Coleg Sir Gâr

Green Infrastructure Statement:
DRAFT

CR0301-ALA-XX-XX-R-L-00006

P01

October 2025

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ares
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Contents

1. Introduction

1.1. This Green Infrastructure Statement has been prepared by Ares Landscape Architects Ltd collaboration with Brindle & Green Ecology and The Urbanists on behalf on behalf of Coleg Sir Gâr (hereafter referred to as 'the Applicant') in relation to a proposed development at Coleg Sir Gâr Pibwrlwyd Campus, Carmarthenshire (hereafter referred to as 'the Site').

1.2. The proposals concern construction of a new educational campus for Coleg Sir Gâr including landscaping, related infrastructure and engineering works. The Landscape Illustrative Masterplan is provided at Appendix 1 to this document.

1.3. This document has been prepared in response to recent updates to Chapter 6 of Planning Policy Wales (PPW)1, whereby a Green Infrastructure Statement is required for submission alongside the planning application. This document identifies how Green Infrastructure has been incorporated into the landscape design for the Site (provided at Appendices 1 and 2) and provides the relevant avoidance, mitigation and/or compensation measures to be incorporated into the design to ensure the continued functioning of Green Infrastructure assets both within and adjacent to the Site.

1.4. This document will demonstrate:

- a consideration of the opportunities and constraints from baseline data
- the 'Step-wise Approach' has adopted through the proposals
- a scheme of enhancements to ensure a net benefit for biodiversity appropriate to the college setting
- immediate and ongoing management has been considered to secure the net benefit for biodiversity

1.5. This statement should be read in conjunction with the following documents and drawings:

- BG24.331 Ecological Impact Assessment (EcIA)
- BG24.331 Technical Information to support a Habitat Regulations Assessment (HRA)
- The Urbanists Planning Consultants Planning Statement
- CR0301-ALA-ZZ-ZZ-D-L-20001 Landscape Illustrative Masterplan
- CR0301-ALA-ZZ-ZZ-D-L-20021 Planting Strategy
- CR0301-ALA-ZZ-ZZ-D-L-20027 Existing Site Plan
- CR0301-ALA-XX-XX-RP-L-00005 Landscape Management & Maintenance Plan

2. Site Context

2.1. The Site is centred at Ordnance Survey Grid Reference (OSGR) ST 07429 67656. The Local Planning Authority (LPA) is Carmarthenshire County Council (CCC). The Site situated in the rural area on the south-eastern periphery of Carmarthen, within the district of Carmarthenshire. The Site comprises two distinct parcels; the east parcel containing the existing northern campus site and the west parcel predominated by agricultural land. A linear belt of vegetation and a private access track at the centre of the Site delineate the two parcels.

2.2. The site is bordered by open agricultural land to the north and east, Pibwrlwyd Lane and southern college campus site to the south, the A484 and open agricultural land to the west.

2.3. To the north and east of the Site, arable and pastoral land is interspersed with a network of hedgerows and mature treelines. The south and west of the Site is bound by the A484 major road (approx. 9m west of the Site) and local road Pibwrlwyd Lane runs immediately adjacent to the south of the northern campus. To the eastern boundary of the Site is a well-vegetated buffer consisting of the woodland edge of the adjacent land and hedgerow, while the south-eastern boundary is delineated by an established mature hedgerow. The eastern field is subject to some scrub encroachment from the hedgerow field boundaries.

3. Policy and Legislative Context

3.1. Key legislation, planning policy, and guidance that inform the requirements and the approach to the preparation of Green Infrastructure Statements are summarised below:

- Environment (Wales) Act 2016
- Planning Policy Wales, Edition 12
- Future Wales, The National Plan 2040
- Step-wise Approach
- Technical Advice Note 5 - Nature Conservation and Planning (1996)
- DECCA Framework and Ecosystem Resilience
- Ecosystem Services Framework
- Ecosystems, Ecosystem Resilience (ER), and Ecosystem Services (ES)

Section 4 analyses the proposed development through the context set by these documents, notably the Step-wise Approach.

3.2. Refer to Appendix 3 for further details of relevant Policy, Legislation and Guidance.

4. Ecological and Green Infrastructure Baseline

Refer to Section 5 of *BG24.331 Ecological Impact Assessment* for detailed baseline analysis.

4.1. A number of site specific data sources were consulted to establish the ecological baseline of the Site. A desk-study and an initial Preliminary Ecological Appraisal (PEA) was undertaken by Arbtech in October 2024, followed by an additional PEA walkover by Brindle & Green for an extended portion of land to the south of the Site in April 2025. The baseline has been further informed by subsequent detailed surveys in respect of bats, badgers (*Meles meles*), common reptiles and hazel dormouse (*Muscardinus avellanrius*) and other species of principle importance listed under Schedule 7 of the Environment (Wales Act). The outcomes of these investigations are documented in an Ecological Impact Assessment (EcIA) produced by Brindle & Green in September 2025.

