Vale of Glamorgan Council

Vale of Glamorgan Green Infrastructure Strategy

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VALE OF GLAMORGAN GREEN INFRASTRUCTURE STRATEGY

Green Infrastructure (GI) 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.' (Planning Policy Wales Edition 12, 2024)

The range of social, environmental, and economic benefits provided by GI are now widely accepted within national policy. Planning for GI is increasingly recognised as a part of the solution to countering social, economic, and environmental challenges, including mitigating and adapting to climate change. However, to be successful, GI must be considered holistically and strategically both in its management and in relation to new development.

The Green Infrastructure Strategy provides a strategic framework for the planning, design and management of GI across the Vale of Glamorgan. The Strategy seeks to:

- Understand the current provision of GI assets across the Vale, in particular Council-owned assets, and identify needs and opportunities for enhancement, connection or expansion
- Ensure that GI delivery supports the Vale of Glamorgan Well-being Plan 2023-28, Climate Change Challenge Plan 2021-2030 and the 2019 Biodiversity Forward Plan
- Help embed GI into the emerging Replacement Local Development Plan (RLDP) to support growth and sustainable development in the Vale
- Protect, enhance and increase the provision of GI across the Vale through good design standards, governance and asset management/community stewardship
- Support funding applications for GI projects and corporate decision making on investments

The Vale's GI has a key role to play in underpinning the Council's vision for strong communities with a bright future and supporting Well-being Plan objectives. It is anticipated the proposed vision for GI will be delivered through the commitment and involvement of the public, private and voluntary sectors, working together in partnership with the Council.

Green Infrastructure Vision for the Vale of Glamorgan 2036

To develop an integrated network of multi-functional green and blue spaces that makes the Vale of Glamorgan a healthy, biodiverse and resilient place to live, work and visit

The GI Strategy sets out a proposed Strategic GI Network, embracing Strategic GI Corridors connecting existing GI assets within the Vale and in neighbouring areas, which provide important links to the Vale's settlements and communities. These Strategic GI Corridors highlight key areas for focussing the delivery of GI in line with the strategic priorities identified by the Strategy.

The vision is supported by six strategic objectives, with associated priorities, for guiding the planning, management and delivery of GI in the Vale of Glamorgan.

Strategic Green Infrastructure Objectives

1. **Improve Health & Well-being:** create a GI network that supports healthy communities and encourages active lifestyles, bringing nature closer to people.
2. **Enhance Biodiversity & Increase Ecosystem Resilience:** develop a resilient and better-connected ecological network that supports net biodiversity gains to underpin nature recovery.
3. **Increase Climate Change Mitigation & Resilience:** maximise nature-based solutions to help mitigate and adapt to the impacts of climate change.
4. **Improve Social Cohesion:** maximise opportunities for GI to support social initiatives and bring communities together
5. **Support Sustainable Economic Development:** integrate GI as a key component of the local economy, tourism and regeneration.
6. **Strengthen Sense of Place:** utilise GI to enhance landscape character and the built environment.

The Strategy highlights the benefits of integrating GI into development through appropriate site selection and use of creative design in line with Planning Policy Wales, which requires that Building with Nature Standards should be applied to all development.

The GI Strategy includes a Delivery Plan, which outlines delivery principles, potential funding streams and the approach to GI management, maintenance and stewardship. It also provides a framework for developing a prioritised Action Plan, which will enable local partners to deliver GI in line with the Strategy's objectives and priorities.

1.0 INTRODUCTION

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1.1 Purpose of the Strategy

1.1.1 Planning Policy Wales Edition 12 (2024) defines Green Infrastructure (GI) as 'the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places.'

1.1.2 The range of social, environmental, and economic benefits provided by GI are now widely accepted within national policy, and planning for GI is increasingly recognised as a part of the solution to countering social, economic, and environmental challenges, including mitigating and adapting to climate change. However, to be successful, GI must be considered holistically and strategically both in its management and in relation to new development.

1.1.3 Planning Policy Wales Edition 12 (2024) requires the planning system to provide a framework which facilitates the implementation of Green Infrastructure Strategies for urban and rural areas through effective joint working and collaboration across sectors and activities. As part of adopting a strategic and proactive approach to GI, biodiversity and ecosystems resilience, planning authorities are also required to produce Green Infrastructure Assessments to provide up to date inventories and maps of existing GI, ecological assets and networks to inform Green Infrastructure Strategies to support preparation of development plans, drawing from the evidence base provided by Area Statements and well-being assessments as appropriate.

1.1.4 In this context, the Green Infrastructure Strategy is intended to provide a strategic framework for the planning, design and management of GI across the Vale of Glamorgan (the Vale), and to increase understanding of what GI is in the context of the Vale, by:

- Understanding the current provision of GI assets across the Vale, in particular Council-owned assets, and identifying needs and opportunities for enhancement, connection or expansion
- Ensuring that GI delivery supports the Vale of Glamorgan Well-being Plan 2023-28, Climate Change Challenge Plan 2021-2030 and the 2019 Biodiversity Forward Plan

- Helping to embed GI into the emerging Replacement Local Development Plan (RLDP) to support growth and sustainable development in the Vale
- Protecting, enhancing and increasing the provision of GI across the Vale through good design standards, governance and asset management/community stewardship
- Supporting funding applications for GI projects and corporate decision making on investments

1.1.5 Located within South Central Wales, the Vale of Glamorgan (Bro Morgannwg) lies on the south coast of Wales adjacent to the Severn Estuary (see **Map 1.1**).

1.2 Structure of the Strategy

1.2.1 The GI Strategy is structured as follows:

- **Section 2.0** – sets out the Green Infrastructure Approach
- **Section 3.0** – sets out the Green Infrastructure Assessment[1] of the Vale
- **Section 4.0** – sets out the Green Infrastructure Strategy for the Vale
- **Section 5.0** – sets out the Green Infrastructure Delivery Plan for the Vale

1.2.2 The GI Approach is supported by a review of the GI Policy Context (**Appendix 1**). The GI Assessment is supported by the following appendices:

- GI Typology Audit (**Appendix 2**)
- GI Functionality/Ecosystem Services Assessment by GI Zone (**Appendix 3**)

1.2.3 Signposts to where relevant information can be found in relation to the requirements for GI Assessments set out in Section 6.2 of Planning Policy Wales Edition 12 (2024) are outlined in **Table 1.1**.

[1] In line with the requirements set out in Section 6.2 (Green Infrastructure) of Planning Policy Wales (2024) and developed in accordance with the principles of the NRW Green Infrastructure Assessment Guidance Note 42 (2023).

KEY

- Vale of Glamorgan
- Local Authority Boundary
- Main Rivers and Waterbodies
- Built-up Areas[1]
- Railways
- Main Roads

[1] Labelled settlements within the Vale include Key Settlements, Service Centre Settlements and Primary Settlements as identified in the LDP

Table 1.1 – Requirements for GI Assessments

Planning Policy Wales Edition 12 (2024) Green Infrastructure Assessment Requirements	GI Strategy Section
Identify landscape, biodiversity, geodiversity, historic and cultural features which need to be safeguarded as part of multi-functioning urban and rural landscapes (para 6.2.7)	Section 3.0/ Appendix 2/ Maps 3.1-3.7
Identify how a net benefit for biodiversity will be secured and the attributes of ecosystem resilience will be enhanced, making the links to other land management activity and maintenance regimes (para 6.2.7)	Section 3.0/ Appendix 3 Section 4.2
Facilitate the reduction of pollution by identifying nature based solutions which form part of, or complements, wider activity at a catchment scale to address pollution and improve the restoration of riverine and other habitats (para 6.2.7)	Section 3.0/ Appendix 3 Section 4.2
Address the climate emergency by ensuring tree canopy cover in urban areas is increased, incorporating measures for maintaining good air quality and appropriate soundscapes and by requiring effective natural flood management and sustainable urban drainage schemes (para 6.2.7)	Section 3.0/ Appendix 3 Section 4.2
Ensure communities have accessible natural green spaces of various sizes and scales within reasonable walking and cycling distances (para 6.2.7)	Section 3.0/ Appendix 3/ Section 4.2
Identify how the provision of green infrastructure could form an integral part of strategies for growth and provide broad parameters for securing its implementation which recognises the dynamic nature of its provision and identifies measures which will need to be provided to safeguard it over the long term (para 6.2.7)	Section 3.0/ Appendix 3 Section 4.2 Section 4.3 Section 5.0 Map 4.1
The need for ecosystems, habitats and species to adapt to climate change and other pressures should be considered as part of the Green Infrastructure Assessment. (para 6.2.8)	Section 3.0/ Appendix 3/ Section 4.2 Maps 3.3/3.4

1.2.4 The GI Strategy is supported by an integrated GIS map-based evidence resource held by the Council, which provides a tool for informing land use planning and land management decision-making.

1.2.5 The GI Strategy will be kept under review by the Council and updated in the light of changing circumstances as necessary.

1.2.6 The GI Strategy was prepared by CBA in collaboration with internal stakeholders at the Vale of Glamorgan Council, taking into account feedback from a workshop held in December 2022 (See **Appendix 4**)

2.0 THE GREEN INFRASTRUCTURE APPROACH

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2.1 General

2.1.1 The hierarchy of current local and national policy that provide the context and drivers for GI planning and delivery in the Vale of Glamorgan is highlighted below (see **Appendix 1** for further details). Drawing on national, regional and local priorities for action, the following themes for the GI Strategy have been identified:

- Health & Well-being
- Biodiversity & Ecosystem Resilience
- Climate Change and Sustainability
- Social Cohesion
- Economy
- Sense of Place

2.2 Local Policies

Vale of Glamorgan Local Development Plan

2.2.1 The strategic objectives (**Box 2.1**) and strategic policies (**Box 2.2**) of relevance to GI included in the adopted Vale of Glamorgan Local Development Plan 2011-2026.

Box 2.1 Relevant Vale of Glamorgan Local Development Plan strategic objectives

- **Objective 2** – seeks to ensure that development within the Vale of Glamorgan makes a positive contribution towards reducing the impact of and mitigating the adverse effects of climate change.
- **Objective 4** – seeks to protect and where appropriate enhance the Vale of Glamorgan's historic, built, and natural environment as an important resource for residents and visitors.

Box 2.2 Relevant Vale of Glamorgan Local Development Plan Policies

- **Policy SP1 Delivering the Strategy** - states the strategy will seek to improve the living and working environment, promote enjoyment of the countryside and coast and manage important environmental assets.
- **Policy SP10 Built and Natural Environment** - seeks to preserve and where appropriate enhance the rich and diverse built and natural environment of the Vale of Glamorgan. The supporting text identifies that new development will be required

to minimise its impact on natural systems, landscapes, species and habitats and where appropriate provide opportunities for the creation of new or the enhancement of existing habitats.

- **Policy MD2 Design of Development** - sets out the key design principles for all new developments within the Vale of Glamorgan, and emphasises that new development should contribute positively to creating high quality, healthy, sustainable and locally distinct places.
- **Policy MD9 Promoting Biodiversity** - requires all new developments to conserve and where appropriate, enhance biodiversity interests and only allows the loss of biodiversity where it is fully justified and where any losses are offset to ensure no net loss in biodiversity.
- **Policy MG19 Sites and Species of European Importance** – seeks to protect Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites, and protected species - states that development proposals likely to have a significant effect on a European site or protected species (alone or in combination) will only be permitted under very specific/limited circumstances; and in the event they are allowed to progress will require appropriate compensation measures
- **Policy MG20 Nationally Protected Sites and Species** – seeks to protect Sites of Special Scientific Interest or protected species - states that development proposals likely to have a significant effect on a SSSI or protected species (directly or indirectly) will only be permitted under very specific/limited circumstances; and in the event they are allowed to progress will require appropriate avoidance/mitigation/compensation measures
- **Policy MG21 – Sites of Importance for Nature Conservation, Regionally Important Geological and Geomorphological Sites and Priority Habitats and Species** – seeks to protect these sites and species - states that development proposals likely to have an adverse impact will only be permitted under specific/limited circumstances; and in the event they are allowed to progress will require appropriate mitigation/compensation measures

Vale of Glamorgan Replacement Local Development Plan 2021-2036 (in preparation)

2.2.2 The RLDP is currently being prepared and is scheduled for adoption in 2026. The GI Strategy will form a key component of its evidence base. In particular, the GI Assessment (**Section 3**) of the Strategy will be used to inform decision making in both developing the RLDP and on future planning applications.

2.2.3 The RLDPs Preferred Strategy was consulted on between December 2023 and February 2024. In comparison to the adopted LDP the RLDP, as set out in the Preferred Strategy, seeks to create a significantly improved policy context in respect of GI. This is particularly driven by changes to national planning policy that have been implemented since the

adoption of the LDP. **Boxes 2.3** and **2.4** set out the Objectives and Strategic Policies of the RLDP of relevance to GI (as set out in the Preferred Strategy).

Box 2.3 Objectives of the RLDP of relevance to GI

- **1 – Mitigating and adapting to climate change**
- **2 – Improving Mental and Physical Health and Well-being**
- **4 – Placemaking**
- **5 – Protecting and Enhancing the Natural Environment**

Box 2.4 Relevant Vale of Glamorgan Replacement Local Development Plan Strategic Policies

- **Policy SP5 Placemaking** – requires development proposals to demonstrate a series of Placemaking Principles (including strategically integrating GI networks and open space) which will add social, economic, environmental, and cultural value, resulting in enhanced local benefits
- **Policy SP6 Creating Health and Inclusive Places and Spaces** - requires development proposals to seek to create healthy and inclusive places that improve health inequities and social cohesion
- **Policy SP15 Climate Change Mitigation and Adaptation** - requires development proposals to respond to the challenges of climate change by both mitigating its causes and adapting to its impacts, including maximising the opportunities for carbon sequestration, promoting urban shading and cooling, use of sustainable drainage systems and nature-based solutions, all of which can be supported by GI
- **Policy SP18 Green Infrastructure** - requires development proposals to incorporate measures that protect and enhance high quality GI provision and maximise its functionality
- **Policy SP19 Biodiversity and Ecosystem Resilience** – requires that biodiversity in the Vale of Glamorgan will be protected, maintained and enhanced. Also requires development to provide a net benefit for biodiversity and improve the resilience and connectivity of ecosystems

Vale of Glamorgan Well-being Plan 2023-2028

2.2.4 The Vale of Glamorgan Public Service Board Well-being Plan (2023) sets out three Well-being Objectives and the priority areas that the PSB will be focusing on over the coming years to deliver the national well-being goals. The objectives are:

- **A more resilient and greener Vale** - by understanding and making the changes necessary as individuals, communities and organisations in response to the climate and nature emergencies.
- **A more active and healthier Vale** – by encouraging and enabling people of all ages to be more active and to promote the benefits of embracing a healthier lifestyle.

- **A more equitable and connected Vale** - by tackling the inequities that exist across the Vale, engaging with our communities and providing better opportunities and support to make a lasting difference.

Vale of Glamorgan Climate Change Challenge Plan 2021-2030

2.2.5 The Plan, also known as 'Project Zero' is the Council's Plan to help fight climate change, cut the Council's carbon emission to net zero by 2030, and encourage others to make positive changes. To tackle climate change and protect the environment it encourages the Council to: 'be a leader, encourage and support others to do things differently, and change how we work.'

2.2.6 Some of its suggested actions which good quality GI can contribute to include: looking after the environment and the animals and plants that live and grow in it; encouraging others to think about the way they travel e.g. walking, cycling, buses, trains, electric vehicles; and helping people to see how food affects our environment and reduce food waste.

2.2.7 The challenge to 'Protect and enhance green and blue space, biodiversity and, ecosystem resilience and improve understanding of the importance of our natural environment' suggests that the Council should develop and implement a GI Strategy, amongst other actions to support the natural environment, such as implementing the Biodiversity Forward Plan, and promoting tree planting.

2.2.8 The Plan also supports and advocates for more sustainable local food systems, reducing food miles by encouraging local/community food growing projects (which can be supported by the GI Strategy) and promotes reduction of food waste, as well as raising awareness about the impact of food choices on the environment.

2.2.9 To support the Plan, the Council submits carbon data annually to the Welsh Government as part of its Net Zero Carbon reporting. This includes data on land use (including settlements, cropland, wetland, grasslands, other land and forest land). Except for settlements, other land use types all deliver a carbon offsetting effect against wider emissions[2].

[2] Welsh Public Sector Net Zero Carbon Reporting Guide Version 3, 2023

Vale of Glamorgan Biodiversity Forward Plan (2019)

2.2.10 The Biodiversity Forward Plan examines how the Council manages and improves natural resources to ensure that biodiversity and sustainability are considered in all service areas, and are core themes in service delivery, becoming an integral part of the decision-making processes throughout the Council.

2.2.11 The Plan details the mechanisms by which the aims will be delivered in the Vale of Glamorgan to halt the decline of biodiversity, reduce the effects of climate change and promote sustainable development, and sets 6 objectives supported by actions for protection and enhancement of biodiversity within the Vale of Glamorgan. The Plan's objectives are:

- Objective 1: Engage and support participation and understanding to embed biodiversity throughout decision making at all levels.
- Objective 2: Safeguard species and habitats of principle importance and improve their management.
- Objective 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation.
- Objective 4: Tackle key pressures on species and habitats.
- Objective 5: Improve our evidence, understanding and monitoring.
- Objective 6: Put in place a framework of governance and support for delivery.

Vale of Glamorgan Council Corporate Plan (2025-2030)

2.2.12 The Corporate Plan outlines the Vale of Glamorgan Council's priorities for 2025-2030, and how they will be achieved. The plan presents five well-being objectives that collectively contribute towards the seven national well-being goals. The objectives are:

1. Creating great places to live, work and visit
2. Respecting and celebrating the environment
3. Giving everyone a good start in life
4. Supporting and protecting those who need us
5. Being the best Council we can be

2.2.13 The Plan details how the Council will deliver its vision for the Vale of Glamorgan of 'Strong Communities with a bright future'.

2.2.14 Further details about the local policy context for GI can be found in **Appendix 1**.

2.3 National Legislative and Policy Context

2.3.1 A GI approach to land-use planning, design and management can deliver a wide range of planning policy outcomes (e.g. in relation to climate change, biodiversity, sustainable development, economic growth or health and well-being). It is well established through the Welsh spatial planning system, and provides a means to bring together and deliver policy and advice in a holistic way. National legislation and policies that provide the framework for local GI planning are highlighted in **Box 2.5**. Further details can be found in **Appendix 1**.

Box 2.5 National Legislation, Policies and Guidance

- **Well-being of Future Generations (Wales) Act 2015** - Overarching vision to create a Wales that we all want to live in now and in the future. Aims to improve social, economic, environmental and cultural well-being in Wales to target challenges, such as climate change and poverty.
- **Environment (Wales) Act 2016** - Provides a legal framework to manage Wales' natural resources in a more proactive and sustainable manner, contributing to the achievement of the well-being goals set out in the Well-being of Future Generations Act. Provides a context for the delivery of multi-functional GI.
- **Planning (Wales) Act 2015** - Provides a modern legislative framework for the operation of the Welsh planning system - supports the delivery of national, local and community aspirations by creating sustainable places where citizens have improved access to quality homes, jobs and built and natural environments and supports the use of the Welsh language
- **Active Travel (Wales) Act 2013 -** makes walking and cycling the preferred option for shorter journeys, particularly everyday journeys, such as to and from a workplace or education establishment, or to access health, leisure or other services or facilities.
- **Natural Resources Policy (2017**) - Sets out three national priority areas to tackle the challenges to Wales' natural resources and ecosystems, and realise the opportunities they provide across the well-being goals. This provides the context for the **NRW State of Natural Resources Report for Wales 2020** and the **NRW South Central Wales Area Statement (2020).**
- **Future Wales: the National Plan 2040 (2021)** – Provides the national framework that sets the direction for development in Wales to 2040. Policy 9 (Resilient Ecological Networks & Green Infrastructure) includes requirements for GI Assessments.
- **Planning Policy Wales Edition 12 (2024)** - Sets out the land use planning policies of the Welsh Government. The core objective is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales.
- **NRW Green Infrastructure Assessment Guidance Note 42 (2023)** – Provides a guide to key Natural Resources Wales' datasets and how to use them as part of a Green Infrastructure Assessment

- **Technical Advice Note 5: Nature Conservation & Planning (2009)** - Provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.
- **Technical Advice Note 16: Sport, Recreation and Open Space (2009)** - advises on the role of the planning system in making provision for sport and recreational facilities and informal open spaces, as well as protecting existing facilities and open spaces in urban and rural areas in Wales. Sets out a typology of open space.
- **Countryside and Rights of Way Act 2000** - introduced new provisions to modernise Public Rights of Way management and create a new Statutory Right on Foot to certain types of open land, which expanded public access opportunities to GI at the landscape scale.
- **NRW Area Statements** – The seven Area Statements for Wales are a collaborative response to the Natural Resources Policy (2017), outlining the key challenges facing the different areas, what can be done to meet those challenges, and how natural resources can be managed for the benefit of future generations. The **South Central Wales Area Statement** was published in 2020, and covers the Vale of Glamorgan.

2.4 What is Green Infrastructure?

2.4.1 Planning Policy Wales Edition 12 (2024) defines GI as follows:

'*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.'*

2.4.2 PPW goes on to note what the component elements of GI, or GI assets can include:

'At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways, peatlands and mountain ranges. At a local scale, it might comprise parks, fields, ponds, natural green spaces, public rights of way, allotments, cemeteries and gardens. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks'

Diagram from NRW Green Infrastructure Assessment Guidance Note 42 (2023

GI Multifunctionality

2.4.3 PPW also notes that GI is multifunctional, with individual assets potentially providing a range of functions and benefits at the same time:

'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 tranquility, 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.'

GI and Ecosystem Services

2.4.4 Underpinning the multiple functions that GI assets perform is the concept of ecosystem services. Ecosystem services are defined as the benefits provided by environment and GI that contribute to making life both possible and worth living (e.g. clean air, water, food and materials) - see **Box 2.6.**

BOX 2.6 Ecosystem Services

- **Supporting services** - essential to the functioning of ecosystems and indirectly responsible for all other services; includes water and nutrient cycling, soil formation and the processes of plant growth.
- **Regulating services** - includes regulating climate, flooding, water and air quality, erosion and pollination.
- **Provisioning services** - includes the supply of goods such as food, timber, fresh water, fuel and pharmaceuticals.
- **Cultural services** - non-material direct benefits of huge importance to the wider social and cultural needs of society; includes recreational space, tourism, spiritual enrichment, inspiration and employment.

2.4.5 The Welsh Government has been actively promoting a new approach to natural resource management, known as the ecosystem approach. The Environment (Wales) Act 2016 (see **Box 2.5** and **Appendix 1**) puts the ecosystem approach into statute through a set of principles, which are based on the 12 principles of the Convention on Biological Diversity[3]. This approach provides a framework for the integrated management of land, water and living resources that promotes conservation and sustainable land use in an equitable way. The adoption and implementation of this more holistic, integrated and sustainable approach to natural resource management is synonymous with a GI approach to land use management.

GI Connectivity

2.4.6 Whilst individual GI assets can serve one or more functions, connectivity between different GI assets can help maximise the benefits that they generate. Well-connected GI assets create infrastructure that is adaptive and resilient to changes in climate. Physical

[3] The Convention on Biological Diversity is an international legal instrument/treaty with three main goals: i) the conservation of biological diversity, ii) the sustainable use of the components of biological diversity, and iii) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. It has been ratified by 196 parties including the United Kingdom, and came into force in 1993.

connections make the most impact, often by creating ecological 'stepping stones' that encourage biodiversity migration and connect places with sustainable walking or cycling routes.

2.4.7 Linked together, GI assets form important multifunctional GI networks. GI assets and connections should be considered at all spatial scales, as illustrated on **Diagram 2.1**.

GI Benefits

2.4.8 A GI approach enables landscapes to deliver social, economic and environmental benefits simultaneously and then looks at how those benefits can be multiplied by being connected to a wider network of spaces. GI benefits are wide-ranging, as illustrated in **Box 2.5**.

BOX 2.5 GI Benefits

Health & Well-being

- Supporting physical well-being by providing quality green spaces for walking, cycling, sports and recreation.
- Providing more opportunities and places for children to play.
- Improving mental well-being by providing access to nature and attractive green spaces and breathing spaces.
- Providing opportunities for growing food locally and healthy eating.

Biodiversity & Ecosystem Resilience

- Protecting and enhancing biodiversity.
- Providing new and connecting existing habitats or natural features, to allow species movement and increase available habitat areas.
- Preventing fragmentation of habitats.
- Allowing diverse habitats to be created which are rich in flora and fauna.
- Protecting aquatic species through appropriate management of waterside habitats.
- Improving soil health and creating habitats through the use of agroecology methods.

Climate Change and Sustainability

- Reducing CO^2 emissions by providing non-vehicular travel routes and encouraging walking and cycling.
- Providing carbon storage and sequestration in vegetation.
- Providing shelter and protection from extreme weather.
- Managing flood risk: living roofs, large trees and soft landscape areas absorb heavy rainfall.
- Providing for storage of surface water in times of peak flow in SuDS/other water features.
- Cleaning and cooling air, water and soil, countering the 'heat island' effect of urban areas.
- Saving energy: living roofs insulate buildings, and large trees provide shade, reducing the need for air conditioning.
- Reducing CO^2 emissions through limiting food miles by locally growing produce.

SETTLEMENT-SCALE GI

LANDSCAPE-SCALE GI

DOORSTEPS

GI CONNECTIONS

- Pavements
- Cycling paths
- Green corridors

GI ASSETS

- Green roofs
- Green walls
- Domestic gardens
- Rainwater collection systems
- Permeable driveways
- Trellises/ pergolas

STREETS

GI CONNECTIONS

- Footpaths
- Cycling routes
- Green corridors
- Blue corridors

GI ASSETS

- Boundary features (hedges)
- Street trees and front garden trees
- Grass verges
- Sustainable drainage systems (e.g. swales)
- Porous paving

NEIGHBOURHOODS

GI CONNECTIONS

- Town & country connections
- Green corridors
- Blue corridors
- Promoted trails
- Rights of Way Network
- Cycling routes

GI ASSETS

- Park or public garden
- Pocket parks and parklets
- Play areas
- Outdoor sports facilities
- Allotments and community gardens
- Amenity greenspaces
- Cemetery, churchyard or burial ground
- Civic spaces/pedestrianised streets
- University and institutional grounds
- Swales, reeds, ponds, watercourses
- Urban woodlands and nature reserves

COUNTRYSIDE & COAST

GI ASSETS

- Country parks and gardens
- Accessible countryside
- Farmland
- Woodlands, hedgerows and trees
- Uplands
- Grasslands
- Wetlands
- Coasts
- River catchments
- Nature reserves and wildlife sites

Source: Adapted from GI Design and Placemaking (Scottish Government, 2011)

Social Cohesion

- Improving community cohesion and social inclusion.
- Creating green spaces for socialising, interaction and events.
- Providing improved physical connections through green networks to get between places; and to communities, services, friends and family and wider green spaces.
- Creating opportunities for community participation and volunteering.
- Providing spaces for education and training.

Economy

- Supporting a reduction in healthcare costs and increased productivity.
- Attracting businesses and inward investors by creating attractive settings.
- Helping attract and retain a quality workforce and generating employment.
- Supporting the local green economy, including using greener farming techniques such as implementing agroecology methods.
- Reducing environmental costs such as those associated with the reduction of flood risk.
- Improving the image of a place and boosting property values.
- Helping developers get the most out of the site by combining uses, e.g. open space & Sustainable Drainage Systems (SuDS), helping development viability.
- Saving energy and money for residents and end users.

Sense of Place

- Improving townscape, landscape quality and visual amenity.
- Preserving heritage and cultural expression.
- Reinforcing local landscape character.
- Making places more interesting and distinctive.

3.0 GREEN INFRASTRUCTURE ASSESSMENT

3.0 GREEN INFRASTRUCTURE ASSESSMENT

3.1 The Need for a Green Infrastructure Assessment

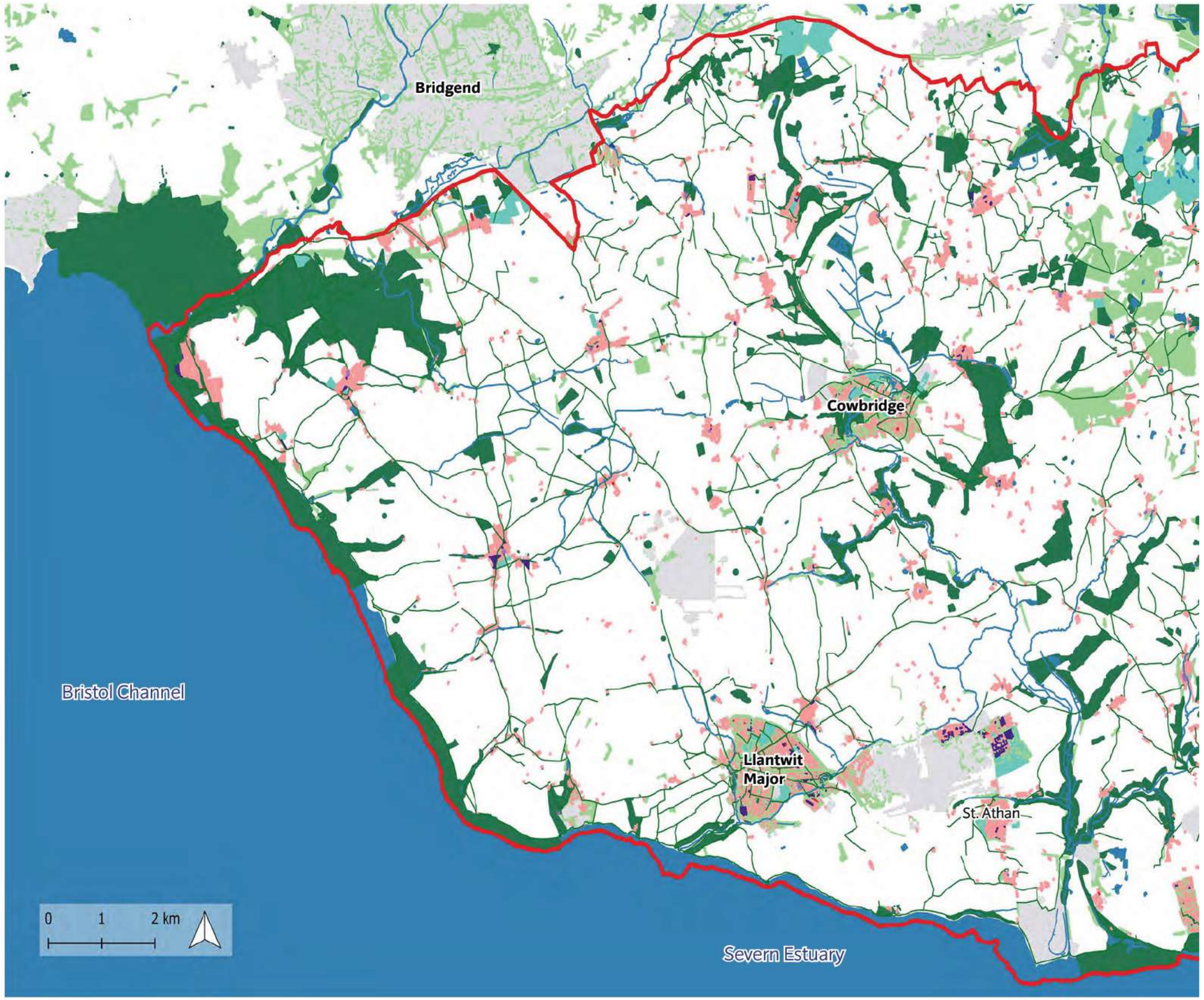
3.1.1 Planning Policy Wales Edition 12 (2024) requires planning authorities to produce Green Infrastructure Assessments to provide up to date inventories and maps of existing GI, ecological assets and networks to inform Green Infrastructure Strategies to support preparation of development plans. Such Green Infrastructure Assessments should use existing datasets, and the best available information, to develop an integrated map-based evidence resource in line with the NRW Green Infrastructure Assessment Guidance Note 42 (2023).

3.2 Vale of Glamorgan's Green Infrastructure Typology

3.2.1 As indicated by the following overview, the Vale contains a wide range of GI assets. They include public and private assets, with and without public access. Grouped together they represent the area's existing GI network. It should be recognised that some 'landscape-scale' assets extend across administrative boundaries, such as the coastline, and rivers such as the Ely. It is therefore of key importance that GI is strategically planned to provide a comprehensive and integrated network at the regional scale.

3.2.2 The typology of GI assets in the Vale are outlined in **Box 3.1** below, and shown on **Maps 3.1a** and **3.1b**. The typology is identified in accordance with the methodology in NRW's Green Infrastructure Assessment Guidance Note 2023[4]. A detailed audit of the Vale's GI assets is set out in **Appendix 2**.

