



Pinefields, Heol Gerrig, Merthyr Tydfil

Green Infrastructure Statement

May 2024 (version 2)



This **Green Infrastructure Statement** has been prepared by:



With input from:

Planning



Ecology



Document Control:

Client:	Pine Fields Private Limited	
Project:	Pinefields, Heol Gerrig, Merthyr Tydfil	
Job number:	TC24229	
Document title:	Green Infrastructure Statement	
Revision:	02	Status:
Date:	1 May 2024	Planning
Prepared by:		
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01 Introduction

Scope

Tir Collective is instructed by Pine Fields Private Limited to prepare this **Green Infrastructure Statement**, which relates to an extension of time application for a consented residential development at Land South of Brondeg & West of Upper Colliers Row, Heolgerrig, Merthyr Tydfil (**Figure 1**). Planning consent (with conditions) for residential development on the site was granted in 2013 and again in 2017, consistent with allocations in both the previously and more recently adopted Local Plans. The latter consent was extended in 2021, but that permission is now nearing expiry.

This report provides a **Green Infrastructure(GI) Statement**. It includes a summary of existing green infrastructure at the site and also explains how the design of the proposed development is based on a step-wise approach, as defined in the Environment (Wales) Act 2016.

Context

The LANDMAP assessment has been reviewed along with relevant national and local policy information. The LANDMAP aspect of most relevance to green infrastructure is the 'Landscape Habitats' layer. The majority of the site is located in aspect area MRTHRLH008, which is classified as Dwarf Shrub Heath (Level 3). The key features that define the area's biodiversity character (question LH24) are those of an "area based on semi-uplands, colliery spoil and tips west of town". The overall evaluation (question 45) for the area is High, as the aspect area is "an area which contains very special habitat of marshy grassland, species-rich neutral grassland and lowland acid grassland, also contains woodland which add value also".

The site is located in the Merthyr Tydfil West Flank Special Landscape Area (SLA). The site also contains a network of public rights of way.

The pattern of vegetation in the context of the site is a mosaic of varied habitats that include woodlands with areas of grassland (Modified neutral-acidic grassland, modified neutral grassland, neutral grassland and marshy grassland. There is also plantation woodland, mature trees, scrub and ruderal, and bare/disturbed ground.

The Site

The baseline conditions of the site are described in detail within the Updated Ecological Appraisal, 2024, prepared by **Bioscan**. The baseline conditions on the site, and the existence and importance of ecological factors, are therefore well known.

The site is comprised of two land parcels bisected by a track that runs southwards from Heolgerrig, and which is itself the course of a former C19th mineral tramway serving the former Coedcae Pit (Figure 2). The smaller land parcel to the north-west of this track is at lower elevation (c.215m AOD) than the eastern parcel; the latter has a raised flat-topped topography at around 220m AOD with steep slopes at its margins consistent with its historic origins as part of a former colliery tip.

Historic map evidence shows that this eastern parcel was in use as a colliery tip into the mid-1800s, but that the western parcel comprised open rough grassland with scattered trees around that time. The western parcel later appears to have had a trackway laid across it and by the end of the 1800s the northern part of it had been subdivided into small enclosures. The form of these is visible on 1945 aerial photographs and again in 2001, but the boundary vegetation was then largely cleared, albeit there has been significant recovery of scrub since.

The eastern parcel has seen less frequent change, although sometime in the 1990s the tip was subject to planting (possibly in connection with the dualling of the A470) and it is around this time that use of the central open area for equestrian purposes seems to have started. 2008 aerials show use of land adjoining the road at the

easternmost boundary for parking/storage of construction machinery and containers. This use had ceased by 2010 and the disturbed ground has subsequently developed into a mixture of scrub and grassland.

The most recent open-access aerial photography (up to March 2023) documents the clearance of land to the north and its subsequent development as the Cwm Woods Grove development, as well as the development of a single dwelling on land adjoining the western parcel to the north-east.

Public access

On the 24th of January 2023 an Order Decision was issued which confirmed the majority of the Claimed Rights of Way within the site and wider area as Public Rights of Way (PRoW). **Figure 1** shows the public access within the site following the Order Decision.

A restricted Byway passes through the site between the west and east parcel. This route connects to public footpaths heading south and west away from the site.

A desktop study and field surveys have been carried out to confirm the green infrastructure features at the site and



Key

-  Site boundary
-  Restricted BYWAY within Order Decision
-  Footpath (2010, 2011 and 2012) within Order Decisions

Figure 1: Site Context and Public Access (Google Earth)

02 Policy Context

Wales Legislation

Well-being of Future Generations (Wales) Act 2015: The Act requires public bodies to carry out **sustainable development**. Sustainable development principle is "the process of improving the economic, social, environmental and cultural well-being of Wales." The principle is made up of five ways of working, including **looking to the long-term**; taking an **integrated approach**; involving a **diversity** of the population; **working collaboratively**; and **preventing issues**.

It sets out seven well-being goals including resilience and being globally responsible.



The seven well-being goals from Well-being of Future Generations (Wales) Act, 2015

Environment (Wales) Act 2016: The Act is intended to work alongside the Well-being of Future Generations Act. It included a new biodiversity duty to **reverse the decline of biodiversity and to secure long-term resilience**.

Section 6 states "A public authority **must seek to maintain and enhance biodiversity... and in so doing promote the resilience of ecosystems**". In relation to resilience of ecosystems, the following "must be taken into account:

- (a) diversity between and within ecosystems;
- (b) the connections between and within ecosystems;
- (c) the scale of ecosystems;
- (d) the condition of ecosystems (including their structure and functioning);
- (e) the adaptability of ecosystems."

