January 2026

Clydesmuir Industrial Estate

# Green Infrastructure Statement

30295735-ARC-EGN-ZZ-TR-ZZ-00001

# GREEN INFRASTRUCTURE STATEMENT

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# 01

# INTRODUCTION

# 1.0 INTRODUCTION

## 1.1 INTRODUCTION

1.1.1 Arcadis Consulting (UK) Limited has been commissioned by Pegasus Developments (the Applicant) to prepare this Green Infrastructure Statement for the submission of a full planning application for a project at Clydesmuir Industrial Estate, Cardiff (the Application Site), for the development of 96 affordable homes, together with associated access, parking, landscaping, sustainable drainage features and supporting infrastructure hereafter referred to as 'the Proposed Development'. The redevelopment will require the demolition of the existing light industrial and warehouse buildings and change of use of the site to residential, in accordance with Cardiff's strategic objectives for housing delivery, brownfield regeneration, and sustainable placemaking.

1.1.2 The Application Site is located entirely within the boundaries of Cardiff Council, who is therefore the determining Local Planning Authority (LPA) for this application.

1.1.3 This full planning application seeks full planning permission for the Proposed Development outlined below:

**'The demolition of existing industrial buildings and redevelopment to deliver 96 affordable houses, associated works including access roads, drainage, landscaping, open space and other works. '**

1.1.4 The Site is situated within a highly built up area of Cardiff, characterised by a diverse range of uses including residential, employment and transport related uses. Notably, existing residential uses directly abut the Site, reflective of the strong residential pattern of development in the immediate vicinity. The Site benefits from proximity to established transport infrastructure, facilitating ease of movement and accessibility for future residents.

1.1.5 Clydesmuir Industrial Estate is situated within the Cardiff settlement boundary, on previously developed (brownfield) land in Tremorfa. The site currently operates as an industrial estate, occupied by a variety of light industrial and commercial businesses including warehouses, a flea market, self-storage facilities, and an upholstery company. The site is accessible via an unnamed adopted road connected to Clydesmuir Road, with a network of internal service roads.

1.1.6 Surrounding the site to the north and west are railway lines, while to the east lies St Catherine's Industrial Estate. The southern boundary is characterised by residential dwellings, marking a clear transition between employment and residential land uses. The physical context presents an opportunity to repurpose an underused industrial estate for housing, with the site benefitting from proximity to public transport, local amenities, employment centres, and established residential communities.


Figure 1. **Survey Boundary of the Clydesmuir Industrial Estate**

## 1.2 SUMMARY OF PROPOSED DEVELOPMENT

1.2.1 The application proposes the demolition of all existing industrial buildings and the delivery of a new residential neighbourhood comprising approximately 96 affordable homes. The scheme will offer a balanced mix of dwelling types and sizes, including one, two, and three-bedroom apartments and houses. All homes will be delivered as affordable units, covering a blend of tenures tailored to meet identified local need, with full compliance to the Welsh Government's Development Quality Requirements (DQR).

1.2.2 The site layout has been carefully planned to provide a legible street hierarchy, with a new access road running through the development and connecting to Clydesmuir Road. The internal road network is designed to prioritise pedestrian movement, encourage cycling, and ensure safe vehicular access for residents and service vehicles. Parking provision meets the requirements for affordable housing, with dedicated spaces for disabled users and secure cycle storage for all dwellings.

1.2.3 Architecturally, the scheme draws inspiration from both contemporary design and local context. Buildings are predominantly two to four storeys in height, utilising a robust material palette of brickwork, render, and metal cladding that references local vernacular while establishing a distinct identity for the new neighbourhood. The development incorporates a comprehensive sustainable drainage (SuDS) solution, including permeable paving, attenuation basins, and planting to manage surface water and improve the site's ecological value.

## Design Principles

1.2.4 The design rationale for the proposed redevelopment of Clydesmuir Industrial Estate has been informed by a set of principles and key constraints and opportunities for the Site, intended to create a high-quality, sustainable and inclusive residential neighbourhood. These principles are:

- **Functional Design:** The site layout and dwelling types have been developed to maximise the efficient use of the site, providing a range of affordable homes while ensuring high standards of amenity, safety, and accessibility for future residents.
- **Environmental Sensitivity:** The positioning of buildings, roads, and open spaces is designed to minimise adverse impacts on the surrounding environment, including neighbouring residential properties and existing infrastructure.
- **Landscape Integration:** The development seeks to be unobtrusive within its urban context by incorporating soft landscaping, tree planting, and sensitive boundary treatments. Existing mature trees and hedgerows are retained where possible, with new green corridors introduced to enhance the site's appearance and ecological function.
- **Access and Connectivity:** Existing access routes from Clydesmuir Road are maintained and enhanced to provide safe and efficient vehicular and pedestrian links. The internal road layout prioritises accessibility for all users, including those with disabilities, and integrates with the wider street network.
- **Biodiversity Enhancement:** The scheme maximises opportunities for ecological improvement through the creation of new habitats, rain gardens, and green spaces, supporting biodiversity net gain and climate resilience.
- **Community Safety and Amenity:** The design ensures natural surveillance over shared spaces, clear demarcation between public and private areas, and incorporates secure cycle and bin storage to promote a safe and attractive living environment.

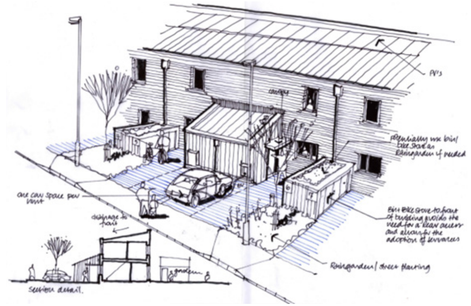

Figure 2. **Architects Holder Mathias sketch design for frontage rain gardens and drainage**

1.2.5 The proposed landscape and ecological design (Appendix B - Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005) includes new amenity grassland, biodiverse roof planting, sustainable urban drainage system (SuDS) basin planting, rain garden planting, wildflower planting with native trees, shrubs and hedgerows. This will provide opportunities for a range of species that are comfortable being in close contact with humans, such as common birds, invertebrates and hedgehog (Erinaceus europaeus). The proposed enhancement measures for the site focus on delivering net benefit to biodiversity in line with Cardiff Local Policy and relevant legislation. These include the integration of native planting schemes, to maximise biodiversity gain, create wildlife corridors, and support pollinators, particularly in relation to the B-Line.

1.2.6 The installation of bat and bird boxes on buildings and within newly planted trees if possible will provide additional roosting and nesting opportunities, compensating for any loss of existing features. The use of biodiverse roofs on ancillary structures such as bicycle sheds and bin stores will further enhance habitat provision for invertebrates and birds (as shown in Figure 2).

1.2.7 Green infrastructure will be strengthened through the creation of a buffer along the northern boundary, the use of native species in hedgerows and scattered trees, and the incorporation of permeable boundaries to facilitate wildlife movement. Finally, the inclusion of rain gardens will deliver sustainable drainage benefits while supporting native planting and improving habitat diversity on site.

1.2.8 A Construction Environmental Management Plan (CEMP) will be delivered as a planning condition for the planned works. The CEMP will provide a framework detailing how the works will be undertaken and managed in accordance with environmental commitments and requirements, which include contractual, legislative and construction industry best practice. The CEMP will provide a means for recording environmental risks, commitments and other environmental constraints and identifies the processes that will be used to manage and control these aspects. The CEMP will also facilitate compliance with relevant environmental legislation, government policy objectives and scheme specific environmental objectives, whilst also providing the mechanism for monitoring, reviewing and auditing environmental performance and compliance.



## 1.3 PLANNING POLICY CONTEXT

1.3.1 At a national level, Planning Policy Wales (PPW) 12 Edition (Welsh Government, February 2024) provides relevant planning guidance informed by the Well Being Future Generations Act, together with the National Development Framework: Future Wales – The National Plan 2040 (February 2021), as well as supporting Technical Advice Notes (TANs). The content of national guidance must be taken into account by local planning authorities when deciding planning applications. Detail of all applicable policy detail is set out in the Planning Design and Access Statement (PDAS) (Document Ref: 30295735-AUK-00-XX-RP-TC-0001-01).

### Green Infrastructure

1.3.2 The Environment (Wales) Act 2016, provides a context for the delivery of multi-functional green infrastructure. Its protection and provision can make a significant contribution to the sustainable management of natural resources, and in particular to protecting, maintaining and enhancing biodiversity and the resilience of ecosystems in terms of the diversity within and connections between ecosystems and the extent and condition of these ecosystems, so that they are better able to resist, recover from and adapt to pressures. This means that the development of green infrastructure is an important way for local authorities to deliver their Section 6 duty.

1.3.3 Proposed changes to PPW were consulted on between March and May 2023. The finalised policy for inclusion in the next iteration of Planning Policy Wales (version 12) are programmed for later this year. In the interim, in order to fulfil COP 15 obligations, an updated chapter 6 policy has come into immediate effect as an annex (October 2023). The main changes include emphasis on green infrastructure, including trees and woodland and Protection for Sites of Special Scientific Interest as well as a Net Benefit for Biodiversity and the Step-wise approach.