[4] NRW Green Infrastructure Assessment Guidance Note 2023



KEY

Green & Blue Spaces:

- Allotment, Community Garden or Urban Farm
- Amenity Greenspace
- Cemetery, Churchyard or Burial Ground
- Natural and Semi-natural Greenspaces
- Outdoor Sports Facilities
- Provision for Children and Young People
- Park or Public Garden
- Domestic Gardens
- Blue space

Green Connections:

- Cycle Networks
- Public Rights of Way

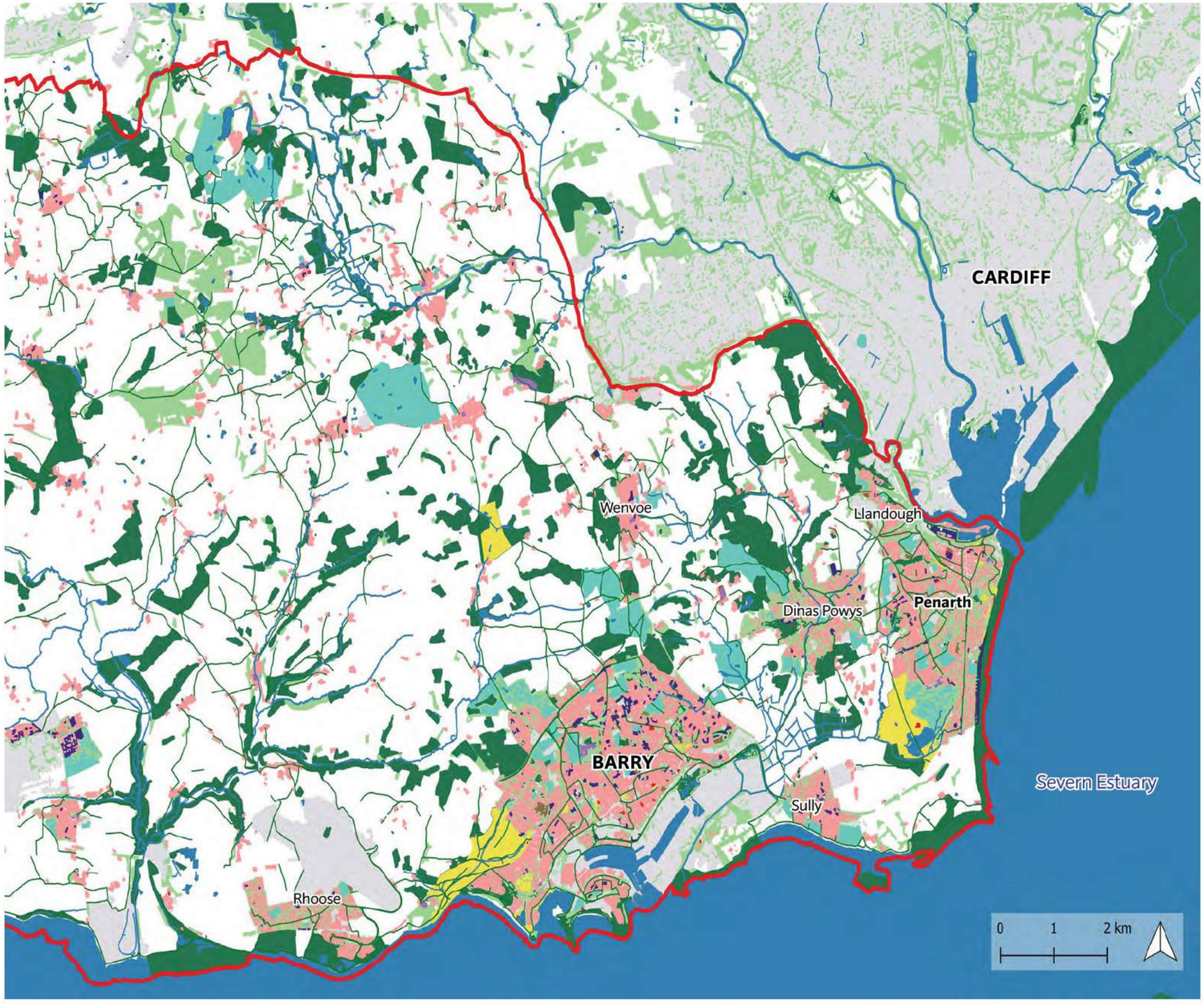
Trees:

- Woodlands & Urban Trees

Productive Landscapes:

- Agricultural Land

- Vale of Glamorgan
- Built-up Areas



KEY

Green & Blue Spaces:

- Allotment, Community Garden or Urban Farm
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Green Connections:

- Cycle Networks
- Public Rights of Way

Trees:

- Woodlands & Urban Trees

Productive Landscapes:

- Agricultural Land

- Vale of Glamorgan
- Built-up Areas

BOX 3.1 Vale of Glamorgan GI Typology

GREEN & BLUE SPACES

Allotment, community garden or urban farm
Food growing space, predominantly in urban areas, with a primary purpose of cultivating fresh local food including fruit and vegetables, and the keeping of hens, rabbits and bees, that provides opportunities for exercise, encouraging healthy lifestyles and attracting pollinators. This can include allotments, where allotment holders/members grow food for their own consumption on land leased either from a local council or private landlord. This can also include shared food growing spaces (community garden or urban farms) with a primary purpose of cultivating fresh local food on a collective basis for communal consumption.

Cemetery, churchyard or burial ground
Cemeteries and other burial grounds (e.g. natural burial sites), churchyards and spaces associated with other places of worship, in urban or rural areas. These have a primary purpose of providing opportunities for quiet contemplation and burial/cremation of the deceased, which may also be spaces of value for wildlife.

Amenity greenspace
Informal green spaces of varied size associated with housing estates, business parks, some highway verges and villages, typically consisting of mown grassed areas with shrub/tree planting and occasional ornamental flower beds, with a primary purpose of providing informal recreational opportunities and/or contributing to the amenity of an area by separating different buildings/land uses for environmental, visual or safety reasons.

Park or public garden
Parks and formal gardens in urban areas or on the urban fringe with the primary purpose of providing opportunities for informal recreation, holding major events and access to nature/heritage. These typically make a significant contribution to the character, environmental quality and recreational resources of settlements by virtue of their location, significant size and high quality, such as country parks. This also includes smaller parks and recreation grounds providing a social and recreational focus for local communities, which can include facilities such as grass playing fields, tennis courts and playgrounds.

Outdoor sports facilities
Outdoor sports facilities (publicly and privately owned) with a primary purpose of providing opportunities for participation in formal outdoor sporting activities – including tennis/netball courts, bowling greens/rinks, grass playing fields/artificial playing pitches, golf courses, athletics tracks, camping sites/caravan parks, school grounds and other institutional playing fields, multi-use games areas, equestrian facilities and other outdoor sports areas. In rural areas, outdoor sports facilities tend to be located within a village recreation ground.

Provision for children and young people's play
Designed spaces, usually associated with housing areas or parks in urban areas, with a primary purpose of providing opportunities for informal outdoor play and social interaction, including play spaces for children (playgrounds with equipped and natural play areas for children up to around 12 years of age) and play spaces for young people (informal

recreation facilities for teenagers between 13 and 17 years of age such as skateboard parks, BMX ramps, multi use games areas and informal ball kick-about areas and shelters).

Natural and semi-natural greenspace
Areas of semi-natural green space in urban and rural areas, which may or may not be accessible, with a primary purpose of wildlife conservation and providing opportunities for environmental education and raising awareness of nature, typically comprising natural habitats such as woodland, scrub, grasslands (e.g. downlands, commons and meadows) wetlands, open and running water, and derelict open land.

Domestic gardens
Private spaces with the primary purpose of providing amenity green space for private residences (including shared communal private gardens for flats), contributing to the amenity value of streetscapes and also providing habitats/corridors for wildlife.

Blue spaces
Blue spaces in both urban and rural areas, with the primary purpose of managing water resources. These can include naturally occurring rivers, streams, lakes, ponds and the sea, and may also include man made assets such as reservoirs.

GREEN CONNECTIONS

Cycle Networks
Routes with the primary purpose of allowing movement by cyclists, which connect green spaces and places throughout urban areas, the wider countryside and along the coast.

Public Rights of Way
Routes with the primary purpose of allowing movement by a range of non-motorised users, which connect green spaces and places throughout urban areas, the wider countryside and along the coast.

TREES

Urban Trees
Street trees, trees in public open spaces and private gardens, woodlands and hedgerow trees in urban areas that contribute to landscape/townscape character and sense of place, provide clean air and regulate stormwater runoff/extreme temperatures, and support wildlife and well-being.

Woodlands
Blocks of deciduous or coniferous trees which form woodland or forest in the countryside providing habitats for wildlife, mitigating and adapting to climate change, providing urban cooling, minimising run-off from fields, and reducing the impact of flooding.

PRODUCTIVE LANDSCAPES

Agricultural land
Arable land or pasture with the primary purpose of providing space for farming, including the growing of crops or the rearing of animals to provide food, wool, and other products. This land can also contribute to the provision of habitats/corridors for wildlife (including hedgerows), and provides the setting for the majority of settlements.

3.2.3 Within the context of the GI typology set out above, a summary of GI assets in the Vale is set out below under the following headings:

- Water assets
- Biodiversity assets
- Landscape and heritage assets
- Accessible greenspace assets

3.2.4 Many elements of the above typology can contribute to more than one of these headings, for example a 'natural and semi-natural greenspace' could be a biodiversity asset, whilst also contributing to heritage (eg. part of the Glamorgan Heritage Coast) and additionally allowing public access, or having public rights of way through the space.

3.2.5 A summary of the socio-economic context in the Vale is also outlined.

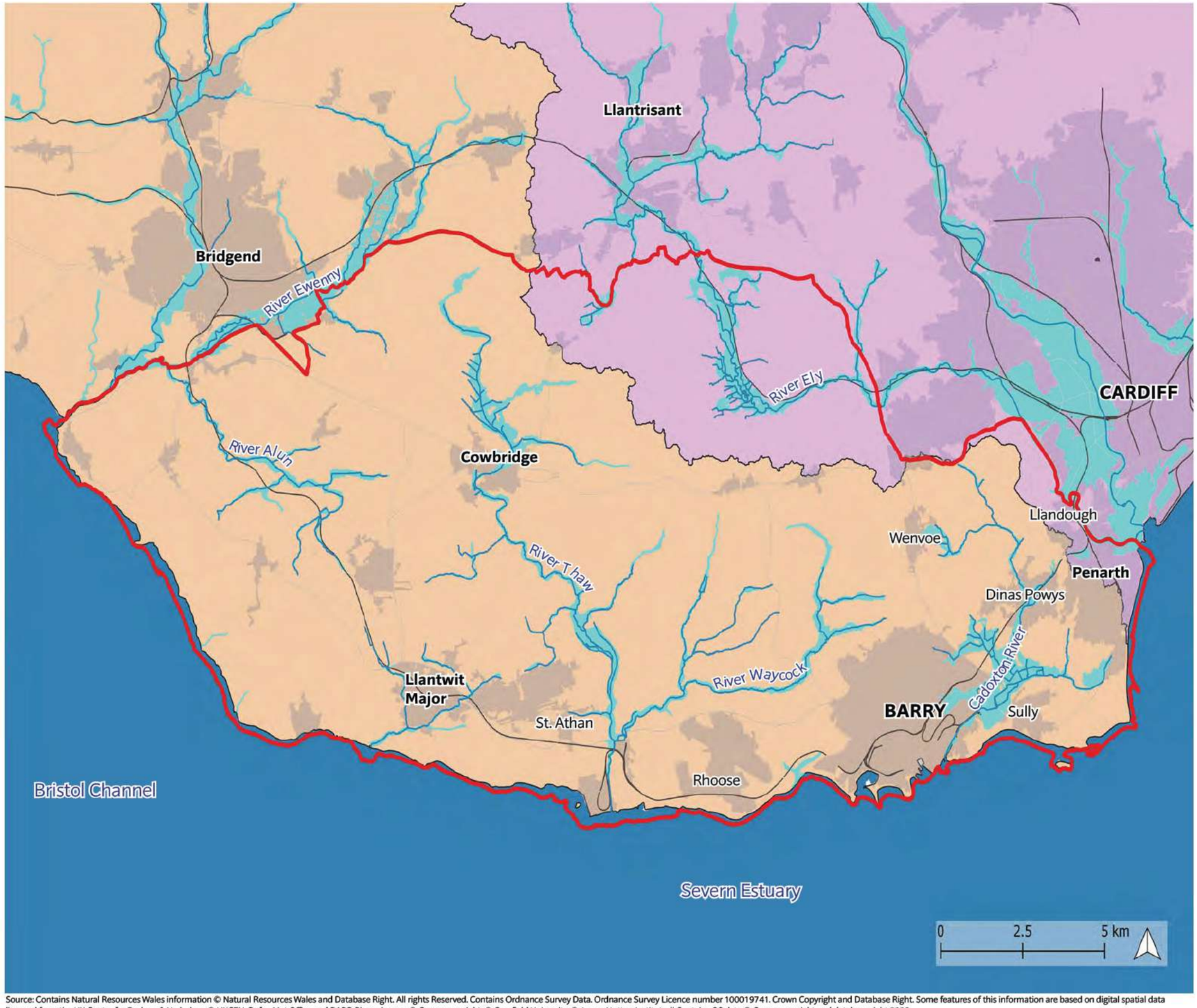
3.2.6 These sections provide an overview of the strategic needs and opportunities for restoring, maintaining, creating and/or connecting GI assets to help strengthen the Vale of Glamorgan's Strategic GI Network for the future. This draws on national and local policy/evidence set out above, NRW's Welsh Information for Nature-based Solutions (WINS) mapping[5], and the detailed GI assessment set out in **Appendices 2** and **3**. The assessment was also informed by the Vale of Glamorgan Council Officers Green Infrastructure Plan Workshop in December 2022 (see **Appendix 4**).

3.3 Water Assets

3.3.1 The Vale is a rolling lowland landscape, mainly comprising limestone plateau incised by watercourses including the rivers Thaw, Ely and Waycock (see **Map 3.2a**). The landscape is bounded in the south by the Severn Estuary and Bristol Channel, which includes four bathing beaches which all pass the EC Bathing Waters classification.

3.3.2 Parts of the Vale are at risk of flooding from rivers (see **Map 3.2a**), surface water (see **Map 3.2b**) or the sea (see **Map 3.2c**), or a combination of these; with a history of recorded flood events caused by multiple sources of flooding[6]. Localised surface water flooding is a particular challenge for urban areas across the Vale. Communities such as Boverton,

[5] https://storymaps.arcgis.com/collections/036c04ccb85948d2abe7312de75ad318?item=1
[6] South East Wales - Strategic Flood Consequence Assessment (Stage 1) Final Report November 2022



KEY

- Main Rivers and Waterbodies
- Flood Risk - Rivers[1]

Management Catchments:

- Tawe to Cadoxton Catchment
- South East Valleys Catchment
- Vale of Glamorgan
- Built-up Areas
- Railways
- Main Roads

[1] Includes high, medium and low flood risk for Rivers:
- 'High' risk means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%)
- 'Medium' risk means that each year, an area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%).
- 'Low' risk means that each year, an area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%).

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VALE OF GLAMORGAN
GREEN INFRASTRUCTURE STRATEGY

MAP 3.2a
WATER: FLOOD RISK FROM RIVERS

December 2023
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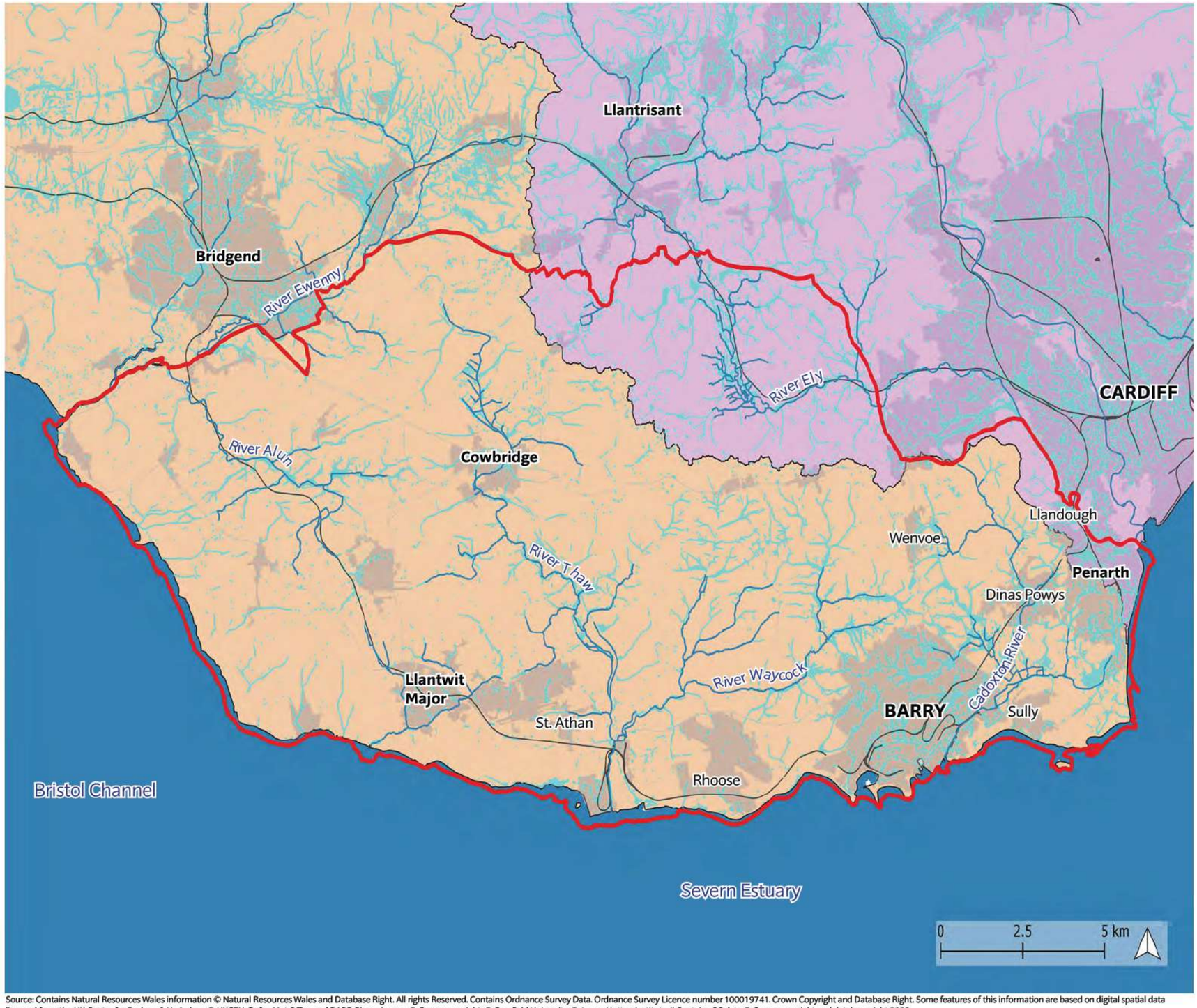

KEY

- Main Rivers and Waterbodies
- Flood Risk - Surface Water & Small Watercourses[1]

Management Catchments:

- Tawe to Cadoxton Catchment
- South East Valleys Catchment
- Vale of Glamorgan
- Built-up Areas
- Railways
- Main Roads

[1] Includes high, medium and low flood risk for Surface Water and Small Watercourses:
- 'High' risk means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%)
- 'Medium' risk means that each year, an area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%).
- 'Low' risk means that each year, an area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%).

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VALE OF GLAMORGAN
GREEN INFRASTRUCTURE STRATEGY

MAP 3.2b
WATER: FLOOD RISK FROM SURFACE WATER AND SMALL WATERCOURSES

December 2023
111431-Maps-F-2023-12.indd

KEY

- Main Rivers and Waterbodies
- Flood Risk - Sea[1]

Management Catchments:

- Tawe to Cadoxton Catchment
- South East Valleys Catchment
- Vale of Glamorgan
- Built-up Areas
- Railways
- Main Roads

[1] Includes high, medium and low flood risk for the Sea:
- 'High' risk means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%)
- 'Medium' risk means that each year, an area has a chance of flooding of between 1 in 200 (0.5%) and 1 in 30 (3.3%).
- 'Low' risk means that each year, an area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 200 (0.5%)

Llantwit Major, Llanmaes and the Coldbrook Catchment in Barry have experienced severe impacts and consequences of flooding (in the 1990s to the mid-2010s)[7], though the Coldbrook catchment now benefits from a flood alleviation scheme[8].

3.3.3 In December 2020, localised river flooding affected numerous locations across South Central Wales, including the Vale, after 50 to 70mm of rainfall fell on an already saturated catchment, with particularly heavy rainfall over lower-lying catchments along the coastline. The worst affected location was Dinas Powys, where a number of properties experienced flooding from the rivers Cadoxton and East Brook.[9] Surface water flooding was also an issue, causing flooding in Sully, affecting 18 properties internally and 26 externally.[10]

3.3.4 The Severn Estuary is also a potential source of tidal flooding in the Vale. Tidal flooding is most likely to occur during storm surge conditions. In areas protected from flooding by sea defences, tidal flooding can occur as a result of a breach in the defences, failure of a mechanical barrier or overtopping of defences. West Aberthaw, Barry and south of the Cadoxton area (Barry) are the main areas at risk of flooding from the sea.[11]

3.3.5 There is a need to manage the water environment appropriately, to ensure biodiversity, flood management, water and soil quality are maintained and enhanced, and to ensure that new development is designed appropriately for the changing climate. The strategic GI needs and opportunities in relation to water and sustainability in the Vale are:

- Seek opportunities to help manage flood risk and partly offset the increased risk of flooding resulting from climate change in some parts of the Vale (eg. communities such as Boverton, Llantwit Major, and Llanmaes have experienced severe impacts and consequences of flooding, whilst Dinas Powys, Llantwit Major and Cowbridge have been identified as at significant future risk from fluvial flooding).
- Increase canopy cover in the Vale through new tree planting (in line with the forthcoming Vale of Glamorgan Tree Strategy 2024-2039) and by ensuring that young

[7] Local Flood Risk Management Strategy (2013) Vale of Glamorgan.
[8] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Coldbrook/Coldbrook-Flood-Alleviation-Works.aspx
[9] NRW Flood Risk Management Plan for Wales: South Central Wales. Draft. 2023
[10] Vale of Glamorgan. Section 19 Flood Investigation. https://www.valeofglamorgan.gov.uk/Documents/Living/Flooding/Section-19/Sully-Section-19-Report-23-12-2020.pdf
[11] South East Wales - Strategic Flood Consequence Assessment (Stage 1) Final Report. November 2022

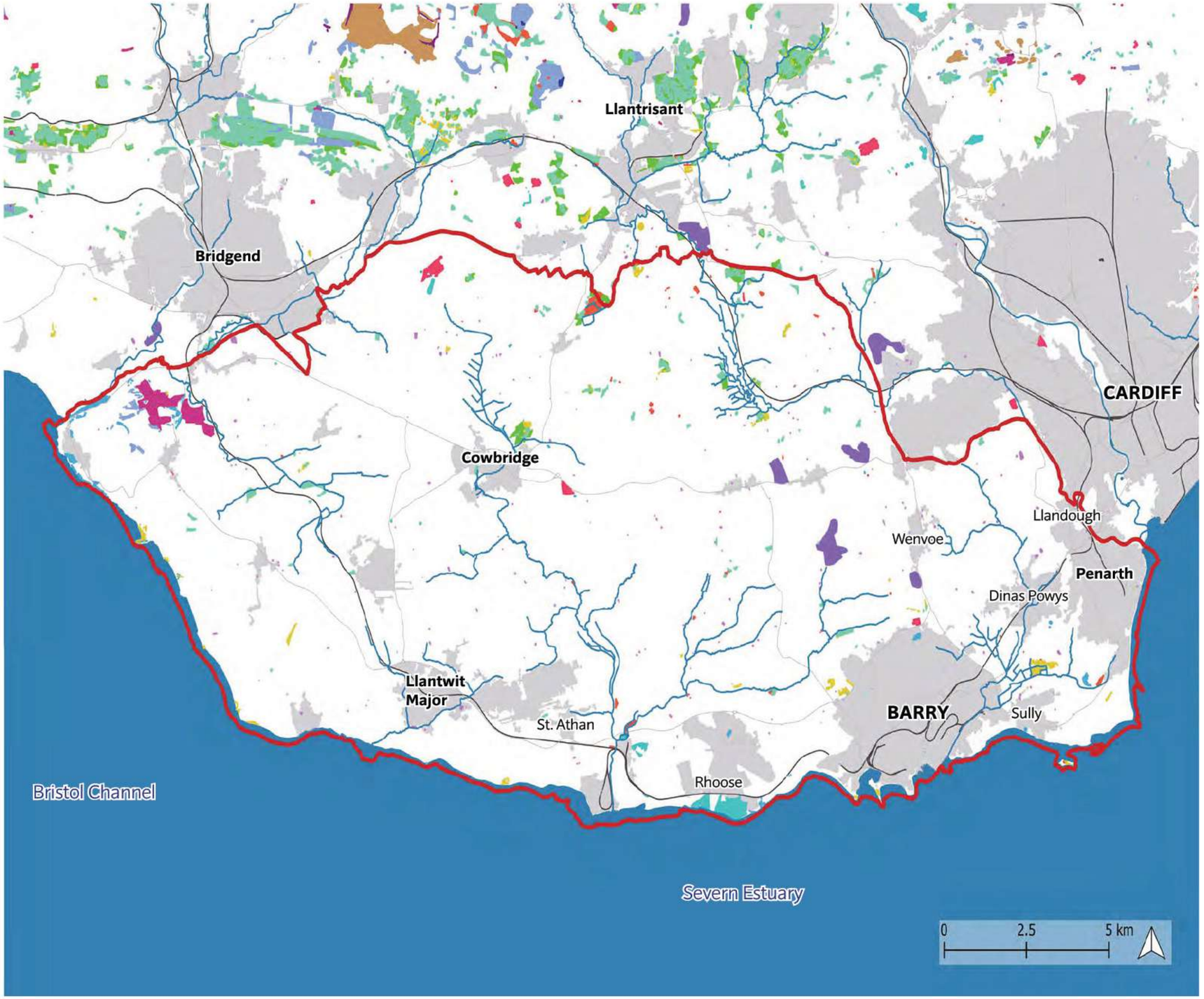
trees can reach maturity. Trees can assist in mitigating surface water run-off from heavy rainfall events.

- Reduce localised flooding incidents through the use of green engineering solutions such as SuDS, including green roofs and walls where appropriate.
- Need to produce Sustainable Drainage Guidance as recommended by the Council's Climate Change Challenge Plan 2021-2030, potentially in the form of Supplementary Planning Guidance.
- Work with partners to improve the status of most river waterbodies and river waterbody catchments in the Vale, which are failing to achieve overall good status under the Water Framework Directive (for example, the overall status of the River Ely and the Ely River Catchment is poor). This is due to pressures from sewage treatment works, organic pollution and combined sewer overflows or misconnections.
- Explore opportunities for diversifying GI provision on Council-owned buildings and estate, such as incorporating green roofs and walls.
- Explore the role of nature-based solutions to improve water management across the Vale including with key stakeholders like NRW, Dwr Cymru Welsh Water and neighbouring local authorities in seeking to manage the impact of surface water on water quality and flood risk. This would include water management on surfaces such as car parks and the wider Council owned highway network.
- Explore opportunities for Council-owned assets to contribute to ecosystem services such as flood reduction, through measures such as reducing prevalence of non-permeable surfaces.

3.4 Biodiversity Assets

3.4.1 The Vale supports rich biodiversity and a wide range of habitats. Broad habitat types include grassland & farmland, woodland, scrub & bracken, coast, freshwater and marine (**Map 3.3)**. More than half of the Vale's boundary is coastline.

3.4.2 Numerous sites across the Vale are protected for their biodiversity value (see **Map 3.4**) with 2 Special Areas of Conservation (SACs), 1 Special Protection Area (SPAs), 27 Sites of Special Scientific Interest (SSSIs), 3 Local Nature Reserves (LNRs), and 361 Sites of Importance for Nature Conservation (SINCs).

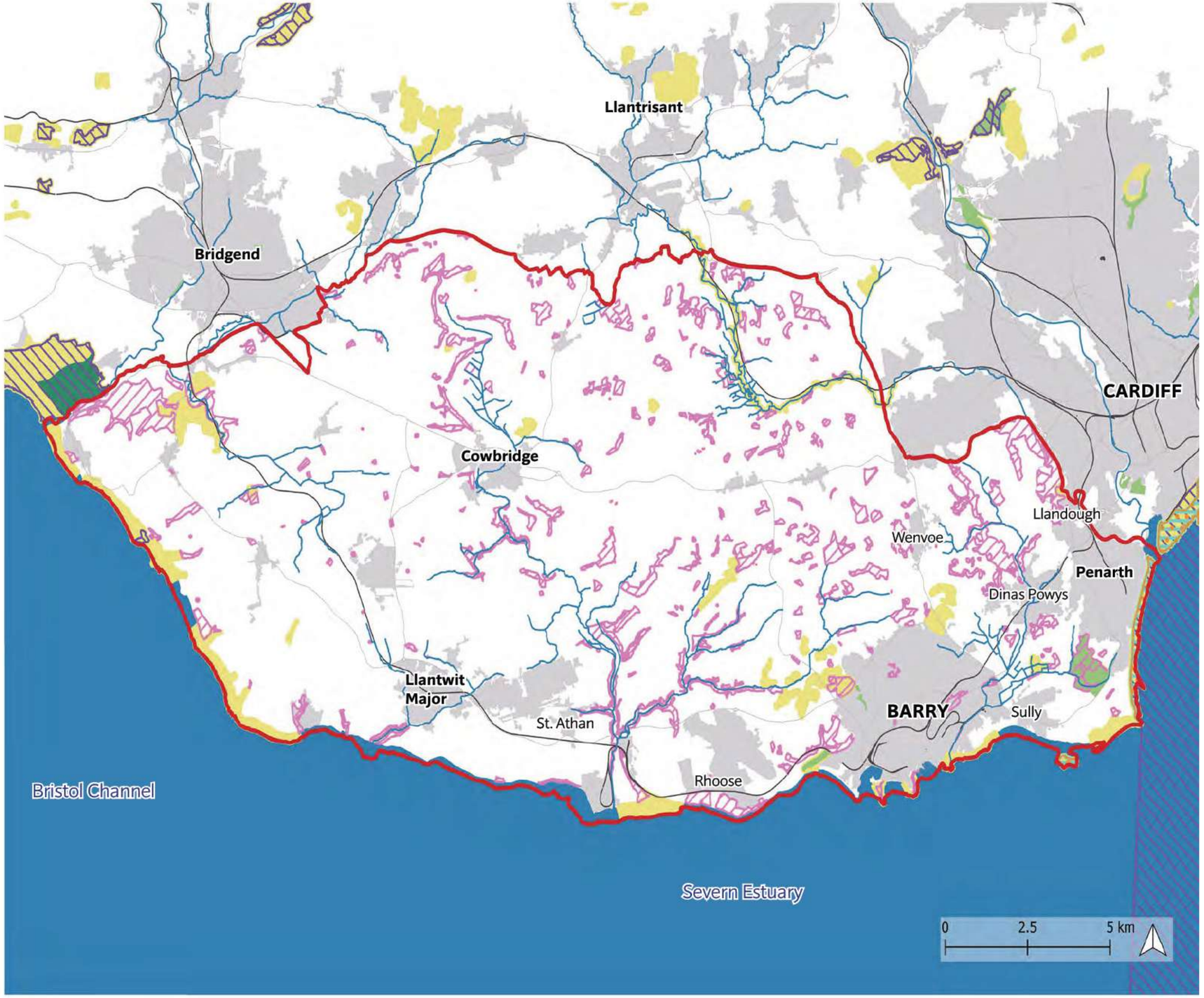


KEY

Priority Habitat:

- Blanket Bog
- Lowland Calcareous Grassland
- Lowland Dry Acid Grasland
- Lowland Fens and Reedbeds
- Lowland Heathland
- Lowland Meadows
- Marsh Fritillary Habitat
- Open Mosaic Habitat on Previously Developed Land
- Parkland
- Purple Moor Grass and Rush Pastures
- Raised Bog
- Traditional Orchards
- Upland Calcareous Grassland
- Upland Flushes, Fens and Swamps
- Upland Heathland
- Wood Pasture

- Vale of Glamorgan
- Main Rivers and Waterbodies
- Built-up Areas
- Railways
- Main Roads



KEY

Biodiversity Designations:

- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- RAMSAR
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)
- Local Nature Reserve (LNR)
- Site of Importance for Nature Conservation (SINC)[1]

- Vale of Glamorgan
- Main Rivers and Waterbodies
- Built-up Areas
- Railways
- Main Roads

1 Vale of Glamorgan area only

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VALE OF GLAMORGAN
GREEN INFRASTRUCTURE STRATEGY

MAP 3.4
BIODIVERSITY: DESIGNATIONS

December 2023
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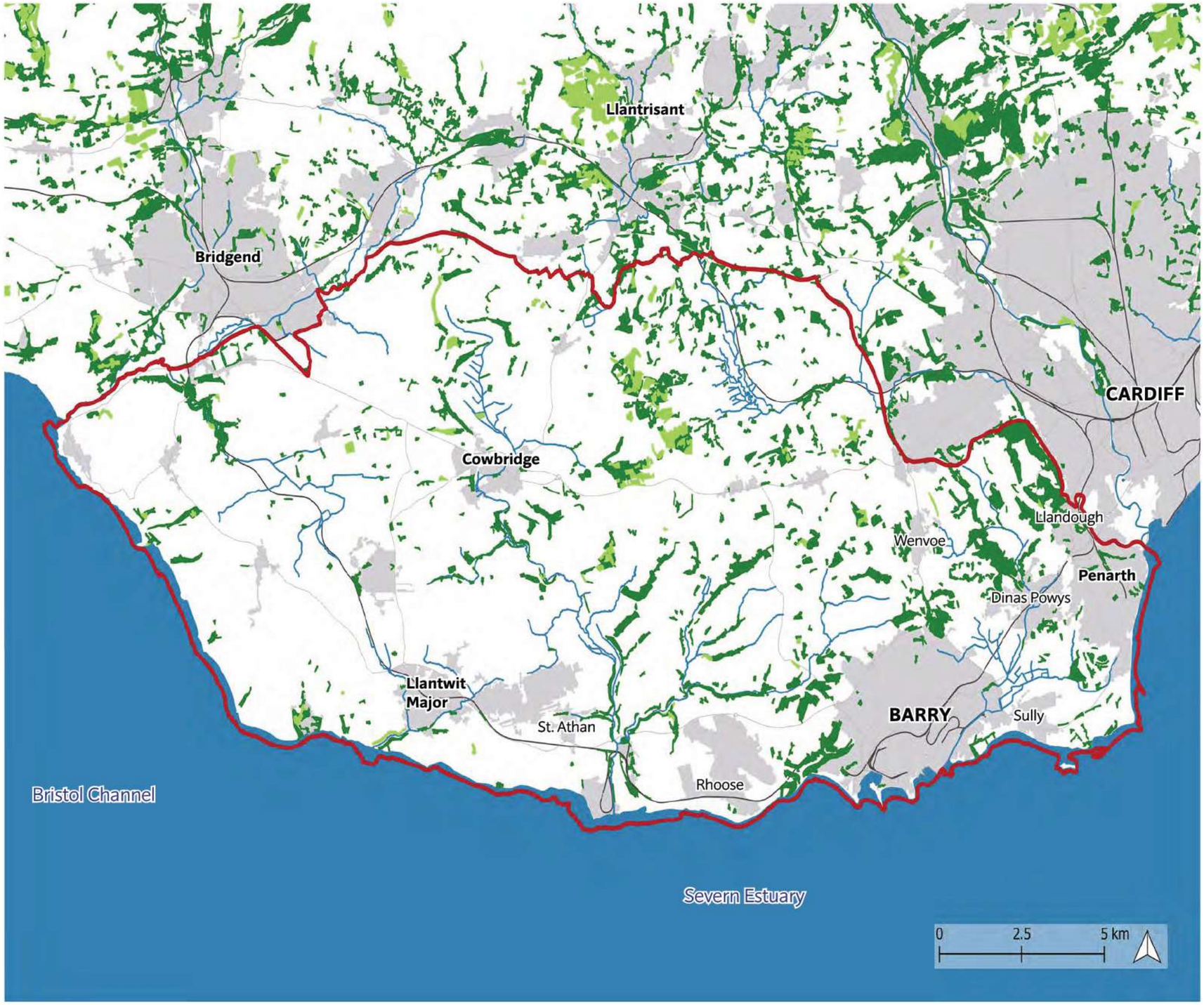
3.4.3 Woodlands in the Vale (**Map 3.5**) provide habitats for a range of priority species, with a series of 14 woodlands around Barry designated as a single SSSI. Woodlands cover 8.2% of the county, which is below the Welsh average of 14%[12].

