be avoided, to maximise its benefits.

General, 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.

Other boundary features could be enhanced to increase their value to commuting and foraging animals. This could be through the addition new plants into gaps.

This will count as species on the Ecology Calculator.

9.4 Second Credit

The second credit relates to where there is a positive increase in the ecological value of the Site of 6 species or greater. The post development ecological value has not been calculated at this stage. These credits will be awarded if the change in ecological value is calculated to be of 6 species or greater.

LE04 – One credit can be achieved if all of the legal requirements are completed as well as at least 4 of the 8 additional requirements. Liaison between ecologists and the architects will be required to achieve these. A further credit will be awarded following post development calculations if there is a positive increase in ecological value.

10. BREEAM LE05: Long Term Impact on Biodiversity

10.1 LE05 Long Term Impact on Biodiversity

The first credit under LE05 can be achieved when the client has committed to achieving the following and at least two of the additional measures.

The second credit can be achieved when the client has committed to achieving the following and at least four of the additional measures.

The following is required to demonstrate compliance:

- A SQE is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU
 legislation relating to the protection and enhancement of ecology has been complied with during the design
 and construction process.
- A landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion in accordance with BS 42020:2013 Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff.
- Additional measures (two to achieve the first credit, four to achieve the second credit) to improve the assessed site's long term biodiversity are adopted.

Although it is possible to produce a full 5-year Landscape and Habitat Management Plan (LHMP) at the Design Stage to help attain credits under LE05, 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 LHMP once the landscaping plan has been finalised. The landscape and habitat management plan should be produced in accordance with BS 42020:2013 Section 11.1 and a suggested format is included in Appendix F.

10.1.1 Additional Measures

The following additional credits are considered relevant to this development (two additional measures are required to be implemented to achieve the first credit; four additional measures are required to be implemented to achieve the second credit under LE05). The full details of these requirements in outlined in the Methodology Section 2.2.4:

1) The contractor is required to nominate a 'Biodiversity Champion' as outlined in Section 2.2.4.

2) The contractor is required to train all relevant site work-force on how to protect site ecology during the project as outlined in Section 2.2.4.

3) The contractor is required to record actions taken to protect biodiversity and monitor their effectiveness throughout key stages of construction as outlined in Section 2.2.4.

4) Where a new ecologically valuable habitat, appropriate to the local area, is created. This includes habitat that supports nationally, regionally or locally important biodiversity, and/or which is nationally, regionally or locally important itself; including any habitat listed in the UK Biodiversity Action Plan (UK BAP), those protected within statutory sites (e.g. SSSIs), or those within non-statutory sites identified in local plans. Several bat species, birds and hedgehogs are Section 7 Priority Species of Principal Importance in Wales. The installation of bat and bird boxes will benefit bats and birds. Creation of species rich areas of grassland, a sensory garden, swale and/or a kitchen garden will be of benefit to invertebrates, bats, birds and hedgehogs.

5) The client requires the contractor to programme site works to minimise disturbance to wildlife. For example, site preparation, ground works, and landscaping have been, or will be, scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination etc. This additional requirement will be achieved where a clear plan has

been produced detailing how activities will be timed to avoid any impact on site biodiversity in line with the recommendations of a suitably qualified ecologist.

6) A partnership has been set up by the design team with a local group that has wildlife expertise (e.g. local wildlife trust or similar local body) and the group has:

a. Provided advice early in the design process regarding protecting/providing habitat for species of local importance on the site.

b. Provided advice to ensure the design is in keeping with the local environment. In particular this should draw on their local knowledge if any features or species of ecological interest on or near the site.

c. Provide or will continue to provide ongoing support and advice to the educational establishment to help them manage, maintain and develop the outdoor space in the longer term.

A suitable starting point for discussion with the local wildlife group would be to ask for advice on how to take account of locally important species in the school/college landscape design.

LE05 - Two credits can be achieved when the client has committed to achieving the requirements as outlined above and at least four of the additional measures. It is important the client maintains good record keeping throughout the project such as photos, diary, documents, email etc to be able to be able to demonstrate that the measures have been completed.

11. Summary of BREEAM Credits

11.1 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 11.1: Ecological Credits Available Based on the Current Landscaping Plan

Credit	Total available	Credits achievable under current landscaping proposals
LE02	2	1*
LE03	2	TBC**
LEO4*	2	2*
LE05*	2	2*
LE Total	8	5*

*Achieving this credit is dependent on recommendations being implemented by the client/contractor.

**LE03 will be confirmed once a detailed site plan including landscape design has been issued.

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Figure 1 Phase 1 Habitat Map



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AECOM Limited 1 Callaghan Square Cardiff, CF10 5BT +44 (0)29 2067 4600 tel www.aecom.com

Project Title:

ECOLOGICAL APPRAISAL AND BREEAM ECOLOGY REPORT

Client: ALE of GLAMORGA **BRO MORGANNWG** LEGEND Site Boundary Target Notes Trees Invasive Species Bat Roost Potential for Buildings A High Potential \wedge Medium Potential Low Potential A Negligible Bat Roost Potential for Trees ★ Low Potential Phase 1 Habitat Linear Features Row of trees - broadleaf - Intact Hedge - Species-Poor HHHH Fence Wall

Phase 1 Habitat Areas

	Broadleaved scattered trees
	Amenity grassland - cultivated land
\times	Introduced shrub - cultivated land
	Buildings
	Hard Standing

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AECOM Internal Project No:

60571313

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GM	СМ	LN	11/06/18	

Master Planning

Figure 2 Final Master Planning Concept – Option 06b



New road
 1-Wintrow High Solod
 2-New projection road
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 New potentian
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Appendix A: Legislation

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 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 2017 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 2017. Badgers are protected under their own Act: The Protection of Badgers Act 1992. Activities affecting protected species must usually be conducted under licence obtained from the appropriate body (in Wales, this is Natural Resources Wales).