- **Green Infrastructure:** stronger emphasis on taking a proactive approach to green infrastructure covering cross boundary considerations, identifying key outputs of green infrastructure assessments, the submission of proportionate green infrastructure statements with planning applications and signposting Building with Nature standards.
- **Net Benefit for Biodiversity and the Step-wise Approach:** further clarity is provided on securing net benefit for biodiversity through the application of the step-wise approach, including the acknowledgement of off-site compensation measures as a last resort, and, the need to consider enhancement and long-term management at each step. The use of the green infrastructure statement as a means of demonstrating the stepwise approach is made explicit. A simplified diagram of the policy approach has been developed (which will be further refined in the consolidated version of PPW12). The importance of strategic collaboration to identify and capture larger scale opportunities for securing a net benefit for biodiversity is recognised.
- **Protection for Sites of Special Scientific Interest:** strengthened approach to the protection of SSSIs, with increased clarity on the position for site management and exemptions for minor development necessary to maintain a 'living landscape'. Other development is considered unacceptable as a matter of principle. Exceptionally, a planned approach may be appropriate where necessary safeguards can be secured through a development plan.
- **Trees and Woodlands:** closer alignment with the stepwise approach, along with promoting new planting as part of development based on securing the right tree in the right place.

1.3.4 Paragraph 6.2.5 of the annex sets out that 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 to health and well-being outcomes. Furthermore 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. In the case of minor development this will be a short description and should not be an onerous requirement for applicants. 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.

1.3.5 Improving ecosystem resilience, particularly improving connectivity to the immediate surroundings, would be a key contribution to on-site avoidance, minimisation, and mitigation strategies and enhancement. How a development would improve the attributes of resilience should be demonstrated as far as this is reasonably practical.

## Step-Wise approach summary

1.3.6 The first priority for planning authorities is to avoid damage to biodiversity in its widest sense (i.e. the variety of species and habitats and their abundance) and ecosystem functioning. Proposals in statutory designated sites are, as a matter of principle unacceptable, and therefore must be excluded from site searches undertaken by developers. This principle also extends to those sites containing protected species and habitats which are irreplaceable and must be safeguarded. When all locational, siting and design options for avoiding damage to biodiversity have been exhausted, applicants, in discussion with planning authorities must seek to minimise the initial impact on biodiversity and ecosystems by:

- maintaining the largest possible area of existing habitat supporting biodiversity and functioning ecosystems, by minimising development size and appropriate orientation on site, paying due regard to the potential for continued long term maintenance and management of retained areas to benefit biodiversity;
- ensuring that retained habitats continue to be well connected to adjacent habitats to provide connectivity for key species and ensuring that the favourable conservation status of local species populations is maintained;
- retaining existing features, develop a management plan for their future care (e.g., trees, hedgerows, species rich grasslands, heath, wetlands, ponds and freshwater habitats) and use appropriate buffers to protect these from construction and operational impacts, and
- using proven innovative/creative solutions (where required) to minimise damage and maintain existing biodiversity features and ecosystems in tandem with robust monitoring and rectification strategies.

1.3.7 Where, after measures to minimise impact, biodiversity and ecosystems could still be damaged, or lost through residual impacts, the proposed development should mitigate that damage. Mitigation measures must be put in place to limit the negative effects of a development. Effective mitigation or restoration measures should be incorporated into the design proposal following the consideration of steps one and two above. Mitigation or restoration measures must be designed to address the specific negative effects by repairing damaged habitats and disturbed species. When all the steps above have been exhausted, and where modifications, alternative sites, conditions or obligations are not sufficient to secure biodiversity outcomes further on site/immediately proximate, and as a last resort off-site compensation for unavoidable damage must be provided. This must be of significant magnitude to fully compensate for any loss.

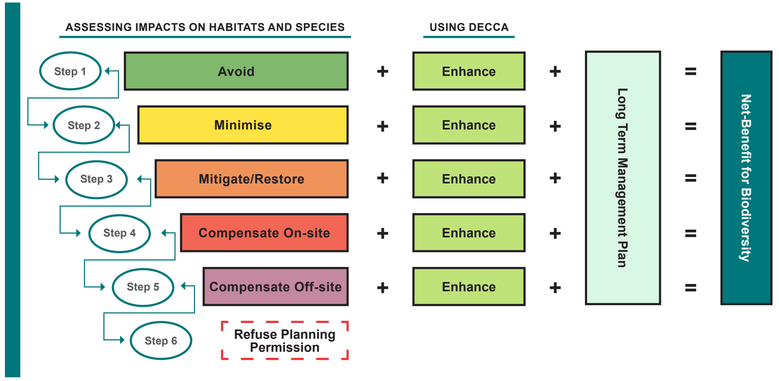


Figure 3. **Step-wise Approach**

## Supplementary Planning Guidance

1.3.8 The following adopted guidance documents are material considerations and have been applied as part of the application submission.

### Green Infrastructure SPG (November 2017)

1.3.9 The SPG consists of a series of Technical Guidance Notes covering topics such as ecology and biodiversity, trees, public rights of way, river corridors, soils, and the protection and provision of open space in new developments. For the proposed development, the most relevant aspect is the guidance on protecting and providing open space.

1.3.10 While Planning Policy Wales does not set out specific open space standards, it encourages local authorities to develop their own. In response, Cardiff City Council has adopted the Fields in Trust 'Benchmark Standard' of 2.43 hectares of functional open space per 1,000 projected population. The SPG provides detailed standards in Table 1 of its Guidance Note, ensuring a consistent approach to open space provision in new developments.

1.3.11 Section 5 of the Guidance Note outlines requirements for open space provision, and links to LDP Policy KP7 (Planning Obligations), which is used to secure mitigation for any impacts directly related to development. Planning obligations are calculated on a case-by-case basis according to SPG criteria. If a development would result in the loss of open space and create or worsen a deficiency, compensatory or alternative provision of equivalent community benefit may be considered acceptable, as further detailed in the Planning Obligations SPG.

### Planning for Health and Wellbeing (November 2017)

1.3.12 This SPG recognises the vital role of planning in enabling healthier lifestyle choices and addressing health inequalities. It sets out a range of considerations for developers, including promoting active lifestyles by prioritising walking and cycling, ensuring interconnectivity within and between developments, and providing access to community and retail facilities. Key areas also include the provision of green spaces, supporting a healthy food environment through access to fresh produce and limiting hot food takeaways, reducing exposure to air, noise, and light pollution, ensuring access to essential services, improving road safety, and encouraging the design of healthy buildings using quality materials and good internal layouts.

1.3.13 The policy acknowledges that not all health-related issues will apply to every development, so a balanced and context-sensitive approach is required. Developers should identify and address the relevant health and wellbeing considerations within their proposals, supported by appropriate documentation. The policy provides a checklist of common issues such as affordable family housing, connectivity to walking/cycling networks, public transport promotion, highway safety, provision of health and education services, employment opportunities, and access to social infrastructure.

1.3.14 In addition, the document links these health and wellbeing principles directly to relevant Local Development Plan (LDP) policies. These cover areas such as accessible housing, public realm enhancement, noise and air pollution minimisation, open space and play space provision, opportunities for local food growing, contributions to biodiversity, flood risk reduction, and climate change adaptation. The aim is to ensure that planning decisions systematically contribute to healthier, more inclusive, and sustainable communities

1.3.15 The Site is unallocated land within the Cardiff settlement boundary. The settlement boundaries displayed both within adopted and forthcoming replacement LDPs set out the urban extent of Cardiff and the towns and villages in its hinterland. For land within settlement boundaries, the current and emerging LDPs are clear that development will be permitted within settlement boundaries subject to any other material planning considerations. The overarching principle of the Proposed Development is considered acceptable on the Site.

1.3.16 Ecological protection and enhancement are central to the proposal. Policies KP16 (Green Infrastructure), EN6 (Ecological Networks), and EN8 (Trees, Woodlands and Hedgerows) have been addressed through the retention and enhancement of green infrastructure, provision of habitat corridors, and new tree planting. These measures deliver net biodiversity gain and support Cardiff's ecological network.

### Net benefit to biodiversity (NBB)

1.3.17 The Well-being of Future Generations Act 2015, Planning (Wales) Act 2015 and the Environment (Wales) Act 2016 provide the legislative context for delivering green infrastructure across Wales. Green infrastructure is also a key thread that runs through Planning Policy Wales 12 and the National Development Framework, Future Wales: the National Plan 2040.

1.3.18 New development proposals will be required to conserve and where appropriate enhance biodiversity interests unless it can be demonstrated that: 1) the need for the development clearly outweighs the biodiversity value of the proposed development; and 2) the impacts of the development can be satisfactorily mitigated and acceptably managed through appropriate future management regimes i.e. a net benefit to biodiversity (NBB).

1.3.19 For the proposed development, the following has been considered in relation to NBB:

- Evaluation of the current ecosystem resilience, achieved through the undertaking of the walkover survey and habitat mapping as well as the consideration of suitability for protected species.
- Consideration of the value of the site for biodiversity.
- Review of existing linkages with surrounding green infrastructure.
- Review of the proposed development and application of the "Step-wise" approach.