3.4.4 The Vale is generally well provided for in terms of natural greenspace and habitats. However, there is a need to reverse the fragmentation and degradation of natural and semi-natural habitats, in order to reduce biodiversity loss, provide ecosystem resilience to adapt to and mitigate climate change, and to provide greater access to nature within the Strategic GI Network.

3.4.5 Strategic GI needs and opportunities in relation to enhancing biodiversity and increasing ecosystem resilience in the Vale are:

- Minimise the impact of new development on species and habitats, and where appropriate, provide opportunities for the creation of new habitats. This can include mitigation such as hedgerows and native species in planting schemes.
- Ensure new development contributes to ecosystem resilience where appropriate, which can be achieved by incorporating GI strategies in the design of new development.
- Increase canopy cover in the Vale through new tree planting (in line with the forthcoming Vale of Glamorgan Tree Strategy 2024-2039), natural regeneration and and by ensuring that young trees can reach maturity. This is particularly true in the Vale's urban areas, where canopy cover is estimated to be 13%, which is well below the recommended 20% target for towns and cities/15% target for coastal urban areas[13].
- Manage woodlands appropriately, with particular regard to the threat from non-native invasive species and disease (eg. ash dieback).
- Engage with the local farming community, landowners and Council tenant farmers/grazers to increase ecological connectivity, for example through woodland planting, hedgerows, orchards, agroforestry, agroecological and regenerative practices (Possible opportunities include connecting several significant woodland patches in and around Barry, which demonstrate potential for high ecological connectivity within close proximity to people, and around Llantwit Major and St Athan where woodland is fragmented[14]).

[12] Our Vale – Our Future. Vale of Glamorgan PSB Well-being plan 2018-2023.
[13] i-Tree Eco Vale of Glamorgan - Guiding future tree planting, Forest Research, 2022
[14] i-Tree Eco Vale of Glamorgan - Guiding future tree planting, Forest Research, 2022



KEY

- Broadleaved / Mixed mainly broadleaved
- Conifer / Mixed mainly conifer
- Vale of Glamorgan
- Main Rivers and Waterbodies
- Built-up Areas
- Railways
- Main Roads

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VALE OF GLAMORGAN
GREEN INFRASTRUCTURE STRATEGY

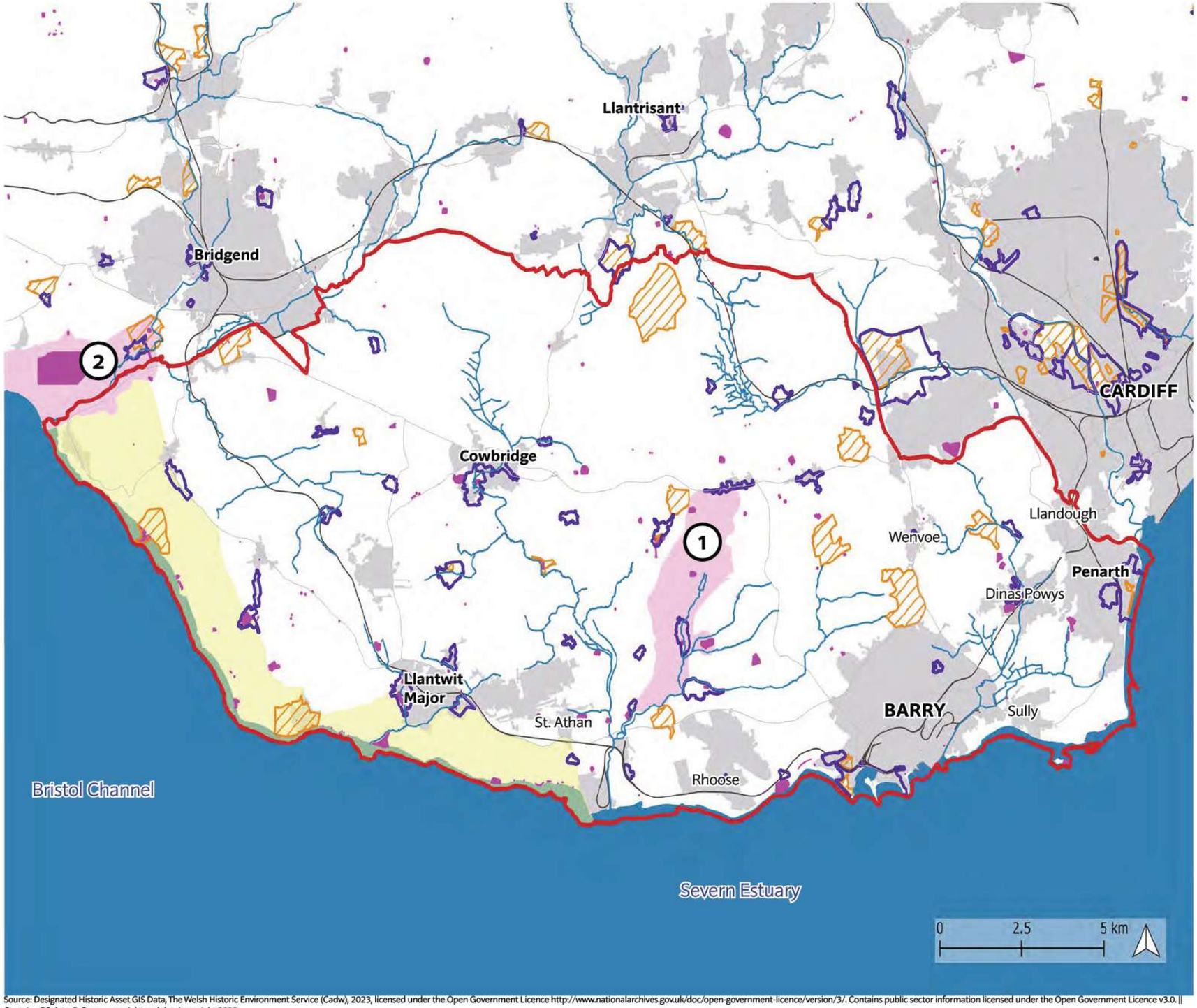
MAP 3.5
WOODLANDS

- Engage with local farming communities and other landowners to facilitate understanding of available funding options (Welsh government rural grants and payments) to support biodiversity net benefits on rural land.
- Review how open spaces are managed to maximise the contribution to ecosystem resilience and to enhance biodiversity, for example managing for pollinators by changing grass cutting regimes.
- Improving management of Council-owned land including road verges, parks, and open spaces and exploring opportunities to reduce pesticide use across the Vale.
- Increase both the area and improve the quality of wildflower meadows at the Glamorgan Heritage Coast, Cosmeston and Porthkerry. This includes a need to control invasive non-native species.
- Wildlife enhancement through the use of Sustainable Drainage Systems - all new developments could incorporate biodiversity conservation and enhancement features through use of attenuation basins etc. In addition, there is a need to promote the use of natural flood management methods to support biodiversity.
- Understand how potential rises in sea levels as a result of climate change may pose a threat to coastal habitats[15].
- Work with farmers and land managers to reduce nutrient runoff from farms and farmland – manure from livestock or poorly stored slurry can wash into rivers and streams resulting in material entering watercourses and the sea.
- Improve the resilience of the Vale's ecosystems by restoring, creating and managing habitats appropriately to reduce habitat fragmentation at the landscape-scale – much of this fragmentation is the result of past agricultural management or development pressure.

3.5 Landscape & Heritage Assets

3.5.1 The Vale has a wealth of natural and cultural heritage, and some of these assets are designated for their heritage value (see **Map 3.6**) This ranges from Ogmore Castle located south of the town of Bridgend, to Tinkinswood Burial Chamber near Bonvilston. During the industrial revolution, coal and metal ores mined in South Wales required ports from which to ship them. Barry and Barry Island, formerly separated by the waters of Barry Sound were

[15] Environmental Info Pack – Vale of Glamorgan Council



KEY

Heritage Assets:

- Registered Historic Parks and Gardens
- Landscapes of Outstanding Historic Interest
- (1) Llancarfan
- (2) Merthyr Mawr, Kenfig & Margam Burrows
- Conservation Areas
- Scheduled Monuments
- Glamorgan Heritage Coast

- Vale of Glamorgan
- Main Rivers and Waterbodies
- Built-up Areas
- Railways
- Main Roads

joined and Barry Docks and railway were built. By 1913, Barry was the largest coal export port in the world[16]. The Victorian era also led to the development of the 'seaside resort'.

3.5.2 Llancarfan, situated in the central plateau of the Vale, has been designated as a Landscape of Outstanding Historic Interest. The ancient settlement and its early church, set within its secluded valley, provide an important example of the historic landscape of the Vale as a whole[17].

3.5.3 Part of the Vale's Western coastline stretching from Aberthaw to Ogmore by Sea, is designated as part of the Glamorgan Heritage Coast, with the aim to conserve, protect and enhance undeveloped coastline. The heritage coast is also a tourist attraction, as well as being an asset for Vale residents.

3.5.4 There is a need to protect and enhance the integrity and local distinctiveness of the Vale's landscapes and townscapes, and to encourage appropriate management of habitats that are of particular importance in defining local character. There is also a need to understand, conserve and enhance the locally diverse historic environment, which contributes strongly to landscape character in the Vale.

3.5.5 The strategic GI needs and opportunities in relation to strengthening the landscape character and distinctiveness of the Vale are:

- Conserve, protect and enhance the undeveloped coastline of the Glamorgan Heritage Coast.
- Protect and, where appropriate, restore natural and cultural landscapes, particularly in relation to the countryside and the coast, which have significant landscape, heritage and nature conservation value.
- Promote the Vale's local distinctiveness to maximise understanding by locals and visitors, celebrating the variety and depth of local history, from pre-historic and Roman remains to Norman Castles and Celtic churches.
- Continue to use green wedges, which seek to prevent the merging of settlements and retain openness, in the adopted and emerging LDP.

[16] https://www.visitthevale.com/see-do/heritage
[17] Historic landscape characterisation: Llancarfan

- Require an appropriate landscape/GI statement to accompany any planning application to ensure that landscaping, character and GI has been considered as an integral part of the overall design and layout for the proposed scheme.

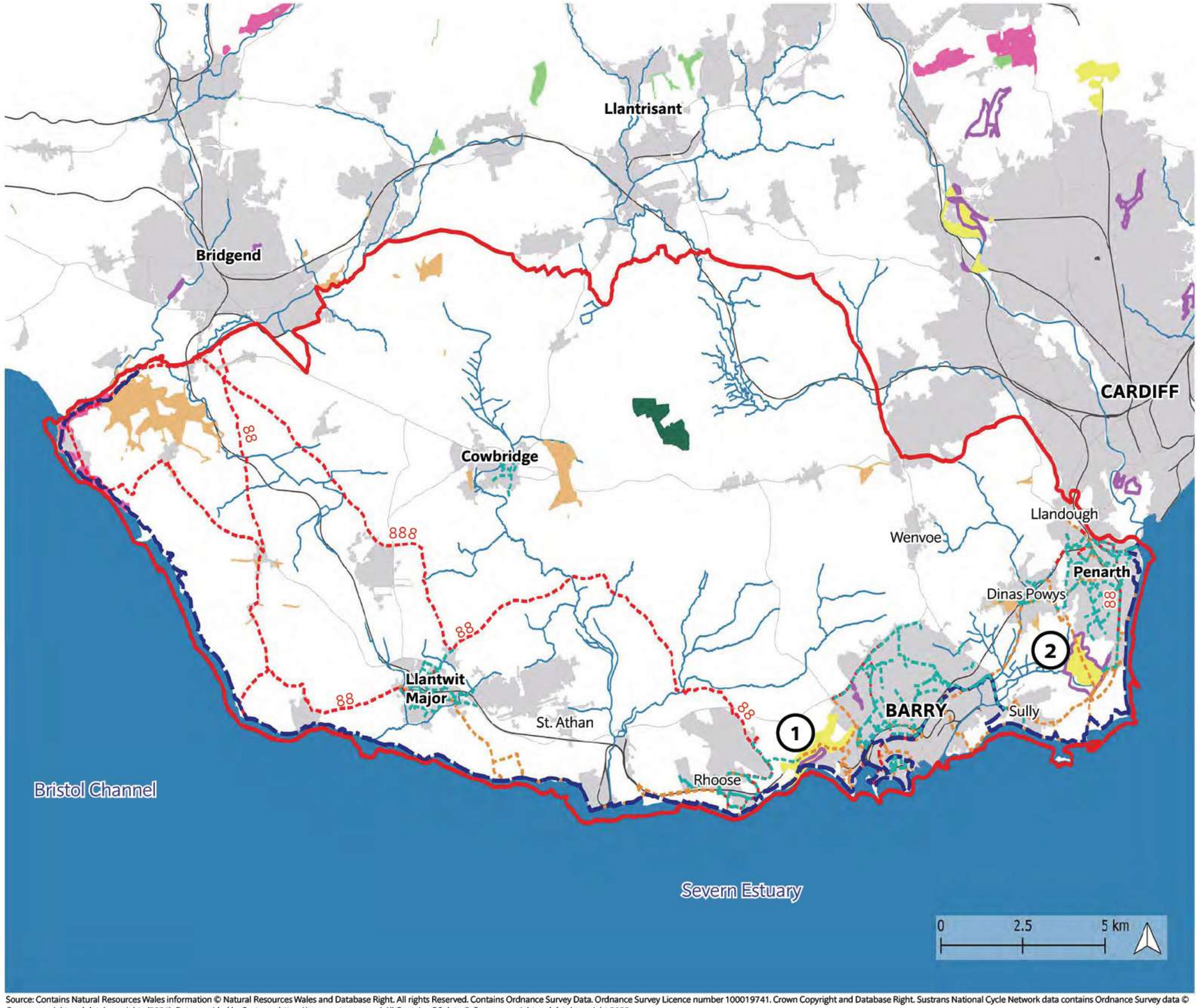
3.6 Accessible Greenspace Assets

3.6.1 The Vale has a range of accessible GI assets which can contribute to health and well-being including country parks, woodland, coastline, public parks, allotments, rivers, lakes and nature reserves (see **Map 3.7**). These sites, and the places people live are joined by a network of access corridors. These assets all provide a wide range of health and well-being benefits, as well as contributing to the wider benefits of the GI network.

3.6.2 Outdoor recreation can make a significant contribution to physical health and mental well-being. Country Parks and LNRs can provide opportunities for people to access nature and the outdoors, such as Porthkerry Park (Country Park), Cwm Talwg Woodlands (LNR), Cliff Wood – Golden Stairs (LNR) and Cosmeston Lakes (Country Park & LNR).

3.6.3 Within urban areas, the Vale also has a number of Parks or Public Gardens, as well as Amenity Greenspaces, Cemeteries Churchyards or Burial Grounds, and Provision for Children and Young People (shown on **Maps 3.1a** and **3.1b**). These assets also collectively contribute to the Vale's resource of accessible greenspace assets, providing health and well-being benefits close to where people live. This is particularly true of Parks and Public Gardens such as Victoria Park in Barry, and Poplars Park in Cowbridge, where these spaces are large enough to provide a range of functions such as children's play, seating, walking paths, open green spaces and gardens with a range of planting.

3.6.4 The Vale has an extensive network of public rights of way, including national trails, national cycle network routes and active travel routes. Well established walking routes include the Salmon Leaps and Caerau Hill Fort Circular trail which starts in the village of Dinas Powys. As well as the Glamorgan Heritage Coast trail forming a section of the Wales Coast Path, which starts from Llantwit Major. National Cycle Network (NCN) Route 88 links NCN Route 4 at Margam Park in the County Borough of Bridgend, through the Vale to the start of NCN Route 8 in Cardiff Bay. The NCN Route 88 includes some sections which are not yet built,



KEY

Routes:

- Coastal Path
- Active Travel Routes
- National Cycle Route
- Proposed National Cycle Route

Accessible Countryside Assets:

- Local Nature Reserves
- Country Parks:
  - 1 Porthkerry Park
  - 2 Cosmeston Lakes

Open Access Land:

- Open Country
- Public Forest
- Common Land
- Other Statutory land

- Vale of Glamorgan
- Main Rivers and Waterbodies
- Built-up Areas
- Railways
- Main Roads

once complete it will be a coastal route between Newport, Cardiff, Bridgend and Margam Country Park.

3.6.5 The Vale is generally well supplied in terms of accessible greenspace provision. However, there is an overarching need to enhance the connectivity of accessible greenspaces by improving access linkages, particularly to and within the larger settlements; and to improve promotion of existing assets, widening access to those who could most benefit from accessible GI assets such as people experiencing poor well-being and those in areas with higher deprivation.

3.6.6 Strategic GI needs and opportunities in relation to improving the health and well-being of communities in the Vale are:

- Improve access to green space and maximise the physical and mental health and well-being benefits of green spaces, particularly within more deprived areas and on Council-owned land. To identify opportunities, it will be necessary to work with local communities to understand detailed needs. It will also be important to understand how the needs of communities have changed, with existing GI no longer providing for community needs.
- Need to address deficiencies in open space provision.
- Limit the loss of GI to new development to maintain accessibility for communities across the Vale of Glamorgan.
- Reduce exposure to air pollution. Air pollution scores are higher in the south and east of the Vale, including Barry, where population densities, traffic volumes and proximity to heavy industry are higher than in more rural areas. Air pollution also disproportionately affects the Vale's more deprived areas which can exacerbate already high levels of health inequality.
- Improve green connections and provide safe and convenient walking and cycling environments to help tackle health problems associated with physical inactivity and social exclusion factors arising from car dependency, poor access to services and public transport.
- Improve provision of off-road access opportunities for cyclists and horse-riders. Whilst hubs of bridleway access exist, notably around Ewenny, Penllyn and Hensol there is a lack of connectivity between them and much of the rest of the Vale has limited access.

- Improve provision for cyclists through dedicated cycle routes for both recreational use, and everyday travel such as to work or the shops, particularly in line with the Active Travel Network mapping already in place demonstrating priorities for the Vale[18].
- Explore opportunities to make green connections more accessible, accommodating the particular needs of blind or partially sighted people and others with mobility differences, including older people.
- Promote more active travel to connect communities across the Vale and minimise negative impacts on the environment and health from excessive car use, by improving access, safety and joining up the active travel network.
- Maintain the Vale's coastal water quality, which is under pressure from sewage, as well as water draining from farmland and urban areas[19]. The Vale has four bathing beaches which currently pass the EC Bathing Waters classification, but this is at risk without forward planning.
- Build upon existing opportunities for local food growing and sharing, with the aim to work with communities to reduce food insecurity in the Vale of Glamorgan.
- Explore opportunities to make resources available to support local food growing and sharing, including suporting training/building skills for food growing.
- Explore opportunities to utilise parts of existing public green spaces or additional areas of land for local food growing and sharing.
- Increase provision of urban trees, providing attractive routes for travel and accessible GI, whilst reducing overall exposure to air pollutants.
- Retain and replace (where necessary) trees along transport networks, including in designated parking areas. This should incorporate those that receive both high pedestrian footfall and busy traffic to mitigate both air and noise pollution as well as supporting other well-being benefits and improving amenity.
- Require developers to ensure that new developments encourage walking and cycling.
- Explore how new and improved recreational sites could take advantage of existing initiatives such as the Valleys Regional Park (VRP)[20].

[18] Active Travel Network Maps
[19] PSB – Vale of Glamorgan: Environmental information for well-being assessments
[20] Valleys Regional Park

3.7 Socio-economic Context for Green Infrastructure

Social and Demographic Context

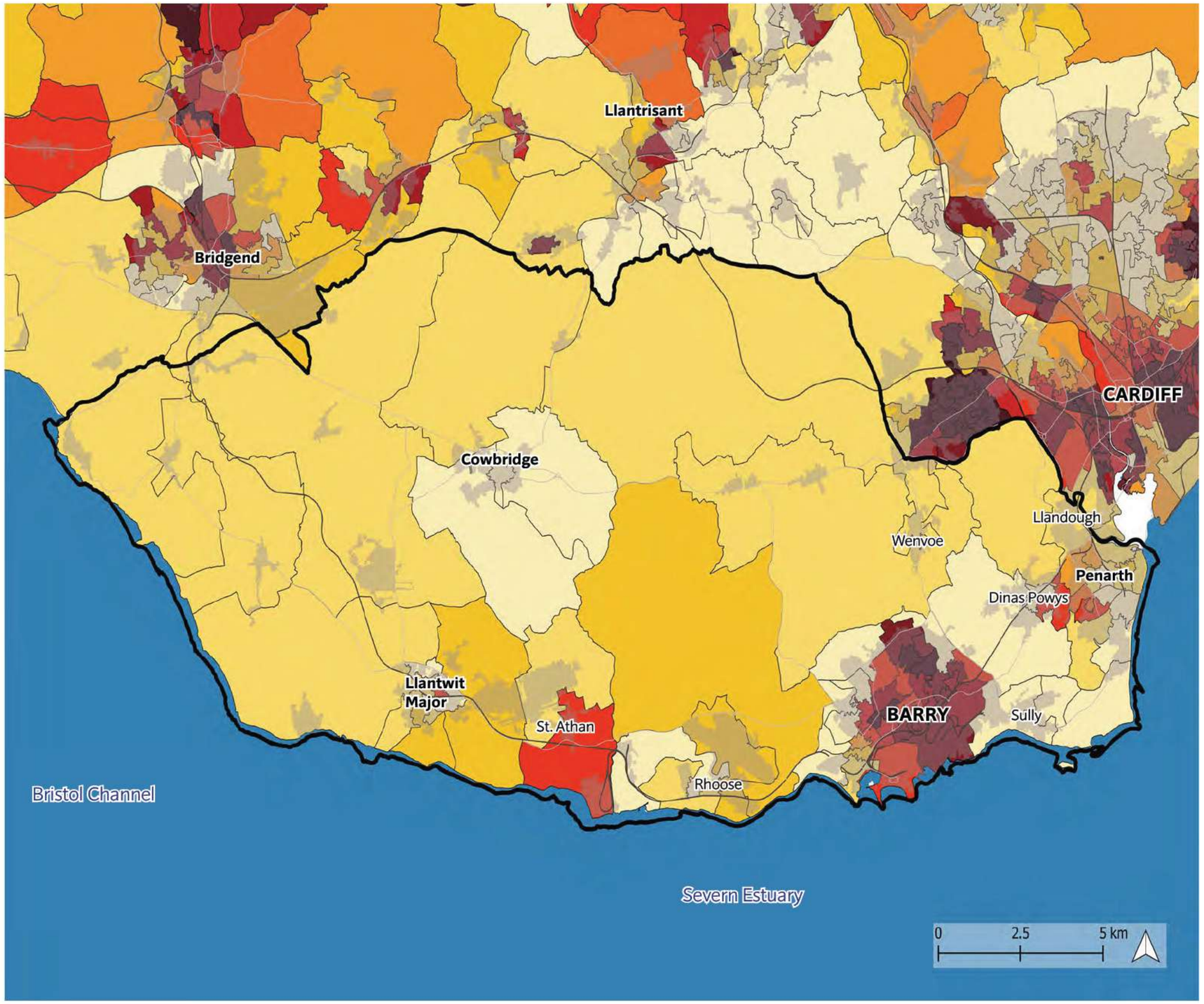
3.7.1 Access to high-quality GI has numerous potential benefits for public health, both physical and mental. Deprived areas often lack access to good quality green space compared to more affluent areas, reducing opportunities for these communities to gain the associated health benefits[21]. Evidence suggests that deprived groups appear to gain the most health benefit from improved access to GI, and socioeconomic inequalities in health are lower in greener communities[22]. Therefore, providing greener environments for deprived areas in the Vale could help to reduce inequalities[23], and should be prioritised.

3.7.2 The Vale as a whole is not a deprived area, and many residents enjoy a high standard of living. However, there are areas in the Vale which suffer from significant deprivation, including high unemployment and higher levels of crime. The 2019 Welsh Index of Multiple Deprivation (WIMD) is the official measure of relative deprivation for Lower Level Super Output areas (LSOAs) in Wales. The WIMD provides spatial information to help understand deprivation and is currently made up of eight separate domains including health, employment and education.

3.7.3 The Vale has predominantly low levels of overall deprivation (deciles ranging from 8 to 10, per the WIMD – see **Map 3.8a**). The most deprived areas in the Vale are found in the eastern area of Barry[24] (decile 1). There are also pockets of moderate deprivation in areas of St Athan and Penarth (deciles ranging from 5 to 7, per the WIMD).

3.7.4 Health in the Vale is generally recorded as being at a moderately good level (**Map 3.8b**), with most of the Vale being in the 50% least deprived LSOAs in Wales. However, there are inequalities displayed between the most and least deprived areas of the Vale in terms of health. There are four LSOAs in the Vale ranked in the 10% most deprived LSOAs in Wales against the Health domain, all located in Barry. Notably, one of these areas (Buttrills 2) is ranked as the most deprived LSOA in the Vale against this domain, with the highest rate of

[21] NRW South Central Wales Area Statement: Improving our health.
[22] Public Health England. (2020). Improving access to greenspace: A new review for 2020.
[23] Lovell et al.. (2020) A rapid scoping review of health and well-being evidence for the Green Infrastructure Standards.
[24] Welsh Index of Multiple Deprivation in the Vale of Glamorgan



KEY

Welsh Index of Multiple Deprivation: Overall Decile

1 (most deprived)
2
3
4
5
6
7
8
9
10 (least deprived)

Vale of Glamorgan
Built-up Areas
Railways
Main Roads

CBA

December 2023

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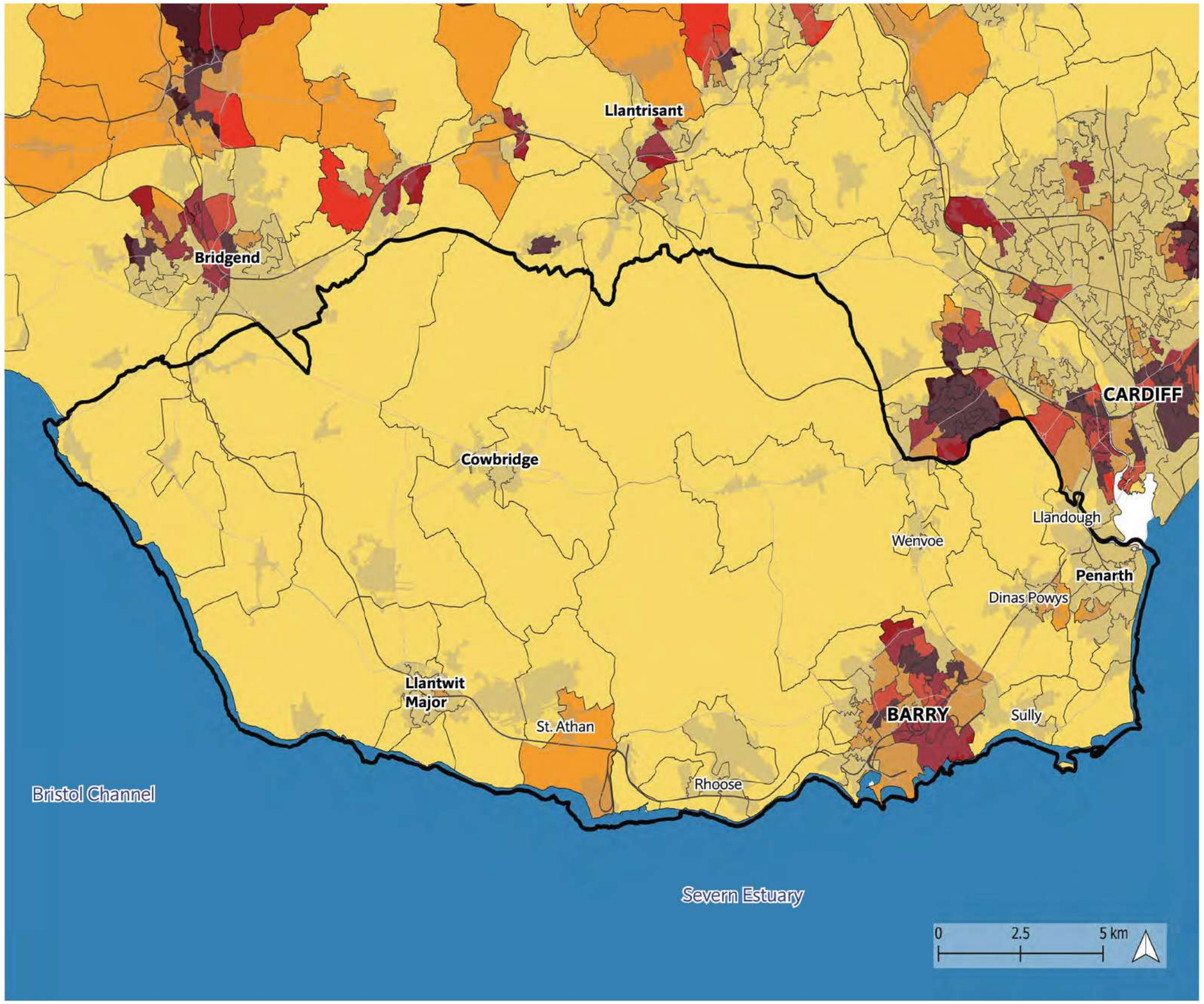
VALE OF GLAMORGAN
GREEN INFRASTRUCTURE STRATEGY

MAP 3.8a
AREAS OF DEPRIVATION: OVERALL



KEY

Welsh Index of Multiple Deprivation: Health

- 10% Most Deprived
- 20% Most Deprived
- 30% Most Deprived
- 50% Most Deprived
- 50% Least Deprived

- Vale of Glamorgan
- Built-up Areas
- Railways
- Main Roads

GP recorded mental health conditions and the highest rate of premature death in the Vale[25].