4.2. The EcIA assesses the wider ecological impact of the proposed development to set out appropriate mitigation and enhancement prescriptions. Paragraph 1.1.1 of the EcIA states: The aim is to result in a scheme that is assessed as making a positive contribution to biodiversity at a local level at the very least.

5. Development Proposals and Green Infrastructure Strategy

5.1. The proposed scheme includes the demolition of 6 existing buildings and the delivery of 4 new college blocks with associated parking, coach parking, access, SuDS and landscape ecological enhancement. The design proposals are presented at Appendix 1.

5.2. <u>Step-wise Approach</u>

In respect of the ecological/Green Infrastructure resource present within and adjacent to the Site, the proposed development has been designed to retain and protect the valued resources identified in the Ecological and Green Infrastructure baseline as far as possible whilst ensuring connectivity (where existing) with Green Infrastructure assets identified in the wider landscape is maintained, alongside delivering net benefits to biodiversity in accordance with Chapter 6 of PPW. This is achieved through adoption of a Step-wise Approach, which ensures that any adverse environmental effects are firstly avoided, then minimised, mitigated, and as a last resort, compensated for, with enhancement secured by delivering biodiversity benefits onsite, over and above that required to mitigate or compensate for any negative impact. In summary, the Step-wise Approach considers:

a) Mitigation - avoidance, minimisation, mitigation or replacement, and compensation

b) Enhancement - diversity, extent, condition, and connectivity;

c) Long-term management principles to secure GI and biodiversity net benefits; and

d) Multifunctionality of the above

The Step-wise Approach and baseline assessment has informed the landscape response and resulting net benefits for biodiversity.

5.3. Mitigation

The site design has been carefully considered to enhance Green Infrastructure. The Proposed habitat protection and creation features, and the benefits they provide to the Green Infrastructure network, include:

a) Retention of trees as far as practicable (subject to updated Arboricultural survey to be supplied by Brindle & Green October 2025)

b) Proposed trees, species to comprise a mix of native (to increase biodiversity values) and non-native species (for a resilient to climate change scheme). The proposed species will no comprise more than 10% of a single species. The provision of new tree planting across the Site with specimen tree planting also provided throughout the built development (circa 203 planted specimens ranging from multi-stem to heavy standards), compensating for proposed losses at a minimum ratio of three trees to every one lost, whilst also maintaining nesting habitat for a bird assemblage and contributing to climate regulation and soil stabilisation;

c) The retention of woodland and hedgerow habitat along the eastern and southeast boundaries of the Site aims to maintain a vegetated corridor along this boundary for the continued dispersal of protected/notable species north–south. This will be combined with the inclusion of new ecotone planting along the retained woodland edge as part of development proposals, compensating for habitat loss whilst strengthening this boundary and reducing edge effects. This will be implemented alongside the long-term management of this habitat, adoption practices aimed at promoting the structural and botanical diversity of the woodland, enhancing the resilience of this habitat to climatic changes;

d) The provision of new tree, hedgerow and shrub planting to compensate for loss of habitats, particularly woodland habitat and hedgerows of Local importance. New habitat features will include:

    i. Provision of c.200 l m of new native hedgerow planting in association with the northern boundary of the Site compensating for loss of hedgerow habitats whilst ensuring habitat connectivity within the Site to offsite habitat is maintained along these boundaries;

    ii. The planting of hedgerows to external amenity spaces and formal landscaped areas. Although ornamental and managed for visual amenity/screening, hedgerows remain of potential value as a foraging resource and cover for protected/notable species (namely birds and invertebrates) whilst softening the edges of built development and providing visual amenity benefits to campus users;

e) Amenity Planting rich in shrub and perennial planting with seasonal change and sensory interest;

f) The incorporation of low maintenance grassland habitat around new buildings and associated parking areas. Seed mixes will be selected with uniform seed head growth for low cutting regimens. Introduction of bulb planting to low access amenity grass

areas are proposed to enhance biodiversity and reduce the grass cutting regimen where possible to support long-term ecological resilience; whilst such areas are to be managed for amenity, grassland will still provide foraging opportunities to protected/notable species such as badger and European hedgehog whilst further integrating Green Infrastructure within the built development footprint;

g) The provision of meadow grassland planting across the site, particularly to the south east and peripheral areas, compensating for the loss of species-poor grassland of negligible value. Such habitat can be managed in the long-term through a sensitive cut regime aimed at promoting a structurally and botanically diverse grassland sward, thus delivering biodiversity benefits;

h) The implementation of a sustainable drainage strategies (SuDS) to include rain gardens, filter drains and attenuation basins to manage surface water runoff from new development. In addition to ensuring impacts upon Afon Tywi/River Tywi SAC and other non-statutory designations/aquatic habitats in the wider landscape are avoided, such features can provide multi-functional benefits. Native planting within such features will enhance the landscape amenity value of the Site whilst also providing foraging opportunities for invertebrates and delivering benefits to climate regulation, adaptation and resilience;

i) The provision of habitat features including dead wood and hibernacula for invertebrates with inclusion of bird nest and bat roost boxes within the fabric of new buildings to increase nesting/roosting provision across the Site for these species groups, seeking to maintain/increase populations of such species within the local area (location and specification of habitat mitigation features to be confirmed by Brindle & Green)