1.3.20 Further details are set out in Appendix A – Net Benefit to Biodiversity Statement (Arcadis).

## 1.4 GREEN INFRASTRUCTURE OVERVIEW

1.4.1 Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places. Component elements of green infrastructure can function at different scales and some components, such as trees and woodland, are often universally present and function at all levels. 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, fields, 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.

1.4.2 Green infrastructure plays a fundamental role in shaping places and our sense of well-being, and is 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. This means considering how it complements existing and future maintenance and management regimes within urban areas and contribute towards wider land management activities in rural areas to aid nature recovery, and its underpinning natural resources. This will require effective joint working and collaboration across various sectors and activities, including administrative boundaries. Establishing arrangements to promote collaboration across local authority borders will be necessary, especially where the provision of off-site compensatory land to address biodiversity loss and provide enhancement will have the greatest benefit for biodiversity and resilient ecological networks.

1.4.3 Green infrastructure is capable of providing several functions at the same time and as a result offers multiple benefits, for social, economic and cultural as well as environmental resilience. The components of green infrastructure, by improving the resilience of ecosystems, can result in positive benefits to well-being including flood management, water purification, improved air quality, reduced noise pollution and local climate moderation, climate change mitigation and food production. These benefits are important in urban environments where they can facilitate health and well-being related benefits of open space, clean air and improved tranquillity, for example, as well as creating a sense of place and improved social cohesion. In addition, green infrastructure has a role in protecting local distinctiveness, providing economic benefits and social and community opportunities.

### Purpose and Structure of the Statement

1.4.4 The purpose of this Green Infrastructure Statement is to demonstrate positive multi-functional outcomes as a result of the Clydesmuir Industrial Estate Development and how the step-wise approach has been applied.

1.4.5 This Statement includes an assessment which is structured around the Building with Nature standards[1]. These 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. Using these Standards in a way which is proportionate to the nature and scale of the development proposed is a useful way of ensuring appropriate consideration in circumstances where there is an absence of a green infrastructure assessment and planned approach or relevant local or Supplementary Planning Guidance. The Standards are underpinned by an accreditation system and whenever possible, accreditation under these standards should be pursued.

1.4.6 The structure of the Green Infrastructure Statement is as follows:

- **Chapter 1** provides a brief description of the Proposed Development, an overview of Planning policy context and purpose and structure to the Statement.
- **Chapter 2** sets out the Site Context in consideration of the immediate locality of the Proposed Development and the wider Green Infrastructure context in which it is located.
- **Chapter 3** provides an analysis of the green infrastructure in consideration of the Building with Nature Standards.
- **Chapter 4** reaches conclusions on the overall provision and design of green infrastructure.



# 02

# SITE CONTEXT

# 2.0 SITE CONTEXT

## 2.1 INTRODUCTION

2.1.1 This Chapter provides an overview description of the Green Infrastructure assets surrounding the Site and a description of the Proposed Development Site (PDS). The green infrastructure approach advocates that green infrastructure assets should be protected and enhanced to help sustain and improve our way of life. Green infrastructure assets should be linked to form part of a wider network, as this helps them to withstand climate change and other impacts.

## 2.2 DEVELOPMENT SITE & SURROUNDINGS

2.2.1 The site is currently occupied by several buildings that are used for a range of B2 commercial and light industrial uses, along with associated servicing / parking area space. The existing buildings on the site total approximately 10,227m2 GFA. The site is accessed via the adopted un-named access road which connects to Clydesmuir Road in the east, and continues through the wider Clydesmuir Industrial Estate.The site is bordered by a railway line to the north, further industrial estate uses to the east and west, and residential units to the south.

2.2.2 The PDS is generally flat, with a legacy of hardstanding and service infrastructure. Vegetation is limited primarily to the boundaries, and there are no significant ecological or archaeological constraints identified by initial surveys. The Site is located within a pluvial Flood Zone 2 and is classified as a highly vulnerable development under national planning policy. However, it is also situated within a Defended Zone for this type of flooding, providing a degree of protection through flood control measures and is considered to have a lower probability of flooding. The Site is not subject to any statutory or non statutory environmental, landscape, or heritage designations. There are no Public Rights of Way within or nearby the Site.

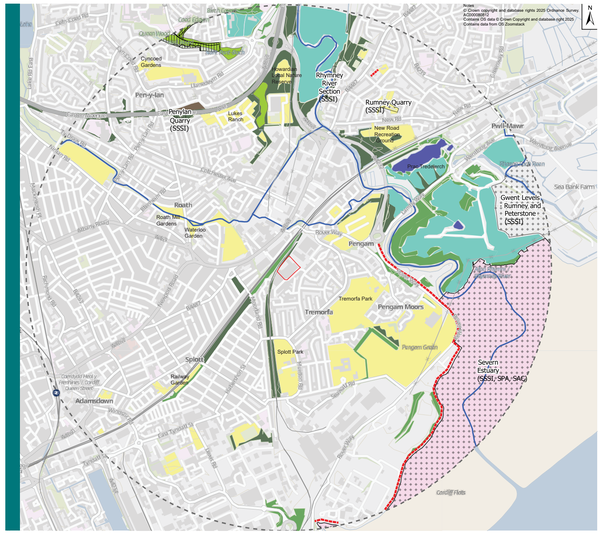


Figure 4. **Green Infrastructure Contextual Assets Plan**

2.2.3 Access into the PDS is provided in the south via a number of gated and un-gated access arrangements with the un-named Clydesmuir Industrial Estate access road running along the southern boundary. The un-named access road is approximately 400m in length, and provides a no through route continuing west from Clydesmuir Road, providing access to both the site and the neighbouring industrial / commercial units within the wider Clydesmuir Industrial Estate area to the west. The un-named access road has a carriageway width of approximately 9m, and connects to Clydesmuir Road via a priority junction arrangement. Clydesmuir Road provides one of the key strategic routes through the Tremorfa area. The road is residential in nature, and subject to a 20mph speed limit with traffic calming measures (speed humps, chicanes etc) and on-street parking along its length. The un-named access road has footways of approximately 2m in width along both sides of its carriageway. These footways continue east from the PDS, connecting into footways along Clydesmuir Road, which in turn connect into the established pedestrian network continuing through the wider Tremorfa area.

### Existing Habitat, Statutory and Non-Statutory Designated Sites

2.2.4 An extended Phase 1 habitat survey was undertaken on 28 August 2025 by Arcadis Consulting (UK) (Document reference 30295735-AUK-00-XX-RP-TC-0001-01). The survey identified that there are six ecologically statutory designated sites within 2km of the proposed development site, as listed in Table 3 of the survey report. There are no SACs designated for bats within 10km of the site. There are 12 non-statutory designated sites within 2km of the PDS, including 11 Local Wildlife Sites / SINCs and one B-Line. B-Lines are 'insect pathways' running through countryside and towns which link existing wildlife areas together and runs through the PDS. There are five ancient semi-natural woodland sites within 2km of the proposed development, the closest area is located 1940m north-west of the PDS. There are also two Natural Resources Wales (NRW) Priority Areas (Coastal Saltmarsh and Lowland Wetland) within 2km of the PDS. Although the site sits within the coastal saltmarsh priority habitat, there is no saltmarsh on site. The Lowland Wetland priority habitat area is 848m east of the site.

### Existing Site Features and Vegetation

2.2.5 An Arboricultural Impact Assessment (Reference 30295735-ARC-XX-XX-RPT-ARB-001-AIA) has also been undertaken by an arboriculturist at Arcadis Consulting (UK), to identify, and evaluate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of proposed development. A total of six arboricultural features were recorded within the study area, these were recorded as two individual trees, three groups of trees and one hedgerow. A total of five different individual tree species were recorded during the survey and are represented throughout the survey area. A summary of the species surveyed can be found within the tree schedules in Appendix B of the AIA comprising Dogwood (Cornus sanguinea), Goat Willow (Salix caprea) , Hawthorn (Crataegus monogyna) , Leyland Cypress (Cupressus x leylandii), Sycamore (Acer pseudoplatanus).

2.2.6 It was confirmed by the Cardiff Council that no trees surveyed are subject to Tree Preservation Orders or Conservation Area restrictions. It was confirmed that there are no designated ancient woodlands in the study area and no veteran trees were identified during the survey. One arboricultural feature (G1) within the study area will be subject to potential incursions within its calculated Root Protection Area. Mitigation requirements for these works are provided in Section 5 of the AIA.

Clydesmuir Industrial Estate - Site Surroundings

## Tree Preservation Orders (TPO)

2.2.7 There are no TPO's within the Study Area.

## Landscape Character

2.2.8 The existing published character assessments have been considered as part of the context review:

- The National Landscape Character Areas (NLCAs) (Natural Resources Wales, 2014)
- LANDMAP (Natural Resources Wales, 2016)

### Landscape Character at the National Scale

2.2.9 Natural Resource Wales has divided Wales into 48 regional areas referred to as NLCAs. Their boundaries follow natural lines in the landscape, rather than administrative boundaries, and each is defined by a unique combination of landscape, biodiversity, geodiversity and cultural and economic activity.

