

Cardiff Biodiversity and Resilience of Ecosystems Duty Forward Plan



September 2019

City of Cardiff Council Green Infrastructure Plan

'Delivering the Biodiversity and Resilience of Ecosystems Duty (BRED) Forward Plan, and contributing to Resilience Objectives under the Well-being of Future Generations Act'

Draft July 2019

Bydd y ddogfen hon ar gael yn Gymraeg/This document will be available in Welsh

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Executive Summary

1. This document consists of two parts; a Green Infrastructure Plan and a Biodiversity and Resilience of Ecosystems Duty (BRED) Action Plan. Together they form the Biodiversity and Resilience of Ecosystems Duty (BRED) Forward Plan, which has been produced in compliance with Cardiff Council's duty under Section 6 of the Environment (Wales) Act 2016. This is a statutory duty which requires Cardiff Council to seek to maintain and enhance biodiversity, and in doing so promote the resilience of ecosystems, and to produce a forward plan setting out how it will achieve this.
2. The Green Infrastructure Plan sets out Cardiff Council's approach to green infrastructure - multi-functional, connected green spaces that make the best use of land - at the same time providing green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits.
3. It does not introduce new policy, but describes how officers working with parks and public open spaces, ecology and biodiversity, trees, soils and public rights of way will collaborate to consider the approach that considers these elements in a holistic, integrated way to secure multiple benefits.
4. The Green Infrastructure Plan includes the following:-
 - A Vision for green infrastructure in Cardiff
 - An explanation of what we mean by green infrastructure, and why a green infrastructure approach is beneficial
 - The policy and legislation background supporting a green infrastructure approach
 - Six strategic objectives for the green infrastructure approach in Cardiff, which maximise the benefits that the green infrastructure approach can make to ecology and biodiversity, climate change mitigation and adaptation, Cardiff's economy, public physical and mental health, learning, volunteering and social inclusion, and Cardiff's sense of place.
5. The BRED Action Plan sets out a list of actions which, if implemented, would deliver the objectives of the Green Infrastructure Plan as well as those of the Nature Recovery Action Plan. It also gives consideration to how biodiversity and ecosystem resilience can be embedded within Cardiff Council functions by engagement with individual service areas.
6. The Biodiversity and Resilience of Ecosystems Duty Forward Plan is also well-placed to contribute to the achievement of any objectives that Cardiff Council sets in relation to the 'Resilience Goal' under the Wellbeing of Future Generations Act 2015.
7. The preparation of this document was part funded by Natural Resources Wales within the 2014-15 GR1 partnership funding programme. The plan draws together current and future work programmes that deliver, promote and sustain Cardiff's green infrastructure.

1.0 Introduction

1.1 The Vision

‘Cardiff’s distinctive natural heritage will provide a network of Green Infrastructure which will be protected, enhanced, developed and managed to ensure that its integrity and connectivity is sustained for the economic, social and environmental benefit of the City and the Region.’

1.2 What is Green Infrastructure?

1.2.1 Green infrastructure is about multi-functional, connected green spaces that make the best use of land - at the same time providing green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits. This is as important to the city as its ‘grey’ infrastructure of roads, buildings and power lines (CABE 2009), and helps to address many of the social and environmental issues linked to urban life (Wildlife Trust Wales 2016).

1.2.2 Green infrastructure is broadly analogous to ‘Natural Capital’, which can be defined as ‘...the elements of nature that produce value (directly and indirectly) to people, such as the stock of forests, rivers, land, minerals and oceans. It includes the living aspects of nature (such as fish stocks) as well as the non-living aspects (such as minerals and energy resources). Natural capital underpins all other types of capital... and is the foundation on which our economy, society and prosperity is built.’ (The Natural Capital Committee 2017).

1.2.3 Green infrastructure can include:

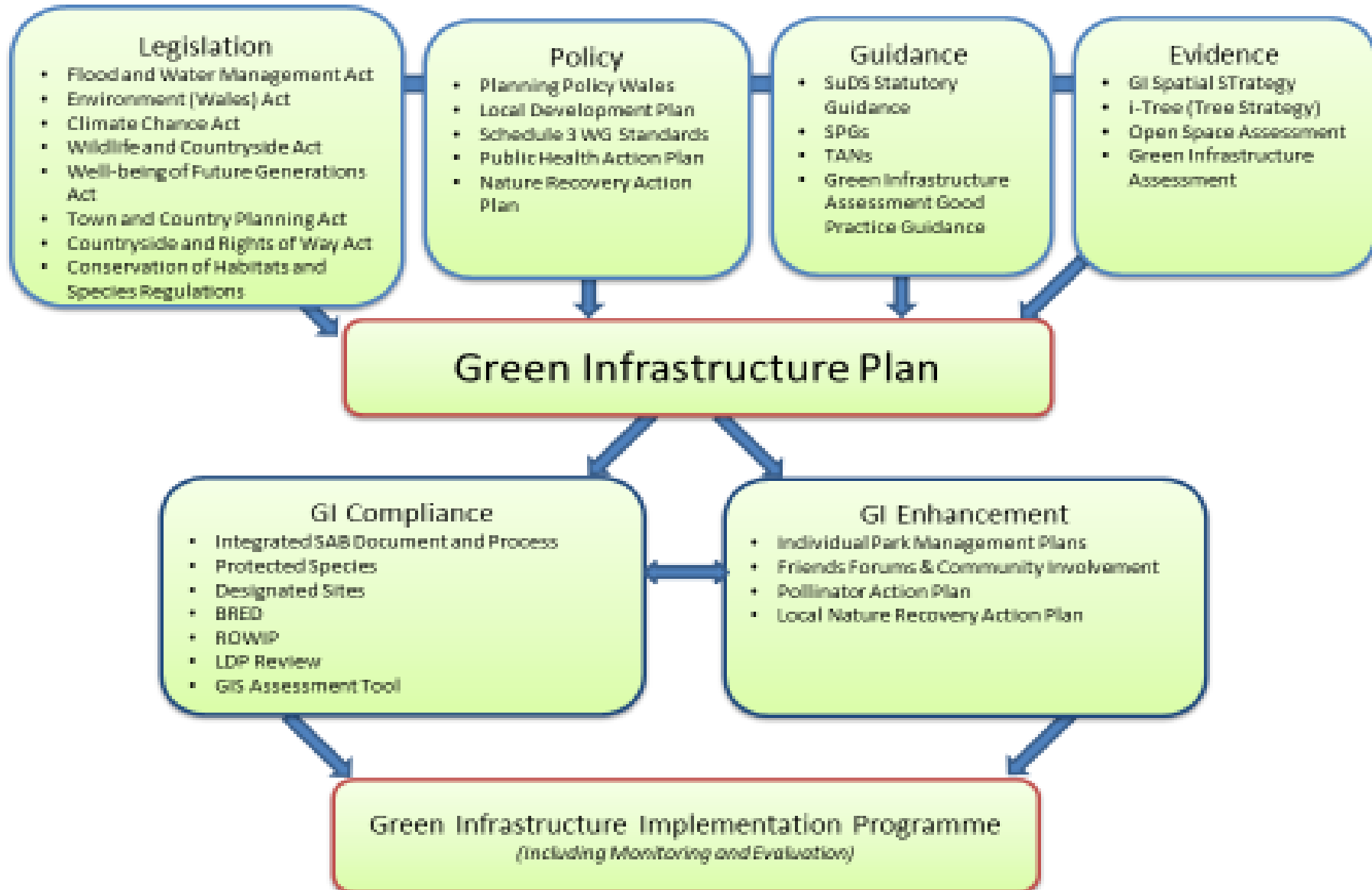
- Parks and Gardens
- Allotments and orchards
- Open countryside
- Rivers, lakes, ponds and streams
- Woodland, hedgerows and scrub
- Roadside verges and street trees
- Green roofs and walls
- School and hospital grounds
- Cemeteries and churchyards
- Golf courses
- Sustainable Drainage Systems (SuDS)
- Railway embankments
- Footpaths and bridleways
- Open mosaic habitat on previously developed land (Brownfield sites)
- Headlands and set-aside areas around agricultural fields