Mitigation Hierarchy Summary

Avoidance	A large amount of the Site is currently in use as a fully operational college. The proposal is to retain and expand this use to ensure a viable development and future for the college. The college is a key educational facility currently serving the surrounding region and with expansion will serve an even greater catchment. A proportion of the site is currently greenfield agricultural land. Subsequently, there will be a loss of modified and neutral grassland, a small extend of broadleaved woodland (adjacent to the existing car park in the southern area of the Site) and mixed scrub (refer to 5.2.3 *BG24.331 Ecological Impact Assessment for details).* None of which are determined a National and / or Local Habitat of Principle Importance (HPI) or Woodland Habitat of Principle Important as listed on schedule 7 of the Environment Act Wales add therefore have limited nature conservation value. Scattered individual trees, including some Category B trees are located across the site, some of which will need to be removed. The trees present in the Site area have been identified to have limited ecological value. A series of hedgerows to edges of the existing college site and field pattern to the north do have value for protected species, which are addressed further below.

Minimisation	The principle of minimisation has been followed while delivering on the brief. Hedgerows of notable importance to the existing field margins will be retained to maintain vegetated corridors for the continued dispersal of protected/notable species north–south and east-west. Other hedgerows that form the west and southwest boundary of the existing college will be retained as far as practicable, with only small sections removed to accommodate temporary construction access. Temporary access has been designed to use proposed future pedestrian access routes to minimise impact on existing vegetation. In respect of tree loss, only those needed to deliver a viable development are proposed for removal, and efforts will be made to retain existing species proposed for retention during the construction process. These trees include Category B and C specimens.
Mitigation	The proposed planting scheme for the offers appropriate habitat re-provision and forms a key part of the mitigation approach for the development. Extensive tree planting, feature planting, natural grassland, ornamental planting and rain garden planting form a key part of the wider landscape strategy. SuDS features including planted attenuation basins form a core component of the overall drainage strategy and act as multi-functional landscape features, providing visual amenity benefits and ecological enhancement through the provision of new habitat. The eastern boundary of the Site will be enhanced by the introduction of the of new ecotone planting along the retained woodland edge as part of development proposals, compensating for habitat loss whilst strengthening this boundary and reducing edge effects. Extensive tree planting is proposed that will exceed the 3:1 replacement ratio required in Planning Policy Wales. Species types are appropriate to the local area and designed to enhance the ecological value of tree species on the site. In respect of protected species, bat habitat boxes are to the cited across the site as well as integrated boxes to building facades (as required) to compensate for loss of existing habitats for bat species foraging on the site, the loss of bat roost features and the known roosts will be replaced. Sensitive lighting design is to is also to be introduced to further minimise impacts for bat species. Bird boxes will also be provided as part of the design as/where required. For reptiles, proposed grassland areas will offer some habitat re-provision, with further enhancement offered through the introduction of more diverse planting and SuDS features.
Compensation	TBC subject to additional surveys being completed 2025, it is noted compensatory measures may be required *(*refer to 7.1.1 *BG24.331 Ecological Impact Assessment for details* and *BG24.331 Technical Information to support a Habitat Regulations Assessment)*

5.4. Enhancement & multi-functionality

5.4.1. In light of Planning Policy Wales (PPW) that seeks Net Biodiversity benefit within development and stipulates “planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions” (PPW 11), the scheme aims to provide a considered and significant enhancement, in line with the step-wise approach.

5.4.2. The accompanying Ecological Impact Assessment (Refer to *7.2 BG24.331 Ecological Impact Assessment*) sets out a formal consideration of: the site’s baseline; how the potential impacts from the proposed development have been avoided, minimised, mitigated, or compensated for; and what enhancements are proposed/or recommended for inclusion. It therefore illustrates how a net benefit for biodiversity, with increases in ecological resilience within the site and wider area, should be achieved.

5.4.3. This technical note sets out the preliminary ecological and GI baseline and examines these via the mechanism of the step-wise approach. Enhancement and multifunctionality has been considered in reference to the DECCA and Ecosystem Services frameworks.

5.4.4. The proposed scheme aims to offer integrated enhancement of an improved variety and diversity of habitats and the relative opportunities they present, and therefore a biodiversity and ecosystem enhancement, while also producing some additional ecosystem service benefits which are themselves a betterment over the current site. Suitable multi-functional benefits for both wildlife and people have also been considered within the framework of ecosystem services.

5.5. Long-term Management

5.5.1. The above noted mitigation and enhancement opportunities will be implemented alongside the long-term management of habitats noted, adopting practices aimed at promoting the structural and botanical diversity of the woodland, enhancing the resilience of this habitat to climatic changes.