2.2.10 The Study Area lies within NLCA35: 'Cardiff and Newport' character area. This NCLA is illustrated on Figure 5. Two cities and associated suburbs and satellite towns dominate this part of south-east Wales. They include Wales' capital and largest settlement, Cardiff, as well as Newport, Cwmbran, Pontypool, Penarth and Barry. The area forms a busy transport and development corridor. It occupies the coastal lowlands between the Severn estuary with its levels, and the edge of the South Wales Valleys with their uplands. The area includes major ports at Cardiff, Barry and Newport, and associated industrial infrastructure. There are also extensive residential, suburban areas and major retail, business and recreational facilities. There is an intensive network of busy roads and railways, including part of the M4 corridor.

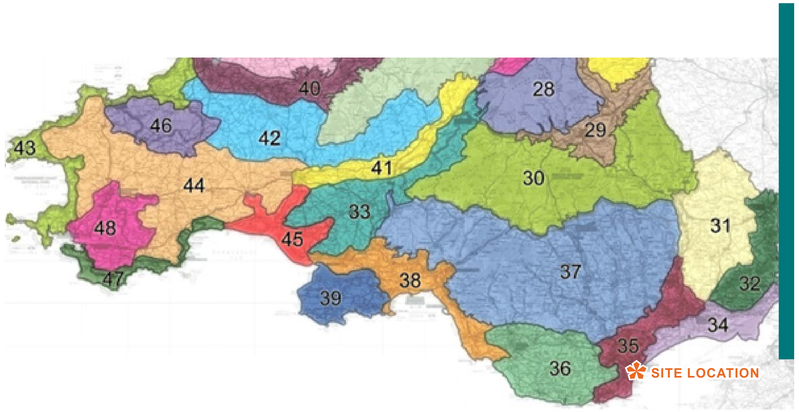


Figure 5. **NLCA35: Cardiff and Newport Map**

2.2.11 Key characteristics:

- Urban fringe / peri-urban areas – for example land between Penarth and Barry, which contains linear settlement linked by rural roads but has an urban fringe character in parts.
- Green wedges / corridors penetrating urban areas – including wooded river corridors in Cardiff and Newport and the coast at Barry.
- Lowland river corridors - Rivers Taff and Ely drain into Cardiff Bay and the tidal River Rhymney runs through east Cardiff; the tidal River Usk forms the focus of Newport with the River Ebbw meandering to the south east.



# 03

# GREEN INFRASTRUCTURE ANALYSIS

# 3.0 GREEN INFRASTRUCTURE ANALYSIS

## 3.1 APPLICATION OF THE BUILDING WITH NATURE STANDARDS

3.1.1 This Chapter provides an analysis of green infrastructure in consideration of the planning application material prepared for the Proposed Development. The analysis is structured using the Building with Nature (BwN) Standards. Taken together, the 12 BwN Standards define "what good looks like" by offering a set of quality standards for placemaking and place-keeping, covering the themes of Wellbeing, Water and Wildlife. The BwN Standards support cross-disciplinary decision making about green infrastructure design and delivery, implementation, construction, management and maintenance of green infrastructure in development.

3.1.2 The analysis considers each of the 12 BwN Standards against the key criteria in consideration of the design, mitigation and management arrangements for the Proposed Development bringing together the contextual analysis as a baseline starting point and analysis of the proposed green infrastructure enhancement and gains. The table set out below provides evidence referencing the key planning application documents where each of the standards can be supported with explanatory text to set out the key proposals and benefits they will bring.

3.1.3 The Landscape and Ecological Strategy is provided in Appendix B for reference however all Planning documents have been reviewed as part of the desk top review and this analysis.

| BwN Standards | Evidence | Analysis |
|---|---|---|
| Standard 1 Optimises Multifunctionality and Connectivity | | |
| Optimises multifunctionality and connectivity within the boundary of the project and links with existing and planned for green infrastructure in the surrounding area. | **Landscape and Ecological Proposals** (Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005)<br><br>**Net Benefit to Biodiversity Statement** (Ref: Appendix A of this Green Infrastructure statement)<br><br>**Arboricultural Impact Assessment** (Ref: 30295735-ARC-XX-XX-RPT-ARB-001-AIA)<br><br>**Preliminary Ecological Appraisal** (Ref: 30295735-AUK-00-XX-RP-TC-0001-01) | The existing site does not contain any green infrastructure with ecological value. The proposed development will create and reinforce connections to the existing scattered trees and scrub along the railway line connection, which borders the north-western boundary, and add connections into the surrounding planted road systems and residential spaces.<br><br>Biodiversity and ecosystem resilience has been considered at the earliest possible stage of the development. The Proposed Development will maintain, protect and enhance ecological networks and features of importance for biodiversity, particular importance will be given to maintaining and enhancing the connectivity of ecological network. It is recommended that an ecologist contributes to the evolution of the development and landscaping design to maximise biodiversity gain and advise upon the provision of appropriate green infrastructure. The ecologist should ensure that wildlife corridors are created and that any new planting is designed to be beneficial to wildlife. Suitable planting will ensure that the site provides opportunities for pollinators and supporting the B-Line running through the site.<br><br>A green buffer is included at the northern boundary of the site, not only to provide an opportunity for wildlife but to help with visual and noise screening. This vegetation links to new gardens and provides links to the wider area. Hedgerows, parcels of grassland and scattered trees are incorporated around the perimeter of the site and help with linkages. Native species are specified to plant all green linkages. Barriers between houses should be permeable to allow movement of wildlife – either hedgerows or fences should have gaps at the base to allow hedgehogs and other wildlife to pass between gardens.<br><br>Vegetation clearance will be minimised as much as possible to retain the existing habitats present within and adjacent to the Proposed Development.<br><br>The landscape and ecological design and mitigation assists both the aesthetic and functional aspects of the surrounding landscape but also contribute significantly to the preservation and restoration of the natural ecosystems. Ecological protection and enhancement are central to the proposal. Policies KP16 (Green Infrastructure), EN6 (Ecological Networks), and EN8 (Trees, Woodlands and Hedgerows) have been addressed through the retention and enhancement of green infrastructure, provision of habitat corridors, and new tree planting. These measures deliver net biodiversity gain and support Cardiff's ecological network. |



| BwN Standards | Evidence | Analysis |
|---|---|---|
| Standard 2 Positively Responds to the Climate Emergency | | |
| Is designed to be climate resilient by incorporating mitigation and adaptations that respond to the impacts of climate change. The green infrastructure is designed to promote low carbon behaviours and contributes to achieving zero carbon development by optimising carbon sequestration and demonstrating low carbon approaches to design, construction, and long-term maintenance. | **PDAS** (Ref: 30295735-AUK-00-XX-RP-TC-0001-01)<br><br>**Net Benefit to Biodiversity Statement** (Ref: Appendix A of this Green Infrastructure Statement)<br><br>**Landscape and Ecological Proposals** (Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005) | The proposal demonstrates good quality and sustainable design, in full accordance with Policy KP5 (Good Quality and Sustainable Design). The layout, massing, and architectural treatments respect the character of the area, provide high-quality amenity for future residents, and integrate landscaping to support biodiversity and climate resilience. The design also considers community safety in line with Policy C3 (Community Safety/Creating Safe Environments).<br><br>The proposals also include climate resilient species and Biodiverse roofs are to be installed on bicycle sheds and bin stores on the site. This would significantly enhance opportunities for wildlife by providing valuable habitat in an otherwise urban environment. The development incorporates a comprehensive sustainable drainage (SuDS) solution, including permeable paving, attenuation basins, and planting to manage surface water and improve the site's ecological value. |
| Standard 3 Maximises Environmental Net Gains | | |
| Is designed to actively mitigate any unavoidable harmful environmental impacts of development on soil and air quality and to minimise light and noise pollution. In addition, it delivers environmental net gains, including improving air and water quality and wherever possible includes quiet spaces for people and wildlife. | **PDAS** (Ref: 30295735-AUK-00-XX-RP-TC-0001-01)<br><br>**Landscape and Ecological Proposals** (Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005)<br><br>**Clydesmuir Industrial Estate Preliminary Ecological Appraisal** (Ref: 30295735-AUK-00-XX-RP-TC-0001-01) | Potential temporary impacts and mitigation measures will be detailed in the Construction and Environmental Management Plan (CEMP), to be delivered as a planning condition.<br><br>Preparation and adherence to a CEMP will ensure impacts are avoided and/or minimised. The CEMP shall include those items listed in Section 5 of Clydesmuir Industrial Estate Preliminary Ecological Appraisal (30295735-AUK-00-XX-RP-TC-0001-01) and (but not limited to):<br>• Toolbox talk about the sensitivities of the site.<br>• Sensitive building removal under a precautionary working method statement in respect to fauna (nesting birds and bats with ecological supervision/clerk of works where necessary).<br>• Excavations covered and/or means of egress provided.<br>• Bat boxes should be incorporated into new landscaping and buildings.<br>• Sensitive lighting if night-time construction working is required.<br><br>The short-term negative effects of the proposed development are considered to be off-set by the proposed landscape planting that will ensure commuting routes will be maintained and feeding/roosting reestablished. The removal of existing buildings is not considered to have a significant impact to bats if enhancement and mitigation recommendations are followed. |