- Historical sites

1.3 Purpose of this document

- 1.3.1 Cardiff has long had a reputation as a green city dating back to Victorian times, and natural heritage assets are fundamental to the city's character, distinctiveness and sense of place. This document sets out the city's approach to green infrastructure and is one of a series of documents that provides the context for green infrastructure in Cardiff. Figure 1 below outlines this approach and highlights this document's place in the hierarchy.
- 1.3.2 Co-ordination and promotion of inter-departmental working within Cardiff Council will make the best use of financial resources and avoid duplication of effort by providing a central resource for green infrastructure development actions. This in turn will promote and foster improved partnership working both within the Council and with external bodies from the private, public and voluntary sectors. The document is intended to provide a simple but cohesive context to green infrastructure in Cardiff, without excessive detail, to ensure that the overview of information can be maintained and updated within the Council's resources.
- 1.3.3 The Well-being of Future Generations Act 2015 requires public bodies such as Cardiff Council to set objectives designed to maximise their contribution to the Welsh Government's seven well-being goals. One of those goals is:-
- '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).'*
- 1.3.4 The Green Infrastructure Plan is well-placed to contribute to the achievement of any objectives that Cardiff Council sets in relation to this 'Resilience Goal', as the Vision of the GI Plan is very similar to that Goal. Furthermore, the Six Objectives of the Green Infrastructure Plan can be related to the Focus Areas in the Capital Ambition process as described in Section 3.8.1 below.
- 1.3.5 Similarly, section 6 of the Environment (Wales) Act 2016 places a duty upon Cardiff Council to set out a plan explaining how it intends to comply with the 'Biodiversity and Resilience of Ecosystems Duty'. This is a duty to seek to maintain and enhance biodiversity in the exercise of our functions, and in doing so promote the resilience of ecosystems. The present Green Infrastructure Plan, together with the Biodiversity and Resilience of Ecosystems Action Plan, will set out how Cardiff Council intends to comply with this duty.

Figure 1. Cardiff Council Green Infrastructure Process



1.3.6 Therefore, the Cardiff Council Green Infrastructure Plan will be important in delivering the contribution to the Resilience Goal under the WBFG Act, and the 'Biodiversity and Resilience of Ecosystems Duty' plan requirement.

1.3.7 The existing green infrastructure in Cardiff includes:

- Undeveloped countryside around the outskirts of Cardiff, supporting a network of hedgerows, woodlands, copses, wetlands and roadside verges
- The coastal area to the south of the City, including habitats protected at an international level such as saltmarsh, sandflats, mudflats and reefs
- Wentloog levels linking to the Gwent Levels in the east
- A wide range of parks and open spaces
- The strategically important river valleys of the Ely, Taff, Nant Fawr and Rhymney
- Freshwater habitats such as Cardiff Bay, Llanishen and Lisvane Reservoirs, and a network of ponds throughout the city
- A range of designated sites including Sites of Special Scientific Interest, Local Nature Reserves and Sites of Importance for Nature Conservation
- A well-developed network of street trees
- A series of growing spaces including allotments and community orchards
- A range of private green spaces (Golf courses, private gardens, hotel grounds etc.)
- Sustainable drainage systems in some areas
- Roadside verges, roundabout islands and screen planting along roads
- A range of active and disused railway lines, providing habitat connectivity throughout the city via embankment vegetation
- Flat Holm island, with its limestone grassland and maritime cliff and slope habitats

1.4 The benefits of a green infrastructure approach

1.4.1 A green infrastructure 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. These benefits are also referred to as **Ecosystem Services**.

1.4.2 The UK National Ecosystem Assessment states that ecosystem services are '**The benefits provided by ecosystems that contribute to making life both possible and worth living**'. The concept of ecosystem services has been developed to improve understanding of the impact that ecosystems have on people's lives and to help guide human use and management of the earth's natural resources.