National Planning Policy

Future Wales: The National Plan: The plan provides a strategy for addressing key national priorities through the planning system, including achieving climate-resilience, developing strong ecosystems and improving the health and well-being of our communities. It also embeds the principles of the Well-being of Future Generations (Wales) Act 2015.

The key policy in relation biodiversity and green infrastructure is **Policy 9 – Resilient Ecological Networks and Green Infrastructure**. It states, "action towards securing the maintenance and enhancement of biodiversity (to provide a net benefit), the resilience of ecosystems and green infrastructure assets must be demonstrated as part of development proposals through innovative, nature-based approaches to site planning and the design of the built environment."

Planning policy Wales (PPW): PPW aims to contribute towards the delivery of sustainable development, embedding the principles of the Well-being of Future Generations (Wales) Act 2015. PPW ingrains Placemaking

Wales Charter and how sustainable development can be achieved through implementing placemaking.

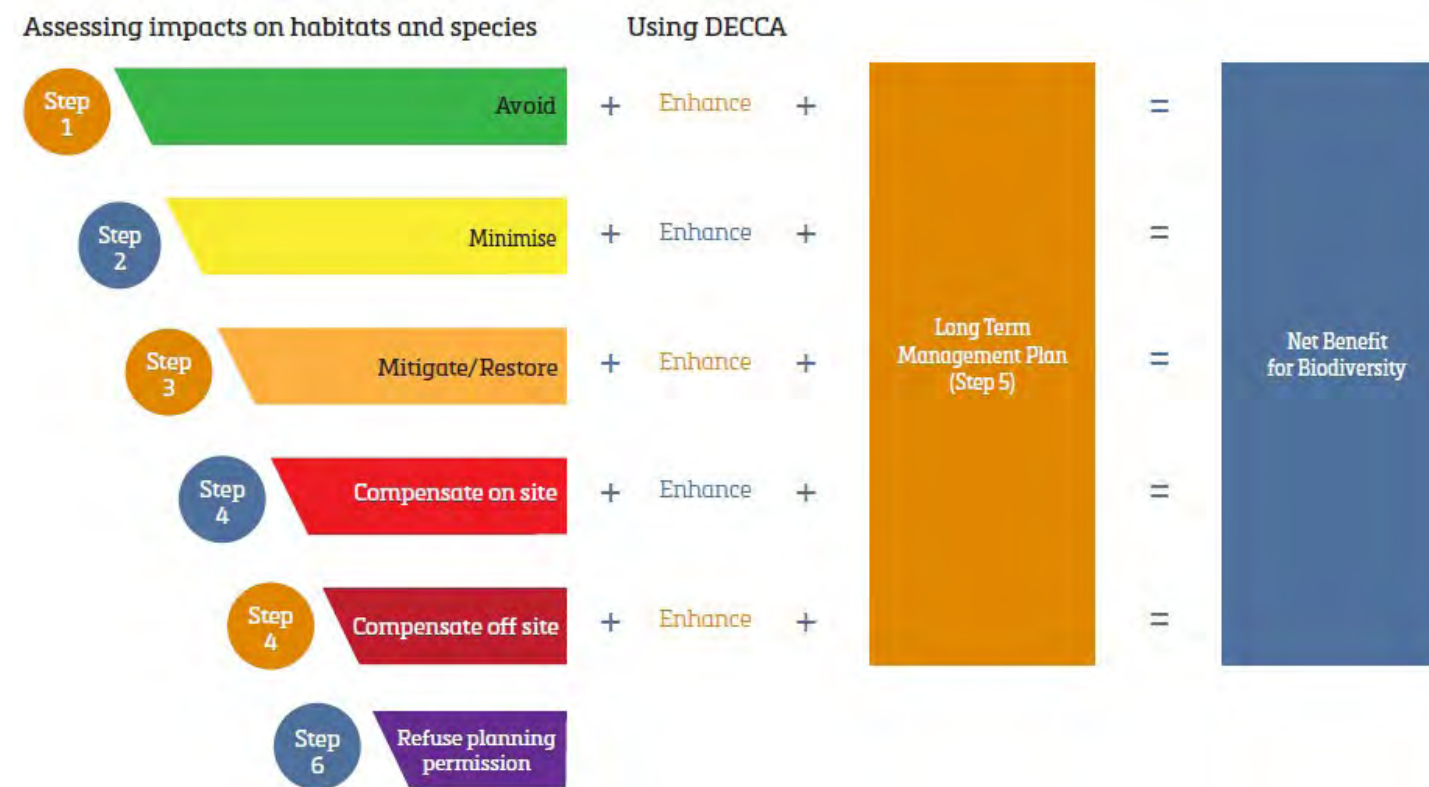
Section 6.2 sets out **green infrastructure** should be given early consideration in development proposals and how it should be integrated into developments.

Paragraph 6.2.12 states " A green infrastructure statement should be submitted with all planning applications. This will be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal... The green infrastructure statement will be an effective way of demonstrating positive multi functional outcomes which are appropriate to the site in question and must be used for demonstrating how the step wise approach has been applied."

Paragraph 6.2.14 states "Development proposals should be informed by the priorities identified in green infrastructure assessments and locally based planning guidance. The Building with Nature standards represent good practice and are an effective prompt for developers to improve the quality of their schemes and demonstrate the sustainable management of natural resources."