5.5.2. Hard and soft infrastructure should be maintained according to the Management and Maintenance Plan (Refer to CR0301-ALA-XX-XX-RP-L-00005 Landscape Management & Maintenance Plan). As far as possible, management prescriptions should be designed to avoid potential harm to protected species and to maximise the biodiversity value of the Site. Management can be defined as either routine maintenance including regular (assumed weekly) site inspections/monitoring and responsive maintenance activities which need to be implemented on an ‘as required’ basis in response to specific site events. Where maintenance activities for planting are essential to ensure establishment they are also identified.

Appendix 1: Illustrative Masterplan

Note

1. Do not scale from this drawing
2. To be read in conjunction with Project Risk Register
3. To be read in conjunction with all other Landscape Architect's drawings

KEY

- Existing Building to be demolished
- Existing Vegetation
- (A) Main Entrance
- (B) Southern Pedestrian Approach — From Pibwrlwyd Lane
- (C) Western Pedestrian Approach — From existing bus stop on A484
- (D) Vehicle Parking — TBC nr. standard spaces; TBC nr. accessible spaces
- (E) SuDS Features — Feature raingardens to central public realm spaces and infiltration basins to external landscape areas
- (F) Central Plaza — External plaza space with planting and amphitheatre seating
- (G) Terraced Landscape — Terraced landscape with lawn and incidental art features
- (H) Art Terrace
- (I) ILS Garden — With external classroom and horticulture areas, feature trees, communal and secluded seating
- (J) Construction Yard — To rear of workshops
- (K) Service Access Road — Access for service, maintenance, emergencyand other vehicular users requiring access to workshops
- (L) ILS Pedestrian Access
- (M) Covered Cycle Shelter — TBC nr. spaces
- (N) Boundary Hedge Planting
- (O) Plant Compound & Substation
- (P) Subterranean Bin Store
- (Q) Plant Room
- (R) Existing Bus Stop
- (S) Coach Drop-off and Pedestrian Crossings
- (T) Pedestrian Footpath Connection to A484

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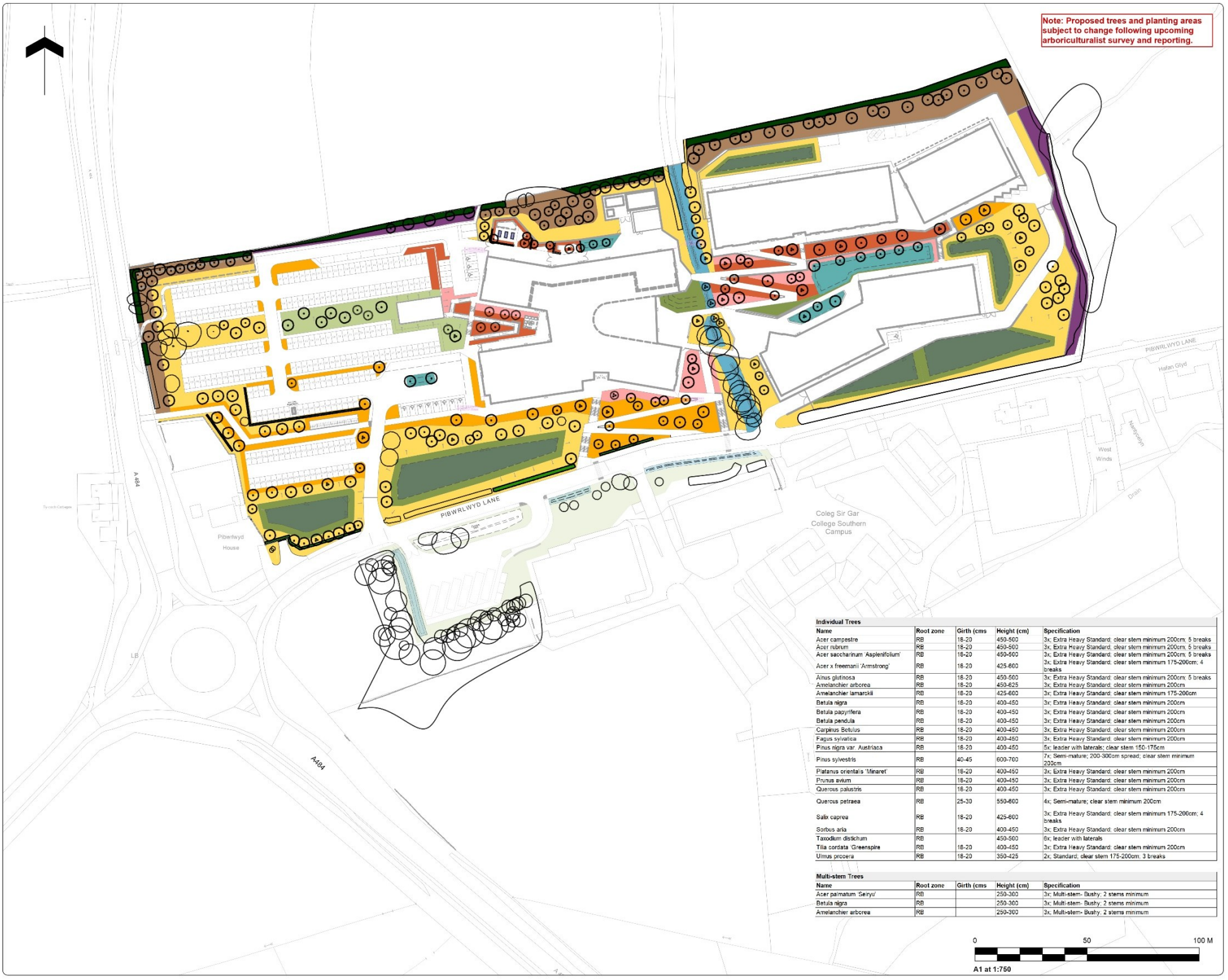
Appendix 2: Planting Strategy