| BwN Standards | Evidence | Analysis |
|---|---|---|
| Standard 4 Champions a Context Driven Approach | | |
| Positively responds to the local context, including the physical environment, such as landscape and urban character and social, economic, and environmental priorities, including the evidenced needs and strengths of existing and future local communities. | **PDAS**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01)<br><br>**Landscape and Ecological Proposals**<br>(Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005)<br><br>**Net Benefit to Biodiversity Statement**<br>(Ref: Appendix A of this Green Infrastructure Statement) | The local context and local character features have been used as a starting point for the proposals and incorporates them into the Proposed Development to reference, reflect and enhance the local environment.<br>The Landscape and Ecological Proposals set out the proposed planting palettes. The proposed species have been selected in consideration of existing key ecological species and invertebrates in the area, such as planting to enhance habitats and encourage species that are suitable for the locality in consideration of soil type and the ability to create a very diverse range of species across the site.<br><br>The proposals include new amenity grassland, biodiverse roof planting, sustainable urban drainage system (SuDS) basin planting, rain garden planting, wildflower planting, trees, shrubs and hedgerows. The Emorsgate basic general-purpose mix EG1, meadow mixture EM6, meadow mixture for wetlands EM8, wet meadow mixture EG8 and standard general purpose meadow mixture EM2 will be used to create species rich amenity grassland, biodiverse roofs, and SuDS basin planting. This will provide opportunities for a range of species that are comfortable being in close contact with humans, such as common birds, invertebrates and hedgehog (*Erinaceus europaeus*). |
| Standard 5 Creates Distinctive Places | | |
| Is integral to the project and is designed to reinforce local distinctiveness and/or create a distinctive sense of place | **PDAS**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01)<br><br>**Landscape and Ecological Proposals**<br>(Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005) | Architecturally, the scheme draws inspiration from both contemporary design and local context. Buildings are predominantly two to four storeys in height, utilising a robust material palette of brickwork, render, and metal cladding that references local vernacular while establishing a distinct identity for the new neighbourhood. The development seeks to be unobtrusive within its urban context by incorporating soft landscaping, tree planting, and sensitive boundary treatments.<br><br>Existing mature trees and hedgerows are retained where possible, with new green corridors and B-lines introduced to enhance the site's appearance and ecological function. The landscape and ecological proposals reinforce local distinctiveness through the creation of new native hedgerows, diverse swards of grassland, locally native diverse tree species and meadow mixes. These will also help create a distinct identity for the new neighbourhood as well as providing wider green infrastructure connections to open space and existing habitats. |



| BwN Standards | Evidence | Analysis |
|---|---|---|
| Standard 6 Secures Effective Place-keeping | | |
| Is subject to management arrangements that demonstrate a commitment to effectively implement, establish and maintain features at all stages of the development process. This should include details of funding, governance, maintenance, monitoring, remediation and, where appropriate, community involvement and stewardship. | **Preliminary Ecological Appraisal**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01) | It is recommended that a site-specific Reasonable Avoidance Measures Method Statement (RAMS) is produced to ensure the potential for ecological impacts of the proposed remediation works are minimised.<br>To ensure the implementation of the RAMS, an Ecological Clerk of Works (ECoW) should have oversight and be available to supervise and provide guidance to the contractors prior to and during the works, as required. While the RAMS should be produced using site and task specific information, provided below are general mitigation measures to be considered for inclusion in the RAMS:<br>– All vegetation clearance works should be overseen by a suitably qualified ecologist performing the role of Ecological Clerk of Works (ECoW) in accordance with the RAMS.<br>– Pre-commencement checks for protected/ notable species including amphibians, reptiles and hedgehogs should be undertaken prior to clearance works commencing.<br>– If clearance works are undertaken between 1 March and 31 August, pre-clearance checks for nesting birds should also be completed. Should any protected/ notable species be encountered during the works, all works should cease and advice sought from the ECoW.<br>– Removal and disposal of the invasive non-native species Rhododendron and Cherry laurel should be undertaken in accordance with best practice.<br>The ECoW will be agreed and appointed prior to the works commencing. |
| **BwN Standards** | **Evidence** | **Analysis** |
| Standard 7 Brings Nature Closer to People | | |
| Is close to where people live, work, learn, play and/or visit, and is designed to optimise use and enjoyment for everyone across the year, to maximise health and wellbeing outcomes and to promote active living for existing and future communities. | **PDAS**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01)<br><br>**Landscape and Ecological Proposals**<br>(Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005) | The site layout and dwelling types have been developed to maximise the efficient use of the site, providing a range of affordable homes while ensuring high standards of amenity, safety, and accessibility for future residents. Existing access routes from Clydesmuir Road are maintained and enhanced to provide safe and efficient vehicular and pedestrian links. The internal road layout prioritises accessibility for all users, including those with disabilities, and integrates with the wider street network. The design ensures natural surveillance over shared spaces, clear demarcation between public and private areas, and incorporates secure cycle and bin storage to promote a safe and attractive living environment. The scheme maximises opportunities for ecological improvement through the creation of new habitats, rain gardens, and green spaces, supporting biodiversity net gain and climate resilience. |

| BwN Standards | Evidence | Analysis |
|---|---|---|
| Standard 8 Supports Equitable and Inclusive Places | | |
| Is designed to encourage and enable everyone, including those from vulnerable or excluded groups, to use and enjoy it, to help reduce health inequalities and to build a shared sense of community and belonging. | **PDAS**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01) | The Proposed Development is for a 100% Affordable Housing scheme, directly addressing the acute need for high-quality, accessible homes for a range of households in Cardiff. By delivering exclusively affordable units, the scheme aligns with national and local policy objectives to increase the supply of affordable homes, as set out in PPW and the Cardiff Local Development Plan. This approach will make a significant contribution towards meeting identified housing needs, supporting social inclusion and community cohesion. In addition, the delivery of affordable housing on a sustainable, brownfield site ensures that new homes are accessible to those most in need, while making efficient use of previously developed land in line with government priorities. Communal amenity space will be provided for residents of the apartment units, fostering a sense of community and supporting residents' health and wellbeing. Landscaping will be designed to create attractive, usable spaces for recreation, relaxation, and social interaction. |
| Standard 9 Delivers Climate Resilient Water Management | | |
| Is integral to sustainable drainage using above ground features to manage flood risk, maintain the natural water cycle and improve water quality within the boundary of the project and at a catchment scale. The green infrastructure is designed to be drought resistant and wherever possible, includes measures for the retention and reuse of rainwater. | **PDAS**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01)<br><br>**Landscape and Ecological Proposals**<br>(Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005)<br><br>**Landscape Typical details**<br>(Ref: 30295735-ARC-EGN-ZZ-0006)<br><br>**Net Benefit to Biodiversity Statement**<br>(Ref: Appendix A of this Green Infrastructure Statement)<br><br>**Engineering Layout**<br>(Ref: 25000-101) | The Proposed Development will incorporate SuDS features throughout, including permeable paving, rain gardens, and swales, to manage surface water sustainably and enhance local biodiversity. The proposed landscape design (Appendix B) includes new amenity grassland, biodiverse roof planting, sustainable urban drainage system (SuDS) basin planting, rain garden planting, wildflower planting, trees, shrubs and hedgerows.<br><br>SuDS features include:<br>— Raingardens and bioretention<br>— Permeable paving<br>— Small ditches/swales (1:2, 350-500mm depth)<br>— A SuDS basin (1:3, 1.1-1.3m depth)<br>— Cellular surface water storage |