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

Designation	Brief Description
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 2017) (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, 2017 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 2000 has strengthened this legal protection (see below).
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

Designation			Brief Description
			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 2016	(Wales)	Act	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.

Appendix B: Site Photographs









Project number: 60571313





Photograph 31: Building 7 and 12. Gap where facia and flashing Photograph 32: Building 12, missing vent brick. meet brick wall.





Photograph 35: Invasive species point 2.

Appendix C: Target Notes

Target Note	Description
1	Brash piles with hedgehog potential.
2	Memorial garden with poppies and gravel.

Appendix D 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	Development proposals must preserve and where appropriate enhance the rich and diverse built and natural environment and heritage of the Vale of Glamorgan including:
	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.
	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.
	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.
	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.
Policy MG17 - Special	The following areas are designated as special landscape areas:
Landscape Areas	1. Castle Upon Alun;
	2. Upper & Lower Thaw Valley;
	3. Ely Valley & ridge slopes;
	4. Nant Llancarfan;
	5. Dyffryn basin & ridge slopes;
	6. Cwrt-yr-Ala basin.
	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.
	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

Policy	Details
	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:
	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 Species of European mportance	Development proposals likely to have a significant effect on a European site, when considered alone or in combination with other projects or plans will only be permitted where: 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;

Policy	Details
	 There are reasons of overriding public interest; and Appropriate compensatory measures are secured.
	Development proposals likely to have an adverse effect on a European protected species will only be permitted where: 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.
	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.
	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.
	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.
	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.
MG20 – Nationally Protected Sites and Species	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: 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
	 Appropriate compensatory measures are secured; or The proposal contributes to the protection, enhancement or positive management of the site.
	Development proposals likely to affect protected species will only be permitted where it is demonstrated that:
	 The population range and distribution of the species will not be adversely impacted; 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.
	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.
	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 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.

Policy	Details
	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 SINCs, 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

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 E: Project Staff – Suitably Qualified Ecologist

Lisbeth Nash BSc (Hons) MCIEEM

Principal Ecologist

Lisbeth is a Principal Ecologist over 10 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 (handling) Wales and a great crested newt survey licence holder – England and Wales. She is a Member of the Chartered Institute of Ecology and Environmental Management.

Ursula Jones BSc (Hons) MCIEEM

Senior Ecologist

Ursula is a Senior Ecologist with seven years of consultancy experience and over ten years experience in the field of botany and habitat survey. Ursula holds a First Class Honours in Environmental Conservation from the Swansea Metropolitan University. She has conducted numerous botanical and habitat surveys (including Phase, NVC, 1, Common Standards Monitoring, IHS and RHS) across the range of UK habitats and abroad, and has expertise in mapping and GIS (ArcMap). She has experience in protected species surveys for bats, reptiles, great crested newts, nesting birds, water voles, otters, badgers and dormice, and has produced numerous Phase 1 and Phase 2 written reports, several ecology chapters and appendices for Environmental Statements, a number of Habitat Regulations Assessments screening reports, as well as several CfSH and BREEAM assessments. She is a Member of the Chartered Institute of Ecology and Environmental Management.

Lucy Foster BSc (Hons) ACIEEM

Ecologist

Lucy is an Ecologist with five 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), 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 badgers, otters, water vole, reptiles and bats.

Appendix F Habitat Management Plan Structure

- 1. 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

Appendix G: Suggested Planting

Suggested plant species of benefit to invertebrates

List available in Landscape and urban design for bats and biodiversity - Gunnell et.al. (2012).

Free to download http://www.bats.org.uk/pages/landscapedesign.html

Suggested plant species of benefit to butterflies and moths

Scientific Name
Agrimonia eupatoria
Potentilla sterilis
Prunus spinosa
Rubus fruticosus
Lotus corniculatus
Potentilla reptans
Rosa canina
Lotus pedunculatus
Hippocrepis comosa
Sanguisorba minor
Potentilla erecta
Prunus domestica
Fragaria vesca
Geum urbanum

(Eeles, P. (2008) UK Butterflies Food Plants [Online] Available from: http://www.ukbutterflies.co.uk/foodplants.php)

Suggested plants for bees by season

Common Name	Scientific Name
	Species that flower in March and April
Bluebell	Hyacinthoides non-scriptus
Bugle	Ajuga reptans
Lungwort	Pulmonaria longifolia
False heather	Cuphea hyssopfplia
Ribwort plantain	Plantago lanceolata
Hedge garlic	Alliaria petiolata
Germander speedwell	Veronica chamaedrys
Oxlip	Primula elatior
Dog's mercury	Mercuralis perennis
Ground ivy	Glechoma hederacea
Herb Robert	Geranium robertianum
Coltsfoot	Tussilago farfara

Species that flower between May and June		
Wild wallflower	Cheiranthus cheiri	
Red clover	Trifolium pratense	
Salad burnet	Sanguisorba minor ssp minor	

Common Name	Scientific Name
Rock rose	Helianthemum nummularium
Rock cinquefoil	Potentilla rupestris
Foxglove	Digitalis purpurea
Honeysuckle	Lonicera periclymenum
Selfheal	Prunella vulgaris
Bladder campion	Silene vulgaris
Cowslip	Primula veris
Thyme	Thymus drucei
Sorrel	Rumex acetosa
Bugle	Ajuga reptans
Cow parsley	Anthriscus sylvestris
Wild wallflower	Cheiranthus cheiri

Species should be chosen to fit with the local ground conditions and local conditions such as shading.

Appendix H: Examples of Invertebrate Boxes



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