Individual Trees

Name	Root zone	Girth (cms	Height (cm)	Specification
Acer campestre	RB	18-20	450-500	3x; Extra Heavy Standard; clear stem minimum 200cm; 5 breaks
Acer rubrum	RB	18-20	450-500	3x; Extra Heavy Standard; clear stem minimum 200cm; 5 breaks
Acer saccharinum 'Asplenifolium'	RB	18-20	450-500	3x; Extra Heavy Standard; clear stem minimum 200cm; 5 breaks
Acer x freemanii 'Armstrong'	RB	18-20	425-600	3x; Extra Heavy Standard; clear stem minimum 175-200cm; 4 breaks
Ainus glutinosa	RB	18-20	450-500	3x; Extra Heavy Standard; clear stem minimum 200cm; 5 breaks
Amelanchier arborea	RB	18-20	450-625	3x; Extra Heavy Standard; clear stem minimum 200cm
Amelanchier lamarckii	RB	18-20	425-600	3x; Extra Heavy Standard; clear stem minimum 175-200cm
Betula nigra	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Betula papyrifera	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Betula pendula	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Carpinus Betulus	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Fagus sylvatica	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Pinus nigra var. Austriaca	RB	18-20	400-450	5x; leader with laterals; clear stem 150-175cm
Pinus sylvestris	RB	40-45	600-700	7x; Semi-mature; 200-300cm spread; clear stem minimum 200cm
Platanus orientalis 'Minaret'	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Prunus avium	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Quercus palustris	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Quercus petraea	RB	25-30	550-600	4x; Semi-mature; clear stem minimum 200cm
Salix caprea	RB	18-20	425-600	3x; Extra Heavy Standard; clear stem minimum 175-200cm; 4 breaks
Sorbus aria	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Taxodium distichum	RB		450-500	6x; leader with laterals
Tilia cordata 'Greenspire	RB	18-20	400-450	3x; Extra Heavy Standard; clear stem minimum 200cm
Ulmus procera	RB	18-20	350-425	2x; Standard; clear stem 175-200cm; 3 breaks

Multi-stem Trees

Name	Root zone	Girth (cms	Height (cm)	Specification
Acer palmatum 'Seiryu'	RB		250-300	3x; Multi-stem- Bushy; 2 stems minimum
Betula nigra	RB		250-300	3x; Multi-stem- Bushy; 2 stems minimum
Amelanchier arborea	RB		250-300	3x; Multi-stem- Bushy; 2 stems minimum

Note

1. Do not scale from this drawing
2. To be read in conjunction with Project Risk Register
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KEY

Site

- Planning Application Boundary
- Existing Tree/tree group/hedgerow Retained

Planting

- Proposed Tree — Selected semi-mature, standard and heavy standard species
- Proposed Multi-stem Tree — Selected semi-mature species
- Grass Seed — Amenity grass seed mix (Product TBC)
- Grass Turf — Amenity lawn turf (Product TBC)
- Meadow Planting - Full/Partial Sun — Wildflower seed mix (Product TBC)
- Naturalistic Ditch Planting — Water tolerant small shrubs, grasses and ferns
- Naturalistic Grasses — Medium to low grass species and herbaceous
- Amenity Planting - Full/Partial Sun — Drought tolerant specimen shrubs and herbaceous species
- Amenity Planting - Shade Tolerant — Water tolerant specimen shrubs and herbaceous species
- Amenity Planting - Edible — Edible species to raised beds or horticultural use
- SuDS Planting - Raingarden — Water tolerant specimen shrubs, grasses and herbaceous
- SuDS Planting - Attenuation Basin — Water and drought tolerant specimen shrubs, grasses and herbaceous
- Woodland Edge Planting — Selected standard trees and taller shrubs, native wildflowers, grasses and herbaceous
- Native Buffer Planting — Medium and smaller shrubs, native wildflowers, grasses and herbaceous
- Species-rich Native Hedgerow — Selected native species
- Formal Hedgerow — Selected species

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Appendix 3: Relevant Policy, Legislation and Guidance

Legilsation

Environment (Wales) Act 2016

The act introduced an enhanced duty for public authorities in the exercise of their functions - the biodiversity and resilience of ecosystems duty (referred to as the section 6 duty).