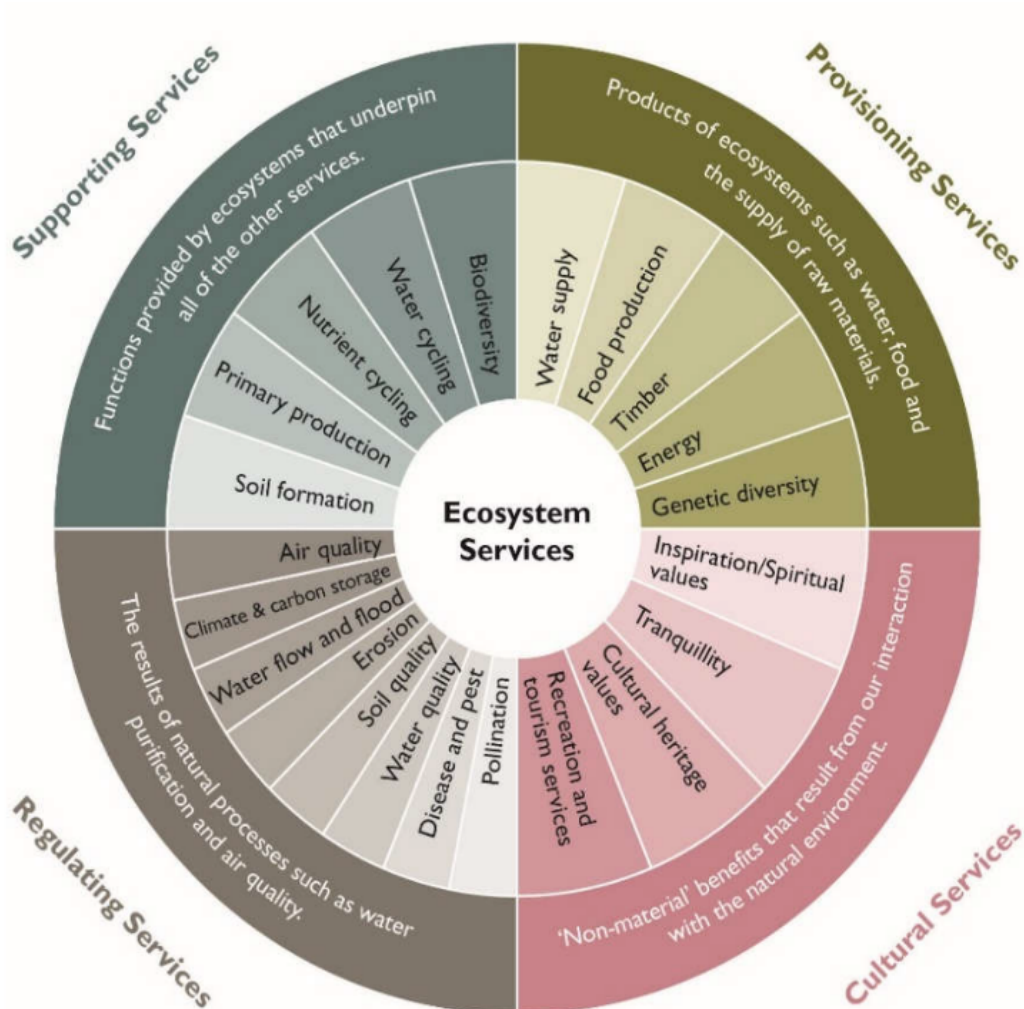
1.4.3 Ecosystem services are grouped into four main categories:

- **Supporting Services** – not of direct benefit to people, but essential to the functioning of ecosystems and so indirectly responsible for all other services. Includes water cycling, nutrient cycling, soil formation and the processes of plant growth;

- **Regulating Services** –often not attributed real monetary value in conventional markets, but of direct benefit to people. Includes regulating climate, flooding, water quality, air quality, erosion and pollination;
- **Provisioning Services** – the supply of goods that are of direct benefit to people. Includes food, timber, fresh water, fuel and pharmaceuticals; and
- **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, reflection and employment.

1.4.4 These ecosystem services are depicted in Figure 2, below.

Figure 2. Ecosystem Services



1.4.5 The value of the green infrastructure approach arises from the multiple benefits that can be gained from green infrastructure, including some or indeed all of the above benefits. The multi-functional nature of green infrastructure therefore represents a much more efficient use of land whilst maximising the benefits, or Ecosystem Services.

1.5 Scale of green infrastructure

1.5.1 Green infrastructure operates at a series of scales – as set out in Table 2 below. It is important that the benefits which arise from green infrastructure, and the impacts of development upon those benefits, are considered at the appropriate scale.

Table 2. Green Infrastructure at differing scales.

Scale	Some examples
Building	<ul style="list-style-type: none"> • Private gardens, garden trees, garden ponds • Forecourts with porous paving • Communal gardens • Roof gardens, green roofs and walls • Roosting and nesting opportunities for bats and birds
Street	<ul style="list-style-type: none"> • Pocket parks • Pollinator-friendly roadside verges, roundabouts and vision splays • Porous street paving, rain gardens, swales and other water features • Street trees, street planters and hedgerows • Ponds • Public Rights of Way
Neighbourhood	<ul style="list-style-type: none"> • Public parks and green spaces • Community gardens • Public Rights of Way, Wildlife Explorer Trails, Cardiff Centenary Walk, Circular Walks • Street trees, tree lines, copses and small woodlands • Allotments • Wildlife areas in parks • Woodlands and streams within suburban areas • Churchyards and School and hospital grounds • Rain Gardens and 'Greener Grangetown' style projects • Scrub and waste ground, including open mosaic habitats on previously developed land • Golf courses
Landscape	<ul style="list-style-type: none"> • Open countryside • Woodlands • Private estates • Railway embankments • Shelterbelts • River catchments under the Water Framework Directive • Forestry • River Valleys riparian habitat, • Caerphilly Ridge upland habitats

	<ul style="list-style-type: none">• Gwent Levels reed network• Severn Estuary• Country parks• Wales Coastal Path, Ely Trail, Taff Trail, Rhymney Trail,• River Valleys
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2.0 Policy, Legislative and Strategy Context

2.1 International Policy

2.1.1 The **Convention on Biological Diversity (CBD)**, to which the UK government is a signatory, has produced a Strategic Plan for 2011-2020, which sets out a series of Biodiversity Targets (The 'Aichi Targets'). All of these targets relate in some way to green infrastructure, but some targets are particularly relevant:

Target 5:- By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Target 11:- By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

2.1.2 The same Convention also has an 'Ecosystems Approach' cross-cutting theme, which is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. The Ecosystems Approach is supported by 12 principles:-

Principle 1: The objectives of management of land, water and living resources are a matter of societal choices.