| BwN Standards | Evidence | Analysis |
|---|---|---|
| Standard 10 Brings Water Closer to People | | |
| Is designed to integrate water, including areas of standing water, flowing water, seasonal and ephemeral features, to bring additional amenity and wildlife benefits. | **Landscape and Ecological Proposals**<br>(Ref: Appendix B of this Green Infrastructure Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005)<br><br>**Engineering Layout**<br>(Ref: 25000-101)<br><br>**Landscape Typical details**<br>(Ref: 30295735-ARC-EGN-ZZ-0006) | The SuDS basin will include swale planting comprising a Meadow mixture for wetlands. The proposed mix contains species suitable for seasonally wet soils and based on traditional floodplain and water meadow vegetation. Soils in wet meadows may flood for short periods in winter, but are usually well drained in summer. Most of the sown meadow species are perennial and are slow to establish. Soon after sowing there will be a flush of annual weeds, arising from the soil seed bank. These weeds can look unsightly, but they will offer shelter to the sown seedlings, are great for bugs, and they will die before the year is out. Once cut this will reveal the young meadow, which can then be kept short by grazing or mowing through to the end of March of the following year. |
| Standard 11 Delivers Wildlife Enhancement | | |
| Optimises long term and climate resilient net benefits for nature, by retaining and enhancing existing ecological assets and creating locally relevant new habitats within the boundary of the project. Wildlife measures are secured at all stages of implementation and where applicable, across multiple phases of development. | **Net Benefit to Biodiversity Statement**<br>(Ref: Appendix A of this Green Infrastructure statement)<br><br>**Arboricultural Impact Assessment**<br>(Ref: 30295735-ARC-XX-XX-RPT-ARB-001-AIA)<br><br>**Preliminary Ecological Appraisal**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01) | Ecological protection and enhancement are central to the proposal. Policies KP16 (Green Infrastructure), EN6 (Ecological Networks), and EN8 (Trees, Woodlands and Hedgerows) have been addressed through the retention and enhancement of green infrastructure, provision of habitat corridors, and new tree planting. These measures deliver net biodiversity gain and support Cardiff's ecological network.<br><br>The proposed enhancement measures for the site focus on delivering net benefit to biodiversity in line with Cardiff Local Policy and relevant legislation. These include the integration of native planting schemes, to maximise biodiversity gain, create wildlife corridors, and support pollinators, particularly in relation to the B-Line.<br><br>The installation of bat and bird boxes on buildings and within newly planted trees if possible will provide additional roosting and nesting opportunities, compensating for any loss of existing features. The use of biodiverse roofs on ancillary structures such as bicycle sheds and bin stores will further enhance habitat provision for invertebrates and birds.<br><br>Green infrastructure will be strengthened through the creation of a buffer along the northern boundary, the use of native species in hedgerows and scattered trees, and the incorporation of permeable boundaries to facilitate wildlife movement. Finally, the inclusion of rain gardens will deliver sustainable drainage benefits while supporting native planting and improving habitat diversity on site.<br><br>Monitoring of the new landscape planting for the first three years with weeding, watering and replacement planting being completed during this period will ensure habitats are established. The nature of the development and lack of anticipated residual effects mean that it is considered unnecessary to undertake any long-term population monitoring for species. |

| BwN Standards | Evidence | Analysis |
|---|---|---|
| Standard 12 Underpins Nature's Recovery | | |
| Creates effective links with existing and planned for ecological features and networks beyond the boundary of the project to support the creation and restoration of resilient ecological networks in the wider landscape. | **Landscape and Ecological Proposals**<br>(Ref: Appendix B of this GI Statement- Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005)<br><br>**Net Benefit to Biodiversity Statement**<br>(Ref: Appendix A of this GI statement)<br><br>**Arboricultural Impact Assessment**<br>(Ref: 30295735-ARC-XX-XX-RPT-ARB-001-AIA)<br><br>**Preliminary Ecological Appraisal**<br>(Ref: 30295735-AUK-00-XX-RP-TC-0001-01) | The proposed landscaping and ecological mitigation proposals play a key role in achieving environmental sustainability as part of the Proposed Development. The proposals enhance the aesthetic and functional aspects of the surrounding landscape but also contribute significantly to the preservation and restoration of B-Lines. By incorporating these key design principles promote a balanced coexistence between the Proposed Development and the environment aspects of the site. The proposals ensure that target habitats are enhanced such as the creation of hedgerows using native species of local provenance to provide greater connectivity throughout the development. |



# 04

# CONCLUSION

# 4.0 CONCLUSION

## 4.1 GREEN INFRASTRUCTURE SUMMARY

4.1.1 The Proposed Development demonstrates that the design and mitigation proposals have been designed to protect and reinforce local distinctiveness, notably in consideration of landscape character and local habitat typologies. The Proposed Development identifies important local character features as a starting point for the Green Infrastructure proposals and incorporates them into the Proposed Development to reference, reflect and enhance the local environment.

4.1.2 In consideration of the Step-wise approach the design has considered maintaining the largest possible area of existing habitat paying due regard to the potential for continued long term maintenance and management of retained areas to benefit biodiversity. The proposals ensure that retained habitats continue to be well connected to adjacent habitats to provide connectivity for key species and ensuring that the favourable conservation status of local species populations is maintained.

4.1.3 Given the importance and influence of local landscape character and existing Green Infrastructure assets, careful planning and design has informed an appropriate level of Green Infrastructure which embeds the benefits of biodiversity. The landscape and ecological design and mitigation assists both the aesthetic and functional aspects of the surrounding landscape but also contributes to the preservation and restoration of the natural ecosystems. By incorporating these key design principles they promote a balanced coexistence between the Proposed Development and the environmental aspects of the site.



# APPENDIX A

## NET BENEFIT TO BIODIVERSITY STATEMENT

# 1. POLICY

## 1.1 Net Benefit to Biodiversity Policy

The Well-being of Future Generations Act 2015 [1], Planning (Wales) Act 2015 [2] and the Environment (Wales) Act 2016 [3] provide the legislative context for delivering green infrastructure across Wales. Green infrastructure is also a key thread that runs through Planning Policy Wales 12 [4] and the National Development Framework, Future Wales: the National Plan 2040 [5]. The Welsh Government has prepared new guidance on green infrastructure and its delivery within the planning system, as an update to the National Planning Policy for Chapter 6 of Planning Policy Wales [4], published in October 2023 which advocates a more proactive approach to Green Infrastructure setting out how in particular, planning authorities must demonstrate that they have sought to fulfil the duties and requirements of Section 6 of the Environment (Wales) Act [3] by taking all reasonable steps to maintain and enhance biodiversity in the exercise of their functions. New development proposals will be required to conserve and where appropriate enhance biodiversity interests unless it can be demonstrated that: 1) the need for the development clearly outweighs the biodiversity value of the proposed development; and 2) the impacts of the development can be satisfactorily mitigated and acceptably managed through appropriate future management regimes i.e. a net benefit to biodiversity (NBB). NBB is delivered under a broad framework called DECCA, Diversity, Extent, Condition Connectivity and Adaptation attributes of ecosystem resilience (adaptability, recovery and resistance).

When considering NBB in Wales, a whole system approach is encouraged with an understanding of the following required:

- The biodiversity value of the site,
- Its ecosystem resilience (using DECCA),
- The ecosystem services or benefits provided,
- Its existing and potential linkages with the wider green infrastructure network pre- and post- development proposals.

In order for a planning proposal to be accepted, the application must demonstrate it has maintained and enhanced biodiversity as well as built resilient ecological networks. A stepwise approach needs to be implemented which comprises:

- Avoidance
- Minimising
- Mitigating (as a last resort)
- Compensating for any adverse impacts as a result of the development
- In the event of adverse effects outweighing other material considerations then the application would be refused.

For the proposed development, the following has been considered in relation to NBB:

- Evaluation of the current ecosystem resilience, achieved through the undertaking of the walkover survey and habitat mapping as well as the consideration of suitability for protected species.
- Consideration of the value of the site for biodiversity.
- Review of existing linkages with surrounding green infrastructure.
- Review of the proposed development and application of the “Stepwise” approach.

## 1.2 Site Valuation

The site was hardstanding with industrial building units throughout. There was a small section of ephemeral/tall ruderal vegetation in the northern corner of the site. Overall, the site is considered not important for ecological value.

## 1.3 Green Infrastructure

The existing site does not contain any green infrastructure with ecological value. The proposed development will create and reinforce connections to the existing scattered trees and scrub along the railway line connection, which borders the north-western boundary, and add connections into the surrounding planted road systems and residential spaces.

The proposed landscape design (Drawing 30295735-ARC-EGN-ZZ-DR-ZZ-00005) includes new amenity grassland, biodiverse roof planting, sustainable urban drainage system (SuDS) basin planting, rain garden planting, wildflower planting, trees, shrubs and hedgerows. The Emorsgate basic general-purpose mix EG1, meadow mixture EM6, meadow mixture for wetlands EM8, wet meadow mixture EG8 and standard general purpose meadow mixture EM2 will be used to create species rich amenity grassland, biodiverse roofs, and SuDS basin planting. This will provide opportunities for a range of species that are comfortable being in close contact with humans, such as common birds, invertebrates and hedgehog (*Erinaceus europaeus)*.

## 1.3 Stepwise Approach

Avoidance – The design has been focused on utilising existing areas of industrial buildings, hardstanding, and habitats of low biodiversity value (i.e. tall ruderal and ephemeral vegetation) and has avoided green space.

Minimise –The footprint has been designed to use the existing areas of industrial buildings, hardstanding, and habitats of low biodiversity value (i.e. tall ruderal and ephemeral vegetation). Compounds will be located on site.

Mitigate - Preparation and adherence to a CEMP will ensure impacts are avoided and/or minimised. The CEMP shall include those items listed in Section 5 of Clydesmuir Industrial Estate Preliminary Ecological Appraisal (30295735-AUK-00-XX-RP-TC-0001-01) and (but not limited to):

- Toolbox talk about the sensitivities of the site.
- Sensitive building removal under a precautionary working method statement in respect to fauna (nesting birds and bats with ecological supervision/clerk of works where necessary).
- Excavations covered and/or means of egress provided.
- Bat boxes should be incorporated into new landscaping and buildings.
- Sensitive lighting if night-time construction working is required.

The short-term negative effects of the proposed development are considered to be off-set by the proposed landscape planting that will ensure commuting routes will be maintained and feeding/roosting reestablished. The removal of existing buildings is not considered to have a significant impact to bats if enhancement and mitigation recommendations are followed.

## 1.5 DECCA

The proposed housing development at Clydesmuir Industrial Estate seeks to deliver approximately 96 affordable homes and associated car parking spaces. A full assessment against all attributes of the DECCA framework is provided in Table 1 and overall, a NBB is anticipated.