Section 6 sets out the biodiversity and resilience of ecosystems duty of all public authorities in Wales, to seek to maintain and enhance biodiversity in their functions, and so promote resilience of ecosystems. Section 7 (Part 1) species and habitats of 'principal importance' for the purpose of maintaining and enhancing biodiversity, and which Welsh Ministers must encourage others to do.

National and Local Policy

Planning Policy Wales, Edition 12

Planning Policy Wales (PPW) is the principal planning policy document of the Welsh Government and informs all planning decisions and appeals. The current version of which is PPW Edition 12.

Chapter 6 of PPW 12 explains that a GI Statement should be submitted with all planning applications and also explains the general standards that any statement should seek to meet.

It explains that GI comprises the:

"network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places…"

"...At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways, peatlands and mountain ranges or be connected networks of mosaic habitats, including grasslands. At a local scale, it might comprise parks, fi elds, ponds, natural green spaces, public rights of way, allotments, cemeteries and gardens or may be designed or managed features such as sustainable drainage systems. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks" (par.6.2.1).

It further advises that:

"proposals should be informed by the priorities identified in green infrastructure assessments and locally based planning guidance" (par.6.2.5).

It also sets out how proposed development should be assessed within, or potentially impacting upon, designated sites, including non-statutory designated sites. It introduces the 'Step-wise approach' which is expected to be applied to such consideration and therefore should be evidenced in any GI statement. This approach regards the resilience of ecosystems (ER) and therefore their ability to continue to deliver value from GI, when under pressure or differring demand.

It explains that, in terms of protection for non-statutory designated sites, which includes Site of Nature Conservation Interest (SINCs), development can be appropriate where adherence to the Step-wise approach is demonstrated (including a net benefit t for biodiversity) and there is no reduction in overall conservation value of the designated area or feature.

The PPW Chapter 6 update also covers trees, woodland, and hedgerows, and sets out the expectations to retain and protect such assets, where they are capable of making a significant contribution to an area. Where loss occurs, replacement will be required in line with the standards and ratios set out, and any permanent removal is only appropriate where there would be significant and clearly defi ned public benefit. Compensatory planting is required to be proportionate to the proposed

loss as identified through an assessment of green infrastructure value by way of three specific aspects of biodiversity, landscape (amenity) and carbon capture values.

Future Wales: The National Plan 2040

Future Wales (FW) - The National Plan 2040 was adopted in February 2021 as the national development framework (NDF) setting the direction of development in Wales to 2040. The NDF provides a strategy to address key national priorities through the planning system, including developing a vibrant economy, developing strong ecosystems, achieving decarbonisation and climate resilience and improving the health and wellbeing of communities.

Policy 9 of FW focuses on 'Resilient Ecological Networks and Green Infrastructure', and sets out that planning authorities should identify areas of importance and opportunities for Green Infrastructure, for safeguarding and enhancement.

Given that FW strategy and national priorities can be in part addressed through Green Infrastructure, any GI Statement would be expected to align with those and support the delivery of it, where possible.

Technical Advice Note 5 - Nature Conservation and Planning (1996)

TAN5 provides national guidance on how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. The guidance indicates that biodiversity conservation and enhancement is an integral part of planning for sustainable development. The guidance advocates a collaborative approach where LPAs, developers and key stakeholders in conservation should work together to deliver sustainable development.

Frameworks, Approaches, and Best Practice Guidance

DECCA Framework and Ecosystem Resilience

This DECCA framework (see Figure 3 below) sets out 5 key considerations of habitats and species which lead to Ecosystem Resilience (ER). The fi rst four are the attributes of Diversity, Extent, Condition and Connectivity of species (genetics and populations) and/or habitats. There is also the fifth combined aspect of Adaptability, recovery and resistance, which is an emergent combined property resulting from the other four attributes (see Figure 1 below), and which together decide the level of ecosystem resilience