Principle 2: Management should be decentralized to the lowest appropriate level.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Principle 6: Ecosystem must be managed within the limits of their functioning.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Principle 9: Management must recognize the change is inevitable.

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

2.1.3 The EU has developed a Biodiversity Strategy to 2020 – ***‘Our life insurance, our natural capital’***, otherwise known as the EU Biodiversity Strategy (EUBS). Target 2 of this strategy states:

‘By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.’

2.1.4 This will contribute to the EU's sustainable growth objectives and to mitigating and adapting to climate change, while promoting economic, territorial and social cohesion and safeguarding the EU's cultural heritage. It will also ensure better functional connectivity between ecosystems within and between Natura 2000 areas and in the wider countryside.

2.2 National policy framework

2.2.1 Welsh Government policy

2.2.1.1 The Welsh Government (WG) is responsible for areas such as health, education, language and culture and public services, including planning and land use. There is currently no central policy relating specifically to green infrastructure, but WG environmental responsibilities are defined in terms of promoting the economic and environmental sustainability of Welsh communities through management of climate, energy, waste and water and land in ways that will protect the natural environment.

2.2.2 State of Natural Resources Report (SoNaRR)

2.2.2.1 The SoNaRR report sets out the state of Wales' natural resources. It assesses the extent to which natural resources in Wales are being sustainably managed, and recommends a proactive approach to building resilience. And - for the first time – the report links the resilience of Welsh natural resources to the well-being of the people of Wales.

2.2.2.2 Based on the evidence in SoNaRR, Welsh Ministers will set out their priorities for policy to address the sustainable management of natural resources. Area statements will be developed by Natural Resources Wales (NRW) with our partners and stakeholders to put this policy into action.

2.2.2.3 The report shows that overall, ecosystem diversity is declining, which is shown by loss of habitats and species. The 'extent' of some habitats has also declined significantly. 'Condition' shows mixed results, while 'connectivity' has greatly reduced. All ecosystems have problems with one or more attributes of resilience. This means that their capacity to provide ecosystem services and benefits may be at risk. No ecosystem, on the basis of our assessment, can be said to have all the features needed for resilience.

2.2.3 Natural Resources Policy

2.2.3.1 Sustainable management of natural resources is defined in the Environment Act as: *“Using natural resources in a way and at a rate that maintains and enhances the resilience of ecosystems and the benefits they provide. In doing so, meeting the needs of present generations of people without compromising the ability of future generations to meet their needs, and contributing to the achievement of the well-being goals in the Well-being of Future Generations Act.”*

2.2.3.2 Section 4 of the Environment Act introduces nine principles to help guide and underpin the way SMNR should be interpreted to ensure a consistent approach for SMNR across Wales:

- **Adaptable** A need to plan, monitor, review and change future work in light of new evidence and understanding
- **Scale** Decisions and actions will need to be taken at national, regional or local levels to deliver the best outcomes
- **Working together** Everyone in Wales is a stakeholder in the natural environment and hence, to ensure best management of natural resources, all views need to be considered
- **Engaging with the public** Ensure that the public has opportunity to give its opinion on how natural resources are managed, at all stages of the decision making process
- **Evidence** An improved evidence base is needed to understand Wales’ natural resources to allow for better management
- **Understanding all of the benefits received from natural resources** The whole of Wales needs to understand the economic, social, cultural and environmental value of natural resources, including how they can benefit future generations
- **Long term** Impacts of decisions need to be considered not only in the short term but also in the long term
- **Prevention** Take steps to prevent damage to Welsh ecosystems
- **Resilience** To be able to deal with increased demands and pressures, such as climate change, Welsh ecosystems need to be healthy. Decisions need to be considered in terms of providing long term benefits.

2.2.4 Area Statements

2.2.4.1 Natural Resources Wales are developing Area Statements to help facilitate the sustainable management of Wales’ natural resources. Area Statements will set out evidence on the natural resources in a place, the benefits they can provide, and from this, identify the opportunities for implementing the Natural Resources Policy, so they can continue to deliver benefits now and in the future. They are an opportunity to rethink the way we manage and use our natural resources, and collaboratively design new solutions to the big societal and environmental challenges we face.

2.2.4.2 Cardiff is in the ‘South Central’ Area, along with Vale of Glamorgan, Bridgend, Rhondda Cynon Taf and Merthyr Tydfil. The Area Statement for this Area is anticipated in Spring 2020.

2.2.5 The Nature Recovery Action Plan for Wales - Setting the course for 2020 and beyond

2.2.5.1 The Nature Recovery Action Plan for Wales sets out how we will address the Convention on Biological Diversity’s (CBD) Strategic Plan for Biodiversity and the associated Aichi Biodiversity Targets in Wales, as well as the EU Biodiversity Strategy targets. It is the National Biodiversity Strategy and Action Plan for Wales.

2.2.5.2 The Nature Recovery Action Plan has been produced by the Wales Biodiversity Strategy Board, members of which represent both land and sea managers, Natural Resources Wales, the environmental third sector, local authorities, Wales Biodiversity Partnership and Welsh Government. It is for everyone in Wales.

2.2.5.3 The plan consists of three parts:

Part 1: ‘Our Strategy for Nature’ sets out our commitment to biodiversity in Wales, the issues we need to address, and our objectives for action. It sets out how our current and proposed action, particularly through the Well-being of Future Generations (Wales) Act, and through the Sustainable Management of Natural Resources, will contribute to reversing the loss of biodiversity in Wales.