Section 6.4 describes biodiversity and ecological networks and provides a summary of the Step-Wise Approach and how it should be used to "maintain and enhance biodiversity, build resilient ecological networks and deliver net benefits for biodiversity by ensuring that any adverse environmental effects are firstly avoided, then minimised, mitigated, and as a last resort compensated for." **Paragraph 6.4.12** states "providing evidence in the Green Infrastructure Statement that the step wise approach has been followed, a scheme of enhancements must be provided to ensure a net benefit for biodiversity."

In relation to trees, woodland and hedgerows, paragraph 6.4.37 sets out their importance for biodiversity and "connecting habitats for resilient ecological networks and make an essential wider contribution to landscape



The Step-Wise Approach from PPW Edition 12, Chapter 6

character, culture, heritage and sense of place..."

"The planting of new trees, hedgerows, groups of trees and areas of woodland should be promoted as part of new development. Existing trees/ groups of trees, hedgerows and areas of woodland must be protected "where they have ecological value, contribute to the character or amenity of a particular locality, or perform a beneficial green infrastructure function."

"In relation to the permanent removal of trees, woodland and hedgerows, it "will only be permitted where it would achieve significant and clearly defined public benefits." The stepwise approach must also be followed. Where loss is unavoidable, PPW sets out the requirements of replacement planting, which "shall be at a ratio equivalent to the quality, environmental and ecological importance of the tree(s) lost and this must be preferably

onsite, or immediately adjacent to the site, and at a minimum ratio of at least 3 trees of a similar type and compensatory size planted for every 1 lost."

Finally, in relation to SuDS, **paragraph 6.6.18** states "The provision of SuDS must be considered as an integral part of the design of new development and considered at the earliest possible stage when formulating proposals for new development." **Paragraph 6.6.19** goes on to state "Design for multiple benefits and green infrastructure should be secured wherever possible..."

Local Planning Policy

Merthyr Tydfil Replacement Local Development Plan 2016 – 2031, adopted on the 29th January 2020. In relation to green infrastructure, **Policy SW11: Sustainable Design and Placemaking** states at item 4 that development will be required to 'contribute to the

provision of green infrastructure, including open space in accordance with the Council's standards, sustainable drainage systems where appropriate, and ensure that the County Borough's network of green infrastructure is accessible and connected'.

Paragraph 6.6.14 states that 'Biodiversity enhancement on development sites can be achieved by incorporating green infrastructure features into development proposals. As a minimum, the levels of enhancement should be commensurate with the level of adverse impact and proportionate to the scale of development although opportunities for greater enhancement should be considered wherever possible.

Enhancement features that can be included could comprise: small animal underpasses, bird and bat boxes on new builds, vegetated dark flight corridors, ponds, hedgerows, new planting schemes, and wildlife-friendly sustainable drainage systems. These features not only mitigate and enhance, but also significantly contribute towards sustainability and natural resource planning; ensuring that new developments are 'future-proof' allowing for migration and colonisation in response to climate change. Baseline ecological data will be required to evaluate the level of enhancement achieved.

The LDP is supported by Supplementary Planning Guidance (SPG). SPG Note 5: Nature and Development was published in May 2015 and Supplementary Planning Guidance Note, No 4: Sustainable Design (Adopted July 2013).

Although biodiversity is not the main focus of the sustainable design SPG, it recognises that Sustainable Urban Drainage Systems (SUDS), green roofs and green infrastructure support the enhancement of biodiversity and that such provision is an important consideration in achieving sustainability, through good design, whilst promoting biodiversity.

Guidance

Placemaking Wales Charter

The **Placemaking Wales Charter** has been developed by Welsh Government and the Design Commission for Wales in collaboration with the Placemaking Wales Partnership. The charter outlines six placemaking principles that cover the range of considerations that contribute to establishing and maintaining good places.

Landscape Institute Green Infrastructure: An integrated Approach, 2013

The document defines **Green Infrastructure** (GI) as *"the **network of natural and semi-natural features, green spaces, rivers and lakes...** It is a natural, service-providing infrastructure that is often more cost-effective, **more resilient and more capable of meeting** social, **environmental** and economic **objectives...**"*

The Landscape Institute recommends *"local authorities ensure that GI is a core requirement in their policy documents" and "developers be aware of an area's strategic GI goals and appreciate how those goals contribute to mitigating the environmental impacts of new development and creating beautiful places."* The **Placemaking Wales Charter** has been developed by Welsh Government and the Design Commission for Wales in collaboration with the Placemaking Wales Partnership. The charter outlines six placemaking principles that cover the range of considerations that contribute to establishing and maintaining good places.

Well designed, maintained and connected green infrastructure is an essential component of good placemaking. The design of the proposed development should focus on well connected GI with multi-functionality to maximise the benefits to residents and the environment.

Building with Nature Standards

The **Building with Nature Standards** Framework 2.0 involves twelve Standards, arranged across four groups. There are six Core Standards and three themes, Wellbeing, Water and Wildlife, containing two Standards in each.