*Table 1 Assessment against the attributes of the DECCA framework pre- and post- development.*

| Attribute | Baseline | Post Development | Assessment |
|---|---|---|---|
| Diversity [1] | Hardstanding / Buildings (0)<br><br>Tall ruderal / ephemeral vegetation (5) | Amenity grassland (5 grasses)<br><br>SuDS basin (5 grasses, 15 forbs)<br><br>Rain garden (7 grasses, 5 trees)<br><br>Swale planting (7 grasses, 24 forbs)<br><br>Shrub planting (9)<br><br>Biodiverse roof planting (8 grasses, 22 forbs)<br><br>Native Hedge (6)<br><br>Standard trees (18) | A significant increase from 5 species to a large variety of grasses shrubs, trees and forbs. |
| Extent | Hardstanding / Buildings (1.73 ha)<br><br>Tall ruderal / ephemeral vegetation (0.066 ha) | Amenity Grass (0.1181ha)<br><br>SuDS Basin Planting (0.0778ha)<br><br>Swale Planting (0.009ha)<br><br>Raingarden Planting (0.0241ha)<br><br>Wildflower Planting: (0.0650ha)<br><br>Biodiverse Roof Planting (0.0100ha)<br><br>Native Shrubs (0.0578ha)<br><br>Native Hedge (0.0373ha)<br><br>Standard trees (N/A) | The loss of a very small area of tall ruderal / ephemeral vegetation to accommodate the proposed development is mitigated by additional tree, shrub and hedgerow planting and species rich grassland / wildflower mixes in the verges, roof planting and raingardens. |

1 Numbers in brackets in baseline and post-development columns refer to the number of species in each habitat type.

| | | | |
|---|---|---|---|
| Condition | A condition assessment (Annex A) has identified the habitat condition as follows:<br><br>Hardstanding / Buildings – N/A<br><br>Tall ruderal / ephemeral vegetation – Poor | It is anticipated that once established all habitats on site could be of moderate condition. | |
| Connectivity | Negligible – Other than a small area of tall ruderal / ephemeral vegetation, there is a lack of connective habitat within the site itself. The site is bordered along its north-western boundary by the railway embankment, which supports scattered trees and scrub that contribute some connectivity to the wider landscape. | Moderate – The proposed development will create and reinforce connections to the existing scattered trees and scrub along the railway line, which borders the north-western boundary. On site hedgerow planting will add connections into the surrounding planted road systems and residential spaces. | Additional tree, grass, wildflower and shrub planting will increase and enhance the connectivity. |
| Adaptability | Poor – the hardstanding of the existing industrial units has no adaptability built into its design. | Good – the proposed development will include sustainable urban drainage systems throughout, including rain gardens and a SuDS basin, to manage surface water sustainably and enhance local biodiversity. | Planting will capture pollutants and help improve air quality. The new rain garden and SuDS basin will provide additional water management capacity.<br><br>Generous amenity space and sustainable drainage features will enhance residents' wellbeing and environmental resilience. |

## 1.6 Compensation, Enhancement and Monitoring

No off-site compensation is considered necessary as all mitigation would occur on site.

The proposed enhancement measures for the site focus on delivering net benefit to biodiversity in line with Cardiff Local Policy and relevant legislation. These include the integration of native planting schemes, to maximise biodiversity gain, create wildlife corridors, and support pollinators, particularly in relation to the B-Line.

The installation of bat and bird boxes on buildings and within newly planted trees if possible will provide additional roosting and nesting opportunities, compensating for any loss of existing features. The use of biodiverse roofs on ancillary structures such as bicycle sheds and bin stores will further enhance habitat provision for invertebrates and birds.

Green infrastructure will be strengthened through the creation of a buffer along the northern boundary, the use of native species in hedgerows and scattered trees, and the incorporation of permeable boundaries to facilitate wildlife movement. Finally, the inclusion of rain gardens will deliver sustainable drainage benefits while supporting native planting and improving habitat diversity on site.

Monitoring of the new landscape planting for the first three years with weeding, watering and replacement planting being completed during this period will ensure habitats are established. The nature of the development and lack of anticipated residual effects mean that it is considered unnecessary to undertake any long-term population monitoring for species.

**References**


[1] Welsh Government, "Well-being of Future Generations Act," 2015.

[2] HM Government, "Planning (Wales) Act," 2015.

[3] HM Government, "The Environment (Wales) Act," 2016.

[4] Welsh Government, "Planning Policy Wales Edition 12," 02 2024. [Online]. Available: https://www.gov.wales/sites/default/files/publications/2024-02/planning-policy-wales-edition-12.pdf.

[5] Welsh Government, "Future Wales: The National Plan 2040," 2021.




## Annex A: Habitat Condition Assessment

The Statutory Biodiversity Metric -Technical Annex 1: Condition Assessment Sheets and Methodology. Version Number: July 2025 (v1.0.2)

**Tall Ruderal / Ephemeral vegetation**

| Condition Assessment Criteria | | Criterion passed (Yes or No) | Notes (such as justification) |
|---|---|---|---|
| Core Criteria - must be assessed for all urban habitat types: | | | |
| A | Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area. | N | |
| B | The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year. | Y | Plant species included Buddleia Buddleja davidii, Dock sp. Rumex spp., Willowherb sp. Epilobium spp., Dandelion sp. Taraxacum spp., Ribwort plantain Plantago lanceolata |
| C | Invasive non-native plant species (listed on Schedule 9 of WCA1) and others which are to the detriment of native wildlife (using professional judgement)2 cover less than 5% of the total vegetated area3.<br><br>Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover). | N | Buddleia Buddleja davidii is not listed on Schedule 9 of the Wildlife and Countryside Act 1981 but is recognised as an invasive non-native species in the UK and covers over 5% of the total vegetated area. |
| Essential criteria relevant for habitat type achieved (Yes or No) | | | Y |
| Number of criteria passed | | | 1 |

| Condition Assessment Result | Condition Assessment Score | Score Achieved ×/□ | |
|---|---|---|---|
| Results for habitats requiring assessment of 3 core criteria only (all listed urban habitats except Open mosaic habitat on previously developed land, Bioswale, SuDS and Green roofs): | | | |
| • Passes all 3 core criteria;<br>AND<br>• Meets the requirements for Good condition within criterion C. | Good (3) | | |
| • Passes 2 of 3 core criteria;<br>OR<br>• Passes 3 of 3 core criteria but does not meet the requirements for Good condition within criterion C. | Moderate (2) | | |
| • Passes 0 or 1 of 3 core criteria. | Poor (1) | X | |
| Suggested enhancement interventions to improve condition score | | | |
| | | | |
| Footnotes | | | |
| **Footnote 1** – Wildlife and Countryside Act 1981 (as amended).<br><br>**Footnote 2** – Sources of information about detrimental non-native species can be found on the GB Non-native Species Secretariat (GBNNSS) website: | | | |
| Home » NNSS (nonnativespecies.org) | | | |
| and Natural England Access to Evidence page should also be checked for up-to-date information: | | | |
| Horizon-scanning for invasive non-native plants in Great Britain - NECR053 (naturalengland.org.uk) | | | |
| For criterion C – For green roof habitat types only – buddleia Buddleja davidii should be assessed alongside Schedule 9 species. This species impairs the health of the local ecosystem and reduces the biodiversity potential of the roof. It is also a sign that a roof has not been planted and seeded correctly in subsequent years.<br><br>**Footnote 3** – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.<br><br>**Footnote 4** – Use professional judgement. Sources of information about non-native species that are not detrimental to native wildlife can be found on the GBNNSS website: | | | |
| Alternative plants » NNSS (nonnativespecies.org) | | | |



# APPENDIX B

## LANDSCAPE AND ECOLOGICAL STRATEGY


NOTES:

1. Do not scale from this drawing.
2. This drawings must be read in conjunction with all other relevant drawings.
3. This document should not be relied on or used in circumstances other than those for which it was prepared and for which ARCADIS was commissioned. ARCADIS accepts no responsibility for this document to any other party other than the person by whom it was commissioned.
4. Always work to noted dimensions. All dimensions are in millimetres unless otherwise stated.
5. The dimensions of all materials must be checked on site before being laid out.
6. This drawing must be read with the relevant specifications clauses and detail drawings.
7. SuDS attenuation ditch is a dry ditch and will be lined
- For further details refer to:
- 30295735-ARC-EGN-ZZ-DR-ZZ-00006 Landscape Typical Details
- 30295735-ARC-EGN-ZZ-SH-ZZ-00001 Outline Landscape Specification & Materials Schedule
- 25000.101 Engineer's Arrangement
- Architect's drawing package (Ref TBC)

**Key**

**Proposed Soft Landscape**

- Amenity grass (AG)
- SuDS Basin (SB)
- Swale Planting (SW)
- Rain Garden Planting (RG)
- Wildflower Planting (WP)
- Native Shrubs (NS)
- Biodiverse Roof Planting (BR)
- Native Hedge (NH)
- Private Garden