Part 2: ‘Our Action Plan’ sets out those actions which have been specifically identified to meet our objectives to reverse the decline of biodiversity.

Part 3: ‘The Nature Recovery Framework’, in development, will show the governance structure for the Nature Recovery Plan, and the roles and responsibilities of everybody involved in the delivery of action for biodiversity in Wales. It will also define the accountability measures in place to ensure delivery.

2.2.5.4 The NRAP 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 principal 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

2.2.5.5 In accordance with the Environment Act, the Biodiversity and Resilience of Ecosystems Duty Forward Plan should be guided by these six objectives.

2.3 Legislative Framework

2.3.1 Well-being of Future Generations Act 2015

2.3.1.1 From April 2016, all public bodies must set and publish well-being objectives that are designed to achieve the stated well-being goals, and must then take all reasonable steps to meet those objectives. For green infrastructure, the most relevant of the seven well-being goals is:-

‘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).’

2.3.1.2 The Six Objectives of the Green Infrastructure Plan relate closely to the Strategic Outcomes as set out in the 'What Matters' strategy and the Liveable City Report 2015, as described in section 3.1.8, below.

2.3.2 Environment (Wales) Act 2016

2.3.2.1 This Act places a new 'biodiversity and resilience of ecosystems duty' upon local authorities as follows:

6(1) 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.

6(2) In complying with subsection (1), a public authority must take account of the resilience of ecosystems, in particular the following aspects:-

- (a) diversity between and within ecosystems;*
- (b) the connections between and within ecosystems;*
- (c) the scale of ecosystems;*
- (d) the condition of ecosystems;*
- (e) the adaptability of ecosystems.*

Furthermore, public bodies such as Cardiff Council have to set out a plan explaining how it intends to comply with that duty, and then report on how that plan has been delivered, by 2019. This is known as the Biodiversity and Resilience of Ecosystems Duty Forward Plan, and Report.

2.3.3 The Flood and Water Management Act 2010 (Schedule 3)

This Act requires new developments to include SuDS features that comply with national standards. The Welsh Government proposes to publish interim national standards on an advisory basis until such time as it determines the most effective way of embedding SuDS principles in new developments in the longer term.

This enables designers, property developers, local authorities and other interested parties to both demonstrate that they have taken account of the Welsh Government's planning advice on Development and Flood Risk and to pilot the standards, so that if necessary they can be revised before being placed on a statutory footing.

2.4 National Planning Policy Framework

2.4.1 Planning Policy Wales (PPW) Edition 10 December 2018

2.4.1.1 PPW will deliver the vision of Wales as set out in the Well-being of Future Generations Act: a more prosperous Wales, a resilient Wales, which supports healthy, functioning ecosystems and recognises the limits of the global environment, a healthier Wales, a more equal Wales, a Wales of more cohesive communities, a Wales of vibrant culture and a globally responsible Wales.

- 2.4.1.2 PPW plays a significant contribution to the improvement of well-being in all its aspects as defined by the statutory well-being goals. It embeds the spirit of the Well-being of Future Generations Act, through moving us towards a low carbon, resilient society, of providing secure and well-paid jobs, and of building well-connected environments for everyone in Wales that improves our lives and health and enhances our well-being. It will help prepare for a more diverse population and a greater ageing population, by supporting the integration of services, embedding social cohesion, and ensuring for example that sites of new housing ensure equality, access to the Welsh language, and encourage a sense of belonging.
- 2.4.1.3 The concept of placemaking introduced in this PPW is a key element to deliver on the aspirations of the Act and drive plan making and development management decisions. It embraces the statutory goals and ways of working as well as giving clear direction through the definition of key planning principles and placemaking outcomes in Wales.
- 2.4.1.4 the 'Distinctive and Natural Places' section makes frequent reference to green infrastructure, and introduces the requirement to integrate green infrastructure into development. Planning authorities are also required to adopt a strategic and proactive approach to green infrastructure and biodiversity by producing up to date inventories and maps of existing green infrastructure and ecological assets and networks. Such Green Infrastructure Assessments should use existing datasets, and the best available information, to develop an integrated map-based evidence resource. Doing so will facilitate a proactive approach and enable contributions towards the well-being goals to be maximised.
- 2.4.1.5 The Green Infrastructure Assessment should be used to develop a robust approach to enhancing biodiversity, increasing ecological resilience and improving well-being outcomes, and should identify key strategic opportunities where the restoration, maintenance, creation or connection of green features and functions would deliver the most significant benefits

2.5 Local Policy Framework

2.5.2 Cardiff Local Development Plan (2006-2026)

The Local Development Plan (LDP) is a land use document that cannot in itself deliver the range of outcomes defined in the 'What matters' strategy, but the plan can create the conditions that can directly or indirectly support the delivery of the outcomes. One of the key themes of the LDP is the creation of sustainable neighbourhoods and within this theme, there is a stated objective to:

'...maximise the contribution of networks of multi-functional and connected open spaces to strategically design networks of open space that are rich in biodiversity and provide safe routes between key locations to encourage healthier lifestyles through promoting walking and cycling. To further encourage healthy lifestyles by providing allotments together with the wider promotion of healthy eating....

Key Policy KP16: Green Infrastructure, within the LDP refers specifically to the protection and conservation of the natural heritage network, emphasising that this needs to be reconciled with the benefits of new development. New development will be required to demonstrate how green infrastructure has been considered and integrated into proposals to ensure that these assets are strategically planned. The policy also emphasises the economic, social and environmental benefits

of green infrastructure including its contribution to reducing the impact of climate change, enhanced biodiversity habitat and connectivity, provision of sport and recreational facilities, contribution to health and well-being and the provision of visual benefits to all.

KP 16 describes how Cardiff's distinctive natural heritage provides a network of green infrastructure which will be protected, enhanced, created and managed to ensure the integrity and connectivity of this multi-functional green resource is maintained. Protection and conservation of natural heritage network needs to be reconciled with the benefits of development. Proposed development should therefore demonstrate how green infrastructure has been considered and integrated into the proposals. If development results in overall loss of green infrastructure, appropriate compensation will be required.

