

Green/ Blue Infrastructure Statement

14th February 2024 Rev C

Overview

As part of the development process, the existing Green Infrastructure (GI) asset has been assessed through landscape desktop survey, and the context of the site, in its wider GI network, and within the policy framework in Wales and Merthyr Tydfil. The following statement reports on the iterative GI process and how it has influenced the design approach based on national and local policy, focusing on the appropriate and proportionate GI benefits that development of this site can contribute.

Introduction

Definition of Green Infrastructure.

The term ‘Green Infrastructure’ first came to prominence in the early 2000’s most notably in the Landscape Institute Position Statement ‘Green Infrastructure An integrated approach to landuse’ (2009). This document defined Green Infrastructure as;

‘The network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect villages, towns and cities. 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 than ‘grey’ infrastructure.’

GI Functions are described as 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 ecosystems services. They may have obvious primary functions, but each asset can perform different functions simultaneously – ‘multifunctionality.’

Green/Blue Infrastructure (GI) is the term adopted in this document to incorporate the now more fully developed drainage requirements for developments under SABs, (Sustainable Drainage Approval Body) in Wales, along with other GI elements including all the features of the natural environment between and within towns and cities, including greenspace, vegetation and water. Provision of GI offers a multitude of ecosystem services (i.e. the benefits that people derive from nature) and forms part of a sustainable approach to the management of natural resources. New infrastructure should seek to strengthen and reinforce existing assets within a site and it should be planned and designed to be beneficially multi-functional.

Policy & Guidance

Planning Policy Wales 2024 (12th Edition)

6.2 Green Infrastructure

“Green infrastructure plays a fundamental role in shaping places and our sense of well-being, and are intrinsic to the quality of the spaces we live, work and play in. The planning system must maximise its contribution to the protection and provision of green infrastructure assets and networks as part of meeting society’s wider social and economic objectives and the needs of local communities. Taking a proactive and spatial approach, which links to wider activity being taken by local authorities to protect and provide green infrastructure, will help provide clarity around the contribution which the planning system can make.”

“The quality of the built environment should be enhanced by integrating green infrastructure into development through appropriate site selection and use of creative design. With careful planning and design, informed by an appropriate level of assessment, green infrastructure can embed the benefits of biodiversity and ecosystem services into new development and places, help to overcome the potential for conflicting objectives, and contribute towards health and well-being outcomes.”

Future Wales: The National Plan 2040

Policy 9 – Resilient Ecological Networks and Green Infrastructure

“To ensure the enhancement of biodiversity, the resilience of ecosystems and the provision of green infrastructure, the Welsh Government will work with key partners to:

- identify areas which should be safeguarded and created as ecological networks for their importance for adaptation to climate change, for habitat protection, restoration or creation, to protect species, or which provide key ecosystems services, to ensure they are not unduly compromised by future development; and
- identify opportunities where existing and potential green infrastructure could be maximised as part of placemaking, requiring the use of nature-based solutions as a key mechanism for securing sustainable growth, ecological connectivity, social equality and well-being.

Planning authorities should include these areas and/or opportunities in their development plan strategies and policies in order to promote and safeguard the functions and opportunities they provide. In all cases, 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.”

“As part of a green infrastructure assessment, broad opportunities for habitat protection, restoration or creation and the provision of green infrastructure may be specified as part of identifying areas to be safeguarded or may take the form of more specific allocations. This may be achieved, for example, through the provision of buffer areas around protected sites or stepping stones connecting habitats or through the identification of green infrastructure in and around urban areas.”

Policy Principal Aims/Wider Targets of GI.