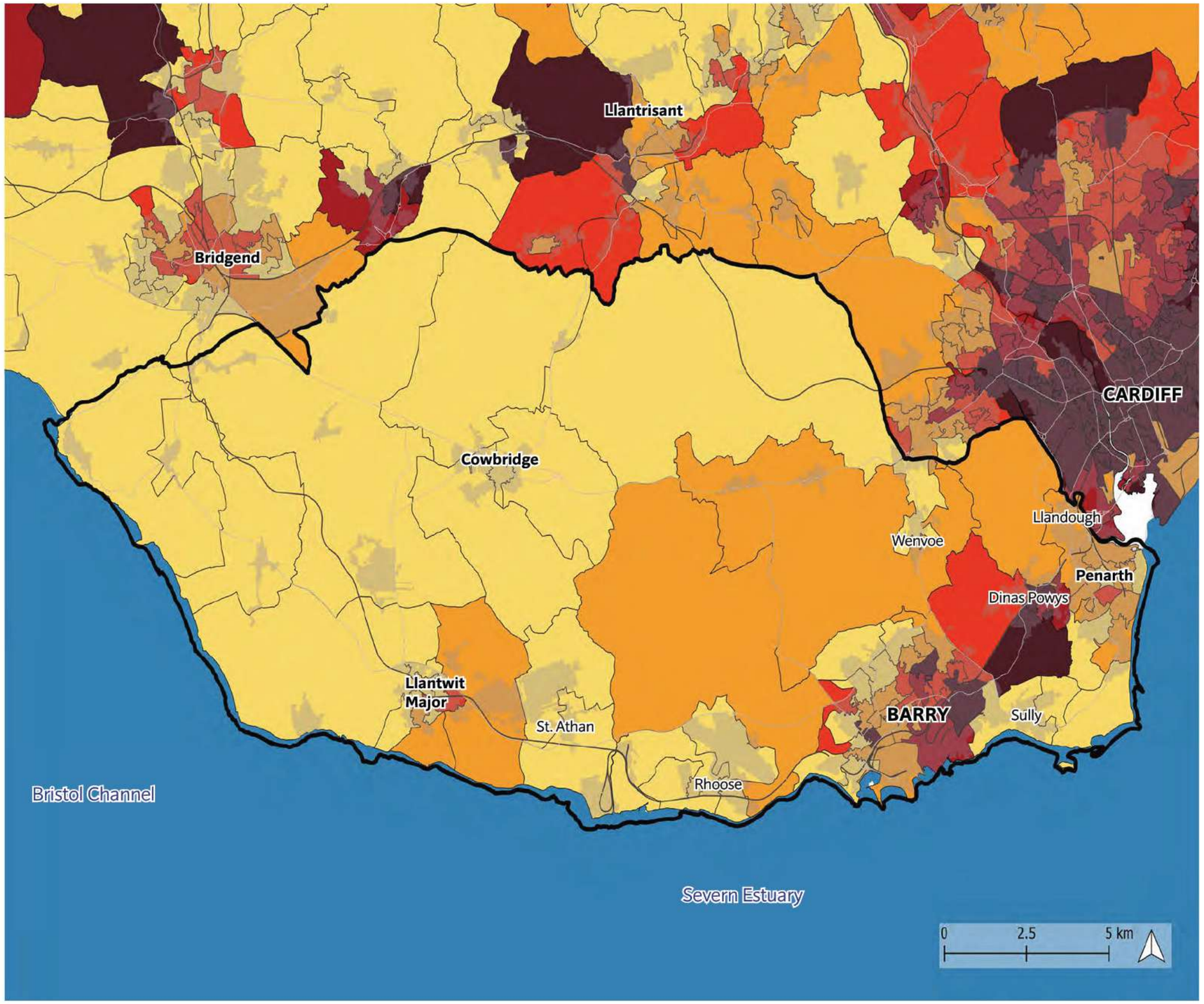
3.7.5 The Community Safety domain measures deprivation relating to living in a safe community, including experience of crime and fire, and perceptions of safety in the local area, whilst the Physical Environment domain (**Map 3.8c**) measures the factors in an area that may impact on the well-being or quality of life of those living in an area, including Flood Risk and Green Space. These are both areas in which well designed GI can help to mitigate challenges.

3.7.6 There are two LSOAs in the Vale ranked in the top 10% most deprived LSOAs in Wales against the Community Safety domain, both located in Barry[26]; and there are five LSOAs in the Vale ranked in the top 10% most deprived LSOAs in Wales in the Physical Environment domain. These are all located in the Barry and Dinas Powys area. Notably, 'Castleland 2G' in Barry records the lowest ambient green space score in the Vale and 'Cadoc 5' in the east of Barry records the highest score of households at risk of flooding in the Vale[27].

3.7.7 There is an overarching need to enhance the provision of and access to greenspaces for community uses, particularly in more deprived areas. The strategic GI needs and opportunities for improving the health and social cohesion of communities in the Vale are:

- Improve access to green space to support community health and well-being, particularly within more deprived areas. To identify opportunities, it will be necessary to work with local communities to understand detailed needs.
- Develop a greater understanding about local communities and to review assets within the Vale to maximise their potential for community use, to help tackle issues such as age-related social inclusion (age-friendly green spaces may include increased seating, public toilets, etc).
- Develop activities for community engagement linked to the local environment, for instance working with community groups to increase the number of allotments and community garden spaces.

[25] Welsh Index of Multiple Deprivation in the Vale of Glamorgan
[26] Welsh Index of Multiple Deprivation in the Vale of Glamorgan
[27] Welsh Index of Multiple Deprivation in the Vale of Glamorgan



KEY

Welsh Index of Multiple Deprivation: Physical Environment

- 10% Most Deprived
- 20% Most Deprived
- 30% Most Deprived
- 50% Most Deprived
- 50% Least Deprived

- Vale of Glamorgan
- Built-up Areas
- Railways
- Main Roads

- Explore how GI opportunities can be utilised to improve community safety - The Vale has two areas ranked in the top 10% most deprived in Wales against the Community Safety domain of the Welsh Index of Multiple Deprivation, both located in Barry[28].
- Require specific interventions to improve the provision of GI when considering development proposals in more deprived areas.

Economic Context

3.7.8 The Vale of Glamorgan is an economically diverse place, including both rural areas and urban centres. The area benefits from good road, sea, rail and air links and is well placed within South Wales for employment and business development. The economic profile of the Vale of Glamorgan is one of diversity, with a variety of business and industry, a growing tourist economy, particularly built around the heritage coast, and a strong agricultural economy in rural areas.

3.7.9 There is an overarching need to support sustainable business and housing development, farming and tourism, in ways that deliver services essential to the functioning of ecosystems. The strategic GI needs and opportunities in relation to supporting a sustainable economy in the Vale are:

- Support developers in maximising GI benefits on a site by combining uses, e.g. open space & SuDS, helping development viability. This could be achieved through requiring an appropriate landscape/GI statement to accompany any planning application to ensure that GI has been considered as an integral part of the overall design and layout for the proposed scheme.
- Support farmers to maximise the environmental and economic benefits of good GI management of their land.
- Explore opportunities for GI to support training and skills development, particularly in areas of the Vale that have higher levels of educational deprivation.
- Promote the economic value of the Vale's GI network, particularly where these contribute to the tourist economy, such as the coastline designated as part of the Glamorgan Heritage Coast, countryside and biodiversity assets and the active travel

[28] Welsh Index of Multiple Deprivation in the Vale of Glamorgan The Community Safety domain measures deprivation relating to living in a safe community, including actual experience of crime and fire, and perceptions of safety in the local area)

network. In balance to this, there is a need to monitor and manage impacts on GI assets of increased use, particularly in the summer months.

- Understand the economic benefits that can be provided by GI in the Vale, ranging from provision of green jobs or cost-savings through flood reduction, to health service savings provided by the health and well-being benefits of GI.
- Incorporate multi-functional GI into regeneration initiatives, attracting investment that indirectly or directly supports sustainable economic growth.
- Invest in the maintenance and enhancement of greenspaces, making places more attractive in which to live and work.
- Develop sustainable management of strategic tourism assets, such as the Heritage Coast, beaches, country parks and woodlands.

3.8 Functionality of the Existing Green Infrastructure Network

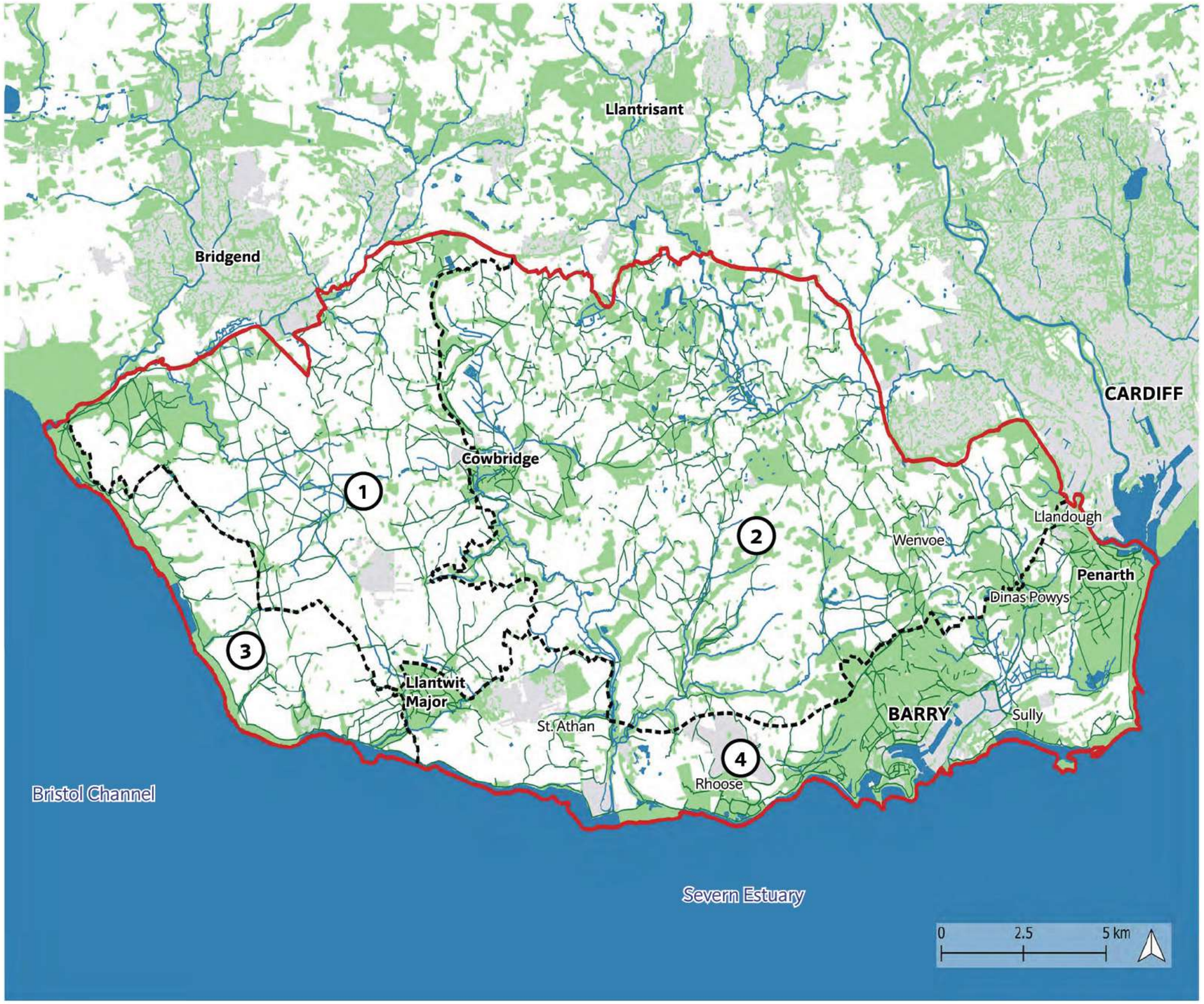
3.8.1 An overview of the existing GI network for the Vale of Glamorgan is shown on **Map 3.9**. This illustrates the broad distribution of green and blue space, green connections and productive landscapes that form the building blocks which underpin the structure of the existing GI network.

3.8.2 **Diagram 3.1** sets out the potential functionality of the existing GI network's assets. Drawing on best practice from other GI assessments in South Wales, and the principles of NRW's GI Assessment Guide, the indicative primary and secondary functions of the different GI types have been identified by GI strategy theme.

3.8.3 GI functions (aka ecosystem services) are the roles that GI assets can play if planned, designed and managed in a way that is sensitive to, and includes provision for, natural features. Assets may have obvious primary functions, but each asset can perform different functions simultaneously – known as multifunctionality.

3.8.4 For example, woodland contributes to climate change mitigation through its function of absorbing and storing carbon as well as providing support for wildlife, aesthetic and recreational functions.

3.8.5 Urban green spaces also have the potential to be multifunctional where opportunities for providing natural areas to support wildlife, as well as formal play/sports facilities are



KEY

- Green Spaces
- Blue Spaces
- Green Connections
- Productive Landscapes
- GI Zones:
  - (1) Western Vale
  - (2) Eastern Vale
  - (3) Rural Coast
  - (4) Coastal Settlements
- Vale of Glamorgan
- Built-up Areas

GI Strategy Themes		GI Functions	GI Typology: Green & Blue Spaces: Allotment, community garden or urban farm	Cemetery, churchyard or burial ground	Amenity greenspace	Park or public garden	Outdoor sports facilities	Provision for children and young people	Natural and semi-natural greenspace	Domestic Gardens	Blue space	Green Connections: Cycle Networks	Public Rights of Way	Trees: Urban Trees	Woodlands	Productive Landscapes: Agricultural Land
	Health & Well-being	Outdoor recreation	P	S	P	P	P	P	S	P	S	P	P	S	S	
		Active travel										P	P			
		Access to nature	S	S	S	S	S	S	S	S	S	S	S	S	S	
		Air quality improvement	S	S	S	S			P	S		S	S	P	P	S
		Noise pollution absorption	S	S	S	S			S	S				S	S	S
	Biodiversity & Ecosystem Resilience	Habitat diversity	S	S	S	S	S	S	S	S	P			S	S	S
		Habitat extent	S	S	S	S	S	S	S	S	P			S	S	S
		Habitat connectivity	S	S	S	S	S	S	S	S	P	S	S	S	S	S
		Habitat condition	S	S	S	S			S	S	P			S	S	S
		Pollination	S	S	S	S	S	S	S	S	S			S	S	S
	Climate Change & Sustainability	Shade & wind shelter	S	S	S	S	S	S	S	S				S	S	S
		Soil stabilisation	S	S	S	S	S	S	S	S				S	S	S
		Carbon removal & storage	S	S	S	S	S	S	S	S				S	S	S
		Water storage & drainage	S	S	S	S	S	S	S	S	P			S	S	S
		Water pollution amelioration							P					P	P	S
		Coastal protection							S		P			S	S	
	Social Cohesion	Community space	S	S	P	P	P	S	S	S	S	S	S	S	S	
		Food production	P			S				S						P
	Economy	Support jobs & productivity	S	S	S	S	S		S	S	S	S	S	S	S	P
		Lifelong learning & education	P						S					S	S	
		Skills and volunteering	P				P		S		S			S	S	
		Food/fuel/materials production	P											S	S	P
	Sense of Place	Visual contribution to landscape	S	S	S	S	S	S	S	S	S			S	S	S
		Connection to local environment	S	S	S	S	S	S	S	S	S	S	S	S	S	S
		Heritage and culture	S	S	S	S	S	S	S	S	S	S	S	S	S	S

P - Primary Function
S - Secondary Function

maximised. Public spaces could also provide temporary water storage (reducing flood risk) where they have streams flowing adjacent to them or where the space is designed as a Sustainable Drainage System (SuDS).

3.8.6 Conversely, it may not be appropriate for an individual asset to be fully multifunctional, for example a wildlife site that is designated for its ground nesting birds should not necessarily be fully accessible as that is likely to be detrimental to its primary function of supporting wildlife.

3.8.7 Whilst individual GI assets can provide one or more functions, connectivity between different GI assets can help maximise the benefits that they generate. Well-connected GI assets create infrastructure that is adaptive and resilient to environmental changes. Physical connections encourage wildlife migration and connect places with sustainable walking or cycling routes. Linked together, GI assets form important multifunctional GI networks, which are effective at a variety of spatial scales.

3.8.8 Green and blue corridors can function as 'stepping stones' for the dispersal of wildlife between otherwise fragmented and isolated habitats providing services for a range of wildlife habitats, such as supporting pollinators where managed appropriately. In addition, green and blue corridors can incorporate walking and cycling links between settlements and the surrounding countryside, providing health and well-being benefits for local communities and visitors.

3.8.9 A high level assessment of the functionality of the Vale's GI assets in relation to the ecosystem services that they provide within different GI Zones is set out in **Appendix 3**. For the purposes of this assessment, the Vale has been subdivided into four broadly-defined GI Zones based on similar landscape and environmental characteristics as shown on **Map 3.9**. This assessment identifies needs and opportunities to inform the GI Strategy set out in the following section.

4.0 GREEN INFRASTRUCTURE STRATEGY

4.0 GREEN INFRASTRUCTURE STRATEGY

4.1 Vision for Green Infrastructure in the Vale of Glamorgan

4.1.1 The Vale's GI has a key role to play in underpinning the Council's vision for strong communities with a bright future, and offers a range of quality of life benefits for supporting Well-being Plan objectives.

4.1.2 It is anticipated the proposed vision for GI set out in **Box 4.1** will be delivered through the commitment and involvement of the public, private and voluntary sectors, working with the Council in new collaborative ways across the Vale.

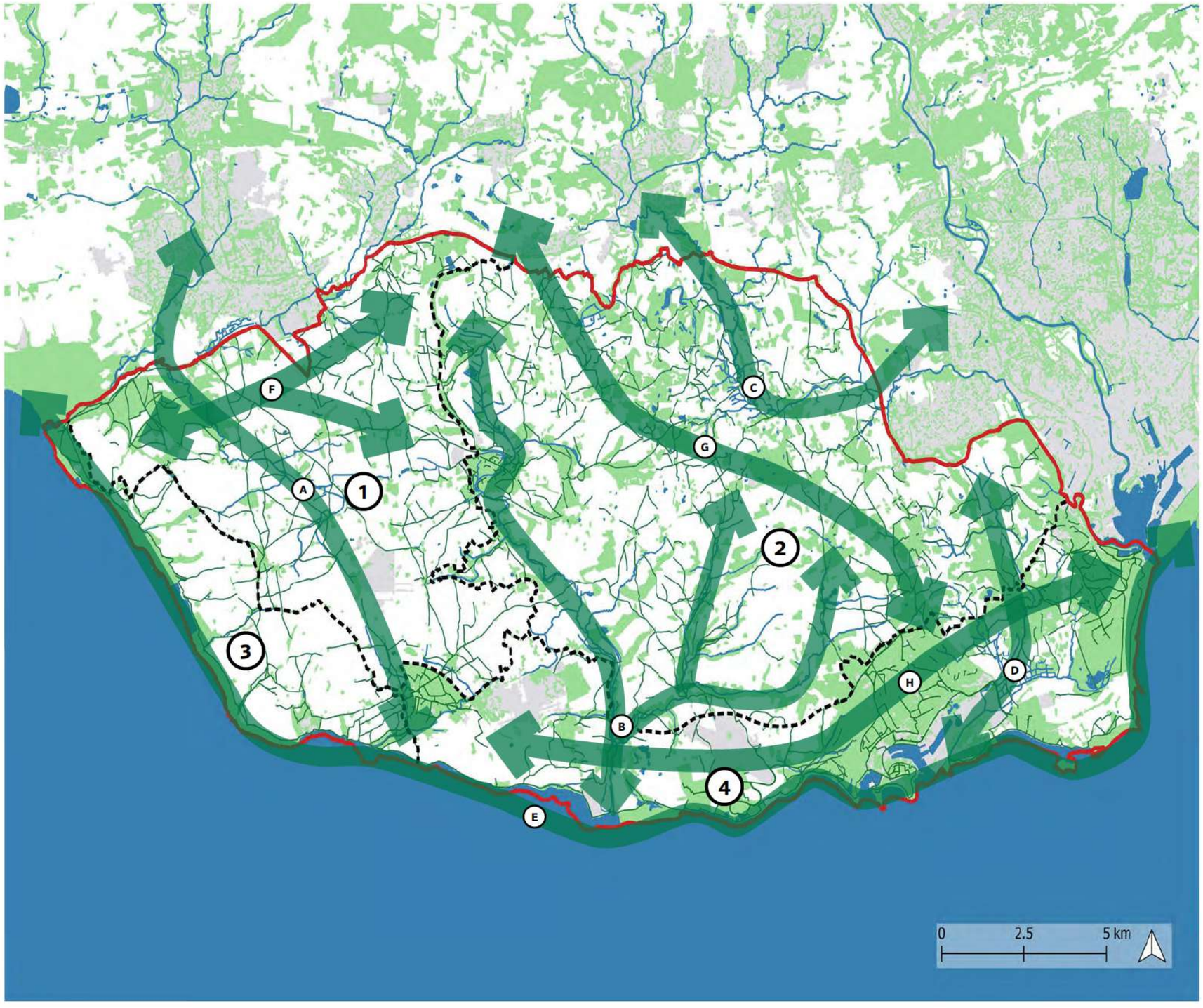
BOX 4.1 Green Infrastructure Vision for the Vale of Glamorgan 2036

To develop an integrated network of multi-functional green and blue spaces that makes the Vale of Glamorgan a healthy, biodiverse and resilient place to live, work and visit

4.1.3 Addressing the challenges of climate change and meeting zero carbon targets, addressing biodiversity loss and encouraging healthy living through the provision of multifunctional, varied, connected and accessible high quality GI is at the heart of this vision.

4.1.4 The proposed Strategic GI Network for the Vale of Glamorgan illustrated on **Map 4.1** embraces Strategic GI Corridors connecting existing GI assets within the Vale and in neighbouring areas, providing important links to the Vale's settlements and communities. These indicative Strategic GI Corridors are considered to be key areas for focussing the delivery of GI in line with the strategic priorities identified by this GI Strategy.

4.1.5 Together, the vision and Strategic GI Network provide the overarching framework for driving positive actions by all stakeholders involved in the future protection, enhancement and management of GI for the Vale.



KEY

- Green Spaces
- Blue Spaces
- Productive Landscapes
- Green Connections[1]

GI Zones:

1. Western Vale Rolling Lowlands
2. Eastern Vale Lowland Valleys
3. Rural Coast
4. Coastal Settlements & Environs

Strategic GI Corridors:

- A River Alun & Tributaries Corridor
- B Rivers Thaw and Waycock & Tributaries Corridor
- C River Ely & Tributaries Corridor
- D Cadoxton River & Tributaries Corridor
- E Vale Coast Corridor
- F Northwestern Vale Corridor
- G Eastern Vale Woodlands Corridor
- H Southeastern Settlements Corridor

- Vale of Glamorgan
- Built-up Areas

1 Vale of Glamorgan Area Only

4.2 Strategic GI Objectives and Priorities

4.2.1 The vision is supported by six strategic objectives and associated priorities for guiding the planning, management and delivery of GI in the Vale of Glamorgan (see **Box 4.2**). These objectives and priorities are reflected in the GI projects identified in the Delivery Plan and are also intended to be used in monitoring the outcomes of projects.

BOX 4.2 Strategic Green Infrastructure Objectives

1. **Improve Health & Well-being:** create a GI network that supports healthy communities and encourages active lifestyles, bringing nature closer to people.
2. **Enhance Biodiversity & Increase Ecosystem Resilience:** develop a resilient and better-connected ecological network that supports net biodiversity gains to underpin nature recovery.
3. **Increase Climate Change Mitigation & Resilience:** maximise nature-based solutions to help mitigate and adapt to the impacts of climate change.
4. **Improve Social Cohesion:** maximise opportunities for GI to support social initiatives and bring communities together
5. **Support Sustainable Economic Development:** integrate GI as a key component of the local economy, tourism and regeneration.
6. **Strengthen Sense of Place:** utilise GI to enhance landscape character and the built environment.

4.2.2 The strategic objectives support many of the national well-being goals (see **Box 4.3**) that public bodies have a duty under the Well-being of Future Generations Act to contribute to, delivering sustainable development as defined in the Act - ensuring that the needs of the present are met without compromising the ability of future generations to meet their own needs.

BOX 4.3 National Well-being Goals

1. **A Prosperous Wales** – an innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.
2. **A Resilient Wales** - a nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).
3. **A Healthier Wales** - a society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.
4. **A More Equal Wales** - a society that enables people to fulfil their potential no matter what their background or circumstances (including their socioeconomic background and circumstances).
5. **A Wales of Cohesive Communities** - attractive, viable, safe and well-connected communities.
6. **A Wales of Vibrant Culture and Thriving Welsh Language** - a society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation.
7. **A Globally Responsive Wales** – a nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.

(Source: Well-being of Future Generations (Wales) Act 2015)

4.2.3 In addition, the GI approach is supportive of the following five "ways of working" advocated by the Well-being of Future Generations Act:

- **Integration** – it reflects a joined-up approach to communities and people, the economy, the environment and culture
- **Long-term thinking** – it aims to balance current and long-term needs
- **Prevention** – it encourages taking action now to prevent problems in the future
- **Collaboration** – it promotes working with a range of stakeholders to meet objectives
- **Involvement** – it involves people affected by actions in delivery of projects

4.2.4 At a local level, the strategic objectives also seek to contribute to the local well-being objectives of the Vale of Glamorgan Well-being Plan 2023-28 (see **Box 4.4**).

BOX 4.4 Vale of Glamorgan Local Well-being Objectives

- **A more resilient and greener Vale (1)** - by understanding and making the changes necessary as individuals, communities and organisations in response to the climate and nature emergencies.
- **A more active and healthier Vale (2)** – by encouraging and enabling people of all ages to be more active and to promote the benefits of embracing a healthier lifestyle.
- **A more equitable and connected Vale (3)** - by tackling the inequities that exist across the Vale, engaging with our communities and providing better opportunities and support to make a lasting difference.

(Source: Vale of Glamorgan Public Service Board Well-being Plan 2023-28)

4.2.5 It is anticipated that the Vale of Glamorgan Council will review how its current processes can be improved or rationalised to more fully align with the proposed GI approach, taking into account the ways of working advocated by the Well-being of Future Generations Act.

4.2.6 The GI approach also supports the objectives of the Vale of Glamorgan Biodiversity Forward Plan (see **Box 4.5**) developed by the Council in line with its duties under the Environment (Wales) Act 2016. The Biodiversity Forward Plan looks at how the Council manages and improves natural resources to ensure that biodiversity and sustainability are considered in all service areas and are core themes in service delivery, becoming an integral part of the decision-making processes throughout the Council.

BOX 4.5 Vale of Glamorgan Biodiversity Forward Plan Objectives

- Objective 1: Engage and support participation and understanding to embed biodiversity throughout decision making at all levels.
- Objective 2: Safeguard species and habitats of principle importance and improve their management.
- Objective 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation.
- Objective 4: Tackle key pressures on species and habitats.
- Objective 5: Improve our evidence, understanding and monitoring.
- Objective 6: Put in place a framework of governance and support for delivery.

(Source: 2019 Vale of Glamorgan Biodiversity Forward Plan)

4.2.7 The strategic GI objectives and priorities of this Strategy are set out below.

Objective 1 – Improve health & well-being, creating a GI network that supports healthy communities and encourages active lifestyles, bringing nature closer to people by:

- Helping people to live healthier lives through provision of sustainable access and outdoor recreation opportunities for health and well-being.
- Providing a connected, safe and attractive network of formal and informal open spaces supported by safe walking and cycling routes to encourage physical activity, helping reduce health inequalities and reflecting the diverse needs of communities, whilst prioritising the Vale of Glamorgan's most deprived wards.
- Maximising opportunities for urban communities and visitors to enjoy the countryside via appropriate provision of walking and cycling routes, including working with partners to extend/complete partially open National Cycle Network routes.
- Preparing an open space assessment to understand the quality and value of the existing resource and inform decisions on improvements.
- Maximising opportunities for Council-owned land to deliver health and well-being benefits.
- Ensuring that new development contributes to provision of GI, and creating a network of interconnected spaces.
- Improving access to growing spaces to support community growing initiatives and local food production and increasing the multifunctionality of green spaces to include spaces for growing food, including on new development sites.
- Improving access to the countryside for recreation and education, creating opportunities for people to explore and engage with nature.
- Collaborating with partners to maintain the quality of the Blue Flag/Seaside Award bathing beaches to maximise public access to this outdoor resource.
- Seeking opportunities to improve air quality by supporting interventions in areas of high population densities, traffic volumes and proximity to heavy industry.
- Improving and extending the off-road network available to cyclists and horse riders.

Objective 2 – Enhance Biodiversity & Increase Ecosystem Resilience, developing a resilient and better-connected ecological network that supports net biodiversity gains and underpins nature recovery by:

- Responding to the nature and climate emergencies through the design of Resilient Ecological Networks in line with the three-step approach recommended by the NRW guide to Resilient Ecological Networks.
- Implementing the Vale's Nature Recovery Action Plan through partnership working.
- Improving ecosystem resilience through improved land management for biodiversity, both on Council-owned land and working with external partners.
- Improving habitat connectivity to conserve, enhance and deliver biodiversity net gain and support nature recovery, identifying opportunities for the creation of robust ecological networks in both urban and rural areas as part of new GI provision.
- Ensuring habitat connectivity is retained and enhanced including where new development is proposed, to deliver biodiversity net benefits.
- Safeguarding existing urban trees, and increasing tree cover within settlements in line with the emerging Vale of Glamorgan Tree Strategy.
- Exploring opportunities for the rewilding of underutilised land including the Council's own estate, or seeking opportunities to increase the multifunctionality of existing green spaces (such as making spaces more pollinator friendly), working with partners and landowners.
- Exploring opportunities for landscape scale interventions to deliver multiple benefits, working with a range of partners and landowners (such as improving the habitat condition and connectivity of natural areas on or between protected sites, or for natural flood management opportunities).
- Reducing damage caused through poor environmental management, such as high levels of nutrient run-off into watercourses, working with farmers and other landowners.
- Improving the quality status of rivers, especially where they are failing to achieve overall good status under the Water Framework Directive, working with a range of partners (including Dŵr Cymru Welsh Water/sewage treatment works, farming communities, and NRW as regulators incorporating those in neighbouring authorities/wider catchments)
- Monitoring and managing tree populations to mitigate impacts from disease such as ash die-back, which threaten woodland habitats.
- Providing opportunities for people to understand, explore and engage with nature by improving access to nature reserves for education.
- Considering the findings of the Sites of Importance for Nature Conservation (SINC) Review and implement its recommendations as appropriate.

Objective 3 – Increase climate change mitigation and resilience, maximising the use of nature-based solutions to deliver climate resilient water management and help mitigate and adapt to the impacts of climate change by:

- Contributing to sustainable water management and management of flood risk through effective use of GI, including natural flood management, SuDS and greening the built environment.
- Increasing tree cover to support carbon sequestration, particularly in urban areas (including existing residential areas), regeneration projects and in rural areas, in line with the emerging Vale of Glamorgan Tree Strategy.
- Prioritising the integration of GI into new development proposals, including green roofs and walls (including small scale interventions such as those on cycle shelters), to assist with urban cooling.
- Supporting opportunities for renewable energy production to help mitigate climate change by reducing the Vale's carbon footprint.
- Supporting a reduction in the area's carbon footprint by developing and expanding the network of green traffic-free routes for walking and cycling, which also enhance place making by connecting urban and rural settlements with the countryside.
- Reducing emissions associated with food and farming by supporting local food production.

Objective 4 – Improve social cohesion, maximising the use of GI solutions to support social initiatives and bring communities together by:

- Supporting opportunities for community involvement in the stewardship and management of GI assets.
- Supporting partners to create safe and accessible green places to promote community cohesion.
- Increasing participation in outdoor activities, local food growing and volunteering by facilitating community engagement.
- Facilitating projects to tackle food insecurity in the Vale of Glamorgan.
- Integrating GI into development proposals as a means of creating cohesion and a sense of place.

Objective 5 – Support sustainable economic development, integrating GI as a key component of the local economy, tourism and regeneration by:

- Providing attractive and multi-functional GI as part of regeneration initiatives and inward investment that indirectly or directly supports sustainable economic growth.
- Investing in the maintenance and enhancement of greenspaces and other GI assets that contribute to the environmental quality and distinctiveness of the Vale's landscapes and settlements, helping attract and retain inward investment.
- Increasing opportunities for sustainable tourism and green industries based on the natural environment.
- Developing the sustainable management of strategic tourism assets including Management Plans where appropriate, such as for the Heritage Coast, beaches, country parks and woodlands, including understanding and managing the impacts on these GI assets at peak times.
- Promoting the economic value of providing attractive and accessible green corridors, public rights of way, and strategic walking and cycle routes, whilst also identifying opportunities for new routes and links.
- Developing opportunities to deliver ecosystem services (see **Box 2.6**); improve resource efficiency and reduce energy consumption; facilitate the sharing of resources between businesses; and re-localise the supply chain, by bringing partners together to work with businesses across the Vale.

Objective 6 – Strengthen landscape character & distinctiveness, utilising GI to enhance landscape character and the built environment by:

- Ensuring that new development and GI projects contribute towards positive place making that safeguards or enhances landscape character and the historic environment.
- Conserving and enhancing significant landscape and heritage features, and addressing issues of landscape quality where this contributes towards wider economic growth, such as tourism and leisure.
- Engaging local communities and visitors in appreciating and understanding the cultural and natural influences that shaped the character of the landscape.
- Reinforcing the strong sense of tranquillity, remoteness and wildness found in some parts of the Vale that makes a contribution to people's mental well-being.
- Enhancing the condition of degraded landscapes where appropriate.