The six Core Standards underpin the delivery of high-quality green infrastructure through design, planning and development. The Standards in the Wellbeing, Water and Wildlife themes build on this to target specific aspects:

CORE Standards

- Standard 1** Optimises Multi functionality and Connectivity
- Standard 2** Positively Responds to the Climate Emergency
- Standard 3** Maximises Environmental Net Gains
- Standard 4** Champions a Context Driven Approach
- Standard 5** Creates Distinctive Places
- Standard 6** Secures Effective Place-keeping

WELLBEING Standards

- Standard 7** Brings Nature Closer to People
- Standard 8** Supports Equitable and Inclusive Places

WATER Standards

- Standard 9** Delivers Climate Resilient Water Management
- Standard 10** Brings Water Closer to People

WILDLIFE Standards

- Standard 11** Delivers Wildlife Enhancement
- Standard 12** Underpins Nature's Recovery



03 Existing Green Infrastructure

its surrounding context. The GI elements are described in the following sections, identifying and assessing existing or potentially important habitats or species and ecological connectivity corridors. This has been informed by the desktop studies, field surveys and specialist surveys / reports. It summarises the surveys carried out to identify and assess the GI elements of importance in advance of the **Stepwise approach Step 1 – Avoid and Step 2 Minimise**.

The ecological resources within and adjoining the Application Site have been documented by **Bioscan**. Updated surveys have been undertaken since the previous survey to establish if there have been any changes in the intervening three years. The repeat desk and field surveys carried out in 2024 found that such changes that have occurred on the site since the extension of time determination in 2020 are generally minor and non-material in planning terms.

The green infrastructure of the site and immediate context includes the following broad habitat types:

- Plantation woodland
- Modified neutral-acidic grassland – grazed
- Modified neutral grassland – ungrazed
- Neutral grassland
- Marshy grassland
- Scrub and ruderal
- Mature, non-woodland trees
- Bare/disturbed ground

The extent of each of the above habitats is mapped at **Figure 2**.

Plantation woodland: Fenced-in blocks of deciduous plantation, now mature at 30+ years of age, surround the

eastern part of the site on three sides - west, south and east. These are predominantly comprised of dense stands of alder (both grey alder *Alnus incana* and common alder *Alnus glutinosa*) and locally ash *Fraxinus excelsior* with frequent downy birch *Betula pubescens*, and more scattered oak *Quercus sp.* (much of the former evidently self-sown).

Encapsulated within parts of the southern and south-eastern parts of these plantations are some older specimens of common alder *Alnus glutinosa* showing coppice. Understorey varies from nonexistent between dense pole-stage stands of the above species, to areas where hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and/or dog rose *Rosa canina* occur, particularly towards the margins. The ground-layer in these areas is variously leaf-litter dominated, with frequent low-growing bramble *Rubus fruticosus* agg.

The steeper banks of the stream course of the Nant Cwm Pant Bach, just outside the site boundary to the south, are characterised by more open woodland cover dominated by mature common alder (including coppiced specimens) with locally frequent ash and occasional hazel and hawthorn.

Modified neutral-acidic grassland – grazed: The eastern field unit is a sown or over-sown grassland on former colliery spoils, which has evidently been intensively horse-grazed for some time. While signs of recent grazing are still evident, the formerly bare trotting track has now largely occluded through vegetation colonisation and horses are no longer present. There has also been localised disturbance and denudation of vegetation around the gate in the north-west, connected to the development on the adjoining part of the field to the north.

Modified neutral grassland: In 2024, the extent of this habitat has been much reduced by a combination of

disturbance and recent over-grazing/poaching by horses. The disturbed areas are now mostly bare soil.

Neutral grassland: A small pocket of unmanaged circumneutral grassland occurs at the eastern edge of the eastern parcel, in a roadside location subject to previous disturbance but subsequent revegetation.

Marshy grassland: This habitat occurs along the southern fringes of the westernmost part of the western parcel of the site, albeit since 2020 it has been denuded in extent by scrub encroachment, overshadowing and localised disturbance. At this location the land slopes towards the south and becomes waterlogged, seemingly by the action of spring or flush-lines.

Scrub and ruderal: Other than as a small component of the grassland and plantation woodland areas described above, scrub occurs on the site in association with former boundaries, such as along the edges of the former mineral tramway bisecting the site, and as defined pockets of thicket within the western parcel. The former, although often linear in arrangement, do not appear to be hedgerows in the traditional sense, so are dealt with here as scrub.

Along the western side of the former tramway are scattered bushes of hazel and hawthorn and grey willow *Salix cinerea*, with occasional mature trees of sycamore, along a boundary demarcated by a post and wire fence. Associated with this vegetation are patches of bramble and bracken.

In 2020, Japanese knotweed was scarce, apparently as a consequence of recent eradication measures. However, by 2024 the species was found to be in recovery and there are several distinct patches along the western side, also extending into the adjacent western parcel.