The principal multifunctional targeted benefits of GI are to:

1. Protect and enhance biodiversity and the resilience of ecosystems and their connectivity;
2. Consider Opportunities for habitat protection, restoration or creation in the provision of GI;
3. Contribute to improved mental health with more direct contact with nature, the seasons and natural processes;
4. Identify opportunities where existing and potential green infrastructure could be improved and enhanced as part of placemaking;
5. Provide opportunities for improved physical health and wellbeing through recreational access, community permeability and connectivity;
6. Enhance place-making, identity and sense of community ownership;
7. Improve townscape and landscape quality and visual amenity;
8. Integrate play and recreation in GI networks;
9. Improve micro-climate (summer cooling/winter shelter);
10. Mitigate and adapt to the impacts of climate changes improving of;
 - Oxygen production.
 - Carbon sequestration (locking carbon in vegetation and soils).
 - Water sequestration (vegetation evapotranspiration and formal attenuations).
 - Improve air and water quality.
 - Reduce flood risk.
 - Provide alternative transportation opportunities (cycling/walking/public transport links).

Merthyr Tydfil Replacement Local Development Plan (LDP) 2016 - 2031

Policy SW11: Sustainable Design and Placemaking

“Development must contribute to the creation of attractive and sustainable places through high quality, sustainable drainage systems where appropriate, and ensure that the County Borough’s network of green infrastructure is accessible and connected;”

6.4.72 – “Amongst the list of detailed considerations the policy requires the provision and integration of Green Infrastructure in new development proposals which may, for example, include open space and Sustainable Drainage System (SuDS) features. The integration of Green Infrastructure is important as it can realise other positive benefits to health and well-being. This can include for example, the provision of healthy and active environments, flood management, water and air quality improvements, reduced noise pollution, climate moderation, climate change mitigation and food production. Examples of features that can help address these wider objectives can include landscaping, green roofs, grass verges, sustainable urban drainage, open spaces and gardens.”

6.4.74 – “The Council’s Biodiversity Action Plan and future Nature Recovery Action Plan will identify local biodiversity issues and opportunities for green infrastructure enhancement that can inform the planning and design of development proposals. Examples of landscape-scale green infrastructure within the County Borough that can provide enhancement opportunities and which are areas of high biodiversity value include former mineral and coal spoil tips and the Coedcae (Fridd) mosaic habitats that exist on predominantly steep valley sides between the valley floor and upland areas. The Council’s Open Space Strategy and Local Nature Reserve can also be used in the consideration of potentially suitable locations for off-site compensation where there is unavoidable loss of sites important for biodiversity”.

6.6.9 – “The Council’s Biodiversity Action Plan and future Nature Recovery Action Plan will identify local biodiversity issues and opportunities for enhancement and will supplement the information contained in NRW’s Area Statements. As well as identifying opportunities to promote ecosystem resilience, the Council’s Open Space Strategy and Local Nature Reserve can also be used to identify potentially suitable locations for securing off-site compensation. Further information regarding the consideration of Green Infrastructure in new development can be found under Policy SW11: Sustainable Design and Placemaking”.

Merthyr Tydfil Nature Recovery Action Plan 2019 - 2024

Objective 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation

“Landowners will be positively influenced to undertake land management that will restore degraded habitats and/or create new habitats” (pg. 23).

Development GI Process

As part of the development process, the existing Green Infrastructure (GI) assets have been assessed through Landscape desktop survey, and the context of the site, in its wider GI

network, considered. These assessments are illustrated and reported in the following document(s);

- 2387201-SBC-00-XX-DR-L-300 Landscape and GI Constraints and Opportunities Plan
- 2387201-SBC-00-XX-DR-L-400 Strategic Soft Landscape Plan
- 2387201-SBC-00-XX-DR-L-401 External Areas Calculation
- 2387201-SBC-00-XX-DR-L-500 Tree Pits and Hedge Detail

Plan 300 'Landscape and GI Constraints and Opportunities Plan', assesses the landscape element which would be impacted by the proposed primary school. As part of the development proposal, the context and enhancement of the existing GI has been an integral design consideration, which has influenced the design approach and details of the proposal, with the objective to minimise impacts and to deliver positive new GI features, mitigating and enhancing the proposal with consideration to ecology and habitats, landscape related Green Infrastructure aspects.