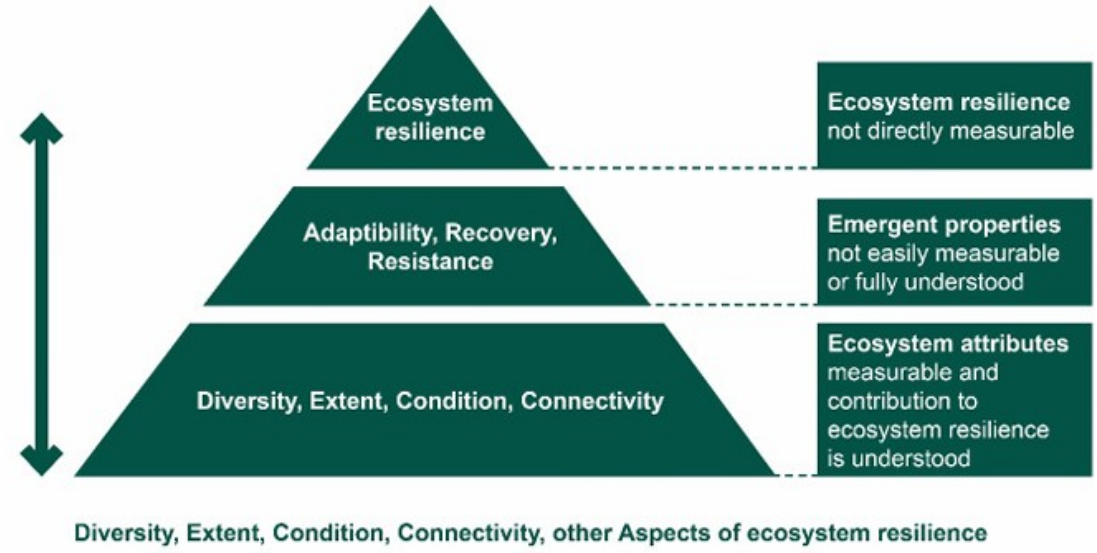

Figure 1: DECCA framework showing the relationship between the attributes and the emergent properties of resilience (source: Extract from Natural Resource Wales)

Ecosystem Services Framework

Ecosystem Services (ES) are a framework which can be utilised as an effective means by which to understand the flow of benefits from Green Infrastructure to humans, and therefore more directly consider what is valuable to people and communities. They add a human layer to the understanding of the multi-functionality of GI, which allows a greater consideration of how this can be maximised and for who.

We experience ES as Cultural, Regulating, Provisioning, and Supporting services; as a common, and widely accepted, standard of division (see Figure 2 below). Cultural services are non-material benefits to society that help deliver various cultural advancements. Regulating services are those that help moderate natural phenomena to the benefit of people. Provisioning services are those that deliver a material benefit to people, via the extraction of resources. Finally, supporting services are those that ensure the continued production and maintenance of those other services; these can be thought of as those services which help deliver ER and other ES forms.

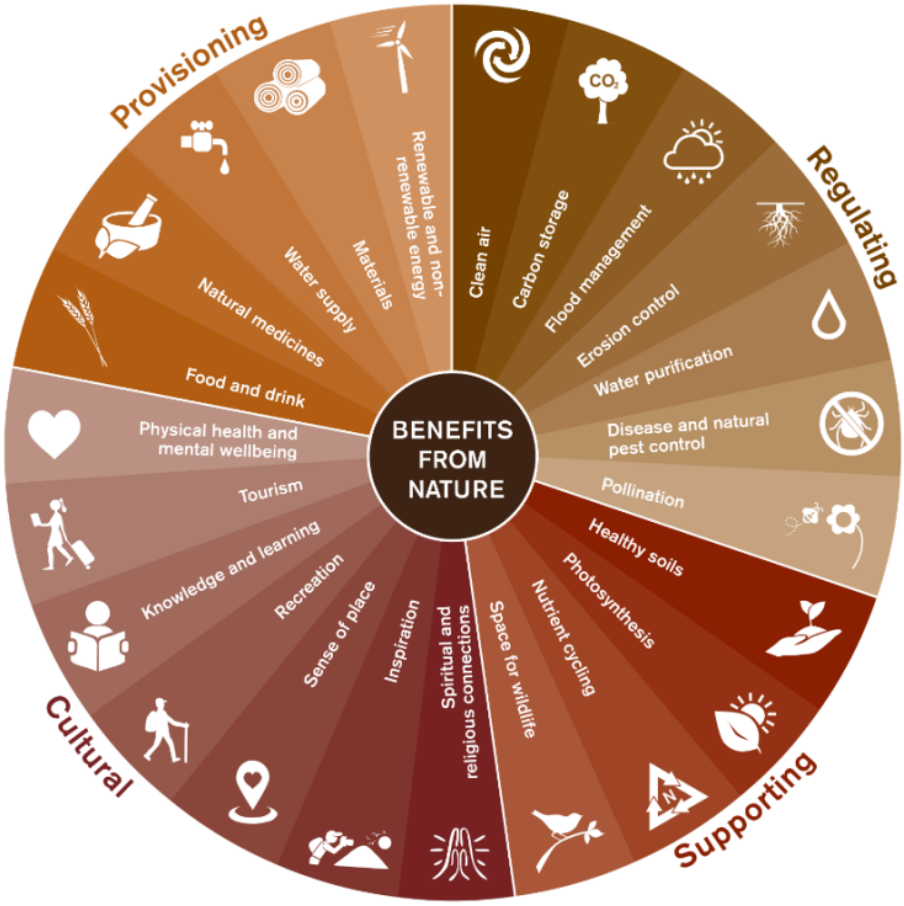

Figure 2: Ecosystem Services (source: Nature Scot)

As the Natural Resource Wales 'State of Natural Resources Report (SoNRR)' sets out, ER is important for the continuing delivery and therefore sustainability of ES. Both concepts are inherently linked to the structure of an ecosystem (its 'Processes' and resultant 'Functions'). ER being an important emergent property of an ecosystem's physical and biological structure, and ES being a resultant beneficial outcome for people.