4.2.8 The contribution that these strategic GI objectives make to the National Well-being Goals, Vale of Glamorgan Well-being Objectives and Vale of Glamorgan Biodiversity Forward Plan Objectives are highlighted in **Table 4.1**.

Table 4.1 – Contribution of Strategic GI Objectives

Strategic GI Objectives	National Well-being Goals (Box 4.3)							Vale of Glamorgan Well-being Objectives (Box 4.4)			Vale of Glamorgan Biodiversity Forward Plan Objectives (Box 4.5)					
	1	2	3	4	5	6	7	1	2	3	1	2	3	4	5	6
1 – Improve Health & Well-being			√		√	√			√	√						
2 – Enhance Biodiversity & Increase Ecosystem Resilience		√						√			√	√	√	√	√	√
3 – Increase Climate Change Mitigation & Resilience		√					√	√				√	√	√		
4 – Improve Social Cohesion			√	√	√					√						
5 – Support Sustainable Economic Development	√			√				√		√						
6 – Strengthen Sense of Place			√			√		√		√						

4.3 Integrating Green Infrastructure and Development

4.3.1 Planning Policy Wales (2024) requires that the quality of the built environment should be enhanced by integrating GI into development through appropriate site selection and use of creative design. With careful planning and design, GI can embed the benefits of biodiversity and ecosystem services into new development and places, helping to overcome the potential for conflicting objectives, and contributing towards health and well-being outcomes.

4.3.2 The proposed vision and strategic objectives for implementing the GI Strategy are reflective of the GI quality standards for place-making and place-keeping provided by the **Building with Nature Standards** (see **Box 4.6**), which provide a benchmark of good practice for integrating GI and development. Planning Policy Wales (see **Appendix 1** for details) requires that the Building with Nature Standards should be applied to all development[29] as a quality checklist, in a way which is proportionate to the nature and scale of the development proposed.

Box 4.6 Building with Nature Standards Framework

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

Well-being Standards
7. Brings Nature Closer to People
8. Supports Equitable and Inclusive Places

Water Standards
9. Delivers Climate Resilient Water Management
10. Brings Water Closer to People

Wildlife Standards
11. Delivers Wildlife Enhancement
12. Underpins Nature's Recovery

[29] The Building with Nature Standards Framework advises that the standards are best suited for use on 'major' or 'significant' development sites (10+ dwellings; 0.5 hectares or more; 1000+ square metres of floor space) and 'strategic' development sites (such as major regeneration schemes or urban extensions).

4.3.3 PPW highlights that the Building with Nature Standards represent a default benchmark for ensuring appropriate consideration in circumstances where there is an absence of a GI Assessment and planned approach or relevant Supplementary Planning Guidance. Whenever possible, accreditation under these standards should be pursued.

4.3.4 PPW also states that a Green Infrastructure Statement (prepared by the applicant) will be an effective way of demonstrating positive multifunctional outcomes. There are multiple ways of incorporating GI, dependent on the needs and opportunities a site presents but in all cases development proposals should address well-being priorities and the nature and climate emergencies and demonstrate how this has been done. The GI Assessment set out in this document and associated GIS data will be a point of reference in order to ascertain local priorities.

4.3.5 The Welsh Housing Quality Standard (2023) focuses on the integration of GI into social housing developments. Element 8 of the standard is to create attractive and practical outside spaces including managing verges, parks, grounds and open green spaces to make them more wildlife friendly.

4.3.6 In addition, BREEAM (Building Research Establishment Environmental Assessment Method) credits has a role to play in incorporating a range of GI benefits into development projects including adaptation to climate change, reduction of ecological risks, flood risk reduction and surface water management.

5.0 GREEN INFRASTRUCTURE DELIVERY PLAN

5.0 GREEN INFRASTRUCTURE DELIVERY PLAN

5.1 Delivery Framework

5.1.1 The delivery framework for implementing the vision and strategic objectives set out in **Section 4.0** is outlined below. This is broadly based around the "ways of working" approach that public bodies are required to adopt by the Well-being of Future Generations (Wales) Act 2015.

Integrated and Joined Up Approach

5.1.2 The GI Strategy promotes an integrated and joined up approach to delivering GI that takes into account the needs of the Vale's communities, environment and economy. An important overarching principle underpinning the GI Strategy is the need to recognise the multi-functionality of GI assets and to maximise the benefits different assets can deliver through an integrated approach. For example, greenspaces can be used for sustainable food production, contribute to flood management and provide access to nature for recreation. It is essential that the inter-relationship and connections between GI projects outlined are considered in the round to ensure that opportunities for shared outcomes and mutual benefits are maximised.

Long-Term Thinking and Prevention

5.1.3 The GI Strategy promotes long-term thinking by aiming to balance current and long-term GI needs for the Vale of Glamorgan. It also encourages taking action now to prevent problems in the future through targeted investment in the delivery of new and enhanced GI where it is most needed. This is reflected in the range and nature of the GI projects included in the Action Plan.

Stakeholder Collaboration and Community Involvement

5.1.4 As reflected in the Action Plan (see **Appendix 5**), the GI Strategy promotes a collaborative approach to working with a range of stakeholders and partners to help meet its objectives.

Importantly, the GI Strategy also seeks to directly involve and engage local communities in the delivery of the GI projects included in the Action Plan.

5.2 Delivery Principles

5.2.1 To maximise the successful implementation of the GI Strategy, the Vale of Glamorgan Council will work with its partners to:

- Highlight existing good practice, seek to reinforce this, and where possible encourage it elsewhere.
- Champion the benefits of GI across the public, private and voluntary sectors.
- Influence and enable delivery of GI, with a particular focus on delivery of GI benefits on Council-owned land where appropriate.
- Provide advocacy to promote the benefits of GI to all relevant stakeholders.
- Identify opportunities for funding GI projects.
- Establish partnerships for pooling funding, coordinating delivery and long-term management of specific GI projects.
- Liaise with partners in neighbouring areas to co-ordinate cross-boundary delivery of landscape-scale GI projects at the regional level.
- Monitor progress in delivery of the Action Plan and evaluate project impact in relation to the GI Strategy's objectives and priorities.
- Promote adoption of best practice with regards to implementation and long-term maintenance and stewardship of GI.
- Provide assistance/advice on integration of the GI Strategy into other plans, policies and programmes.

5.2.2 The Local Development Plan is a key mechanism for delivering GI provision to support planning strategies for sustainable growth. In line with the requirements in Section 6.2 of Planning Policy Wales, the Council should consider incorporating appropriate strategic and development management GI planning policies in the replacement Local Development Plan.

5.3 Potential Funding Streams

5.3.1 The Council should continue to be proactive in seeking funding opportunities for delivery of GI in line with the objectives and priorities set out in this GI Strategy. Potential funding streams that may support delivery of GI projects include:

- **Welsh Government**: such as funding allocated in the Infrastructure Investment Strategy and Transforming Towns funding, which can provide support for delivery of cross-sector, collaborative GI projects.
- **Developer contributions**: can provide funding for delivery of GI projects related to development proposals secured in line with the Council's LDP policy.
- **Landfill Disposal Tax Communities Scheme**: distributes grants to community-based environmental projects to help mitigate effects of landfill on local communities.
- **Heritage Funding**: such as the Local Places for Nature Capital Fund, a grant scheme intended to enable communities in Wales to restore and enhance nature.
- **Small-scale community grants**: can provide funding for community-based environmental projects in support of GI objectives.
- **Public/private sector funding**: can play a key role in securing the future of community green space and other GI assets as part of meeting corporate social responsibility objectives.

5.4 Green Infrastructure Management, Maintenance and Stewardship

5.4.1 The Vale of Glamorgan Council will support the long-term stewardship, management and appropriate maintenance of GI assets on land within its ownership and share good practice in this regard. This includes working with license-holders of Council-owned land to integrate GI aims.

5.4.2 The Council will also seek to encourage other landowners and land managers of GI assets on public or private land to put in place appropriate management and maintenance practices.

5.5 Green Infrastructure Action Planning

5.5.1 The Council will develop an Action Plan to take forward delivery of the strategic objectives and priorities identified in the GI Strategy (**Section 4.0**).

5.5.2 As set out in the GI Action Plan User Guide (see **Appendix 5**), the Action Plan will include strategic/landscape-scale GI projects that extend across one or more of the GI Zones within and beyond the Vale, and also local GI projects focussed around the settlements.

5.5.3 The Action Plan will be reviewed periodically by the Council and updated as necessary to reflect progress or changing circumstances.

APPENDIX 1
GREEN INFRASTRUCTURE POLICY CONTEXT

Policy	Summary	Relevance to GI
Well-being of Future Generations (Wales) Act 2015	Overarching vision to create a Wales that we all want to live in now and in the future. Aims to improve social, economic, environmental and cultural well-being in Wales to target challenges, such as climate change and poverty. Vision for Wales set out in **'Seven Well-being Goals'** for public bodies listed in the Act to work towards: 1. A Prosperous Wales 2. A Resilient Wales 3. A More Equal Wales 4. A Healthier Wales 5. A Wales of Cohesive Communities 6. A Wales of Vibrant Culture & Thriving Welsh Language 7. A Globally Responsible Wales Introduces **'The Five Ways of Working'** which public bodies must consider when decision making to show they have applied the sustainable development principle: 1. Long-term 2. Integration 3. Involvement 4. Collaboration 5. Prevention	The act places a 'Well-being Duty' stating that each public body must act in accordance with the sustainable development principle. All parts of the Act are important to climate change adaptation because protecting Wales for future generations requires adapting to climate change. Provision of GI can contribute towards the seven national well-being goals in addition to well-being objectives set by public bodies at a regional/local level. For instance, the Welsh well-being goal of securing 'A resilient Wales' is about building healthy functioning ecosystems which support social, economic and ecological resilience. GI could contribute towards several factors within the national well-being indicators framework highlighted in the 'Well-being of Future Generations (Wales) Act 2015: the essentials' guidance document (p.18-22) including: - Air quality - Sense of community - Biological diversity - Water quality - Healthy ecosystems - Reducing flood risk to homes and businesses - Mental well-being.

Policy	Summary	Relevance to GI
Environment (Wales) Act 2016	Provides a legal framework to manage Wales' natural resources in a more proactive and sustainable manner, contributing to the achievement of the well-being goals set out in the Well-being of Future Generations Act. The Act sets out the legislative framework necessary to tackle climate change. Supports the Welsh Government's wider work to help secure Wales' long-term well-being.	Introduces a new biodiversity duty, requiring all public authorities to 'maintain and enhance biodiversity'. This Section 6 duty, requires that a public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions. The intention of this duty is to ensure that biodiversity becomes an integral part of decision making in public authorities. The Act also places a duty on the Welsh Government to produce and implement a National Natural Resources Policy for the achievement of SMNR in Wales. Provides a context for the delivery of multi-functional GI. Provision of GI can contribute significantly to the sustainable management of natural resources, in particular to maintaining and enhancing biodiversity and the resilience of ecosystems in terms of the diversity and connections within and between ecosystems and the extent and condition of these ecosystems, so that they are better able to resist, recover 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.

Policy	Summary	Relevance to GI
Natural Resources Policy (NRP) 2017	Sets out **three national priority areas** to tackle the challenges to Wales' natural resources and ecosystems, and realise the opportunities they provide across the well-being goals: 1. Delivering nature-based solutions. 2. Increasing renewable energy and resource efficiency. 3. Taking a place-based approach.	A key priority of the NRP is to deliver Nature-based solutions to help improve environmental, social and economic resilience. This includes increasing GI in and around urban areas through nature-based solutions. GI can deliver in terms of both ecosystem resilience and benefits across the well-being goals. The NRP states a commitment towards planning the development of GI at the heart of communities to deliver multiple benefits.
Natural Resources Wales/ State of Natural Resources Report (SoNaRR) for Wales 2020	Natural Resources Wales' purpose is to pursue sustainable management of natural resources (SMNR), to improve Wales' well-being and provide a better future for everyone. Three areas for transformative change: the food, energy and transport systems. SoNaRR2020 is an assessment of the extent to which Wales is achieving the SMNR. It aims to assess Wales' progress against four aims and sets out a range of opportunities for action to move towards a sustainable future. **Four long term aims** of SMNR that guide the assessments that underpin SoNaRR2020: 1. Stocks of natural resources are safeguarded and enhanced. 2. Ecosystems are resilient to expected and unforeseen change.	The SMNR is assessed against several cross-cutting themes highly relevant to GI, for example: • Biodiversity • Climate Change • Land use and soils • Air quality Links to the Welsh well-being goals e.g., of securing 'A resilient Wales' through building healthy, functioning ecosystems which support social, economic and ecological resilience. GI could play a key role as part of an integrated approach to meet the four long-term aims of SMNR (e.g., Aim 3, GI can help to improve air and noise pollution and reduce risk of flooding).

Policy	Summary	Relevance to GI
	3. Wales has healthy places for people, protected from environmental risks. 4. Contributing to a regenerative economy, achieving sustainable levels of production and consumption.	The green recovery task and finish group identified a need to refocus attention towards a truly green recovery, a society that works with nature, not against it.
Active Travel (Wales) Act 2013	The Active Travel (Wales) Act makes walking and cycling the preferred option for shorter journeys, particularly everyday journeys, such as to and from a workplace or education establishment, or to access health, leisure or other services or facilities. The Active Travel Act requires local authorities to produce Integrated Network Maps, identifying the walking and cycling routes required to create fully integrated networks for walking and cycling to access work, education, services and facilities.	GI planning has an important role to play in promoting and supporting the delivery of the Active Travel Act by creating attractive and healthy environments and infrastructure that encourages people to walk and cycle and increase accessibility to open green spaces.

Policy	Summary	Relevance to GI
Planning (Wales) Act 2015	The Planning (Wales) Act is a set of provisions derived from an extensive evidence base and stakeholder engagement that will provide a modern legislative framework for the operation of the planning system. It puts in place delivery structures, processes and procedures, to make the planning system fit for the 21st Century. Taken together the provisions will allow the planning system to support the delivery of national, local and community aspirations by creating sustainable places where citizens have improved access to quality homes, jobs and built and natural environments and supports the use of the Welsh language.	
Planning Policy Wales (PPW) -Edition 12 (2024)	Sets out the land use planning policies of the Welsh Government. The core objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales (As required by the Well-being of Future Generations (Wales) Act 2015.)	Chapter 6 (Distinctive and Natural Places) includes Section 6.2 (Green Infrastructure), which sets out national policy on integration of green infrastructure and development. The 2024 update of Chapter 6 incorporates changes to strengthen policy on Sites of Special Scientific Interest, Trees and Woodlands and Green Infrastructure. The updated Section 6.2 on green infrastructure covers: • Taking a proactive approach to Green Infrastructure • Green Infrastructure Assessments • Integrating Green Infrastructure and Development

Policy	Summary	Relevance to GI
Future Wales – the National Plan 2040 (2021)	Future Wales – the National Plan 2040 is the highest tier of development plan and is focused on solutions to issues and challenges at a national scale, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of communities. Identifies **11 Outcomes**: **A Wales where people live…** 1. … and work in connected, inclusive and healthy places. 2. … in vibrant rural places with access to homes, jobs and services. 3. … in distinctive regions that tackle health and socio-economic inequality through sustainable growth. 4. … in places with a thriving Welsh Language. 5. … and work in towns and cities which are a focus and springboard for sustainable growth. 6. … in places where prosperity, innovation and culture are promoted. 7. … in places where travel is sustainable. 8. … in places with world-class digital infrastructure. 9. … in places that sustainably manage their natural resources and reduce pollution. 10. … In places with biodiverse, resilient and connected ecosystems. 11. … in places which are decarbonised and climate-resilient.	GI can contribute to a number of the Future Wales outcomes, for example 'a Wales where people live and work in connected, inclusive and healthy places.', and a Wales where people live in places with biodiverse, resilient and connected ecosystems.' Policy 2 Shaping Urban Growth and Regeneration – Strategic Placemaking sets out the national placemaking principles that all new developments, regeneration and investment initiative should seek to achieve across all parts of Wales and at all scales, and emphasises "the use of innovative nature-based solutions should form part of strategies for urban growth and regeneration" (page 66). In relation to GI, Policy 2 states that the integration of GI within developments should be "informed by the planning authority's Green Infrastructure Assessment" Policy 9 – Resilient Ecological Networks and Green Infrastructure reiterates the importance of GI in urban growth and supporting rural communities and responding to the twin challenges of addressing the climate emergency and reversing biodiversity decline. To achieve this the NDF emphasises that all Strategic and Local Development Plans must be informed by green infrastructure assessments and contribute to these aims through appropriate policies.

Policy	Summary	Relevance to GI
Technical Advice Note 5: Nature Conservation & Planning (2009)	Provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. NB – written to be read in conjunction with Planning Policy Wales (2002).	Sets out the key principles of planning for nature conservation, addresses nature conservation in development control procedures deals with the conservation of internationally and nationally designated sites and habitats and local sites. Also covers the conservation of protected and priority species.
Technical Advice Note16: Sport, Recreation and Open Space	Provides advice about how the land use planning system should make provision for sport and recreational facilities and informal open spaces, as well as how it can protect existing facilities and open spaces in urban and rural areas in Wales. NB – written to be read in conjunction with Planning Policy Wales (2002).	Sets out the key principles of understanding need, auditing provision and planning new provision for sport, recreation and open spaces. These spaces can all form part of a multifunctional green infrastructure network.
NRW Green Infrastructure Assessment Guidance Note 42 (2023) A guide to key Natural Resources Wales' datasets and how to use them as part of a Green Infrastructure Assessment	The Welsh Government has asked all planning authorities in Wales to undertake a Green Infrastructure Assessment. The Guide provides an overview of the key national datasets held by NRW. It also describes how this data could be used to help inform Green Infrastructure Assessments and where these datasets can be accessed.	Provides guidance on national datasets held by NRW to inform Green Infrastructure Assessments.
NRW South Central Wales Area Statement 2020	The South Central Area Statement area covers the Local Authorities of the Vale of Glamorgan, Bridgend, Merthyr Tydfil and Rhondda Cynon Taff, as well as Cardiff, Wales' capital city.	GI is broadly relevant to the area statement across all of its themes, but it includes some specific mentions of GI, including: • An intent to 'work with Public Service Boards and their member public bodies...to ensure that

Policy	Summary	Relevance to GI
	The Area Statement is dominated by a desire to bridge the urban and the natural environments. To ensure everyone involved in the Area Statement process is thinking of South Central Wales in the same context, **five strategic themes** are used to investigate and understand place: 1. Building resilient ecosystems 2. Connecting people with nature 3. Working with water 4. Improving our health 5. Improving our air quality	ecosystem resilience and green infrastructure is a key consideration in future well-being assessments and well-being plans…' • Increasing the green infrastructure in and around urban localities to maximise benefits such as recreation, cleaner air, improving protection from hazards such as flooding and wildfire, and enhancing mental and physical well-being, ensuring that the natural environment becomes a key part of the decision-making process. • Pressure on ageing infrastructure is a key concern in South Central Wales, with surface water infiltration into our combined sewage systems causing overloading and leading to pollution. Here, success would be the integration of nature-based solutions, such as sustainable drainage systems, into urban green infrastructure in order to alleviate the pressure on urban areas, and adapting communities to an increased risk of flooding.
Local Policy		
Adopted Local Development Plan	The Adopted Vale of Glamorgan Deposit Local Development Plan (LDP) sets out the council's land use policies and proposals to control development in the county borough up to 2026. It does not include a specific policy relating solely to green infrastructure but does have policies of relevance to green infrastructure in several of its policies for example, Policy SP 10: Built and Natural Environment, Policy MD 2: Place Making, Policy MD 3: Design of New Development, Policy MD 6: Promoting Biodiversity, Policy MG 20 – Transport Proposals (Walking and Cycling), Policy MG19 Sites and Species of European Importance, Policy MG20	Local development plans can include policies for the provision and enhancement of GI. In some instances they do not have a specific GI policy, but GI, or GI assets are incorporated into other policies where relevant.

Policy	Summary	Relevance to GI
	Nationally Protected Sites and Species, Policy MG21 – Sites of Importance for Nature Conservation, Regionally Important Geological and Geomorphological Sites and Priority Habitats and Species. The Vale of Glamorgan also has a series of Supplementary Planning Documents of relevance to GI: • **Biodiversity and Development** – outlines how biodiversity in the Vale of Glamorgan will be conserved and enhanced throughout the planning and development process • **Design in the Landscape** - seeks to promote best practise and to reinforce the sense of place or "bro" of the Vale of Glamorgan by setting out the Councils design expectations arising from its landscape policies and designated areas • **Trees, Woodlands Hedgerows and Development** - provides guidance to homeowners, land owners, contractors, developers and other interested parties involved in the planning process on how to fully consider trees and hedgerows as part of new development proposals	
Vale of Glamorgan Local Authority Well-being Plan	The Vale of Glamorgan Public Service Board published its second Well-being Plan in 2023. The Well-being Plan sets out three Well-being Objectives and the priority areas that the PSB will be focusing on over the coming years to out its duties to deliver the national well-being goals. The objectives are: • **A more resilient and greener Vale** - by understanding and making the changes necessary as individuals,	Many well-being plan aspirations and objectives overlap with GI aspirations, and green infrastructure planning can contribute to achieving well-being objectives through the provision of quality green spaces.

Policy	Summary	Relevance to GI
	communities and organisations in response to the climate and nature emergencies. • **A more active and healthier Vale** – by encouraging and enabling people of all ages to be more active and to promote the benefits of embracing a healthier lifestyle. • **A more equitable and connected Vale** - by tackling the inequities that exist across the Vale, engaging with our communities and providing better opportunities and support to make a lasting difference.	
Vale of Glamorgan Biodiversity Forward Plan (2019)	The Vale of Glamorgan Biodiversity Forward Plan looks at how the Council manages and improves natural resources to ensure that biodiversity and sustainability are considered in all service areas and are core themes in service delivery, becoming an integral part of the decision-making processes throughout the Council. The plan sets out how the Vale of Glamorgan Council's shall meet its obligations under section 6 of the Environment (Wales) Act 2016 to demonstrate how the Local Authority will "seek to maintain and enhance biodiversity in the proper exercise of their functions and in doing so promote the resilience of ecosystems". The plan details the mechanisms by which the aims will be delivered in the Vale of Glamorgan to halt the decline of biodiversity, reduce the effects of climate change and promote sustainable development, and sets 6 objectives supported by a series of short, medium, and long-term actions for protection and enhancement of biodiversity within the Vale of Glamorgan. The objectives are defined below:	Many of the plan aspirations overlap with GI aspirations, and green infrastructure planning can contribute to achieving the objectives through the provision of quality green infrastructure.

Policy	Summary	Relevance to GI
	• Objective 1: Engage and support participation and understanding to embed biodiversity throughout decision making at all levels • Objective 2: Safeguard species and habitats of principle importance and improve their management • Objective 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation • Objective 4: Tackle key pressures on species and habitats • Objective 5: Improve our evidence, understanding and monitoring • Objective 6: Put in place a framework of governance and support for delivery	
Vale of Glamorgan Climate Change Challenge Plan 2021-2030	The Plan, also known as 'Project Zero' is the Council's Plan to help fight climate change. To tackle climate change and protect our environment it encourages the Council to: 'be a leader, encourage and support others to do things differently, and change how we work.' Its actions include: • Talk with and listen to people to help us all understand what we can do to help. • Keep learning about what we can do better and what skills we'll need in the future. • Look after our environment and the animals and plants that live and grow in it. • Make sure our work and our plans help us fight climate change e.g. planning and procurement. • Encourage others to think about the way they travel e.g. walking, cycling, buses, trains, electric vehicles. • Help people to see how food affects our environment and reduce food waste.	Many of the plan aspirations overlap with GI aspirations, and green infrastructure planning can contribute to achieving the Project Zero actions through the provision of quality green infrastructure.

Policy	Summary	Relevance to GI
	• Waste less and help people to reuse, repair and recycle. Use less energy and get our energy from renewable sources like the wind and the sun. • Work to make our homes and buildings including schools use less energy. • Use technology to help staff work from home and make it easier for people to access services	
Vale of Glamorgan Corporate Plan	The Corporate Plan outlines the Vale of Glamorgan Council's priorities for 2025-2030, and how they will be achieved. The plan presents five well-being objectives that collectively contribute towards the seven national well-being goals. The objectives are: 1. Creating great places to live, work and visit 2. Respecting and celebrating the environment 3. Giving everyone a good start in life 4. Supporting and protecting those who need us 5. Being the best Council we can be The Plan details how the Council will deliver its vision for the Vale of Glamorgan of 'Strong Communities with a bright future'.	Many of the plan aspirations overlap with GI aspirations, and green infrastructure planning can contribute to achieving the objectives through the provision of quality green infrastructure.

APPENDIX 2
GREEN INFRASTRUCTURE TYPOLOGY AUDIT

1.0 GREEN INFRASTRUCTURE TYPOLOGY AUDIT

1.1 Approach

Identifying Green Infrastructure Assets

1.1.1 This Green Infrastructure Audit brings together existing datasets to provide an evidence resource of the existing GI Assets that contribute to the Vale of Glamorgan's network of natural areas. The typology is identified in accordance with the methodology in NRW Green Infrastructure Assessment Guidance Note 42 (2023).

Mapping Green Infrastructure Assets

1.1.2 The datasets listed in the following table were identified as contributing GI assets within The Vale of Glamorgan. Publicly available datasets were acquired through the DataMapWales portal and Ordnance Survey's OSOpenData resource. Additional data layers were sourced from various departments within The Vale of Glamorgan Council.

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
Biodiversity	**Special Protection Area (SPA)**	Special Protection Areas (2022) Source: DataMapWales	This spatial dataset contains the digital boundaries of all Special Protection Areas (SPAs) in Wales. The EC Birds Directive of 1979 requires member states to establish SPAs to conserve the habitats of two categories of birds: i) Species which are rare or vulnerable, of which there are forty-eight in the UK. ii) Some migratory species which visit our shores regularly. Attribution: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	Special Area of Conservation (SAC)	Special Areas of Conservation (2022) Source: DataMapWales	This spatial dataset contains boundaries of designated Special Areas of Conservation (SACs) in Wales. The EC Habitats and Species Directive came into force in 1992 with the aim of conserving biodiversity by protecting a wide range of habitats and species of animals and plants. Attribution: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right
	Ramsar Wetlands of International Importance	Ramsar (2022) Source: DataMapWales	This spatial dataset contains the digital boundaries of Ramsar sites in Wales. In ratifying the Convention in 1976, the UK government accepted a commitment to promote the conservation of internationally important wetland sites within its territories. Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number AC0000849444. Crown Copyright and Database Right.

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
	Site of Special Scientific Interest (SSSI)	Sites of Special Scientific Interest (2023) Source: DataMapWales	This spatial dataset contains the boundaries of Sites of Special Scientific Interest (SSSIs) in Wales. SSSIs cover a wide range of habitats from small fens, bogs and riverside meadows to sand dunes, woodlands and vast tracks of uplands. Most are in private ownership, although some are owned and managed by local wildlife trusts, or other voluntary conservation bodies. Attribution: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	National Nature Reserve (NNR)	National Nature Reserve (2022) Source: DataMapWales	National Nature Reserves represent the very best examples of wildlife habitats and geological features. They are owned or leased by NRW, or the land is held by an approved body, such as a County Wildlife Trust. Each reserve has a programme of work to manage the site's special features. All of them are also Sites of Special Scientific Interest (SSSI) and may provide places for educational projects, research and management trials. Attribution statement: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	Local Nature Reserve (LNR)	Local Nature Reserve (2022) Source: DataMapWales	Local Nature Reserves contain natural features of special interest to the local area. These are all publicly accessible sites. LNR prove to be useful not only to protect habitats and wildlife but increase people's awareness of their environment. They are places where children can learn about nature, and they are often situated in or near urban areas. Attribution statement: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	Sites of Importance for Nature Conservation (SINCs)	Sites of Importance for Nature Conservation – Data provided by Vale of Glamorgan Council	Sites of Importance to Nature Conservation (SINCs) are areas that are recognised for the value of their geology, wildlife and biodiversity. These areas are given a level of protection within the local planning system.

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
	Priority Habitats	Priority Habitat - High Sensitivity (2021) Source: DataMapWales	Shows semi-natural habitats which are listed as priority habitats under Section 7 of the Environment (Wales) Act 2016 Attribution statement: Contains public sector information licensed under the Open Government Licence v3.0.
Water	**Rivers**	Main Rivers (2022) Source: DataMapWales	'Main rivers' are usually larger streams and rivers, but some of them are small watercourses of significance. Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number AC0000849444. Crown Copyright and Database Right.
	Management Catchments	Water Framework Directive (WFD) Management Catchment Cycle 2 (2017) Source: DataMapWales	Management catchments are the unit of geography for which action plans are drafted in implementing the Water Framework Directive. Attribution statement: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	Flood Risk	Flood Risk from Rivers (2022) Source: DataMapWales	Flood Risk Assessment Wales provides a national assessment of risk flooding from Rivers The assessment takes into account flood defences and combines new, national-scale modelling with detailed local-scale models to categories risk into 3 bands, labelled 'High', 'Medium' and 'Low' risk. For Rivers: • 'High' risk means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%) • 'Medium' risk means that each year, an area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%). • 'Low' risk means that each year, an area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%). Attribution Statement: Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved. Some features of this information are based on digital spatial data licensed from the UK Centre for Ecology & Hydrology © UKCEH. Defra, Met Office and DARD Rivers Agency © Crown copyright. © Cranfield University. © James Hutton Institute. Contains OS data © Crown copyright and database right.

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
	Flood Risk	Flood Risk from Surface Water and Small Watercourses (2022) Source: DataMapWales	Flood Risk Assessment Wales provides a national assessment of risk flooding from Surface Water and Small Watercourses. The assessment takes into account flood defences and combines new, national-scale modelling with detailed local-scale models to categories risk into 3 bands, labelled 'High', 'Medium' and 'Low' risk. For Surface Water and Small Watercourses: • 'High' risk means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%) • 'Medium' risk means that each year, an area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%). • 'Low' risk means that each year, an area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%). Attribution Statement: Contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved. Some features of this information are based on digital spatial data licensed from the UK Centre for Ecology & Hydrology © UKCEH. Defra, Met Office and DARD Rivers Agency © Crown copyright. © Cranfield University. © James Hutton Institute. Contains OS data © Crown copyright and database right.
	Flood Risk	Flood Risk from the Sea (2022) Source: DataMapWales	Flood Risk Assessment Wales provides a national assessment of risk flooding from the Sea. The assessment takes into account flood defences and combines new, national-scale modelling with detailed local-scale models to categories risk into 3 bands, labelled 'High', 'Medium' and 'Low' risk. For the Sea: • 'High' risk means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%) • 'Medium' risk means that each year, an area has a chance of flooding of between 1 in 200 (0.5%) and 1 in 30 (3.3%). • 'Low' risk means that each year, an area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 200 (0.5%) Attribution Statement: Contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved. Some features of this information are based on digital spatial data licensed from the UK Centre for Ecology & Hydrology © UKCEH. Defra, Met Office and DARD Rivers Agency © Crown copyright. © Cranfield University. © James Hutton Institute. Contains OS data © Crown copyright and database right.