The stepwise approach (PPW Figure 12, pg. 148) has been implemented. A summary of the stepwise approach is as followed-

1. Avoid
To avoid damage to biodiversity and ecosystem functioning.
2. Minimise
Alternative sites that would result in less harm, no harm or gain are to be fully considered to minimise the any harmful environment effects.
3. Mitigate/Restore
'...ensure that features and elements of biodiversity or green infrastructure value are retained on site, and enhanced or created where ever possible.'
4. Compensation on site
5. Compensation off site must be sought when all other options have been exhausted.

The Landscape GI Constraints/Opportunities & Context Plan illustrates the context and extent of the site with disconnected wider GI context. With the baseline that further redevelopment could improve this context the developing proposals have aimed to introduce a positive GI enhancement which may be more widely connected in the future.

Development GI Aims

The GI aims have been built on the Landscape and GI Constraints and Opportunities Plan, and the design team review of how the development GI could most appropriately enhance Placemaking, Biodiverse, Adapt the site for Climate Change, contribute to the Health and

Wellbeing of the users and deliver a Sustainable approach, all focusing on beneficial Multi-functional GI outcomes.

The site area was also reviewed as part of the design process and the function of the development in contributing to the wider GI network. The site itself is isolated from the local GI network (Ref: 2387201-SBC-00-XX-DR-L-300 *Landscape and GI Constraints and Opportunities Plan*). Therefore, the proposed development aims to establish GI along the site boundary which will contribute to the wider GI network for any future connections and developments. The Merthyr Tydfil Borough Council SPG Chapter 10 on Green Infrastructure, summaries below, have been applied to achieve the GI proposals.

1. Protect and Enhance the function of Existing GI

Using contextual appraisal to gain understanding of the assets, functional requirements, and potential benefit of the existing green infrastructure, that can then be used to inform design new developments that protects, enhance the function of existing green infrastructure. The range of measures includes scale building measure e.g. green roofs, to bigger scale measure, as well as providing new recreational green space.

2. Incorporating Green Spaces Networks

‘Networks of green spaces can be incorporated into developments through wildlife-friendly landscaping, provision of open space, installation of SuDS and features such as green roofs and walls.’ The SPG also emphasise the species chosen should be ‘suited to the microclimate and beneficial to wildlife... Native species are best suited to the local environment, sustaining biodiversity while protecting and enhancing natural features and the character of the area.’

The proposed SuDS including rain gardens and swales which will retain a degree of water run-off and encourage natural drainage in-situ on-site, as well as increasing evaporation and micro-climate benefits. Extensive wildflower meadow seeding (tolerant of occasional flooding) within the rain gardens will provide valuable habitat and ecological resources for the local ecosystem. Furthermore, tree planting within rain gardens will add vertical visual interest, biodiversity value and shading within the landscape. Two raised SuDS planters provide additional bioretention and planting interest.

Summary of Effects, Mitigation & Enhancement

2387201-SBC-00-XX-DR-L-400 Strategic Soft Landscape Plan illustrates the impact and proposed new landscape elements as part of the proposed works described below in response to the stepwise approach (PPW Figure 12, pg. 148) and Merthyr Tydfil Borough Council SPG 4: Sustainable Design, Chapter 10 on Green Infrastructure:

Step 1: **Avoid** – Have reasonable alternative sites (with less harm, no harm or a benefit) been considered?

Step 2: **Minimise** – Has the largest possible area of existing onsite habitat been maintained?

Step 3: **Mitigate/Restore** – How have mitigation and/or restoration measures been used to limit negative impacts of the development by e.g. repairing damaged habitats?

Step 4: **Compensate (onsite)** – Have onsite measures of a sufficient magnitude to fully compensate for loss off onsite biodiversity and ecosystem resilience been demonstrated?