2.5.3 Cardiff Capital Ambition

Capital Ambition, the new administration's five-year plan for the city, outlines the council's vision for Cardiff to become a leading city on the world stage. Each Cabinet member has outlined their key aims and ambitions for their term of office. The plan focuses on four main areas:

- **Working for Cardiff** - Making sure everyone who lives and works here can contribute to, and benefit from, the city's success.
- **Working for Wales** - A successful Wales needs a successful capital city.
- **Working for the future** - Managing the city's growth in a sustainable way.
- **Working for public services** - Making sure public services are delivered efficiently, effectively and sustainably in the face of rising demands and reduced budgets.

3.0 Strategic objectives

3.1 Key priorities

3.1.1 The Green Infrastructure Plan takes its lead from national and local policy, legislation and strategy outlined in section 2. Six Objectives of this Green Infrastructure Plan are:

- Protecting the natural environment
- Protecting people and places
- Supporting the local economy
- Improving health
- Creating opportunities for people
- Enhancing local character and sense of place

3.1.2 These objectives will be achieved by:

- Implementation of LDP policies relating to green infrastructure
- Collaborative delivery of projects listed in the Green Infrastructure Implementation Programme
- Developing and maintaining an evidence-based spatial strategy
- Coordination of Cardiff Council activities in relation to green infrastructure by the Green Infrastructure Group

The following sections set out these six objectives in more detail.

3.2 Protecting the natural environment

3.2.1 Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.

3.2.2 This will be delivered by:

- Mapping of ecosystems, and preparation and implementation of management plans for specific ecosystems
- Delivery of city-wide and cross-boundary initiatives including projects to support removal of invasive species, increased planting of pollinators and protection of endangered habitats and species
- Ensuring ecosystems are resilient, in terms of their extent, diversity, connectivity and condition
- Provision of ecosystem corridors in new and existing developments
- Ongoing work with volunteers to improve local biodiversity
- Monitoring and recording of species and habitats
- Provision of information and training for volunteers and local people

3.2.3 Urban green infrastructure can support a range of wildlife, and can form a functioning ecosystem in its own right. Just as importantly, urban green infrastructure contributes to ecosystem function in the wider landscape. Habitats within green infrastructure can be of value, including 'brownfield' habitats, as well as supporting a range of species which include protected and priority species. Green infrastructure can also form important habitat connectivity and 'stepping stones', allowing the free movement of species for foraging, migration and dispersal. Larger, higher quality, and better connected green spaces will maximise the contribution that green infrastructure makes to ecosystems.

3.2.4 The requirement to consider ecosystems is embedded in the Environment (Wales) Act 2016 in sections 4 and 6, for example, and also in the 'A resilient Wales' Goal of the Wellbeing of Future Generations Act 2015. Green infrastructure provides the habitats, species and soils upon which ecosystems are based, so protection and enhancement of green infrastructure is an essential element of the ecosystem approach.

3.2.5 The ecosystem approach makes explicit the link between the status of natural resource systems and ecosystem services that support human well-being. It seeks to maintain the integrity and functioning of ecosystems as a whole to avoid rapid undesirable ecological change. It also recognises that the impacts of human activities are a matter of social choice, and are as integral to ecosystem interactions as ecosystems are to human activities (POST Note No. 377).

3.3 Protecting people and places

3.3.1 Objective 2: To ensure that Cardiff's green infrastructure is enhanced and managed in a way that increases resilience to the changing climate and provides protection for people and places.

3.3.2 This will be delivered by:

- Projects to increase local resilience to flooding, including improved recovery of sites used for temporary floodwater storage
- Improved management of trees and woodlands, including extended planting to attenuate rainfall and provide shading and microclimate benefits
- Implementation and improved management of sustainable urban drainage and holistic water management schemes in existing and new developments
- Monitoring of climate change impacts on existing landscapes and implementation of improvement schemes to address resilience

3.3.3 Green infrastructure provides a range of climate change services that can make both a substantial contribution towards adapting to climate change and a limited yet important contribution towards mitigating climate change. Such natural interventions are increasingly being recognised as a desirable 'win-win' approach to combating climate change, as they also help to deliver multiple other social, economic and environmental benefits (<http://www.greeninfrastructurenw.co.uk/climatechange/>)

3.3.4 Green infrastructure can provide climate change mitigation and adaptation, as per the UK's National Strategy for Climate and Energy (HM Government, 2009), for example:

- **Temperature regulation:** Green infrastructure in urban areas can ameliorate the warming effects of climate change and the Urban Heat Island effect. Provision of green infrastructure can reduce higher urban temperatures through evapotranspiration, direct shading and conversion of solar radiation to latent heat. Gill *et al.* (2007) suggested that increasing the current area of green infrastructure in Greater Manchester by 10% (in areas with little or no green cover) could result in a cooling of up to 2.5 °C under the high emissions scenarios based on the UK Climate Impacts Programme (UKCIP02) predictions.
- **Drainage:** The implementation of sustainable drainage systems (SuDS) in the right locations plays a vital role in combating flooding. Woodland and other vegetation in the urban or peri-urban environment can contribute to flood alleviation by delaying the downstream passage of flood flows, by reducing the volume of runoff through interception and by promoting rainfall infiltration into the soil. Duffy *et al.* (2008) produced a cost benefit analysis which supports SuDS and indicates that well designed and maintained SuDS are more cost effective than traditional drainage solutions, as they cost less to construct and maintain.
- **CO₂ Removal:** Trees and other vegetation remove CO₂ from the air. UK forests remove approximately 4m tonnes of carbon from the atmosphere every year which is equivalent to 14.8m tonnes of carbon dioxide. (Forestry Commission England (no date) – Trees and Climate Change).