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
Access	**Public Rights of Way Network**	Public Rights of Way. Source: The definitive map and statement. (2022) Data provided by Vale of Glamorgan Council.	Routes which are publicly accessible and includes facilities such as footpaths, bridleways and pavements. They often provide or enhance connectivity between other green and open spaces.
	Active Travel Routes	Welsh Government Active Travel Approved Routes (2022) Source: DataMapWales Data provided by Vale of Glamorgan Council.	Walking and cycling routes for everyday short distance journeys, such as journeys to school, work, or for access to shops or services. These routes are identified for improvements under the Active Travel (Wales) Act 2013. Attribution statement: © Crown copyright and database rights 2023 OS
	National Cycle Network	Sustrans: National Cycle Network (2021) Source: DataMapWales Data provided by Vale of Glamorgan Council.	UK-wide network of signed paths and routes for walking, cycling, and exploring outdoors Attribution statement: Sustrans National Cycle Network data contains Ordnance Survey data © Crown copyright and database rights (2021). Data provided by Sustrans: https://www.sustrans.org.uk/

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
	Open Access Land	NRW: Open Access - Registered Common Land (2017) NRW: Open Access - Open Country (2016) NRW: Open Access - Other Statutory Access Land (2016) NRW: Open Access – Other Dedicated Land (2017) NRW Open Access – Dedicated Forests (2016) Source: DataMapWales	Areas of open country, registered common land or dedicated land (under the Countryside and Rights of Way Act 2000) open to people to walk, run, explore, climb, watch wildlife etc., without having to stay on paths. Attribution statement: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	Country Park	NRW: Country Parks (2014) Source: DataMapWales	An area designated for people to visit and enjoy recreation in a countryside environment. The purpose of a Country Park is to provide somewhere for visitors who do not necessarily want to go out into the wider countryside. Attribution statement: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
Landscape & Heritage	**National Park**	National Park (2022) Source: DataMapWales	National Parks were established to protect beautiful and relatively wild countryside by: • Preserving the characteristic beauty of the landscape; • Providing access and facilities for public open-air enjoyment; • Protecting wildlife, buildings and places of architectural and historic interest; whilst allowing sustainable farming use to continue as before. Attribution statement: Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	Areas of Outstanding Natural Beauty	Areas of Outstanding Natural Beauty (2022) Source: DataMapWales	Areas of Outstanding Natural Beauty (AONBs) in Wales. AONBs are established under the Countryside Act of 1949, but unlike National Parks, AONBs are not created specifically for opportunities for recreation. However, recreation within AONBs is acceptable if it is consistent with the conservation and enhancement of natural beauty and the needs of agriculture, forestry and other uses. Attribution statement Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right.
	World Heritage Sites	Cadw World Heritage Sites in Wales (2021) Source: DataMapWales	World Heritage Sites are places that the World Heritage Committee of UNESCO has inscribed on a list of international sites because of their outstanding universal value, the importance of which is so great as to transcend national boundaries. Attribution Statement: Designated Historic Asset GIS Data, The Welsh Historic Environment Service (Cadw), 2023, licensed under the Open Government Licence http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
	Registered Landscapes of Historic Interest	Cadw: The Registered Landscapes of Outstanding and of Special Interest in Wales (2022) Source: DataMapWales	To recognise the value of historic landscapes, and to raise awareness of their importance, Cadw, in partnership with the Countryside Council for Wales (now called Natural Resources Wales) and the International Council on Monuments and Sites (ICOMOS UK) has compiled a non-statutory Register of 58 landscapes of outstanding or special historic interest in Wales. Attribution Statement: Designated Historic Asset GIS Data, The Welsh Historic Environment Service (Cadw), 2023, licensed under the Open Government Licence http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/
	Heritage Coast	Data provided by Vale of Glamorgan Council	
	Registered Historic Parks and Gardens	Cadw: Registered Historic Parks and Gardens (2022) Source: DataMapWales	Registration identifies sites which are of special historic interest to Wales. The Register was compiled in order to aid the informed conservation of historic parks and gardens by owners, local planning authorities, developers, statutory bodies and all concerned with them. Attribution Statement: Designated Historic Asset GIS Data, The Welsh Historic Environment Service (Cadw), 2023, licensed under the Open Government Licence http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/
	Scheduled Monuments	Cadw: Scheduled Monuments (2023) Source: DataMapWales	Archaeological sites of national importance are given legal protection by being placed on a 'Schedule' of monuments. Attribution Statement: Designated Historic Asset GIS Data, The Welsh Historic Environment Service (Cadw), 2023, licensed under the Open Government Licence http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/
	Conservation Areas	Conservation Areas (2022) Source: DataMapWales	Conservation areas are distinct parts of the historic environment designated by local planning authorities for their special architectural or historic interest. Attribution Statement: Contains public sector information licensed under the Open Government Licence v3.0.

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
	Agricultural Land	Welsh Government: Predictive Agricultural Land Classification (2022) Source: DataMapWales	Land managed for agriculture, including grazing land, crop production fields and hedgerows. Attribution Statement: Contains public sector information licensed under the Open Government Licence v3.0.
	Welsh Information for Nature-based Solutions	Welsh Information for Nature-based Solutions (2022)	This data shows where the best places are to take action and enhance the environment. This can help with well-being and increase biodiversity. By using the maps together with other data and local knowledge, suitable decisions can be reached at both the local area scale and the whole Wales scale on the sustainable management of natural resources (SMNR)
Urban Green Space	**Park or Public Garden**	Data provided by Vale of Glamorgan Council (Existing Open Space Provision).	
	Amenity Greenspace	Data provided by Vale of Glamorgan Council (Existing Open Space Provision).	
	Outdoor Sports Facilities	Data provided by Vale of Glamorgan Council (Existing Open Space Provision).	
	Allotments, Community Gardens and City (urban) Farms	Data provided by Vale of Glamorgan Council (Existing Open Space Provision).	
	Cemeteries and Churchyards	Data provided by Vale of Glamorgan Council (Existing Open Space Provision).	
	Natural and Semi-Natural Greenspaces	Data provided by Vale of Glamorgan Council (Existing Open Space Provision).	
	Domestic Gardens	Data Provided by Vale of Glamorgan Council (Building Curtilage and Private Gardens)	

Category	GI Asset Type	Dataset Name/Date/Source	Dataset Description
Trees	**Woodland**	National Forest Inventory (2022) Source: Forestry Commission Open Data	The National Forest Inventory (NFI) woodland map covers all forest and woodland area over 0.5 hectare with a minimum of 20% canopy cover, or the potential to achieve it, and a minimum width of 20 metres. Attribution Statement: Contains, or is based on, information supplied by the Forestry Commission. © Crown copyright and database right 2021 Ordnance Survey 100021242
	Urban Trees	NRW Urban Tree Cover (2018) Source: DataMapWales	Woodlands or groups of trees within an urban setting, and individual street trees. Attribution statement Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right. 2023

1.2 Green Infrastructure Typology

1.2.1 The GI typology for the Vale of Glamorgan is set out in **Section 2.0 (Box 2.4)** and shown on **Maps 3.1a** and **3.1b**. Details of the quantity, and (where information is available) quality of these assets are set out below.

Green and Blue Spaces

1.2.2 The following types of green space in the Vale of Glamorgan are predominantly focussed in and around settlements, and are generally accessible spaces (with some exceptions such as members-only sports facilities or allotments).

Type	No. in the Vale
Allotment, community garden or urban farm	23
Cemetery, churchyard or burial ground	65
Amenity greenspace	366
Park or public garden	29
Outdoor sports facilities	145
Provision for children and young people	117

1.2.3 NRW's Welsh Information for Nature-based Solutions (WINS) data[30] suggests that there are some areas in the Vale, particularly pockets in the north of Barry and west of Barry docks, where deprived urban areas do not currently have good access to greenspace.

Natural and semi-natural greenspace

1.2.4 Natural and semi-natural greenspace encompasses a range of spaces, which may or may not be accessible, with a primary purpose of wildlife conservation and providing opportunities for environmental education and raising awareness of nature, typically comprising natural habitats.

1.2.5 The Vale of Glamorgan has a broad range of habitat types, which support a range of wildlife species. The Vale of Glamorgan has 11 different priority habitats, shown on **Map 3.3**.

Priority Habitat	Total Area (ha)	% of The Vale area
Lowland Calcareous Grassland	48.4	0.14
Lowland Dry Acid Grassland	25.8	0.08
Lowland Fens and Reedbeds	37.5	0.11
Lowland Heathland	100.8	0.3
Lowland Meadows	50.6	0.15
Marsh Fritillary Habitat	43.7	0.13
Open Mosaic Habitat on Previously Developed Land	57.2	0.17
Parkland	104	0.31
Purple Moor Grass and Rush Pastures	86.3	0.25

[30] https://storymaps.arcgis.com/collections/036c04ccb85948d2abe7312de75ad318?item=5

Traditional Orchards	19.1	0.06
Wood Pasture	26.7	0.08

1.2.6 Many of these habitats are designated for their biodiversity value at international, national or local level across The Vale of Glamorgan, as shown on **Map 3.4**. These designated assets comprise around 10% of The Vale of Glamorgan's total area (33999.6 ha), as detailed below.

1.2.7 The Vale includes several biodiversity sites of national and international significance, such as the Cosmeston Lakes Country Park which is an LNR and has 25.6ha designated as a SSSI to protect species including Water Voles, and Starry stonewort[31]. In addition, Dunraven Bay SAC forms part of the Southerndown Coast SSSI, which spans 5km of the coastline and is designated for both its geodiversity and biodiversity. The cliff-top grassland is species-rich hosting a range of different plant communities[32]. The Severn Estuary SPA, RAMSAR and SAC site is also included within the Vale.

Designation	No. in The Vale	Name/examples	Total Area (ha)	% of The Vale Area
Special Area of Conservation	2	• Dunraven Bay • Severn Estuary	70.6	0.21
Special Protection Area	1	• Severn Estuary	75.1	0.22
Site of Special Scientific Interest	27	• Cliff Wood - Golden Stairs (biodiversity) • Larks Meadows (biodiversity) • Southerndown Coast (geodiversity and biodiversity)	973.1	2.86
Local Nature Reserve	3	• Cwm Talwg Woodlands • Cosmeston Lakes Country Park	118.6	0.35
Site of Importance for Nature Conservation	361	• Wenvoe Orchid Field • Ogmore Down	2232.7	6.57

[31] Vale of Glamorgan Council. https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/cosmeston-lakes-country-park/SSSI.aspx
[32] Wales Biodiversity Partnership. https://www.biodiversitywales.org.uk/Vale-of-Glamorgan

1.2.9 The Vale of Glamorgan also has extensive natural and semi-natural areas where countryside access is possible via the Countryside and Rights of Way Act, shown on **Map 3.7**.

Open Access Land	Total Area (ha)	% of The Vale area
Country Parks	168.9	0.50
Open Country	<0.01	<0.01
Other Statutory Land	82.73	0.24
Common Land	425.86	1.25
Public Forest	91.46	0.27
All access land	768.97	2.26

Blue space

1.2.10 The freshwater habitat network (or 'blue infrastructure') and the associated river catchments that cover the Vale of Glamorgan are shown on **Map 3.2a**. This includes the South East Valleys Management Catchment, and the Tawe to Cadoxton Management Catchment.

1.2.11 Most river waterbodies and river waterbody catchments in the Vale are failing to achieve overall good status under the Water Framework Directive[33]. For example, the overall status of the River Ely and the Ely River Catchment is poor. This is due to pressures from sewage treatment works, organic pollution and combined sewer overflows or misconnections. However, the European otter is an important biological indicator of the health of rivers and wetlands and is present throughout the river systems of Vale, with particularly high levels of activity along the River Thaw and its tributaries[34].

1.2.12 The Vale has four bathing beaches which all pass the EC Bathing Waters classification. However, the Vale's coastal water quality is under pressure from sewage, as well as water draining from farmland and urban areas[35].

1.2.13 Parts of the Vale are at risk of flooding from rivers (see **Map 3.2a**), surface water (see **Map 3.2b**) or the sea (see **Map 3.2c**), or a combination of these; with a history of recorded flood events caused by multiple sources of flooding[36]. Localised surface water flooding is a particular challenge for urban areas across the Vale.

Green Connections

Cycle Networks and Public Rights of Way

1.2.14 Green spaces and places in the Vale are connected by a comprehensive network of public rights of way (**Map 3.7**).

[33] Cycle 3 (2021) Rivers and Waterbodies Map. https://waterwatchwales.naturalresourceswales.gov.uk/en/
[34] Vale of Glamorgan Local Flood Risk Management Strategy Volume 2 Strategic Environmental Assessment Report (2013) (p.19) Available at: https://www.valeofglamorgan.gov.uk/Documents/Living/Environment/Flood-and-coastal-erosion-risk/Vale-of-Glamorgan-LFRMS-SEA-Environmental-Report.pdf
[35] PSB – Vale of Glamorgan: Environmental information for well-being assessments. Available at: https://www.valeofglamorgan.gov.uk/Documents/Our%20Council/Achieving%20our%20vision/Public-Services-Board/Well-being-Assessment/FINAL-ENGLISH-VERSIONS/Our-Environment-Evidence-Report-2.pdf
[36] South East Wales - Strategic Flood Consequence Assessment (Stage 1) Final Report November 2022

Countryside Access Networks	Total Length (km)
NCN Routes	78.2
Footpaths	512.3
Bridleways	40.3
Restricted Byways	21.8
Total PRoW (Footpaths, Bridleways, Byways & BOAT)	**652.6**

1.2.15 There are several 'National Cycle Network' (NCN) routes in the Vale including:

- NCN 88/888 - Barry to Ewenny, and some short sections in Penarth. National Route 88 of the National Cycle Network is a proposed coastal route between Newport, Cardiff, Bridgend and Margam Country Park. At the moment, only short sections of the route are open.

1.2.16 The Wales Coast Path, Vale Ways Millennium Heritage Trail and the Great Glamorgan Way are promoted walking routes through The Vale, along with a number of local routes such as the Llantwit Major Circular Trail. In addition, there are a number of cycle routes that provide links to attractions in The Vale of Glamorgan and beyond, some on dedicated routes, others on country lanes[37].

Woodland & Trees

1.2.17 The Vale of Glamorgan has a significant tree resource (see **Map 3.5**), as detailed in the i-Tree Eco Report for the Vale[38]. This estimates that there are more than 1.7 million trees in the Vale of Glamorgan, providing ecosystem services worth in excess of £2.05 million each year. This includes an estimated tree canopy cover of 13% in urban areas (with 72% in good or excellent condition), and 14% in rural areas (with 43% in good or excellent condition). However, these totals fall short of the reported averages for Wales and also fall short of published recommended canopy cover targets, of 20% (or 15% for coastal towns and cities).

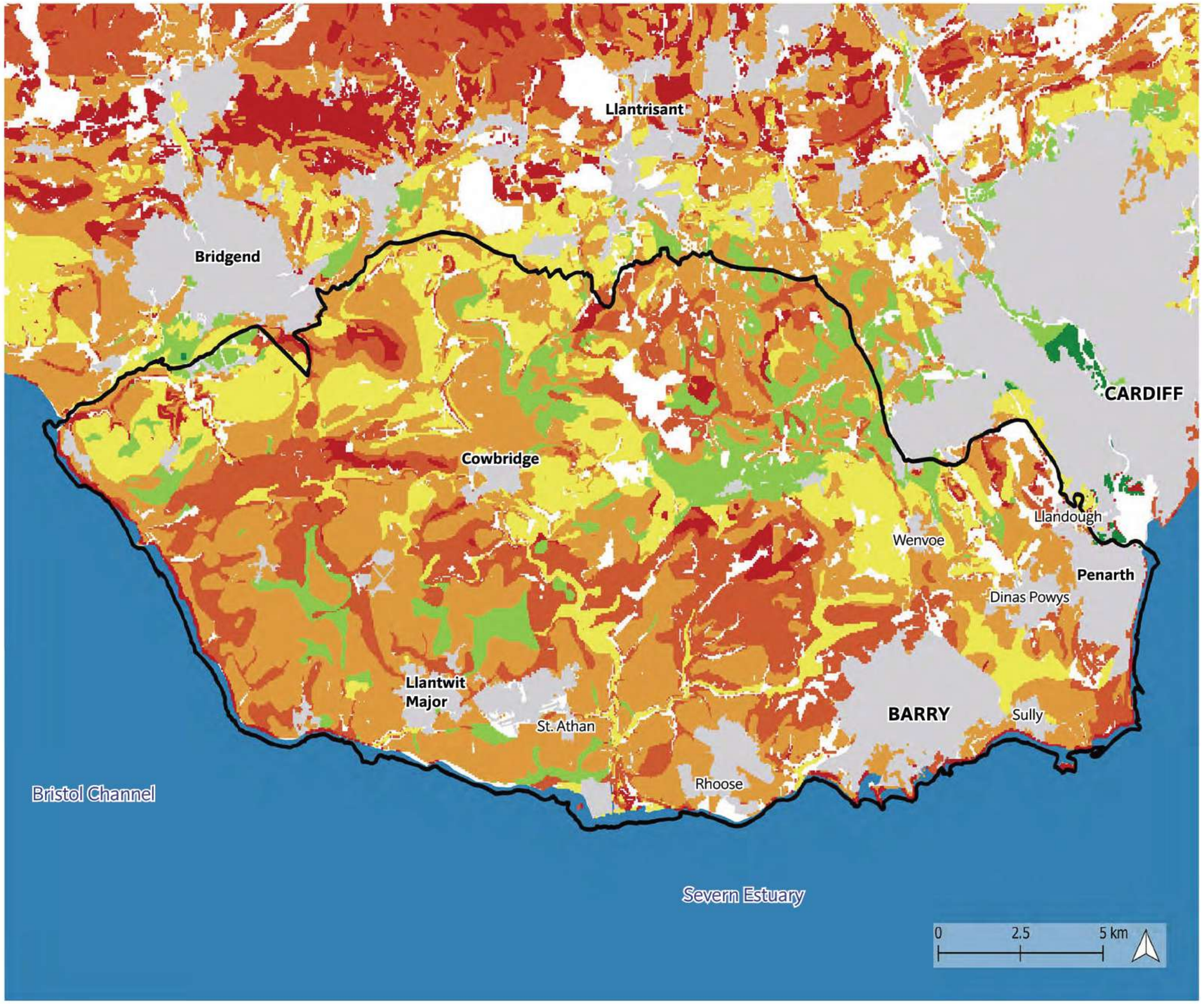
1.2.18 The distribution of the Plantation Forestry within The Vale of Glamorgan is shown as conifer, or mixed mainly conifer on **Map 3.5.** This comprises coniferous woodland partly owned and managed by Natural Resources Wales (such as at Hensol Forest). There are approximately 183.2 ha of coniferous plantation in The Vale of Glamorgan, comprising 0.5% of the total area.

Productive Landscapes

Agricultural Land

1.2.19 Agriculture is a major land-use in the Vale of Glamorgan, with the majority of agricultural land classified as Grade 3 or Grade 4. In areas close to settlement, particularly in the south east surrounding the town of Barry, farmland tends to be of moderate to poor quality (see **Map A1.1**). Extensive farmland in the north east and also to the north west/west are dominated by good to moderate quality agricultural land. Farmland has mixed agricultural uses including livestock faming (mostly cattle, sheep and poultry), mostly on permanent

[37] https://www.visitthevale.com/inspiration/cycling-in-the-vale
[38] i- Tree Eco Vale of Glamorgan. Understanding the Vale's Tree Resource: Technical Report. Forest Research



KEY

Agricultural Land Classification:

- 1 (Very Good Quality)
- 2
- 3a
- 3b
- 4
- 5 (Very Poor Quality)

Vale of Glamorgan

Built-up Areas

CBA

December 2023

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VALE OF GLAMORGAN
GREEN INFRASTRUCTURE STRATEGY

MAP A1.1
AGRICULTURAL LAND CLASSIFICATION

grassland, with some arable land uses (predominantly wheat and barley). The proportion of The Vale of Glamorgan that falls into each quality classification is outlined below:

Predictive Agricultural Land Classification	% of Vale area	Area (ha) in the Vale
1 (Very Good Quality)	<0.01	1.4
2	7.7	2603.6
3A	14.2	4825.4
3B	35.8	12180
4	17.8	6038.1
5 (Very Poor Quality)	2.4	810.2
Total agricultural land	77.8 %	26458.8

APPENDIX 3
GREEN INFRASTRUCTURE FUNCTIONALITY/ ECOSYSTEM SERVICES ASSESSMENT BY GI ZONE

GREEN INFRASTRUCTURE FUNCTIONALITY/ECOSYSTEM SERVICES ASSESSMENT BY GI ZONE

The GI assets identified in the GI typology audit (**Appendix 2**) provide a wide range of benefits to society derived from the functions or ecosystems services that they provide. A high level summary of the ecosystem services provided by the GI assets in each GI zone within the Vale of Glamorgan is described below. These form the basis for identifying needs and opportunities for the GI Strategy.

Zone 1 – Western Vale

The Western Vale is situated inland, in the west of the Vale of Glamorgan and is a lowland landscape defined by large arable fields, with little tree cover apart from occasional conifer shelterbelts around buildings. The main watercourse intersecting the zone is the Alun River. Settlements in the zone include St Brides Major, Llandow, Llanmaes and Colwinston. Llandow Industrial Estate and Car Racing Circuit is a large-scale contemporary feature in the landscape. A small section of the Merthyr Mawr, Kenfig & Margam Burrows Landscape of Outstanding Historic Interest lies in the north-west of the Zone.

Supporting Services
Supporting services are those which are essential to the functioning of ecosystems and indirectly responsible for all other services. This includes the relationship between underlying geology and soil character, soil formation and the processes of plant growth, including pollination.

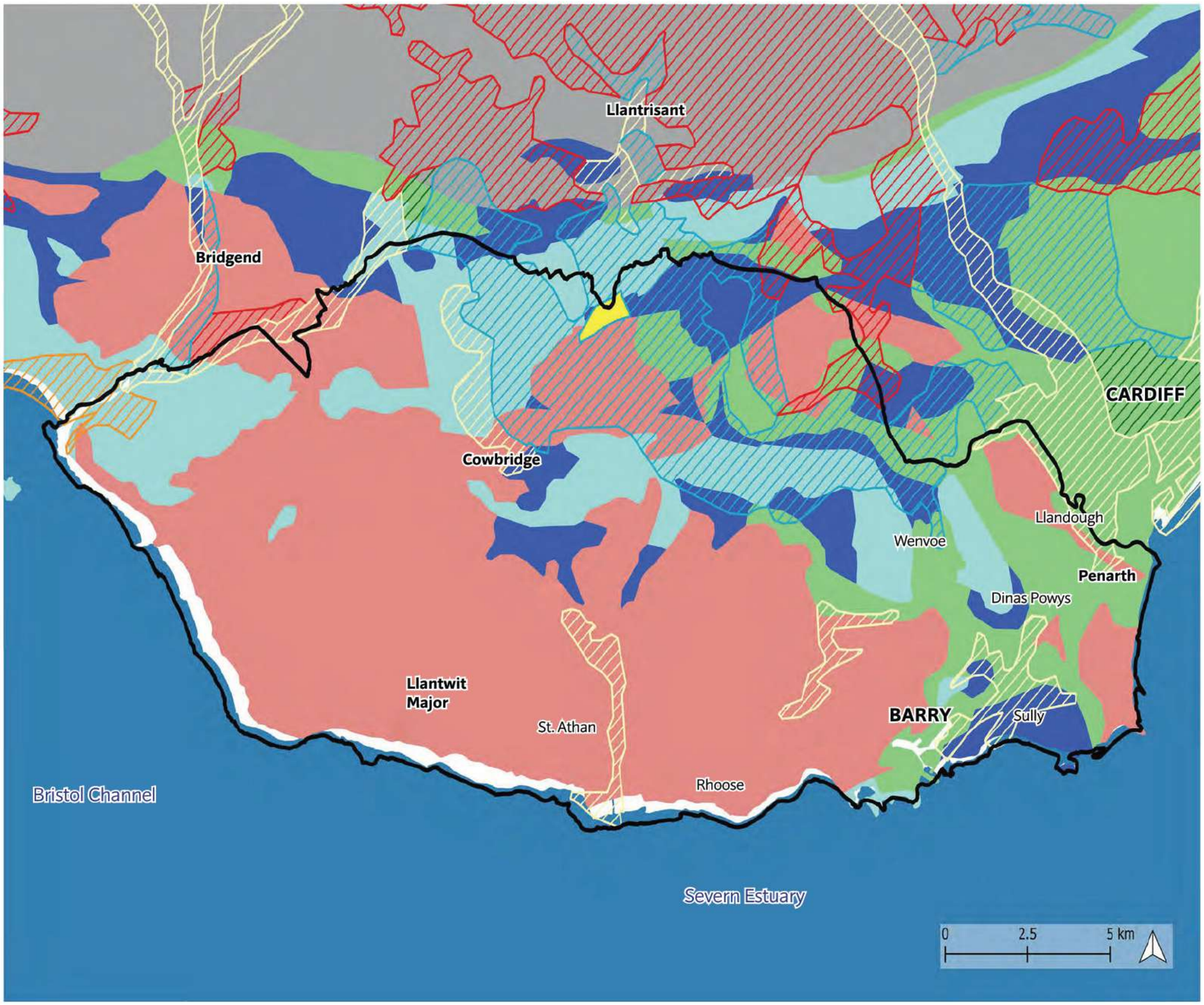
Geology and soil character: The bedrock geology (**Map A1.2**) of the Western Vale Zone is largely mudstone, siltstone, limestone and sandstone; with areas to the north-east and north-west of limestone with subordinate sandstone and argillaceous rocks. There is also a small area of sandstone and conglomerate, interbedded bedrock to the north. The superficial geology is comprised of a small area to the west of blown sand deposits. There are alluvium deposits, and glacial sand and gravel deposits to the north and north-west boundary.

Pollination: by insects provides a supporting service for primary production to support both agricultural production and nature conservation. However, the serious consequences of significant declines in insect pollinator populations, considered largely to result from land-use intensification, habitat destruction and fragmentation, disease, the use of agro-chemicals, and climate change, has been recognised in the government's The Action Plan for Pollinators in Wales[39]. National Initiatives such as B-Lines[40] have been developed to promote landscape-scale habitat creation to try and reverse the decline in pollinating insects, whilst local initiatives such as Making Space for Nature[41] intend to conserve and enhance pollinator habitats.

Provisioning Services
Provisioning services relate to the supply of goods such as freshwater, food and fuel.

Water availability: The Western Vale Zone comprises the Tawe to Cadoxton management catchment area. The main watercourse intersecting the zone is the Alun River.

[39] https://www.gov.wales/sites/default/files/publications/2019-04/action-plan-for-pollinators.pdf
[40] https://www.buglife.org.uk/our-work/b-lines/b-lines-wales/
[41] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Grassland-Management/Making-Space-for-Nature.aspx



KEY

Superficial depositis:

- Alluvium
- Glacial Sand and Gravel
- Blown Sand
- River Terrace Deposits (Undifferentiated)
- Till
- Peat

Bedrock Geology:

- Mudstone, Siltstone, Limestone and Sandstone
- Limestone with Subordinate Sandstone and Argillaceous rocks
- Sandstone and Conglomerate, Interbedded
- Mudstone, Siltstone and Sandstone
- Mudstone, Siltstone, Sandstone, Coal, Ironstone and Ferricrete

- Vale of Glamorgan

Source: Contains British Geological Survey materials © UKRI [2023].

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VALE OF GLAMORGAN
GREEN INFRASTRUCTURE STRATEGY

MAP A1.2
GEOLOGY

The Water Resources Management Plan[42] produced by Dŵr Cymru Welsh Water for the Tywi Conjunctive Use System (SEWCUS) area, which covers the west of the Vale of Glamorgan, suggests that there will be a surplus of water supply across the 30 year planning period from 2020 to 2050, despite a projected increase in population.

Food provision: the area is characterised by mixed farmland. The quality of agricultural land varies between ALC Grade 2-5, with the majority of the area graded between 3a and 4.

Fuel and fibre: Within the Vale there are 3 forms of renewable energy which are considered to be the most prevalent: wind energy; solar energy; and biomass energy developments[43]. Maps produced by the updated Renewable Energy Assessment undertaken in 2018[44] show a potential wind energy area towards the western boundary of the Western Vale, north-west of Llandow. Additionally, there are several areas with high potential in terms of generation capacity and the lack of major planning constraints for solar energy developments, for instance north-west of Llandow. The maps also identify extensive patches of agricultural land which could be used to produce biological material to fuel biomass plants, subject to the relevant planning permissions and permits being approved.

Regulating Services

Regulating services maintain natural systems that include water and air quality, flooding, soil erosion and coastal processes.

Climate regulation: Climate change is predicted to affect the amount and distribution of rainfall; this has an impact on flows and water levels, drought and flood events. Project Zero is the Vale of Glamorgan Council's response to the climate change emergency[45]. The project identifies 18 challenges which reflect what needs to change as part of an effective response to the climate emergency. Challenges include the need to 'Protect and enhance green and blue space, biodiversity and ecosystem resilience and improve understanding of the importance of our natural environment'. Steps to achieve this will include replacing lost trees and promoting tree planting across the Vale, helping to provide climate regulation, for instance through carbon storage. Another challenge is 'To work with partners to reduce the risk of flooding, manage our coastline and encourage everyone to take a more responsible approach to water use'. Steps to achieve this will include the implementation of Sustainable Urban Drainage measures to improve drainage, reduce the volume of surface runoff and minimise flood risks.

Regulating water quality: Challenges to water quality in the catchment include pollution from sewage and wastewater, and physical modifications. The Western Vale area includes the Ewenny River waterbody catchment which is of overall good status and the Alun River waterbody catchment which is of overall moderate status under the WFD regulations[46]. A variety of management initiatives have been identified to maintain and improve water quality in the Tawe to Cadoxton Management Catchment[47]. Local measures include Sustainable Urban Drainage schemes to reduce urban pollution, sewage pollution and change to water levels[48].

[42] https://www.dwrcymru.com/-/media/Project/Files/Page-Documents/Corporate/Environment/Water-Resources/Final-Water-Resources-Management-Plan-2019/Final-Water-Resources-Management-Plan-2019---Main-Technical-Report.ashx
[43] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf
[44] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf
[45] https://www.valeofglamorgan.gov.uk/Documents/Our%20Council/Achieving%20our%20vision/Consultation/Project-Zero-Challenge-Plan.pdf
[46] https://waterwatchwales.naturalresourceswales.gov.uk/en/
[47] https://naturalresources.wales/media/679388/2016-updated-_tawe_catchment_summary_nrw.pdf
[48] https://naturalresources.wales/media/679388/2016-updated-_tawe_catchment_summary_nrw.pdf

Regulating water (flooding): The Western Vale has some flooding challenges. Llanmaes near the southern boundary of the Western Vale, north-east of Llantwit Major, has been subject to several flood events during recent years[49]. Work to alleviate flooding in Llanmaes includes the creation of storage areas in the catchment to intercept, slow and divert flows from the village[50], and this is currently under development.
NRW's Welsh Information for Nature-based Solutions (WINS) data[51] demonstrates the extent of potential for woodland habitat to enhance infiltration into the ground. Their mapping shows all areas where tree planting for Natural Flood Management is feasible, and also highlights the areas in which different types of woodland planting could be considered. In the Western Vale Zone, this extends along most watercourses, with particular areas of focus around Clemenstone and Llandow, and to the north of Cowbridge.

Regulating soil erosion and quality: The soils of best quality and most productive agricultural land are a scarce and finite resource in Wales; accounting for less than 7% of land area. Soil quality has deteriorated across all habitats apart from woodlands. The UK Climate Change Risk Assessment 2017 Evidence Report has identified risks to soils from due to warmer, drier summers. Climate change related risks are threatening the many services that soils provide, notably those that relate to soil biota, soil organic matter, and soil erosion and compaction.
Soil is a finite resource that underpins the delivery of a wide range of crucial services such as food production, biodiversity, carbon and water storage. Unsustainable agricultural and land management practices can lead to significant environmental impacts such as soil loss through erosion leading to carbon losses, the pollution of watercourses and increased and more rapid surface water flows which can contribute to flood risk.[52]

Air quality: Poor air quality in Wales poses a significant issue for public health, associated with adverse risks, particularly within urban areas and near major roads. The pollutants of primary concern are particulate matter and nitrogen dioxide (NO2). Both pollutants primarily originate from motor vehicles. Where air quality reviews show that air quality objectives may not be met, local authorities are required to designate an Air Quality Management Area (AQMA), where action must be taken to ensure that air quality in the identified area improves. There are no AQMAs in the Vale of Glamorgan.

Cultural Services
Cultural services provide direct, non-material, benefits to human society, addressing a range of social and cultural needs that encompass a sense of place and inspiration, a sense of history, tranquillity and recreation.

Sense of place and inspiration: The Western Vale is a gentle lowland landscape defined by large arable fields with little tree cover apart from occasional conifer shelterbelts around buildings[53]. The Llandow Industrial Estate and Car Racing Circuit is a large-scale contemporary feature in the landscape.

Sense of history: The Western Vale includes several historic features including Ewenny Priory (RHPG), Corntown causewayed enclosure (SAM) and Caer Dynnaf hillfort (SAM). A small section of the Merthyr Mawr, Kenfig & Margam Burrows Landscape of Outstanding Historic Interest is included

[49] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Local-Flood-Risk-Management-Strategy.aspx
[50] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Llanmaes/Llanmaes-Flood-Alleviation-Work.aspx
[51] https://storymaps.arcgis.com/collections/036c04ccb85948d2abe7312de75ad318?item=3
[52] Vale of Glamorgan Well-being Assessment Evidence Report Our Environment – Part 1
[53] https://cdn.cyfoethnaturiol.cymru/media/682623/nlca36-vale-of-glamorgan-description.pdf?mode=pad&rnd=131550626020230000

near the north-west boundary. The Landscape of Historic Interest is comprised of two discrete areas of dunes situated on the west coast of Glamorgan, presenting an example of natural forces and the significant impact they had on earlier societies[54].

Leisure and Recreation: The Western Vale provides a range of outdoor leisure and recreational activities for local communities and visitors, in particular walking and cycling. Facilities and destinations include recreational routes such as National Cycle Network Route 888, Route 88 and Ewenny Priory (RHPG).

[54] https://www.ggat.org.uk/cadw/historic_landscape/kenfig/english/merthyr_mawr_main.html

Zone 2 – Eastern Vale

The Eastern Vale is situated inland, in the east of the Vale of Glamorgan. The zone contains frequent woodland clumps and field trees, along with riparian woodlands and small plantations on valley slopes. The Llancarfan Landscape of Outstanding Historic Interest is a prominent feature of the landscape, providing one of the best surviving examples of the historic character of the wider Vale. The area includes the market town of Cowbridge to its western boundary, which has coalesced with Llanblethian and become an affluent settlement, with semi-suburban residential areas. Villages within the zone include Wenvoe, St Nicholas and Bonvilston. The main watercourses intersecting the area are the Ely and Thaw.

Supporting Services
Supporting services are those which are essential to the functioning of ecosystems and indirectly responsible for all other services. This includes the relationship between underlying geology and soil character, soil formation and the processes of plant growth, including pollination.