Ecosystems are fundamentally formed of those living biotic (animals and plants, etc.) and non-living abiotic components (soil, rock, rivers, climate, etc.). These living and non-living components influence the processes and functions of ecosystems, and these in turn influence resultant ER and what ES benefits can be realised. Biodiversity of a single or multiple habitat(s) is a manifestation of biotic components of an ecosystem. It is largely more fragile and therefore at risk of development impacts than the abiotic components (although these are also important and can also be at risk). Because of this, a Net Benefit for Biodiversity is an important outcome for development, where the enhancement looks to both reverse ecological decline, or should at least means biodiversity loss is compensated for if calculations of biodiversity value are inaccurate.

Under the Environment (Wales) Act, public bodies should seek to maintain and enhance biodiversity and the resilience of ecosystems. Multifunctional GI is set out as a means to maximise benefits for those more fragile abiotic components, by way of those statutory aims. ES to demonstrate that multifunctionality is therefore additionally important. Within the Planning Policy Wales Ed. 12 Chapter 6 content, the specifics of a GI approach are further prescribed, and the components of a nature-based focus and requirements are established. Together these aims, considerations of frameworks, and requirements of policy, contribute to an explicit need to deliver good-quality design that incorporates beneficial GI.

Step-wise Approach

PPW 12 Chapter 6 requires the Step-wise approach to be demonstrated within proposed development designs. This approach sets out the procedure of initially following the 'Mitigation hierarchy' stages, to sequentially (as required): avoid, minimise, or mitigate/restore impact to habitats and species, or compensate on-site and as a last resort compensate off-site. At each of these stages, a proportional enhancement must be proposed that demonstrates the DECCA attributes. A long-term management strategy is additionally required, that would ensure those measures proposed are deliverable; and would actually result in the level of Net Benefit for Biodiversity (NBB) and ER attributes that are described; as well as any resultant ES benefits gained.

Should the Mitigation hierarchy not be possible to follow (i.e. no stages of the hierarchy are possible) then planning permission should be refused. Should suitable enhancements relative to each stage of the hierarchy, and/or no suitable long-term management plan be possible, then a NBB is consequently unlikely to be possible and planning permission is, again, likely to be refused.

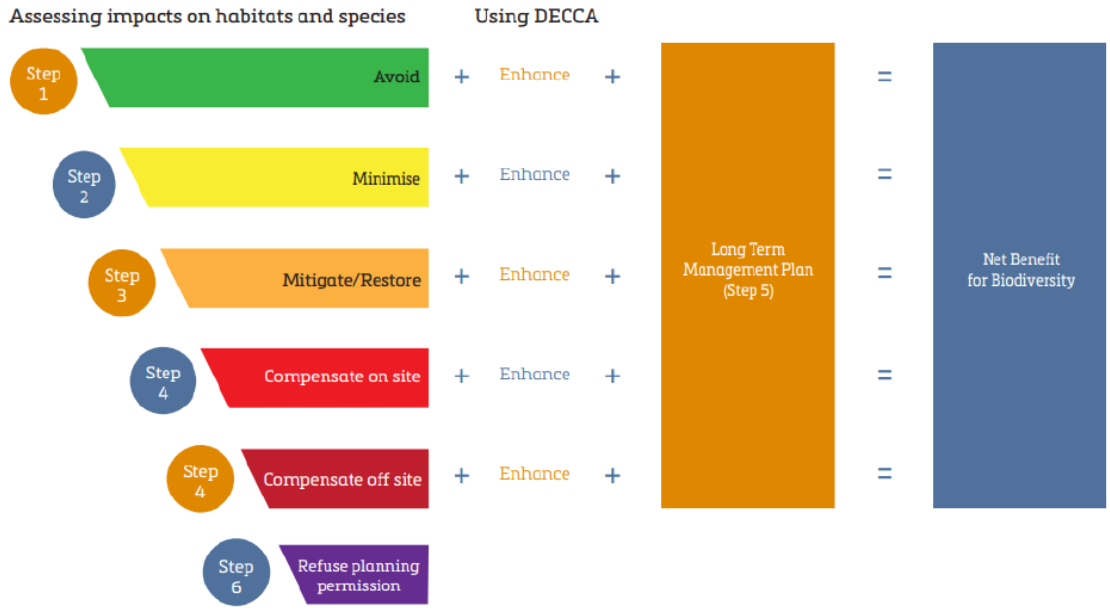

Figure 3: Step-wise Approach (source: PPW, Chapter 6)