- Improving air quality: Tiwary *et al.* (2009) showed that trees reduce pollution through the deposition of particulate matter onto leaf surfaces. The structure of large trees and their rough surfaces cause interception of particulate matter of less than 10 microns in diameter (PM10) by disrupting the flow of air, and trees provide a surface area for capture that can be between 2 and 12 times the area of land they cover.

3.4 Supporting the local economy

3.4.1 Objective 3: To maximise the contribution that green infrastructure makes to Cardiff's economy by enhancing the city's attractiveness for business, tourism and living.

This will be delivered by:

- Master planning and design of new developments to ensure connectivity and multifunctional use of green space
- Development, upgrading and promotion of long distance and cross border recreational routes such as the Wales Coastal Path, the Taff Trail and other river valley routes
- Promotion and development of outdoor activities in green space including walking, horse riding, cycling and water based activities through the Outdoor Cardiff website, partnership working and ongoing investment and improvement
- Development of circular trails and promoted routes within Cardiff
- Support and development for new business activity associated with green tourism in Cardiff
- Continued promotion and development of outdoor activities and events linked to footpaths, cycle ways and open spaces in Cardiff and surrounding areas.

3.4.2 UK Natural Environment Assessment (UK NEA) found that if the UK's ecosystems are properly cared for, they could add an extra £30bn a year to the UK's economy but if they are neglected, the economic cost would be more than £20bn a year. In more detail, green infrastructure contributes to the city's economy by:

- Inward investment: Well-designed and maintained green infrastructure makes an area more attractive. More people move into attractive areas which increases spending in those areas, boosts the local economy and encourages further investment in the surrounding areas. Improved attractiveness means more businesses are interested in moving to an area, and they find it easier to attract and retain workforce and customer base.
- Property Values: Figures from the Commission for Architecture & the Built Environment (CABE) show that property values increase near green spaces, with houses close to parks averaging 8% higher prices than similar properties further away CABE (2005). Research has shown that the trees add 15% to 25% to the total value of property, depending on size, condition, location and species rating (CTLA, 2003).
- Labour productivity. Better working environments can significantly affect productivity. Not only do studies suggest that employees work better and more productively in greener, more attractive environments, but health benefits such as lower stress levels

can reduce sickness and absenteeism. High-grade staff say they stay in their jobs longer if there is a pleasant physical environment, which reduces the costs of recruiting and training new staff. AMION (2008).

- Visitor spending: The attractiveness of an area and the quality of its parks impacts on the number of visitors attracted to, and spending in, that area. The direct and indirect expenditure for and during such visits contributes to the local and regional economy. Direct expenditure accrues to those businesses operating on the green infrastructure (e.g. events, cafes in parks) and indirect expenditure accrues to others in the vicinity (e.g. shops, hotels, taxis etc.).
- Environmental cost-saving: GI provides important regulatory services such as pollution filtration, flood risk reduction and the mitigation of temperature extremes. There is good evidence that GI can therefore reduce damage costs and is often a more cost-effective way to meet environmental targets than mechanical solutions. For example Rawlings et al. (1999) found that the sheltering effect of trees could save 3 to 9% of energy bills. Similarly a study by Liu and Harris (2007) on commercial buildings estimated cost savings at around 18% of heating bills due to the sheltering effect of trees.
- Health improvement: Mental ill-health and stress are significant health issues in the UK and there is strong evidence that access to green space has a positive impact on these issues. The UK also suffers from a significant burden of ill-health due to people not meeting recommended levels of activity. The evidence is strongly suggestive of the quality of the outdoor environment being an important factor in encouraging daily exercise. There is also good evidence that health improvements feed through into increased productivity.
- Employment generation: Developing and maintaining GI provides jobs, and it is estimated that Wales already has over 41,000 people employed in the green economy in a variety of industries (Welsh Government (2014)).

3.5 Improving health

3.5.1 Objective 4: To increase the potential physical and mental health benefits from a good quality, natural environment by improving, promoting and creating connected, multi-functional green infrastructure in Cardiff.

3.5.2 This will be delivered by:

- Creating an attractive landscape to encourage use of the outdoor environment.
- Extending the provision of interpreted trails such as the wildlife discovery trails for children in Cardiff's parks and green spaces
- Provision of improved general interpretation and directional signage to encourage further exploration of areas
- Use of mobile and digital technology to increase use of the outdoor environment including the development of apps and tailored interpretation

- Improving access and facilities in parks and green spaces for people with a wide range of disabilities
- Working with disadvantaged communities to encourage increase use of facilities
- Extending access for cycling and walking in green spaces, including addressing issues of conflict that may arise
- Working with health providers to adapt and deliver facilities that meet the needs of local communities

3.5.3 There is growing evidence to suggest that physical and mental health can be improved with greater access to green space (POST Note 538):

- **Physical Activity:** Being physically active for 30 minutes a day can directly reduce the risk of strokes, cardiovascular disease, obesity, some cancers and type 2 diabetes. At a national level, levels of physical activity are higher in areas with more green space with people living near the greenest areas achieving the recommended amount of physical activity.

Those living closer to green space are more likely to use it, and more frequently. Studies outside the UK suggest that people living closer to good-quality green space are more likely to have higher levels of physical activity.

- **Mental Health and Wellbeing:** Psychosis and depression occur at higher rates in urbanised areas and in the UK 1 in 4 people now experience mental health issues. Local green spaces may provide important areas for social interaction and integration that can indirectly increase public wellbeing. Access to green spaces may also have more direct and immediate benefits for mental health and wellbeing.
- **Therapeutic Use of Contact with Nature:** Patients and hospital staff report feeling happier and more relaxed after spending time in a garden or outdoor space, suggesting that hospitals could incorporate green spaces to improve the wellbeing of healthcare staff, and patients. Some indicators of psychological stress, including blood pressure and heart rate, are reduced in participants exposed to visual and auditory stimuli associated with nature. Cortisol levels in saliva (also linked to stress) decrease upon entering a natural environment.
- **Indirect health effects:** Urbanisation damages the environment and has a range of implications for human health. Increasing urban vegetation could help reduce:
 - Flooding – 10,000 trees can retain approximately 35m litres of water per year, reducing flood risk
 - Noise pollution – a border of trees and shrubs 30 metres wide can reduce noise levels by 5-10 decibels.
 - Air pollution – doubling tree cover across the West Midlands could reduce the concentration of fine particulate matter by 25%, preventing 140 premature air pollution-related deaths in the region.
 - The urban 'heat island' (UHI) effect – vegetation creates shade, which reduces the risk of heat stroke and exhaustion.