Mature, non-woodland trees: Other than specimens of

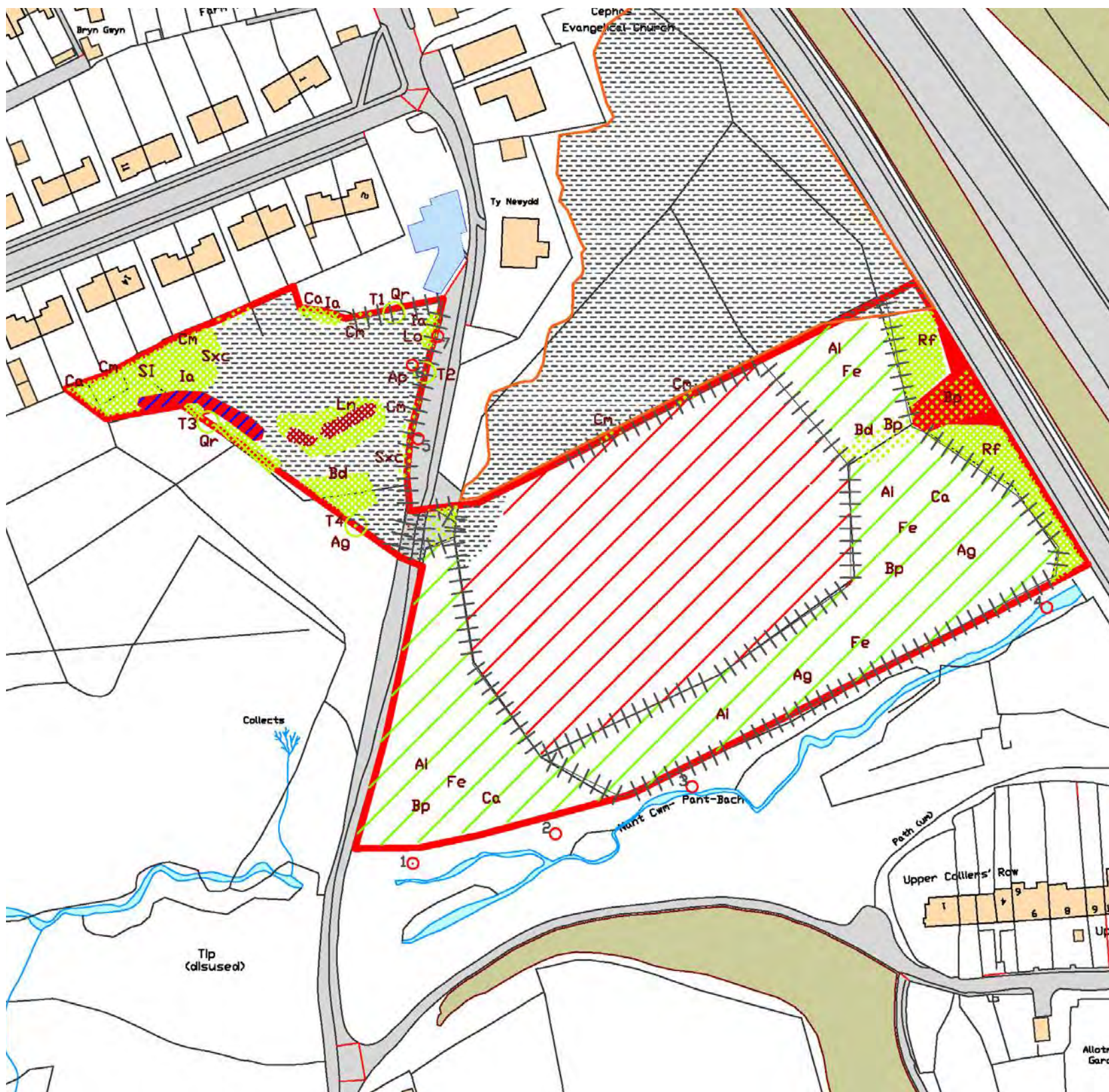


Figure 2: Habitat Map (Bioscan)

mature trees subsumed into the plantation woodlands discussed above, the handful of mature non-woodland trees on the site are associated with the outer boundaries of the western parcel.

They include the following:

- A large, open grown and impressive pedunculate oak *Quercus robur* growing on the northern boundary (T1 on **Figure 2**);
- A large sycamore growing along the eastern edge of the western parcel, adjoining the track (T2 on **Figure 2**);
- An over-mature pedunculate oak along the southern boundary of the western parcel (T3 on **Figure 2**).
- A mature alder, also along the southern boundary (T4 on **Figure 2**).

Bare/disturbed ground and built structures: The

Key

	Application site/consented development site
	Plantation woodland
	Modified neutral-acidic grassland-grazed
	Modified neutral grassland-ungrazed
	Neutral grassland
	Marshy grassland
	Dense scrub
	Scattered scrub
	Introduced shrub
	Mature non-woodland trees
	Bare/disturbed ground
	Footprint of new adjoining dwelling - P/20/0152
	Fence
	Target note & text reference

Cwm Woods Grove active development site

Dominant species codes

Ag	- <i>Alnus glutinosa</i>
Ai	- <i>Alnus incana</i>
Ap	- <i>Acer pseudoplatanus</i>
Bd	- <i>Buddleja davidii</i>
Bp	- <i>Betula pendula/pubescens</i>
Ca	- <i>Corylus avellana</i>
Cm	- <i>Crataegus monogyna</i>
Fe	- <i>Fraxinus excelsior</i>
Ia	- <i>Ilex aquifolium</i>
Lo	- <i>Ligustrum ovalifolium</i>
Qr	- <i>Quercus robur</i>
Rf	- <i>Rubus fruticosus agg.</i>
Sxc	- <i>Salix cinerea</i>