Geology and soil character: The bedrock geology of the Eastern Vale is made up of 4 different lithologies. Primarily this zone contains mudstone, siltstone, limestone and sandstone, with an area of mudstone, siltstone and sandstone to the east of the zone. The area also contains sandstone and conglomerate interbedded bedrock and limestone with subordinate sandstone and argillaceous rocks. The superficial geology is comprised of an extensive area of glacial sand and gravel deposits across the north and centre of the zone. There are also smaller areas of alluvium deposits to the south and east, till deposits to the north-east, and peat deposits to the north.

Pollination: by insects provides a supporting service for primary production to support both agricultural production and nature conservation. However, the serious consequences of significant declines in insect pollinator populations, considered largely to result from land-use intensification, habitat destruction and fragmentation, disease, the use of agro-chemicals, and climate change, has been recognised in the government's The Action Plan for Pollinators in Wales[55]. National Initiatives such as B-Lines[56] have been developed to promote landscape-scale habitat creation to try and reverse the decline in pollinating insects, whilst local initiatives such as Making Space for Nature[57] intend to conserve and enhance pollinator habitats.

Provisioning Services
Provisioning services relate to the supply of goods such as freshwater, food and fuel.

Water availability: The Eastern Vale zone is mostly comprised of the Tawe to Cadoxton management catchment. The South East Valleys catchment also falls within this zone to the north-east. The Water Resources Management Plan[58] produced by Dŵr Cymru Welsh Water for the South East Wales Conjunctive Use System (SEWCUS) area, which covers the east of the Vale of Glamorgan, suggests that there will be a surplus of water supply across the 30 year planning period from 2020 to 2050, despite a projected increase in population.

[55] https://www.gov.wales/sites/default/files/publications/2019-04/action-plan-for-pollinators.pdf
[56] https://www.buglife.org.uk/our-work/b-lines/b-lines-wales/
[57] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Grassland-Management/Making-Space-for-Nature.aspx
[58] https://www.dwrcymru.com/-/media/Project/Files/Page-Documents/Corporate/Environment/Water-Resources/Final-Water-Resources-Management-Plan-2019/Final-Water-Resources-Management-Plan-2019---Main-Technical-Report.ashx

Food provision: the area is characterised by farmland of mixed agricultural land uses. The quality of agricultural land in this area varies between ALC Grade 2-5. There are patches of ALC land grade 2 situated to the centre and to the north.

Fuel and fibre: Within the Vale there are 3 forms of renewable energy which are considered to be the most prevalent: wind energy; solar energy; and biomass energy developments[59]. Maps produced by the updated Renewable Energy Assessment undertaken in 2018[60] show that the Eastern Vale area has a potential wind energy site to the north boundary, east of Hensol. Additionally, there are several areas with high potential in terms of generation capacity and the lack of major planning constraints for solar energy developments, for example north of Cowbridge. The maps also identify that the zone has extensive patches of agricultural land which could be used to produce biological material to fuel biomass plants, subject to the relevant planning permissions and permits being approved.

Regulating Services

Regulating services maintain natural systems that include water and air quality, flooding, soil erosion and coastal processes.

Climate regulation: Climate change is predicted to affect the amount and distribution of rainfall; this has an impact on flows and water levels, drought and flood events. Project Zero is the Vale of Glamorgan Council's response to the climate change emergency[61]. The project identifies 18 challenges which reflect what needs to change as part of an effective response to the climate emergency. Challenges include the need to 'Protect and enhance green and blue space, biodiversity and ecosystem resilience and improve understanding of the importance of our natural environment'. Steps to achieve this will include replacing lost trees and promoting tree planting across the Vale, helping to provide climate regulation, for instance through carbon storage. Another challenge is 'To work with partners to reduce the risk of flooding, manage our coastline and encourage everyone to take a more responsible approach to water use'. Steps to achieve this will include the implementation of Sustainable Urban Drainage measures to improve drainage, reduce the volume of surface runoff and minimise flood risks.

Regulating water quality: The main river waterbody catchments within the Eastern Vale Zone include the Ely which is of poor overall status and the Thaw which is of moderate overall status under the WFD regulations. Challenges to water quality in both the Tawe to Cadoxton and South East Valleys management catchments include pollution from sewage and wastewater, and physical modifications. A variety of management initiatives have been identified to maintain and improve water quality within both management catchments. Local measures include implementing Sustainable Urban Drainage schemes to reduce surface water drainage to sewers and to minimise diffuse pollution[62][63].

Regulating water (flooding): Cowbridge has been identified as at significant future risk from surface water flooding[64], however, there are flood defences on the River Thaw (standard of

[59] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf
[60] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf
[61] https://www.valeofglamorgan.gov.uk/Documents/Our%20Council/Achieving%20our%20vision/Consultation/Project-Zero-Challenge-Plan.pdf
[62] https://cdn.cyfoethnaturiol.cymru/media/3216/tawe-to-cadoxton-management-catchment.pdf?mode=pad&rnd=131625760770000000
[63] https://naturalresources.wales/media/3217/south-east-valleys-management-catchment.pdf
[64] Preliminary Flood Risk Assessment - 2011

protection of 1 in 100 years) which benefit large areas of Cowbridge. Parts of Cowbridge are also at risk of surface water flooding.[65]
NRW's Welsh Information for Nature-based Solutions (WINS) data[66] demonstrates the extent of potential for woodland habitat to enhance infiltration into the ground. This is likely to be a particular consideration in mitigating surface water flooding. Their mapping shows all areas where tree planting for Natural Flood Management is feasible, and also highlights the areas in which different types of woodland planting could be considered. In the Eastern Vale Zone, this extends along most watercourses, with particular areas of focus to the north of St. Athan and north of Barry.

Regulating soil erosion and quality: The soils of best quality and most productive agricultural land are a scarce and finite resource in Wales; accounting for less than 7% of land area. Soil quality has deteriorated across all habitats apart from woodlands. The UK Climate Change Risk Assessment 2017 Evidence Report has identified risks to soils from due to warmer, drier summers. Climate change related risks are threatening the many services that soils provide, notably those that relate to soil biota, soil organic matter, and soil erosion and compaction.
Soil is a finite resource that underpins the delivery of a wide range of crucial services such as food production, biodiversity, carbon and water storage. Unsustainable agricultural and land management practices can lead to significant environmental impacts such as soil loss through erosion leading to carbon losses, the pollution of watercourses and increased and more rapid surface water flows which can contribute to flood risk.[67]
Deep peat soils are of particular importance in Wales, with a small but significant area found in the north of the Vale at Morfa Ystradowen (c.64ha). Key issues for deep peat in the area are drainage, habitat loss, nutrient enrichment and lack of appropriate management Peatland habitats help regulate climate and the water cycle, and deep peat soils are important for mitigating climate change as they take up and store atmospheric carbon. Peatland habitats can play an important role in water management, slowing down flood waters and naturally reducing flood-risk downstream.[68]

Air quality: Poor air quality in Wales poses a significant issue for public health, associated with adverse risks, particularly within urban areas and near major roads. The pollutants of primary concern are particulate matter and nitrogen dioxide (NO2). Both pollutants primarily originate from motor vehicles. Where air quality reviews show that air quality objectives may not be met, local authorities are required to designate an Air Quality Management Area (AQMA), where action must be taken to ensure that air quality in the identified area improves. There are no AQMAs in the Vale of Glamorgan.

Cultural Services

Cultural services provide direct, non-material, benefits to human society, addressing a range of social and cultural needs that encompass a sense of place and inspiration, a sense of history, tranquillity and recreation.

Sense of place and inspiration: The Eastern Vale contains frequent woodland clumps and in-field trees, along with riparian woodlands and small plantations on valley slopes. Added to the often-thick hedgerows and frequent hedgerow trees, this creates the impression of a well-wooded landscape[69]. Hensol Forest is distinctive, with a strong sense of enclosure and solitude, despite its proximity to the M4 motorway to the north. The Eastern Vale contain several thatched cottages, typically in rural

[65] South East Wales - Strategic Flood Consequence Assessment (Stage 1) Final Report. November 2022
[66] https://storymaps.arcgis.com/collections/036c04ccb85948d2abe7312de75ad318?item=3
[67] Vale of Glamorgan Well-being Assessment Evidence Report Our Environment – Part 1
[68] Public Service Board - Vale of Glamorgan Environmental information for well-being assessments
[69] https://cdn.cyfoethnaturiol.cymru/media/682623/nlca36-vale-of-glamorgan-description.pdf?mode=pad&rnd=131550626020230000

village settings for example around Llancarfan. Notably, stretching from the centre of the plateau to the southern zone boundary the Llancarfan Valley is recognised as a Landscape of Outstanding Historic Interest. The historic core of the ancient borough and market town of Cowbridge on the western zone boundary survives largely intact but is becoming increasingly bounded by modern development[70]. It has coalesced with Llanblethian and together they have become an affluent settlement, with semi-suburban residential areas.

Sense of history: The Eastern Vale includes the Llancarfan Landscape of Outstanding Historic Interest. The ancient settlement and its early church, set within its secluded valley, provide one of the best surviving and complete examples of the defining historic character of the wider Vale[71]. The area also includes a range of heritage and landscape assets including Hensol Castle (RHPG), Wenvoe Castle (RHPG), Moulton Roman Site (SAM), Castell Moel (SAM) and Penmark Castle (SAM). Iron Age hillforts such as Castle Ditches (SAM) east of Llancarfan, also provide evidence for early settlement throughout the area[72].

Leisure and Recreation: The Eastern Vale provides a range of outdoor leisure and recreational activities for local communities and visitors, in particular walking and cycling. Facilities and destinations include recreational routes such as National Cycle Network Route 88, Dyffryn Gardens (RHPG), Old Beaupre Castle (RHPG) and the Salmon Leaps and Caerau Hill Fort Circular trail which starts in the village of Dinas Powys.

[70] https://cdn.cyfoethnaturiol.cymru/media/682623/nlca36-vale-of-glamorgan-description.pdf?mode=pad&rnd=131550626020230000
[71] Historic landscape characterisation: Llancarfan https://www.ggat.org.uk/cadw/historic_landscape/llancarfan/english/llancarfan_main.htm
[72] https://cdn.cyfoethnaturiol.cymru/media/682623/nlca36-vale-of-glamorgan-description.pdf?mode=pad&rnd=131550626020230000

Zone 3 – Rural Coast

The Rural Coast encompasses the south-west coastline of the Vale of Glamorgan which is a predominantly rural landscape. The Rural Coast features a section of the Glamorgan Heritage Coast, which stretches for 14 miles from Porthcawl to Aberthaw. The coastline is characterised by plunging cliffs, secluded coves and breathtaking views across the Bristol Channel. Much of the coastline is designated as a SSSI for its coastal biodiversity. The zone includes the mouth of the Afon Colhuw. Villages within the area include Ogmore-by-sea, Southerndown and St Donats.

Supporting Services
Supporting services are those which are essential to the functioning of ecosystems and indirectly responsible for all other services. This includes the relationship between underlying geology and soil character, soil formation and the processes of plant growth, including pollination.

Geology and soil character: The bedrock geology of the Rural Coast Zone is largely comprised of mudstone, siltstone, limestone and sandstone with a small area of limestone with subordinate sandstone and argillaceous rocks to the north. The superficial geology is comprised of a small patch of blown sand deposits to the north.

Pollination: by insects provides a supporting service for primary production to support both agricultural production and nature conservation. However, the serious consequences of significant declines in insect pollinator populations, considered largely to result from land-use intensification, habitat destruction and fragmentation, disease, the use of agro-chemicals, and climate change, has been recognised in the government's The Action Plan for Pollinators in Wales[73]. National Initiatives such as B-Lines[74] have been developed to promote landscape-scale habitat creation to try and reverse the decline in pollinating insects, whilst local initiatives such as Making Space for Nature[75] intend to conserve and enhance pollinator habitats.

Provisioning Services
Provisioning services relate to the supply of goods such as freshwater, food and fuel.

Water availability: The Rural Coast Zone comprises the Tawe to Cadoxton management catchment. The zone includes the mouth of the Afon Colhuw. The Water Resources Management Plan[76] produced by Dŵr Cymru Welsh Water for the Tywi Conjunctive Use System (SEWCUS) area, which covers the west of the Vale of Glamorgan, suggests that there will be a surplus of water supply across the 30 year planning period from 2020 to 2050, despite a projected increase in population.

Food provision: The quality of agricultural land in this area varies between ALC Grade 2-5, with the majority of this zone graded 3b. The area from Llantwit Major to Southerndown is characterised by mixed farmland[77].

Fuel and fibre: Within the Vale there are 3 forms of renewable energy which are considered to be the most prevalent: wind energy; solar energy; and biomass energy developments[78]. Maps produced

[73] https://www.gov.wales/sites/default/files/publications/2019-04/action-plan-for-pollinators.pdf
[74] https://www.buglife.org.uk/our-work/b-lines/b-lines-wales/
[75] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Grassland-Management/Making-Space-for-Nature.aspx
[76] https://www.dwrcymru.com/-/media/Project/Files/Page-Documents/Corporate/Environment/Water-Resources/Final-Water-Resources-Management-Plan-2019/Final-Water-Resources-Management-Plan-2019---Main-Technical-Report.ashx
[77] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Habitats-and-Wildlife/Habitats-and-Wildlife.aspx
[78] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf

by the updated Renewable Energy Assessment undertaken in 2018[79] identify areas of agricultural land located outside of the SSSI designated coastline. This land could be used to produce biological material to fuel biomass plants, subject to the relevant planning permissions and permits being approved.

Regulating Services

Regulating services maintain natural systems that include water and air quality, flooding, soil erosion and coastal processes.

Climate regulation: Climate change is predicted to affect the amount and distribution of rainfall; this has an impact on flows and water levels, drought and flood events. Project Zero is the Vale of Glamorgan Council's response to the climate change emergency[80]. The project identifies 18 challenges which reflect what needs to change as part of an effective response to the climate emergency. Challenges include the need to 'Protect and enhance green and blue space, biodiversity and ecosystem resilience and improve understanding of the importance of our natural environment'. Steps to achieve this will include replacing lost trees and promoting tree planting across the Vale, helping to provide climate regulation, for instance through carbon storage. Another challenge is 'To work with partners to reduce the risk of flooding, manage our coastline and encourage everyone to take a more responsible approach to water use'. Steps to achieve this will include the implementation of Sustainable Urban Drainage measures to improve drainage, reduce the volume of surface runoff and minimise flood risks.

Regulating water quality: Challenges to water quality in the Tawe to Cadoxton management catchment include pollution from sewage and wastewater, and physical modifications. The Rural Coast Zone includes part of the Afon Colhuw river waterbody catchment to the south which is rated overall good status under the WFD regulations[81]. A variety of management initiatives have been identified to maintain and improve water quality in the Tawe to Cadoxton Management Catchment. Local measures include Sustainable Urban Drainage schemes to reduce urban pollution, sewage pollution and change to water levels.

Regulating water (flooding): The town of Llantwit Major which borders on the south-east Rural Coast zone boundary has experienced severe impacts of flooding during the 1990s-mid 2010s[82]. The town has been identified as at significant future risk from surface water flooding[83].
NRW's Welsh Information for Nature-based Solutions (WINS) data[84] demonstrates the extent of potential for woodland habitat to enhance infiltration into the ground. This is likely to be a particular consideration in mitigating surface water flooding. Their mapping shows all areas where tree planting for Natural Flood Management is feasible, and also highlights the areas in which different types of woodland planting could be considered. In the Rural Coast Zone, this extends along most watercourses, with particular areas of focus to south of the B2465 along Nant y Durfol and associated small watercourses.

Regulating soil erosion and quality: The soils of best quality and most productive agricultural land are a scarce and finite resource in Wales; accounting for less than 7% of land area. Soil quality has deteriorated across all habitats apart from woodlands. The UK Climate Change Risk Assessment

[79] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf
[80] https://www.valeofglamorgan.gov.uk/Documents/Our%20Council/Achieving%20our%20vision/Consultation/Project-Zero-Challenge-Plan.pdf
[81] https://waterwatchwales.naturalresourceswales.gov.uk/en/
[82] Local Flood Risk Management Strategy (2013) Vale of Glamorgan. Available at: https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Local-Flood-Risk-Management-Strategy.aspx
[83] Preliminary Flood Risk Assessment - 2011
[84] https://storymaps.arcgis.com/collections/036c04ccb85948d2abe7312de75ad318?item=3

2017 Evidence Report has identified risks to soils from due to warmer, drier summers. Climate change related risks are threatening the many services that soils provide, notably those that relate to soil biota, soil organic matter, and soil erosion and compaction.
Soil is a finite resource that underpins the delivery of a wide range of crucial services such as food production, biodiversity, carbon and water storage. Unsustainable agricultural and land management practices can lead to significant environmental impacts such as soil loss through erosion leading to carbon losses, the pollution of watercourses and increased and more rapid surface water flows which can contribute to flood risk.[85]

Air quality: Poor air quality in Wales poses a significant issue for public health, associated with adverse risks, particularly within urban areas and near major roads. The pollutants of primary concern are particulate matter and nitrogen dioxide (NO2). Both pollutants primarily originate from motor vehicles. Where air quality reviews show that air quality objectives may not be met, local authorities are required to designate an Air Quality Management Area (AQMA), where action must be taken to ensure that air quality in the identified area improves. There are no AQMAs in the Vale of Glamorgan.

Regulating coastal processes: The Lavernock Point to St. Ann's Head Shoreline Management Plan SMP2 (2012) includes the Vale's coastline. The impacts of climate change, including sea level rise will result in an increased threat of flooding and erosion to those living near the coast[86]. The construction and maintenance of works to resist coastal flooding is carried out by NRW in accordance with the Water Resources Act 1991[87].

Cultural Services
Cultural services provide direct, non-material, benefits to human society, addressing a range of social and cultural needs that encompass a sense of place and inspiration, a sense of history, tranquillity and recreation.

Sense of place and inspiration: The Rural Coast zone includes part of the Glamorgan Heritage Coast which stretches for 14 miles from Porthcawl to Aberthaw. The otherwise gentle landscape comes to a very abrupt and dramatic edge, with plunging cliffs, secluded coves and breathtaking views across the Bristol Channel to Somerset and Exmoor [88]. The coastal hinterland is characterized by windblown vegetation that has resulted from the prevailing south-westerly wind exposure[89]. Much of the Rural Coast Zone's coastline is designated as a SSSI, reflecting the coastal biodiversity.

Sense of history: The Rural Coast features a number of historical sites including Dunraven Park (RHPG), St. Donat's Castle (RHPG), Cwm Bach Camps (SAM) and Dunraven Castle Hillfort (SAM).

Leisure and Recreation: The Rural Coast provides a range of outdoor leisure and recreational activities for local communities and visitors, in particular walking and cycling. Facilities and destinations include recreational routes such as The Wales Coastal Path, The Heritage Coast and National Cycle Network Route 88. Dunraven bay is a popular destination due to its sandy beach, breathtaking views across to Temple Bay and wildlife.

[85] Vale of Glamorgan Well-being Assessment Evidence Report Our Environment – Part 1
[86] https://www.southwalescoastalgroup.cymru/smp2/final-smp2-report-and-appendices-pdf-versions/smp2-main-document/
[87] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Coast-Protection.aspx
[88] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Heritage-Coast/Glamorgan-Heritage-Coast.aspx
[89] https://cdn.cyfoethnaturiol.cymru/media/682623/nlca36-vale-of-glamorgan-description.pdf?mode=pad&rnd=131550626020230000

Zone 4 – Coastal Settlements

The Coastal Settlements encompasses the south-east coastline of the Vale of Glamorgan. The zone features a short section of the Glamorgan Heritage Coast, which stretches for 14 miles from Porthcawl to Aberthaw. The area is characterised by coastline, urban coastal settlements and prominent built features such as Cardiff International Airport and MOD St Athan. Main settlements within the area include Barry, Penarth, Dinas Powys and Llantwit Major. The Cadoxton, Kenson, Waycock and Coldbrook are the main watercourses in the area. The zone includes Porthkerry and Cosmeston Lakes Country Parks which are important assets for both biodiversity and access for local communities.

Supporting Services
Supporting services are those which are essential to the functioning of ecosystems and indirectly responsible for all other services. This includes the relationship between underlying geology and soil character, soil formation and the processes of plant growth, including pollination.

Geology and soil character: The bedrock geology of the Coastal Settlements Zone is largely comprised of mudstone, siltstone, limestone and sandstone. To the east of the zone there is an area of mudstone, siltstone and sandstone, together with sandstone and conglomerate interbedded bedrock and small areas of limestone with subordinate sandstone and argillaceous rocks. The superficial geology is comprised of alluvium deposits.

Pollination: by insects provides a supporting service for primary production to support both agricultural production and nature conservation. However, the serious consequences of significant declines in insect pollinator populations, considered largely to result from land-use intensification, habitat destruction and fragmentation, disease, the use of agro-chemicals, and climate change, has been recognised in the government's The Action Plan for Pollinators in Wales[90]. National Initiatives such as B-Lines[91] have been developed to promote landscape-scale habitat creation to try and reverse the decline in pollinating insects, whilst local initiatives such as Making Space for Nature[92] intend to conserve and enhance pollinator habitats.

The Vale of Glamorgan Council and the Vale Local Nature Partnership are working together to introduce conservation grazing into Porthkerry and Cosmeston Lakes Country Parks to improve the condition of the grassland. This forms part of the council's commitment to manage local authority owned green spaces better for biodiversity[93]. The St Cyres Park Biodiversity Project in Penarth has worked with the community and schools to plant a community orchard[94]. The orchard will provide fruit for the community and a food resource for pollinating insects. The project also proposes to establish small areas of wildflower meadow.

Provisioning Services
Provisioning services relate to the supply of goods such as freshwater, food and fuel.

Water availability: The Coastal Settlements Zone is mainly comprised of the Tawe to Cadoxton management catchment, with a small area covered by the South East Valleys management

[90] https://www.gov.wales/sites/default/files/publications/2019-04/action-plan-for-pollinators.pdf
[91] https://www.buglife.org.uk/our-work/b-lines/b-lines-wales/
[92] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Grassland-Management/Making-Space-for-Nature.aspx
[93] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Grassland-Management/Conservation-grazing-in-the-country-parks.aspx
[94] https://participate.valeofglamorgan.gov.uk/st-cyres-park-biodiversity-project

catchment to the east. The Water Resources Management Plan[95] produced by Dŵr Cymru Welsh Water for the South East Wales Conjunctive Use System (SEWCUS) area, which covers the east of the Vale of Glamorgan, suggests that there will be a surplus of water supply across the 30 year planning period from 2020 to 2050, despite a projected increase in population.

Food provision: The quality of agricultural land in the area varies between ALC Grade 1-5, with the majority of this zone graded 3b. The zone includes several allotments within urban settlements for example, Barry Community Garden and Allotment Project in Gibbonsdown[96]. Along the Glamorgan Heritage Coast from Aberthaw to Llantwit Major farmland is mostly arable production[97].

Fuel and fibre: Within the Vale there are 3 forms of renewable energy which are considered to be the most prevalent: wind energy; solar energy; and biomass energy developments[98]. Maps produced by the updated Renewable Energy Assessment undertaken in 2018[99] show that there is a potential wind energy area south-west of Penarth. Additionally, there are several areas with high potential in terms of generation capacity and the lack of major planning constraints for solar energy developments, for example west of Rhoose. The maps identify patches of agricultural land outside of the urban areas of Barry and Penarth which could be used to produce biological material to fuel biomass plants, subject to the relevant planning permissions and permits being approved.

The Coastal Settlements zone includes several existing renewable energy projects, for instance Barry Docks Solar Farm, made up of almost 15,000 solar panels spanning 20 acres. The site is expected to generate around 4.5MWh of renewable energy each year to support ABP's port operations, including its 75 tenants, with surplus energy exported to the National Grid. After a few months in operation the installation was shortlisted for a Wales Green Energy Award[100]. The former Aberthaw coal-fired Power Station which closed in 2020 has plans to be transformed into a new renewable energy hub[101].

Regulating Services

Regulating services maintain natural systems that include water and air quality, flooding, soil erosion and coastal processes.

Climate regulation: Climate change is predicted to affect the amount and distribution of rainfall; this has an impact on flows and water levels, drought and flood events. Project Zero is the Vale of Glamorgan Council's response to the climate change emergency[102]. The project identifies 18 challenges which reflect what needs to change as part of an effective response to the climate emergency. Challenges include the need to 'Protect and enhance green and blue space, biodiversity and ecosystem resilience and improve understanding of the importance of our natural environment'. Steps to achieve this will include replacing lost trees and promoting tree planting across the Vale, helping to provide climate regulation, for instance through carbon storage. Another challenge is 'To work with partners to reduce the risk of flooding, manage our coastline and encourage everyone to take a more responsible approach to water use'. Steps to achieve this will

[95] https://www.dwrcymru.com/-/media/Project/Files/Page-Documents/Corporate/Environment/Water-Resources/Final-Water-Resources-Management-Plan-2019/Final-Water-Resources-Management-Plan-2019---Main-Technical-Report.ashx
[96] https://www.farmgarden.org.uk/org/public-profile/47538
[97] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Habitats-and-Wildlife/Habitats-and-Wildlife.aspx
[98] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf
[99] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Policy/SPG/Renewable-Energy-SPG-March-2019.pdf
[100] https://www.centrica.com/stories/2015/case-study-shining-a-light-on-barry-s-new-solar-farm/
[101] https://www.newcivilengineer.com/latest/decommissioned-welsh-power-station-to-be-converted-into-36m-green-energy-hub-04-03-2022/
[102] https://www.valeofglamorgan.gov.uk/Documents/Our%20Council/Achieving%20our%20vision/Consultation/Project-Zero-Challenge-Plan.pdf

include the implementation of Sustainable Urban Drainage measures to improve drainage, reduce the volume of surface runoff and minimise flood risks.

Regulating water quality: The main river waterbody catchments within the Coastal Settlements Zone include the Cadoxton, Waycock and Kenson which are all of moderate overall status under the WFD regulations. The Ely River waterbody catchment also borders the north-eastern boundary and is of poor overall status under the WFD regulations. Challenges to water quality in both the Tawe to Cadoxton and South East Valleys management catchments include pollution from sewage and wastewater, and physical modifications. A variety of management initiatives have been identified to maintain and improve water quality within both management catchments. Local measures include implementing Sustainable Urban Drainage schemes to reduce surface water drainage to sewers and to minimise diffuse pollution[103][104].

Regulating water (flooding): The Coastal Settlements zone includes several communities that have experienced impacts of flooding (in the 1990s-mid 2010s) such as Boverton, Llantwit Major and Barry[105]. Dinas Powys and Llantwit Major have been identified as at significant future risk from flooding[106]. The Coldbrook Flood Alleviation Scheme (comprising a range of watercourse improvements, culvert enhancements, trash screen upgrades and a flood storage area[107]) has been created to ensure no detriment downstream of the scheme, reducing the risk of flooding to properties/schools in the Coldbrook catchment[108]. Additionally, the Ffordd Bro Tathan Flood Mitigation Scheme aims to reduce flood risk to Boverton village through multiple flood attenuation measures including swales and flood relief culverts[109].

In December 2020, localised river flooding affected numerous locations across South Central Wales, including the Vale, after 50 to 70mm of rainfall fell on an already saturated catchment, with particularly heavy rainfall over lower-lying catchments along the coastline. The worst affected location was Dinas Powys, where a number of properties experienced flooding from the rivers Cadoxton and East Brook.[110] Surface water flooding was also an issue, causing flooding in Sully, affecting 18 properties internally and 26 externally.[111]

NRW's Welsh Information for Nature-based Solutions (WINS) data[112] demonstrates the extent of potential for woodland habitat to enhance infiltration into the ground, which can be particularly effective in mitigating surface water flooding. This mapping shows all areas where tree planting for Natural Flood Management is feasible, and also highlights the areas in which different types of woodland planting could be considered. In the Coastal Settlements Zone, this extends along most watercourses, with particular areas of focus to the north and east of Barry, south of Penarth in and around Cosmeston Lakes Country Park and near to East Aberthaw.

The Severn Estuary is also a potential source of tidal flooding in the Vale. Tidal flooding is most likely to occur during storm surge conditions. In areas protected from flooding by sea defences, tidal

[103] https://cdn.cyfoethnaturiol.cymru/media/3216/tawe-to-cadoxton-management-catchment.pdf?mode=pad&rnd=131625760770000000
[104] https://naturalresources.wales/media/3217/south-east-valleys-management-catchment.pdf
[105] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Local-Flood-Risk-Management-Strategy.aspx
[106] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Local-Flood-Risk-Management-Strategy.aspx
[107] South East Wales - Strategic Flood Consequence Assessment (Stage 1) Final Report. November 2022
[108] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Coldbrook/Coldbrook-Flood-Alleviation-Works.aspx
[109] https://publications.aecom.com/water/managing-flood-risk/projects/ffordd-bro-tathan-flood-mitigation-scheme
[110] NRW Flood Risk Management Plan for Wales: South Central Wales. Draft. 2023
[111] Vale of Glamorgan. Section 19 Flood Investigation. https://www.valeofglamorgan.gov.uk/Documents/Living/Flooding/Section-19/Sully-Section-19-Report-23-12-2020.pdf
[112] https://storymaps.arcgis.com/collections/036c04ccb85948d2abe7312de75ad318?item=3

flooding can occur as a result of a breach in the defences, failure of a mechanical barrier or overtopping of defences. West Aberthaw, Barry and south of the Cadoxton area (Barry) are the main areas at risk of flooding from the sea.[113]

Regulating soil erosion and quality: The soils of best quality and most productive agricultural land are a scarce and finite resource in Wales; accounting for less than 7% of land area. Soil quality has deteriorated across all habitats apart from woodlands. The UK Climate Change Risk Assessment 2017 Evidence Report has identified risks to soils from due to warmer, drier summers. Climate change related risks are threatening the many services that soils provide, notably those that relate to soil biota, soil organic matter, and soil erosion and compaction.
Soil is a finite resource that underpins the delivery of a wide range of crucial services such as food production, biodiversity, carbon and water storage. Unsustainable agricultural and land management practices can lead to significant environmental impacts such as soil loss through erosion leading to carbon losses, the pollution of watercourses and increased and more rapid surface water flows which can contribute to flood risk.[114]

Air quality: Poor air quality in Wales poses a significant issue for public health, associated with adverse risks, particularly within urban areas and near major roads. The pollutants of primary concern are particulate matter and nitrogen dioxide (NO2). Both pollutants primarily originate from motor vehicles. Where air quality reviews show that air quality objectives may not be met, local authorities are required to designate an Air Quality Management Area (AQMA), where action must be taken to ensure that air quality in the identified area improves. There are no AQMAs in the Vale of Glamorgan. However, NRW's Welsh Information for Nature-based Solutions (WINS)[115] data suggests that there are some areas of high demand for GI interventions to reduce air pollution in the east of Barry near the A4055.

Regulating coastal processes: The Lavernock Point to St. Ann's Head Shoreline Management Plan SMP2 (2012) includes the Vale's coastline. The impacts of climate change, including sea level rise will result in an increased threat of flooding and erosion to those living near the coast[116]. The construction and maintenance of works to resist coastal flooding is carried out by NRW in accordance with the Water Resources Act 1991[117].

Cultural Services

Cultural services provide direct, non-material, benefits to human society, addressing a range of social and cultural needs that encompass a sense of place and inspiration, a sense of history, tranquillity and recreation.

Sense of place and inspiration: The Coastal Settlements Zone includes a section of the Glamorgan Heritage Coast which stretches for 14 miles from Porthcawl to Aberthaw. The coastline features plunging cliffs, secluded coves and breathtaking views across the Bristol Channel[118]. The area also features prominent built features such as the decommissioned power station at Aberthaw, Cardiff International Airport to the west of Barry and MOD St Athan RAF base.

[113] South East Wales - Strategic Flood Consequence Assessment (Stage 1) Final Report. November 2022
[114] Vale of Glamorgan Well-being Assessment Evidence Report Our Environment – Part 1
[115] https://storymaps.arcgis.com/collections/036c04ccb85948d2abe7312de75ad318?item=1
[116] https://www.southwalescoastalgroup.cymru/smp2/final-smp2-report-and-appendices-pdf-versions/smp2-main-document/
[117] https://www.valeofglamorgan.gov.uk/en/living/Flooding/Flood-and-Coastal-Erosion/Coast-Protection.aspx
[118] https://www.valeofglamorgan.gov.uk/en/enjoying/Coast-and-Countryside/Heritage-Coast/Glamorgan-Heritage-Coast.aspx

Sense of history: During the industrial revolution, coal and metal ores mined in South Wales required ports from which to ship them. Barry and Barry Island, formerly separated by the waters of Barry Sound were joined and Barry Docks and railway were built. The Victorian era also led to the development of the 'seaside resort' and Barry Marine has been designated as a conservation area due to its development as a seaside holiday resort, largely dating from the 1920s[119]. The zone includes a range of historic assets including the Penarth conservation area, the Cogan Deserted Medieval Village (SAM), Middleton Moated Site (SAM), Cold Knap Park (RHPG) and West Aberthaw Medieval Site SAM. The town of Llantwit Major was one of the first Christian Settlements in Wales and a centre of theological learning[120]. Today it's industrial estate, at its eastern edge, provides a very different centre of activity. However, it remains a popular visitor destination for its historic character.