**Proposed Trees**

- Tree (Woodland edge/ Boundary)
- Tree (Street)
- Tree (Raingarden)
- Tree (Gateway)

**Proposed Hard Landscape**

- Boulders (BD) Indicative location for 20 boulders
- Application Boundary

## Planting Schedule

### Trees (Street)

| Symbol | Species |
|---|---|
| Ac | Acer campestre (Field Maple) |
| Ia | Ilex aquifolium (Holly) |
| Sa | Sorbus aucuparia (Rowan) |
| Bp | Betula pendula (Silver Birch) |

### Trees (Gateway)

| Symbol | Species |
|---|---|
| Bp | Betula pendula (Silver Birch) |
| Sa | Sorbus aucuparia (Rowan) |
| Cmo | Crataegus monogyna (Common Hawthorn) |
| Pp | Prunus padus (Bird Cherry) |
| Al | Amelanchier lamarckii (Snowy Mespilus) |

### Trees (Woodland edge/ Boundary)

| Symbol | Species |
|---|---|
| Ag | Alnus glutinosa (Common Alder) |
| Ps | Pinus sylvestris (Scots Pine) |
| Tc | Tilia cordata (Small-leaved Lime) |
| Pa | Prunus avium (Wild Cherry) |
| Tb | Taxus baccata (Yew) |
| Ia | Ilex aquifolium (Holly) |
| Sal | Salix alba (White Willow) |

### Trees (Raingardens)

| Symbol | Species |
|---|---|
| Bu | Betula utilis (Himalayan birch) |
| Af | Acer x freemanii (Freemans Maple) |
| Cf | Carpinus frans fontaine (Hornbeam frans fontaine) |
| Aca | Amelanchier canadensis (Service Berry) |
| Gt | Gleditsia triacanthos (Honey Locust) |

### Native Shrubs (NS)

| Species |
|---|
| Rhamnus catharticus (Buckthorn) |
| Rosa canina (Dog Rose) |
| Prunus avium (Wild Cherry) |
| Acer campestre (Field Maple) |
| Rubus fruticosus (Blackberry) |
| Rosa arvensis (Field Rose) |
| Lonicera periclymenum (Honeysuckle) |
| Clematis vitalba (Old Mans Beard) |
| Hedera helix (Common Ivy) |

### Native Hedge (NH)

| Species |
|---|
| Ilex aquifolium (Holly) |
| Taxus baccata (Yew) |
| Carpinus betulus (Hornbeam) |
| Cornus sanguinea (Dogwood) |
| Crataegus monogyna (Hawthorn) |
| Fagus sylvatica (Beech) |

### SuDS Basin (SB)

| *Standard General Purpose Meadow Mixture EM2* |
|---|
| **Wild Flowers 15%** |
| Achillea millefolium (Yarrow) |
| Betonica officinalis – Betony |
| Centurea nigra – Common Knapweed |
| Daucus carota – Wild Carrot |
| Galium album – Hedge Bedstraw |
| Galium verum – Lady's Bedstraw |
| Leucanthemum vulgare – Oxeye Daisy |
| Plantago lanceolata – Ribwort Plantain |
| Poterium sanguisorba ssp sanguisorba – Salad Burnet |
| Primula veris – Cowslip |
| Prunella vulgaris – Selfheal |
| Ranunculus acris – Meadow Buttercup |
| Rhinanthus minor – Yellow Rattle |
| Silene dioica – Red Campion |
| Silene vulgaris – Bladder Campion |
| **Grasses 85%** |
| Agrostis capillaris – Common Bent |
| Cynosurus cristatus – Crested Dogstail |
| Festuca rubra – Red Fescue |
| Phleum bertolonii – Smaller Cat's-tail |
| Poa pratensis – Smooth-stalked Meadow-grass |

### Swale Planting (SW)

| *Meadow mixture for Wetlands EM8* |
|---|
| **Wild Flowers 20%** |
| Achillea Millefolium – Yarrow |
| Agrimonia eupatoria – Agrimony |
| Angelica sylvestris – Wild Angelica |
| Betonica officinalis – Betony |
| Centaurea nigra – Common Knapweed |
| Filipendula ularia – Meadowsweet |
| Galium album – Hedge Bedstraw |
| Galium verum – Lady's Bedstraw |
| Lathyrus pratensis – Meadow Vetchling |
| Leontodon hispidus – Rough Hawkbit |
| Leucanthemum vulgare – Oxeye Daisy (Moon Daisy) |
| Lotus corniculatus – Birdsfoot Trefoil |
| Lotus pedunculatus – Greater Birdsfoot Trefoil |
| Medicago lupulina – Black Medick |
| Plantago lanceata – Ribwort Plantain |
| Primula veris – Cowslip |
| Prunella vulgaris – Selfheal |
| Ranunculus acris – Meadow Buttercup |
| Rhinanthus minor – Yellow Rattle |
| Rumex acetosa – Common Sorrel |
| Sanguisorba officinalis – Great Burnet |
| Silene flos-cuculi – Ragged Robin |
| Taraxacum officinale – Dandelion |
| Vicia cracca – Tufted Vetch |
| **Grasses 80%** |
| Agrostis capillaris – Common Bent |
| Carex echinata – Star Sedge (w) |
| Cynosurus cristatus – Crested Dogstail |
| Festuca rubra – Red Fescue |
| Hordeum secalinum – Meadow Barley (w) |
| Phleum bertolonii – Smaller Cat's-tail (w) |
| Poa pratensis – Smooth-stalked Meadow-grass |

### Amenity Grass (AG)

| *Basic General Purpose Mix EG1* |
|---|
| **Species** |
| Agrostis capillaris (Common Bent) |
| Cynosurus cristatus (Crested Dog's-tail) |
| Festuca rubra (Red Fescue) |
| Phleum bertolonii (Smaller Cat's-tail) |
| Poa pratensis (Meadow-grass) |

### Biodiverse Roof Planting (BR)/Wildflower Planting (WP)

| *Meadow Mixture (suitable for green roofs) EM6* |
|---|
| **Wildflowers (20%)** |
| Achillea millefolium (Yarrow) |
| Anthyllis vulneraria (Kidney Vetch) |
| Centaurea nigra (Common Knapweed) |
| Centaurea scabiosa (Greater Knapweed) |
| Daucus carota (Wild Carrot) |
| Filipendula vulgaris (Dropwort) |
| Galium album (Hedge Bedstraw) |
| Galium verum (Lady's Bedstraw) |
| Hippocrepis comosa (Horseshoe Vetch) |
| Leontodon hispidus (Rough Hawkbit) |
| Leucanthemum vulgare (Oxeye Daisy) |
| Malva moschata (Musk Mallow) |
| Medicago lupulina (Black Medick) |
| Origanum vulgare (Wild Marjoram) |
| Plantago lanceolata (Ribwort Plantain) |
| Plantago media (Hoary Plantain) |
| Poterium sanguisorba (Salad Burnet) |
| Primula veris (Cowslip) |
| Prunella vulgaris (Selfheal) |
| Ranunculus acris (Meadow Buttercup) |
| Rhinanthus minor (Yellow Rattle) |
| Silene vulgaris (Bladder Campion) |
| **Grasses (80%)** |
| Agrostis capillaris (Common Bent) |
| Anthoxanthum odoratum (Sweet Vernal-grass) |
| Briza media (Quaking Grass) |
| Carex flacca (Glaucous Sedge) |
| Cynosurus cristatus (Crested Dogstail) |
| Festuca rubra (Red Fescue) |
| Festuca ovina (Sheep's Fescue) |
| Festuca rubra (Red Fescue) |
| Phleum bertolonii (Smaller Cat's-tail) |

### Raingardens (RG)

| *Wet Meadow Mixture EG8* |
|---|
| **Species** |
| Agrostis capillaris (Common Bent) |
| Carex echinata (Star Sedge) |
| Cynosurus cristatus (Crested Dogstail) |
| Festuca rubra (Red Fescue) |
| Hordeum secalinum (Meadow Barley) |
| Phleum bertolonii (Smaller Cat's-tail) |
| Poa pratensis (Smooth-stalked Meadow-grass) |

| Rev | Date | Description | Prod | Chk | Rev | App |
|---|---|---|---|---|---|---|
| A | 07/12/25 | Draft | CB | AM | BF | BF |

Project:

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Drawing Title:

**LANDSCAPE PLANTING PLAN**

| | | | | | |
|---|---|---|---|---|---|
| Designed: | CB | Signed: | CB | Date: | 12/12/25 |
| Prepared: | CB | Signed: | CB | Date: | 12/12/25 |
| Checked: | AM | Signed: | AM | Date: | 12/12/25 |
| Reviewed: | BF | Signed: | BF | Date: | 12/12/25 |
| Approved: | BF | Signed: | BF | Date: | 12/12/25 |

Status: PRELIMINARY

| | | | | | |
|---|---|---|---|---|---|
| Original Size: | A1 | Scale: | A1 | Sheet: | A1 |
| Drawing Code: | DRAFT | Scale: | AS SHOWN | Project Number: | 30295735 |

Suitability Description: DRAFT

Security Classification: NA

Drawing Number: 30295735-ARC-EGN-ZZ-DR-ZZ-00005

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