DO NOT SCALE

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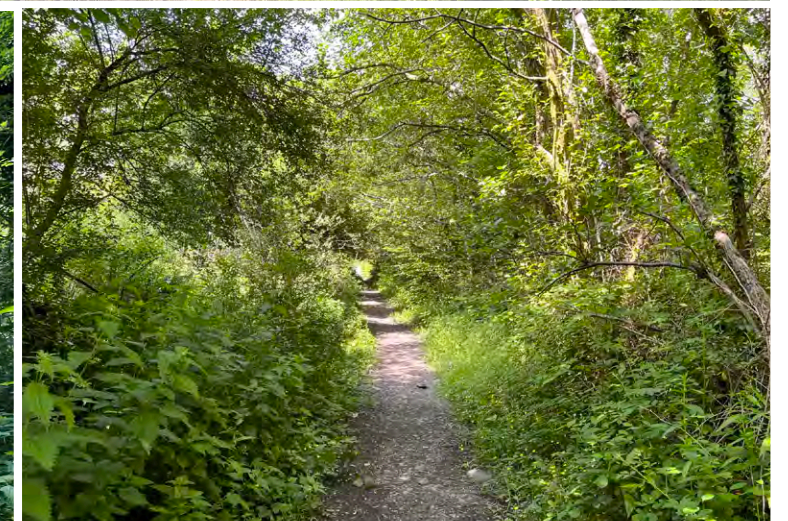
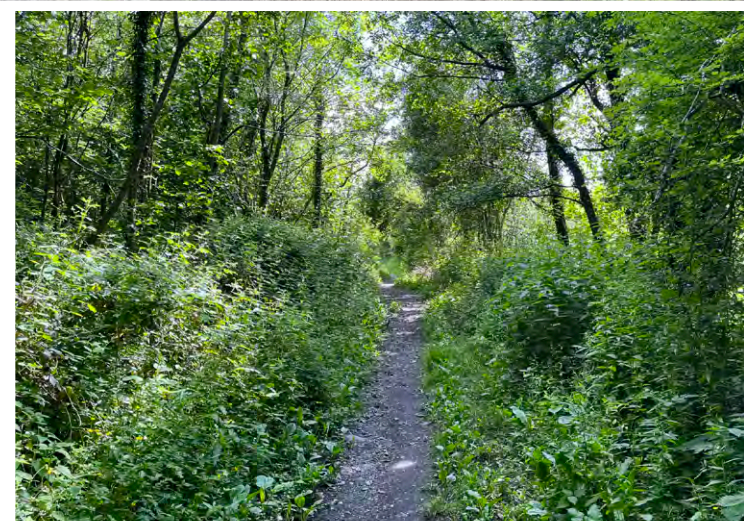
trotting track in the eastern parcel has now largely occluded through grassland colonisation, but more recent disturbance has occurred locally in the eastern parcel and more extensively in the western one.

The following site photographs were taken in spring 2022 and illustrate the features of the site and its context:

1. View across the eastern part of the site toward Merthyr Tydfil town centre.
2. View along edge of woodland along Nant Cwm Pant Bach.
3. View along the boundary of the western part of the site.
4. View west along restricted Byway.
5. View east along restricted Byway.



1	2
3	
4	5



04 Proposals

Landscape Strategy

The landscape strategy for the site is focused around existing and proposed green infrastructure creating a setting for the development. The streets will integrate parking and access with space for nature and tree planting. Views from proposed houses would include street trees and other green infrastructure elements to create connections to nature and seasonal changes in the landscape. The design of the streets would create an attractive public realm, with planting to increase biodiversity and filter intervisibility between dwellings. Tree planting will include native fruiting and flowering species.

Rain gardens would integrate sustainable water management into the street and create places for planting flowering pollinator species to provide a source of nectar for bees and other insects. Species-rich grass/wildflowers will enhance grass areas to create visual interest and increase biodiversity.

Planting Proposals

The planting strategy includes a variety of flowering and fruiting species which will provide contrast and year-round interest. Planting will include a combination of grasses, herbaceous plants and shrubs, located to define front gardens and along the edge of the byway through the site.

SuDS features would be located along the access road. The SuDS Planting Mix will include *Sambucus nigra*, *Viburnum opulus*, *Cornus sanguinea*, *Hydrangea arborescens* 'Annabelle' and *Iris sibirica*. This will provide a bold mix with a variety of colour, form and texture to provide year-round interest.

Within the rain gardens the plants will include species which can withstand short term inundation and long periods of drought, whilst also providing seasonal interest.

Robust plants with bright colours will line the SuDS adjacent to the road. In contrast, a delicate mix of plants will be provided within green spaces, combining with a damp wildflower seed mix for the larger areas (EM8: Meadow Mixture for Wetlands (by Emorsgate).

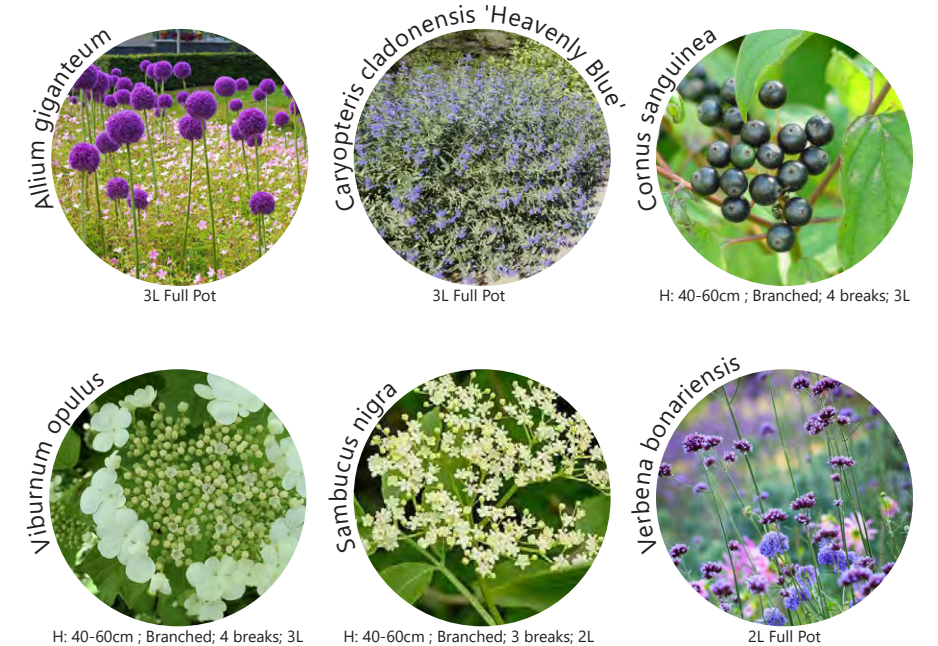
The planting strategy includes native and ornamental species throughout. Specifically native mixes are proposed for scrub reestablishment. Native species are chosen provide fruiting and flowering and also offer interest due to foliage colour.