Leisure and Recreation: The Coastal settlements zone provides a range of outdoor leisure and recreational activities for local communities and visitors, in particular walking and cycling. Facilities and destinations include recreational routes such as the Wales Coastal Path, National Cycle Network Route 88 and Porthkerry and Cosmeston Lakes Country Parks.

[119] https://www.valeofglamorgan.gov.uk/Documents/Living/Planning/Conservation/Appraisals/Barry_Marine_CAAMP_Sep_2009.pdf
[120] https://cdn.cyfoethnaturiol.cymru/media/682623/nlca36-vale-of-glamorgan-description.pdf?mode=pad&rnd=131550626020230000

APPENDIX 4
VALE OF GLAMORGAN COUNCIL OFFICERS GREEN INFRASTRUCTURE PLAN WORKSHOP NOTE

Green Infrastructure Plan Workshop 16/12/22

- Workshop with 23 Officers from across the Council:
    - Housing development and policy
    - Transportation – active travel & Highways
    - Parks and Open Spaces
    - Estates
    - SAB
    - Planning
    - Regeneration
    - Countryside
- Focused minds on the problem at hand
- All attendees saw the importance of the GI Plan and why the work was being done.
- Appreciation that something needed to be done.

How teams currently manage GI

Summarise how your team manages and makes decisions in relation to green infrastructure.	
SAB/LLFA	The SuDS Approval Body (SAB) is responsible for reviewing and approving SuDS designs for most new development greater than 100 sq.m. A SuDS strategy may include measures falling under the definition of green infrastructure applied within the Green Infrastructure Plan, including raingardens, swales, detention basins and ponds. Where SuDS serve more than one property they are subject to mandatory adoption by the SAB, although a limited number of assets have been adopted to date. All SuDS submissions are assessed against the Sustainable Drainage Systems Standards for Wales (2018) which consider surface water run-off, water quality, amenity, biodiversity as well as design for construction, operation and maintenance. The Lead Local Flood Authority (commonly referred to as Land Drainage) team manages or has oversight of a number of existing at surface critical flood and drainage assets on behalf of the Council. These include attenuation basins, open watercourse, swales and ponds. The team also undertakes inspections and enforcement work relating to ordinary watercourses as part of our statutory duties under the Land Drainage Act 1991 which can entail the management and/or removal of obstructions from watercourses where required to manage flood risk. The primary driver for management of such features is flood risk whilst also having regard to various wider statutory obligations including those relating to sustainable development (Section 27, Flood and Water Management Act 2010) and biodiversity and resilience of ecosystems (Section 6, Environment (Wales) Act 2016).

	The Highway Structures team manages a limited area of green infrastructure either immediately adjacent to, or forming part of, the Highway Authority's portfolio of structures. Decision making is primarily focused around maintaining highway safety. These green areas would generally form a sub-set of the wider highway portfolio, potentially interconnected by verges, etc. Management of these areas would usually be dictated by the requirements of maintaining the engineered structure, e.g. vegetation clearance to access for inspection and / or works, prevent damage by root ingress, etc. Bridges and culverts managed by this team are often associated with streams and rivers.
Planning(DM)	Development Management Team makes daily decision in respect of green infrastructure as part of the any planning permission. We deal with works to trees (TPO and TCA) and hedgerow removal. We frequently approve applications which and enhance or secure new areas of opens space, and we secure bio diversity interests from planting, and approved works to rivers and have secured a number of green roofs by condition. Tree replacement is secured on the back of TPO removal. Conditions securing landscaping and planting both in private area and areas to be adopted. We consider the impact of loss of hedgerows / trees . GI to accommodate development – against gain (such a new affordable housing) and the amenity value it may have and the acceptability of compensatory planting.
Housing Development	Primarily designed through the process of designing new council housing estates, supported by experienced design team and consultation with council departments (planning policy, SAB, ecologist etc)
Neighbourhood services	The parks team consider a wide range of environmental impacts and consider ways to increase biodiversity in decision making. They also contribute to the broader strategy.
Regeneration	Currently no formal process in relation to green infrastructure directly. We have added GI to projects on a piecemeal basis, e.g. green wall at BSC2 and green roof on town centre building
Education	Done via schools investment programme board and sustainable communities for learning progrmame
Estates	For those areas not leased out for grazing / small holdings reactionary decisions when a complaint received about the state of the land. Otherwise just left
Housing	Ad hoc basis – no clear housing land. Strategy on existing estates.
Neighbourhood services x 2	Have a Key Performance Indicator (Corporate Plan) to increase wildflower planning year on year
S106	Section 106 money can be used to facilitate new green infrastructure projects eg. Public open space/ biodiversity enhancements
Transport services	Passenger transport, fleet and vehicle maintenance – not done. Enforcement – of fly tipping assists in keeping spaces green and not contaminated

Active Travel	When designing AT routes we rely on consultants and designers to discuss / suggest. Going forward this will change. I will discuss more with conservation etc.

SWOT Analysis findings

TEAM	Strengths	Weaknesses	Opportunities	Threats
Ecology team	• Understanding GI issues • Strategic overview • Creative approach • Knowledge • Delivery • Networking • Grassroots • Work with landscape architects and LNP • Understanding wider environmental, health and wellbeing issues. • Corporate policies • Comprehensive SINC network	• Resources • Poor Networking across departments • Departments sharing best practice • Limited early involvement in project development • 'Greenspace' doesn't always equal 'ecology' • Greenspace standards missing/not applied • Quality of greenspaces • Greenspace design and delivery pre-dates communities in medium to larger housing developments. Assumptions around what is required. • SPG's need revision • SINC's rarely updated	• Project development • Influence development of strategies • Influence development of management plans • Early involvement in large infrastructure projects • Design guides • SPG's • External funding • Community buy-in	• Budgets • Resources • Buy in/lack of understanding/commitment • Short-term • Commercial pressures in new provision – greenspaces are adornments and not functional
Landscape team	• Understanding GI issues • Strategic overview • Creative approach • Knowledge • Delivery • Networking • Work with ecologists and LNP • Understanding wider environmental, health and wellbeing issues. • Corporate policies	• Not directly involved in day-to-day management • resources • Poor Networking across departments • Departments sharing best practice • limited early involvement in project development	• Project development • Influence development of strategies • Influence development of management plans • Early involvement in large infrastructure projects • Design guides • SPG's • External funding •	• Budgets • Resources • Buy in/lack of understanding/commitment
Regeneration / Countryside	• Opportunities for volunteers and the community to get involved	• External funding potential not explored fully • Visitor numbers are weather dependent	• Raise profile with community and highlight links to	• Budget and resource cuts • Alternative leisure facilities • Weather dependency

	• On the doorstep to thousands of visitors, easy access and transport links • Diverse landscape and habitats to explore • Provides green space and recreation to over 250,000 Visitors per year • Outdoor activities, water sports, walking, cycling and horse riding etc… • School visits facilitating both environmental and historical aspects • Prime example of a redeveloped industrial site • Café and refreshments outlets • Designated Local Nature Reserve • SSSI status to protect the plant Starry Stonewort located in the west lake • Green flag status indicating the site is being managed to a high standard • Unique historical attraction. The only reconstructed Medieval Village on original foundations in Wales • Accessible resource • Supports wildlife • Aids with health and wellbeing • Aesthetic	• In need of investment and further development of facilities • Lack of an indoor facility for school / education / community • Overflow car parking is weather dependent • Political & public obstacles to change • Susceptible to visitor pressure during summer months leading to both structural and environmental damage • Cut off from the coastal biodiversity by highway	corporate priorities • Further develop Partnerships • Explore further revenue streams • Become more sustainable both in terms of income and the environment • Further expand volunteer resource • To reduce C02 with alternative energy and management methods • Where possible to increase and build upon past woodland planting and hedgerow connectivity schemes	• Visitor pressure and conflicts • Limited by some policies and procedures • Surrounded by agricultural land lower in biodiversity • Climate emergency • Increase in housing developments in surrounding area • Ash dieback threatening the woodland habitat and structure • Pollution • Invasive species • Vandalism
Highways and Engineering	• Significant areas of highway verge which could be managed differently	• Knowledge • Based around highways requirements and safety • Highway works on highway verge • Full extent of highway land or H&E not understood – work needed	• Maintenance cost • Improve biodiversity? • Improve local areas • Positive impact	• Reduction in highways safety • Complaints from motorists / residents • Obstruction of visibility [something] on highways • Change to visual appearance of an area which will give rise to conflicting views
SAB/ LLFA	• Incorporation wildflower meadow planting	• Resource and expertise – most knowledge and expertise focused on traditional land drainage elements	• Improved use of SuDS planting and layout	• Unrealistic expectations, i.e. a couple of rain gardens won't

	• LLFA keen to protect existing watercourses	• Clear concise guidance and justification • SAB unable to mandate tree planting without wider policy	• Retrofit of at surface SuDS • GI Plan could lead to clear policies that could inform SAB determination and future management of assets • SuDS retrofit policy to identify areas with quick wins or best return on investment • Council owns significant estate and could kick-start local green-roof market, creating base level of maintenance work to support local companies. • Wider / lesser known benefits to explore regarding well-being, e.g. noise reduction potential of green-roofs. • Promoting / develop links with academia relating to performance of at surface SuDS and incorporating monitoring within schemes. • Byelaws to protect watercourses • Improvements to maintenance regimes on flood assets to enhance biodiversity	solve all flooding, particularly large magnitude events • Complex interaction of a number of objectives which could potentially compete, e.g. solar versus green roofs, optimisation hydraulically versus ecologically. • Lack of multi-disciplinary approach to design early in development process makes retrofit of GI harder. • Lack of market / suppliers may inhibit mass uptake initially, i.e. green-roof installers and maintenance relatively niche.

			• Natural Flood Management funding stream through Welsh Govt being developed.	
Housing Development	• Cognisant of the need to support GI within new housing developments • Excellent relationship with relevant council departments- planning, SAB, ecologist • Experienced design team	• Increased levels of GI within housing developments will affect the new homes delivery viability • Residents sometimes do not understand the need for GI and would prefer harder surfaces for children's play – i.e. play grounds	• Greater opportunity for collaboration across all departments • New technology & innovation • Measuring & assessing outcomes on a micro level	• Increased GI requirements through planning & SAB process • Lack of understanding of end users • Increased costs affecting viability
Development management	• Experienced officers always consider impacts of proposal on trees / areas of open space and makes decision to positively enhance areas of open space / landscaping	• Less experience officers may not fully consider impacts on GI. • Not enough time for officers to secure and / or negotiate scheme which can impact on existing GI or secure the best site layout securing new GI	• More officer training • Get a GI plan adopted to add weight in decision making • Use Nature Emergency more in decision making	• Viability / cost of providing as part of any development
Neighbourhood Services x2	• Able to decision make • Own land • Investment & resource opportunities • Expertise	• funding • political interference • areas split across departments • unable to influence private land owners • funding • public perception • capacity within team	• to create change • opportunity to promote and engage public interest • opportunity to change regimes such as grass cutting areas etc	• funding cuts may prevent some change • unable to influence change on private land • private land owners unwilling to adopt sustainable methods to increase biodiversity • funding • lots of space due to [something] • public perception?
Regeneration	• we regularly consult and engage with the public and are open to ideas	• no formal process • no formal expertise directly within the team	• we do initiate our own projects with our strategies and masterplans so we can build green infrastructure into our	• managing a culture change and creating public understanding and ownership • budgets

			process and thinking – to make it more embedded rather than a nice to have (e.g. within the tender process)	• support & educate our local business to look at their own assets in relation to GI
Education	• dedicated team • focus on decarb, ecology, biodiversity, energy • structured community benefits programme forming part of our tender process?	• Limited engagement with other projects	• Developing community leadership	• Lack of buy in • Revenue funding for things like green roof, rain capture etc. difficult management and skills requirements that come with their own costs
Estates	• Land not regularly cleared / mowed so allowed to naturally generate	• Nothing done proactively • Reactionary rather than planned decisions • Biodiversity may be limited as stronger plants take over	• Improve biodiversity of unused land by management • Make grass areas around buildings more biodiverse whilst still looking maintained • Improve hedgerows around grazing areas	• Requests to purchase what are seen as unused/ overgrown land for garden use of development
Housing	• Policy direction – WQHS 2023 • Land • Parks undertake majority of land management • Biodiversity standards required for new funding	• Limited knowledge and experience • No green strategy or policy statement in place • Availability of expert resources and coordinators	• Community involvement • Volunteers • Funding capital & revenue • Areas identified as waste ground, surplus land	• Tenant opposition to change • Resources competing • Properties – new build • Decarb – retrofit • Revenue budget cuts
S106	• GI offers multiple benefits to wildlife and occupiers / users of sites – there are some great examples of where s106 money has been used to enhance GI – knap biodiversity project, tree planting in Pencoedtre, bulb planting etc. • Need to ensure developers / stakeholder are aware of these and the importance of them	• Competing with other planning contributions which may be deemed as a higher priority for the authority • Need to ensure policy is up to date and acknowledges nature and climate change emergency	• Section 106 funding can be used to facilitate projects which incorporate green infrastructure enhancements	• Viability may result in other section 106 contributions e.g. affordable housing / education taking priority over GI projects

Transport Services	• Very few? • Bus shelters – are currently funded by grants so could become part of the GI quite quickly	• Bus shelters – apparently no maintenance of green roofs but examples of overgrown shelters seen •	• Bus shelters – green roofs	• Bus shelters – open to vandalism
Active Travel	• Replant more trees if we remove during construction • Increase grassed areas during construction • ATNM Now has routes to green spaces for development over the next 15 years	• Trees / planting not thought of as part of scheme development sometimes too late when	• Planting alongside AT routes • Green shelters on cycle parking • Use appropriate lighting for nocturnal animals	• Space constraints limit what additional green assets can be included at time of construction • Future maintenance – tried to bid for planters but could not set maintenance agreement

Team	**Answer**
Where are GI assets being used well? (this can inform the SWOT Analysis)	
SAB/LLFA	*Wildflower meadow planting incorporated into flood alleviation works, e.g. Coldbrook, Pencoedtre Park. At surface features adopted via s38 highway agreements, e.g. Ystradowen, Clare Gardens Cowbridge*
Planning(DM)	Parks, countryside,
Neighbourhood services	County parks are good examples and they present a benchmark for other areas
Housing	Specific connectivity led projects – St Lukes, GIBB, Green Camden,
Where are GI assets being under utilised? (this can inform the SWOT Analysis)	
SAB/LLFA	*Opportunity to alter management of open grassed areas within SuDS / flood assets to optimize ecosystem within site constraints, i.e. unimproved grassland. Opportunity to improve planting / management in rain gardens within SuDS schemes – SAB requires guidance on key priorities locally. Potential to retrofit GI to existing council assets, e.g. green-walls, green-roofs, etc. but benefits may not be immediately obvious or beneficial. For example, green-roofs reduce run-off during light rain benefiting receiving watercourses and also reduce heat island effect but the 'owner' incurs cost and unlikely to be key driver during retrofit (may be some immediate benefit if reduces heating/cooling costs).*
Planning(DM)	Areas of GI that are not widely accessible to the public use or being promoted to be accessed. SUDS features ?

Neighbourhood services	Area of parks and open spaces could be improved to consider future biodiversity need
Housing	Areas not due to be developed. Areas with predominantly right to buy council estates but Council retains amenity land
Active Travel	Verges should be incorporated into AT infrastructure e.g. not be black tarmac
What GI elements must be protected and why? (this can inform the SWOT Analysis)	
SAB/LLFA	*Existing watercourses protected from culverting. Surface exceedance flows can enter watercourse rather than relying on formal point inlets, e.g. headwalls / gully inlets. Easier to maintain and identify blockages, less risk of 'lost' assets, biodiversity and habitat benefits. Compliance with Water Framework Directive.*
Planning(DM)	Open space, trees, hedgerows (in the main) to support placemaking and in the interest of biodiversity
Neighbourhood services	Areas that can create biodiversity to help attract wildlife and also for environmental impact and carbon storage
What GI elements should be changed in character or enhanced? – **E.g. tree planting in parks**	
SAB/LLFA	*Optimise planting schedules for new FCERM or SuDS schemes. Limited scope on Highway Structure asset (inclusion of planting elements on new structures could be considered but potential long-term cost implications).*
Planning(DM)	Promoting / enhancement walking /cycling routes through areas of woodland / parks etc, unlocking secured GI space Green roofs on Council / public buildings. Council should have a 1 for 1 replacement for the removal of non protected trees
Neighbourhood services	Public access / attractions / public engagement. Generally is public areas that attract ownership and buy in from the public
Where is there a need to create new GI elements and what type should they be? – **E.g. looking specifically at areas of greatest depravation for priorities (using the QGIS Project)**	
SAB/LLFA	*Need for Vale wide assessment into potential for SuDS (incl GI) retrofit, beyond inhouse capability / resource.*
Planning(DM)	Where there is a lack of GI in a particular area, as GI will add to Placemaking and introduce Biodiversity enhancements etc. Potential to green up public areas by removing large areas of hardstanding, which will also enhance biodiversity interest and introduce a more sustainable means of drainage Green corridors – informal routes

Neighbourhood services	Public and private land. Areas where there is a reliance on heavy grass activity
Housing	Non development land
Active Travel	Include green roofs on cycle shelters where possible
Where should the development of grey infrastructure be integrated with GI? – **E.g. Highways & active travel schemes**	
SAB/LLFA	*Highways and active travel scheme may be subject to SAB and opportunity to incorporate at surface green features into design rather than solely rely on porous 'hard' surfaces. Wider benefits potentially relating to incorporation of treepits, etc to reduce heat island effect, provide shade, etc. but not currently a direct consideration via SAB.* *Council premises, including housing stock, green roofs could be considered in key areas, e.g. help reduce heat island effect.*
Planning(DM)	Active travel routes, to enhance their appeal and provide greater access and visibility of GI
Neighbourhood services	Through the planning process so developments have to comply with a GI strategy that promotes and improves biodiversity
Housing	New pavement? And pathways? On estates subject to funding
Active Travel	On AT routes – plant trees, wildflower at time of construction
Are there are any developments coming forward either consented or proposed that integrate GI into the scheme? If so how?	
SAB/LLFA	*Most new SuDS approvals include some element of new green infrastructure, although design driven by management of surface water so may be opportunity to improve habitat / linkage gains through improved guidance.*
Planning(DM)	Yes nearly all major development will have an element of GI and we seek to maximize the % of GI in large new developments
Neighbourhood services	Yes, change within the grass cutting contract that will create new biodiversity / wildflower areas
Active Travel	Eglwys Brewis – includes removing trees to build route but we are replanting more than removing. I want to include wildflowers
Which elements should be linked together? – **E.g. links from settlements to green / blue flag areas**	
SAB/LLFA	*Opportunity to provide better links across new developments through at surface SuDS*
What inhibits our ability to maximise green infrastructure provision (of various functions)? (this can inform the SWOT Analysis)	
SAB/LLFA	*Cost (sometimes perceived rather than actual issue), resource, expertise / guidance internally on optimizing to achieve wider objectives / aims outside specific area under consideration. For example, under-ground and at-surface water storage may both satisfy technical requirements for SAB but at-surface features incorporating optimized planting could significantly benefit amenity, biodiversity, reduced*

	heat-island effect, etc. Conflicting priorities, e.g. solar panels may not be deemed compatible with green roofs or combination may be more expensive. Difficult to quantify all benefits, e.g. carbon footprint of constructing a green-roof may be higher than traditional build and potentially requires additional maintenance, etc. However, if heating / cooling needs of building underneath is significantly reduced then carbon (and cost) saving may outweigh upfront costs.
Planning(DM)	Land values / viability / housing density requirements, SUDs provision, all of which have to be taken into account and balanced in any proposal. Maintenance costs / budget for Council
Neighbourhood services	Land not owned by the council. Internal politics. Funding restrictions and capacity within teams
Housing	Public perception. Increased revenue costs. Capital (i.e. new planting)
Active Travel	Knowledge and understanding and resources. Constraints when building new AT routes – could be because of widths and / utilities in areas
What can be done to maximize green infrastructure provision (of various functions)?	
SAB/LLFA	*Clear corporate position on common themes, e.g. position on green roofs, green-walls, targets for GI in new development (including clear guidance what will and won't be accepted) linked to over-arching issues (carbon reduction, climate change, heat, flood, water re-use, etc). Clear objectives / targets regarding potential retrofit of GI, e.g. SuDS, green-roofs, tree-pits. Incentives / rebates for sustainable building / GI, e.g. Montreal, Germany – not without challenges! If clear policies available then can embed into requirements via SAB process. Also, improved understanding of how to optimize biodiversity and other gains within constraints of SAB planting.*
Planning(DM)	Increase funding sources / grant opportunities Increase additional requirements in national and local planning policy and SPGs
Neighbourhood services	Council wide policy. Examples of good practice that must be adopted. Included in any development and within planning process.
Housing	Capacity and resources of expert staff within council
Which elements are possibly tradable to achieve net environmental gains in both an infrastructure and qualitative sense?	
SAB/LLFA	*Potential to 'offset' SuDS features considered previously and could apply to GI elements. In heavily constrained areas, i.e. highway junction improvements / widening, where restricted scope to include at surface green features could pay into a fund that is then used to construct features in the same catchment, e.g. highway raingardens away from junction. Could expand idea to cover small private developments, e.g new driveways, but would need to ensure opportunities within catchment.*
Planning(DM)	Possibly childrens play space and reduced parking provision in developements

Neighbourhood services	By adding in legistaltion (and policy) to increase environmental gains by ensuring it's in all aspects of development – housing , infrastructure etc.
What are the main barriers to increasing provision? If resource, please explain how and add one additional barrier?	
Planning(DM)	Council wide budgets to provide / take on GI for adoption Competing requirements in dealing with development sites as per answer h (What inhibits our ability to maximise green infrastructure provision (of various functions)?)
Neighbourhood services	Clear policy and strategy so departments have to work closer together and resource should be structured to aspire and deliver the outputs of the strategy

APPENDIX 5
GREEN INFRASTRUCTURE ACTION PLAN USER GUIDE

GREEN INFRASTRUCTURE ACTION PLAN USER GUIDE

The Action Plan should be developed as an updateable Excel spreadsheet and held by the Vale of Glamorgan Council.

The Action Plan should be structured as follows:

- **Ref No** – the unique reference number for the project.
- **Project Name** – existing project name or suggested name for a potential project.
- **Project Scope** – summary of the project's aims, location or spatial extent.
- **Status:**
  - Concept/Aspirational Stage
  - Feasibility Stage
  - Business Case Established and Ready for Funding
  - Existing/Funded
- **Strategic/Landscape-Scale or Local/Place-Specific GI Project**
- **GI Zone Name:**
  - 1: Western Vale
  - 2: Eastern Vale
  - 3: Rural Coast
  - 4: Coastal Settlements
  - Multiple Zones
- **Settlement Name:**
  - Barry
  - Cowbridge
  - Llantwit Major
  - Rhoose
  - Penarth
  - Dinas Powys
  - Wenvoe
  - Llandow
  - Other
- **Contribution to GI Strategy Objectives:**
  - 1: Improve Health & Well-being
  - 2: Enhance Biodiversity & Increase Ecosystem Resilience
  - 3: Increase Climate Change Mitigation & Resilience
  - 4: Improve Social Cohesion
  - 5: Support Sustainable Economic Development
  - 6: Strengthen Sense of Place
- **Contribution to National Well-being Goals:**
  - 1: A Prosperous Wales
  - 2: A Resilient Wales

- 3: A Healthier Wales
- 4: A More Equal Wales
- 5: A Wales of Cohesive Communities
- 6: A Wales of Vibrant Culture and Thriving Welsh Language
- 7: A Globally Responsive Wales

- **Contribution to the Vale Well-being Objectives:**
  - 1: A more resilient and greener Vale
  - 2: A more active and healthier Vale
  - 3: A more equitable and connected Vale

- **Contribution to the Vale of Glamorgan Biodiversity Forward Plan Objectives**
  - 1: Engage and support participation and understanding to embed biodiversity throughout decision making at all levels
  - 2: Safeguard species and habitats of principle importance and improve their management
  - 3: Increase the resilience of our natural environment by restoring degraded habitats and habitat creation
  - 4: Tackle key pressures on species and habitats
  - 5: Improve our evidence, understanding and monitoring
  - 6: Put in place a framework of governance and support for delivery

- **Priority – the indicative timescale for project delivery:**
  - Short-term (1 year)
  - Medium-term (2-5 years)
  - Longer-term (5+ years)

- **Indicative Cost:**
  - Low: <£10k
  - Medium: £10k-£100k
  - High: £100k-£1M
  - Major: >£1M

- **Delivery Lead**

- **Delivery Partners**

- **Outcomes/Indicators** – for monitoring progress in delivery of action/evaluating project impact.

GLOSSARY

GLOSSARY

Amenity: Positive element or elements that contribute to the overall character or enjoyment of an area. For example, open land, trees, historic buildings and the inter-relationship between them, or less tangible factors such as tranquillity

Benefits: Positive impacts for people and wildlife derived from green infrastructure and natural capital

Biodiversity: The variety of all life on Earth: genes, species and ecosystems. It includes all species of animals and plants, and the natural systems that support them.

Biodiversity Net Gain/Net Benefits: An approach to development and/or land management that leaves nature in a measurably better state.

Blue Infrastructure: Blue or blue-green Infrastructure is the term used to refer to the water elements of green infrastructure, including watercourses, waterbodies, and wetlands.

Carbon Sequestration: The uptake and storage of carbon, for instance by absorption of carbon dioxide by trees and plants which then release the oxygen

Catchment: An area of land defined by its topographic watershed, including streams, rivers, wetlands and lakes, from which rainfall collects flows into a defined outlet such as a river mouth, estuary, tributary confluence or lake

Climate Change: The large-scale, long-term shift in weather patterns and average temperatures across the world due to the release of greenhouse gases (most notably carbon dioxide) into the air since the mid-1800s by humans – causing temperatures to rise and resulting in permanent changes to the climate, affecting people through flooding and damage to ecosystems

Climate Change Adaptation: Adjustments made to natural or human systems in response to the actual or anticipated impacts of climate change, to mitigate harm or exploit beneficial opportunities

Climate Change Mitigation: Action to reduce the impact of human activity on the climate system, primarily through reducing the sources of, or enhance the sinks for, greenhouse gases

Climate Change Resilience: The ability/capacity of places, communities and individuals to thrive in the face of multiple risks, uncertainty and threats posed by climate change. Climate resilience requires mitigation and adaptation actions that must be combined to tackle the current and future impacts of climate change

Conservation: The protection, improvement and use of natural resources in line with principles that assure the highest economic or social benefits for people and the environment

Designated Biodiversity Sites: International sites (Special Areas of Conservation, Special Protection Areas, and Ramsar sites), national sites (Sites of Special Scientific Interest) and locally designated sites including Sites of Importance for Nature Conservation

Ecological Network: Habitats and species and the way that they interact and connect, often but not always in corridors of linked sites.

Ecosystem: A dynamic community of living organisms (animals, plants, fungi and microorganisms) and their physical environment that interact as a functional unit.

Ecosystem Services: are the benefits (such as food, water, flood and disease control and recreation) that people obtain directly or indirectly from natural capital

Green Infrastructure: 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.[121]

Green Infrastructure Assets: green/blue spaces and natural/semi-natural features at a range of scales that provide valuable ecosystem services and benefits for people.

Green & Blue Networks: are connected areas of Green Infrastructure assets that together form an integrated and multi-functional network, which can help to define landscape or townscape structure, provide links with the countryside, promote walking and cycling, and enhance connectivity for species and habitats

Green Roof: A vegetative roof system that hosts plants in a growing medium installed over a waterproof membrane. Green roofs can be designed as wildlife habitats and to optimise energy conservation (through insulation) and/or for aesthetic value, and can be a source of water

Green (or Living) Wall: A vertical wall (partially) covered in greenery, often planted in soil at the base, but sometimes using wall-mounted boxes or special panels. Green walls offer several benefits such as contributing to heat retention and cooling, storm water retention and capturing pollutants

Landscape: An area, as perceived by people, whose character is the result of the action and interaction of their natural and/or human factors (e.g. geology, landform, soils, vegetation, land use and human settlement)

Landscape-scale Conservation: The pursuit of multiple benefits from enhancing nature across a defined area that make links to wider economic and social priorities (e.g. water quality, access to nature)

Mental Health Benefits: Connecting people to a healthy environment is a powerful tool for combatting mental health issues such as chronic stress, depression and anxiety. Access to green space, outdoor exercise and green activities, such as gardening or habitat conservation, can have positive impacts on people experiencing mental ill health

Multi-functionality: The ability to provide multiple functions at the same time (e.g. for nature, health and well-being, climate and prospering communities). In terms of green infrastructure, this can mean providing opportunities for recreation whilst delivering biodiversity, contributing to flood risk management, and reducing urban heat stress through shading and cooler greenspaces.

Natural Capital: The elements of nature that directly or indirectly produce value for people, including ecosystems, species, freshwater, land, minerals, air and oceans, as well as natural processes and functions. Natural capital assets are stocks of nature which provides a flow of ecosystem services and benefits to people over time

[121] Planning Policy Wales Edition 11 (updated 2023)

Natural Flood Management: Managing flood and coastal erosion risk by protecting, restoring and mimicking the natural 'regulating' function of catchments, rivers, floodplains and coasts

Nature-based Solutions: Is a term used to describe natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits; and also refers to solutions supported by working with natural processes

Nature Recovery: Halting and reversing the loss of species and habitats; and enhancing sites that are designated for nature conservation and other wildlife-rich places. Newly created and restored wildlife-rich habitats, corridors and stepping-stones will benefit nature recovery by helping wildlife populations to grow and move

Open Space: All open space of public value, including not just land, but also areas of water (such as rivers, canals, lakes and reservoirs) which offer important opportunities for sport and recreation and can act as a visual amenity

Physical Health Benefits: Access to green space for regular exercise can significantly reduce the impacts of cardiovascular disease and other serious health problems. Regular exercise, including walking, can reduce the negative effects of health threats such as obesity, coronary heart disease and respiratory disorders

Place-making: The process we use to shape our public spaces and buildings. Rooted in community-based participation, place-making involves planning, design, and management. It brings together diverse people (including professionals, elected officials, local groups, residents, and businesses) to improve a community's cultural, economic, social and environmental situation.

Priority Habitats: Habitats of importance included under Section 7 of the Environment (Wales) Act 2016

Resilient Ecological Networks: Networks of habitat in good ecological condition linking protected sites and other biodiversity hotspots across the wider landscape, providing maximum benefit for biodiversity and well-being. Such nature networks have existing or potential for healthy resilient ecosystems which provide a range of important ecosystem services as well as allowing the movement of species across landscapes in response to climate change. These networks should be diverse, of sufficient scale and extent, in good functional condition and part of connected mosaics, to enable species and habitats to adapt to disturbance and change.[122]

Stepping stones: Pockets of habitat that, while not necessarily connected, facilitate the movement of species within urban and rural landscape

Stewardship: Taking care of the land

Sustainability: Meeting the needs of the present without compromising the ability of future generations to meet their own needs

Sustainable Drainage System (SuDS): An approach to managing surface water run-off from rainfall close to where it falls that replicates natural drainage by slowing and holding back run-off, reducing pressure on existing piped systems and reducing risk of flooding. Where designed as

[122] The Nature Recovery Action Plan for Wales, 2020 – 21, Welsh Government

vegetated/green systems, SuDS can help to moderate microclimate, benefit ecology, improve water quality and provide amenity spaces with opportunities for recreation

Sustainable Transport: Environmentally sustainable modes of travel, including walking and cycling, low and ultra-low emission vehicles, car sharing and public transport

Typology (of GI)**:** The classification of the range of green infrastructure assets by broad types (for example, park or public garden, outdoor sports facilities and natural and semi-natural greenspace)

Urban Cooling: Measures for reducing the urban heat island effect where cities experience higher-than-normal heat temperatures, as compared to surrounding areas, due to urban heat stress when densely-populated urban landscapes of tarmac, brick, metal and dark rooftops soak up energy from sunlight

Urban Greening: Increasing and enhancing urban nature and greenspaces, including wider environmental improvements (e.g. reducing pollution and positive environmental behaviours such as recycling and public transport etc)

Urban Tree Planting: The process of planting tree seedlings in towns and cities. As urban sites may not be the natural habitat for trees, tree choice and location are vital if trees are to grow and flourish. Planting trees in urban areas can yield many benefits in addition to their aesthetic value, such as reductions in air pollution and noise levels

Well-being: The state of being happy and healthy. Being in or close to nature reduces anger, fear, and stress and increases pleasant feelings. Exposure to nature not only make us feel better emotionally, it contributes to our physical well-being, reducing blood pressure, heart rate, muscle tension, and the production of stress hormones

Welsh Index of Multiple Deprivation (WIMD): the Welsh Government's official measure of relative deprivation for small areas in Wales. It identifies areas with the highest concentrations of several different types of deprivation. WIMD ranks all small areas in Wales from 1 (most deprived) to 1,909 (least deprived). It is a National Statistic produced by statisticians at the Welsh Government. Small areas are Census geographies called Lower-layer Super Output Areas (LSOAs).

Wildlife (or Ecological) Corridor: Linear features that enable migration and dispersal or otherwise act to link habitats in ways that reduce the isolation of wildlife populations

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