Step 5: **Compensate (offsite)** – Used only as a final resort, where onsite compensation is not possible/fully possible. This must be informed by a full ecological survey of the compensation site to provide a baseline. Offsite compensation should then normally take the form of:

- Habitat restoration
- Habitat creation
- Long term management agreement to enhance existing habitats.

These steps have been applied to the proposed scheme, with the reasoning outlined below:

- **Avoid:** Other sites had been considered, however the proximity of the site to the existing primary school would minimise the change in distance travelled by parents/children. By not developing on the existing primary school it would also allow for education to continue uninterrupted. Furthermore, the proximity of the proposed site to the existing high school would mean that the routes to school could remain the same when moving from primary school to secondary school.
- **Minimise:** There is very little existing GI on site except a few scattered trees and short grassland. Existing trees within the site have aimed to be preserved as far as possible. The footprint of the development and the associated landscape will require the removal of existing grassland, which is a mixture of species-rich neutral semi-improved grassland and species-rich marshy grassland.
- **Mitigate/Restore:** The limited nature of the site's existing GI and the area of grassland that would be removed to accommodate the proposals mean that there would be minimal existing habitat available to restore/mitigate onsite. This has meant that the landscape design has focused on compensating for lost habitat as well as creating new ecological resources for the area.
- **Compensation (onsite):** The proposed landscape scheme will establish and enhance the local landscape and ecological value of the site. The proposed development will establish new GI on site with the following types of planting: street trees, native specimen trees, native woodland, native species-rich hedgerows, wildflower

meadow, shrubs and rain gardens. Part of the planting will be delivered in SuDS elements which will deliver a more diverse micro-climate, which will then support different species and mediate the environment through pollutant and dust capture, evapotranspiration and biological filtration. As well as contributing to ecosystem resilience through additional and improved habitats. Provision of bat boxes, bird boxes, and hedgehog-friendly fences will bolster the ecological value of the proposed landscape. The site itself is isolated from the wider GI corridor network with no current wider GI corridor connection. Therefore, the proposed landscape scheme aims to establish a local GI corridor along its boundary for future connections. The specification of a flowering amenity grassland mix and other wildflower meadow mixes helps to compensate for the loss of existing grassland.

- **Compensation (offsite):** It is not considered that offsite compensation is required as the proposals suitably mitigate for any habitat loss.

Summary of Landscape Proposals

Removed GI

The existing grassland, a mixture of species rich neutral semi-improved grassland and species rich marshy grassland will be removed for development purposes.

Proposed GI

The proposal contributes to a current fragmented and poorly connected GI network and provides the opportunity for future improvements and connections by others to build a more functional and beneficial network. The proposed landscape design has sought to maximise available space for GI compensation and introducing ecological resources to the site.

The development proposals achieve the following;

- Protect and enhance biodiversity and the resilience of ecosystems and their connectivity;
- Consider Opportunities for habitat protection, restoration or creation in the provision of GI;
- Identify opportunities where new GI can be established as part of placemaking;
- Improve townscape, landscape quality and visual amenity;
- Improve micro-climate (summer cooling/winter precipitation intervention);
- 42 out of 61 total proposed tree, shrub and hedgerow species are either native or classed as an RHS Plant for Pollinators.
- Mitigate and adapt to the impacts of climate changes;
 - Improving Oxygen production.
 - Improving Carbon sequestration (locking carbon in vegetation and soils).

- Improving Water sequestration (vegetation evapotranspiration and formal attenuations).
- Improving air and water quality.
- Reducing flood risk.

Retained, Removed and Proposed Vegetation

Retained Trees	1 no.
Removed Trees	6 nos.
Removed Grassland	38017 sqm
Proposed Trees	28 nos.
Proposed Woodland Mix	859 sqm
Proposed Species Rich Hedgerow	434 m
Proposed Readyhedge	114.3 m
Proposed Shrubs Planting	1194 sqm
Proposed Wildflower Meadow Grass Mix	10,431 sqm
Proposed Amenity Grass	4091 sqm