Where plant material is used of native species, there is a preference for local provenance plants, which in this case would be seed source zone 303 or 304, as defined Forest Practice Note No. 8, titled Using Local Seed Sources for Planting Native Trees and Shrubs, Forestry Commission (1999).

Native Scrub and Hedge Mix



SuDS Planting Mix



Shrub/Perennial Planting





- Key**
-  Site boundary
 -  Restricted BYWAY within Order Decision
 -  Footpath (2010, 2011 and 2012) within Order Decisions
 -  Existing Plantation woodland along site boundary
 -  Proposed tree planting with native and ornamental flowering and fruiting species to provide amenity value - Refer to **Figure 4**.
 -  Proposed ecotone along edge of retained woodland to be managed as a transition habitat with scrub and long grass. Where scrub is introduced it would be native species of local provenance.
 -  Grass verge along highway to incorporate SuDS features to provide increased amenity value.



Figure 3: Green Infrastructure Plan

Tree Planting Species



Medium/Large street trees will be established with a linear shared root zone of 20 m³ per tree within soft landscape areas. Native tree species are proposed wherever possible. Where the use of non-native species is justified then suitable species are:

- Liquidambar styraciflua
- Betula pendula
- Pyrus calleryana 'Chanticleer'
- Alnus glutinosa
- Quercus robur

Smaller trees will be established within green spaces with a root zone of 10-15m³ per tree within soft landscape areas. Native tree species are proposed wherever possible. Where the use of non-native species is justified then suitable species are:

- Acer campestre
- Amelanchier grandiflora 'Robin Hill'
- Crataegus monogyna
- Sorbus aucuparia
- Malus sylvestris

Figure 4: Proposed specimen tree species

Sustainable Drainage



- 1. SuDS features associated with landscape based / door step play.
- 2. Mixed perennial and ornamental grasses within rain gardens at key locations.
- 3. Species-rich grassland within detention basins / swales.
- 4. Mixed perennial and shrub planting to create focal elements.
- 5. Species-rich grassland within raingardens along streets.
- 6. Mixed perennial and shrub planting to create focal elements within residential streets.

1	2	3	4
		5	6



05 Green Infrastructure Statement

This statement provides a description of the effects of mitigation of the individual green infrastructure components, which forms the Stepwise **Step 3: Mitigate/Restore**, with a view to minimising any negative impacts on biodiversity as far as possible.

To address the loss of trees and scrub along the edges of the site, the green infrastructure proposals include **Stepwise Step 3: Mitigate / Restore, Step 4 : Compensate** and by considering **Enhancement at each stage in accordance with the DECCA Framework**. Sufficient space is set aside for green infrastructure, as shown on **Figure 3: Green Infrastructure Plan**.

The proposals include an ecotone adjacent to the south and west east edge of built development. This would include some retention of existing woodland and also woodland and scrub planting.

At the outline planning application stage it is not possible to confirm the exact number of trees proposed as part of the proposed development. This level of detail will be established during the reserved matters applications and detailed planting plans to discharge planning conditions. However, the Green Infrastructure Plan at **Figure 3** does establish the space available within the Application Site for mitigating the loss of green infrastructure.

Through the management of existing woodland at the edge of the site and the establishment of an ecotone it would be possible to achieve an increased species diversity compared to the existing woodland. A more diverse mix of species at the site would increase the climate and disease resilience of the woodland. Greater species diversity would also add to the seasonal and biodiversity interest.

Tree planting proposed is appropriate to mitigate the level of tree loss. PPW 12 states that 'Replacement planting shall be at a ratio equivalent to the quality, environmental and ecological importance of the tree(s) lost and this must be preferably onsite, or immediately adjacent to the site, and at a minimum ratio of at least 3 trees of a similar type and compensatory size planted for every 1 lost'.

The land set aside for green infrastructure on **Figure 3: Green Infrastructure Plan** would provide space for tree replacement in excess of the level defined above.

The Updated Ecological Appraisal, 2024, is based on repeat desk and field surveys. It concluded that "there are no new or altered biodiversity considerations that require to be taken into account by the Council in determining whether the time to implement the extant housing consent should be extended".

Multi-functionality of Green Infrastructure

This section identifies the multi-functionality of each green infrastructure element: Trees, scrub mosaic, ecotone and public access. These elements reflect the over arching principle of the stepwise approach applying Enhancement at each stage while applying the principles of good placemaking and green infrastructure.

The multi-functionality of green infrastructure is described as "GI functions are the roles that assets can play if planned, designed and managed in a way that is sensitive to, and includes provision for, natural features and ecosystem services. They may have obvious primary functions, but each asset can perform different functions simultaneously". The GBI functions and benefits of the proposals are listed in **Figure 5**, against the list of functions below:

- Contribution to Placemaking
- Flood Mitigation
- Cooling and Shade
- Food
- Exercise
- Health and Wellbeing
- Calming and Inspiring
- Nutrient Cycling
- Wildlife Habitat
- Wind break
- Cleaning Water and Air

Figure 5 lists the key retained and proposed landscape assets, its green infrastructure element, and the functions of each landscape asset while signposting against the **Building with Nature Standards**.

Resilience of Ecosystems

The Environment (Wales) Act 2016 provides a duty upon public bodies such as Merthyr Tydfil County Borough Council to promote the resilience of ecosystems, which is reflected in planning policy.

The proposed green infrastructure strategy would comprise habitat retention along the site boundary and areas of habitat creation. Within the development there would be planting areas with a range of species, both native and non-native species, to enhance biodiversity and botanical diversity. The species selected would be adaptable to wet and dry conditions, including lengthy dry spells. The range of both tree and plant species proposed would enhance the biodiversity, increase species diversity, the age diversity of vegetation and improve the resilience of habitats to climate change.

The proposed green infrastructure strategy has considered the existing green infrastructure features within and beyond the site boundary, as recommended by the Stepwise approach. The proposed green infrastructure would increase the biodiversity, species diversity, and habitat structure within the site whilst contributing to the multi-functionality of the green infrastructure elements.

Landscape asset	Green infrastructure element	Functions	Building with Nature Standards
Trees	Trees	Wildlife Habitat - Contribution to Placemaking - Cooling and Shade - Calming and Inspiring - Health and Wellbeing - Nutrient Cycling - Wind break - Cleaning Water and Air	2 - Positively Responds to the Climate Emergency 4 - Champions a Context Driven Approach 5 - Creates Distinctive Places 6 - Secures Effective Place-keeping 7 - Brings Nature Closer to People
Scrub mosaic / ecotone	Scrub	Wildlife Habitat - Contribution to Placemaking - Cooling and Shade - Food - Calming and Inspiring - Health and Wellbeing - Nutrient Cycling - Wind break - Cleaning Water and Air	1 - Optimises Multi functionality and Connectivity 2 - Positively Responds to the Climate Emergency 3 - Maximises Environmental Net Gains 5 - Creates Distinctive Places 7 - Brings Nature Closer to People 11 - Delivers Wildlife Enhancement 12 - Underpins Nature's Recovery
Shrub planting within development	Trees / vegetation	Contribution to Placemaking - Food - Calming and Inspiring	1 - Optimises Multi functionality and Connectivity 2 - Positively Responds to the Climate Emergency 3 - Maximises Environmental Net Gains 7 - Brings Nature Closer to People
Proposed SuDS features	Sustainable Drainage	Cleaning Water and Air - Flood Mitigation - Contribution to Placemaking - Calming and Inspiring - Nutrient Cycling	1 - Optimises Multi functionality and Connectivity 2 - Positively Responds to the Climate Emergency 5 - Creates Distinctive Places 7 - Brings Nature Closer to People 9 - Delivers Climate Resilient Water Management 10 - Brings Water Closer to People
Proposed species rich grasslands	Grassland	Wildlife Habitat - Calming and Inspiring - Exercise - Health and Wellbeing - Nutrient Cycling - Wildlife Habitat - Contribution to Placemaking	1 - Optimises Multi functionality and Connectivity 2 - Positively Responds to the Climate Emergency 3 - Maximises Environmental Net Gains 5 - Creates Distinctive Places 6 - Secures Effective Place-keeping 7 - Brings Nature Closer to People 11 - Delivers Wildlife Enhancement 12 - Underpins Nature's Recovery

Figure 5: GI Functions / Benefits and Building with Nature (BwN)

06 Conclusion

The landscape proposals at Pinefields are based on a Stepwise Approach. Following an assessment of the importance of existing green infrastructure at the site, the strategy aimed to avoid and retain green infrastructure wherever possible. Where green infrastructure features have been lost, the proposals provide space for this loss to be mitigated and/or compensated for the loss and would enhanced the green infrastructure overall.

Integrated Sustainable Drainage features would improve the diversity of the green infrastructure with multiple benefits - biodiversity, amenity, drainage and a setting for landscape-based play.

The planting palette consists of a mix of native, ornamental flowering and low maintenance species, structured around native species of trees and shrubs, herbaceous flowering plants and grasses to provide variety through the seasons and reinforce legibility of routes.

SuDS features are integrated into the landscape strategy, introducing flowering pollinator species to provide a source of nectar for bees and other insects.

The green infrastructure aims are:

- Retain existing trees wherever possible and supplement with new native planting of Welsh provenance..
- Create green corridors along retained vegetation with transition habitats.
- Establish strong connectivity across the site for people and nature.
- Focus on habitat enhancements which improve species and age diversity to improve longevity and resilience to climate change.
- Integrate SuDS features as part of landscape proposals to improve amenity value.
- Create a landscape that changes with the seasons to increase amenity and reinforce a connection with nature.

With regards to the **Placemaking Wales Charter** the green infrastructure proposals would make a good contribution towards the six placemaking principles, which cover the range of considerations that contribute to establishing and maintaining good places.

The proposals also contribute well to the **12 Standards of Building with Nature**, creating well connected, multi-functional green infrastructure.

Overall, it is considered that the proposed development would be in accordance with the Local Development Plan policies relating to Green Infrastructure.



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