3.6 Creating opportunities for people

3.6.1 Objective 5: To use Cardiff's green infrastructure to provide opportunities for people to access the outdoor environment and to participate in learning, training and volunteering to foster social inclusion and equality and improve life chances.

3.6.3 This will be delivered by:

- Continued support for 'Friends' groups including the establishment of new groups where support exists and ongoing support for the umbrella 'Friends Forum'
- Development of training opportunities for volunteers, including the provision of facilities to support training
- Working with partners to create and sustain new ways of involving local people in care for the natural environment
- Development of outdoor learning opportunities for schools in Cardiff's parks and green spaces, making the best use of Council resources and external partners.
- Increased liaison with local further and higher educational establishments to encourage to use of Cardiff's green spaces for advanced study and research purposes.

3.6.4 As set out in Forest Research (2010), green space offers possibilities in terms of increasing social activity, improving community cohesion, developing local attachment and lowering crime levels, particularly in deprived communities (Bell *et al.*, 2008; Weldon *et al.*, 2007). The mere presence and local availability of green spaces and natural features have been shown to encourage people to use their outside spaces more and, once outside, these green spaces help to promote positive social interactions. For example:

- 83% more individuals engaged in social activity in green spaces Sullivan *et al.* (2004) as opposed to sparsely vegetated/concreted ones.
- A study by found there is a positive association between neighbourhood features such as parks and the ability of residents to interact positively. Cohen *et al.* (2008).
- In a survey of 750 people who took part in the Walking the Way to Health Initiative, Dawson *et al.* (2006) found that for many participants the walks were not just about providing physical activity; equally important was the increased opportunity for social interaction and contact.

3.7 Enhancing local character and sense of place

3.7.1 Objective 6: To build upon Cardiff's reputation as a vibrant, green and attractive city by continuing to enhance and sustain the green infrastructure that underpins the city's unique qualities and sense of place.

3.7.2 This will be delivered by:

- Master planning and design input into new developments

- Partnership working to ensure joined up management of multifunctional areas (eg SuDS areas in open space)
- Use of management plans to drive and sustain the long term development of new green infrastructure
- Understanding of the significance of important local assets, such as protected trees
- Implementation of the adopted LDP

3.7.3 'Across America and elsewhere in Europe, progressive cities are taking the idea of green infrastructure from something that is 'nice to have', to something that is fundamental to the way we prosper and develop. 'GI' is being widely recognised as providing the environmental foundation that underpins the function, health and character of urban communities. It is emerging as a new way of designing, planning and managing land.' CABE 2009.

3.7.4 The visual appearance and attractiveness of towns and cities has been found to be strongly influenced by the provision of green space (Tibbatts, 2002). The concept of local environmental quality is broad and can encompass many elements including environmental pollution and cleanliness, and visual quality and personal security, but green infrastructure can improve the current situation. (Forest Research (2010)).

'As towns increasingly compete with one another to attract investment, the presence of attractive parks, squares, gardens and other public spaces becomes a vital business and marketing tool. Companies are attracted to locations that offer well designed, well managed public places. These in turn attract and retain customers and happy, healthy, skilled employees as well as providing a company with a positive and dynamic image. Therefore, GI should be seen as an essential part of any successful business or regeneration strategy including City Regions, Business Improvement Districts (BID) and Enterprise Zones.' Wildlife Trusts Wales (2016).

3.8 Relationship between Green Infrastructure Plan objectives and the Capital Ambition document.

3.8.1 These Objectives relate well to the four main focus area in the Capital Ambition document, as follows:

Green Infrastructure Plan Objectives	Capital Ambition
<p>Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.</p>	<p>Working for the Future Managing the city's growth in a sustainable way</p>
<p>Objective 2: To ensure that Cardiff's green infrastructure is enhanced and managed in a way that increases resilience to the changing climate and provides protection for people and places</p>	<p>Working for the Future Managing the city's growth in a sustainable way</p>
<p>Objective 3: To maximise the contribution that green infrastructure makes to Cardiff's economy by</p>	<p>Working for Cardiff</p>

enhancing the city’s attractiveness for business, tourism and living.	<p>Making sure that all our citizens can contribute to, and benefit from, the city’s success.</p> <p>Working for Wales A successful Wales needs a successful capital city.</p>
<p>Objective 4: To increase the potential physical and mental health benefits from a good quality, natural environment by improving, promoting and creating connected, multi-functional green infrastructure in Cardiff</p>	<p>Working for Cardiff Making sure that all our citizens can contribute to, and benefit from, the city’s success.</p>
<p>Objective 5: To use Cardiff’s green infrastructure to provide opportunities for people to access the outdoor environment and to participate in learning, training and volunteering to foster social inclusion and equality and improve life chances.</p>	<p>Working for Public Services Making sure our public services are delivered efficiently, effectively and sustainably in the face of the rising demand and reducing budgets.</p>
<p>Objective 6: To build upon Cardiff’s reputation as a vibrant, green and attractive city by continuing to enhance and sustain the green infrastructure that underpins the city’s unique qualities and sense of place.</p>	<p>Working for Cardiff Making sure that all our citizens can contribute to, and benefit from, the city’s success.</p>

4. Cardiff Green Infrastructure Spatial Strategy

4.1 Mapping Green Infrastructure

4.1.1 It is unclear how much green infrastructure there is in Britain, where it is, who owns it and what quality it is. Work carried out by CABI in 2009 identified the lack of information available about green spaces across England. Plans of urban areas tend to focus on built structures because these are most useful for orientation. However this can give a very ‘grey’, over urbanised impression of the urban environment, when in fact well planned urban places have a massive green space resource which can easily go unnoticed.

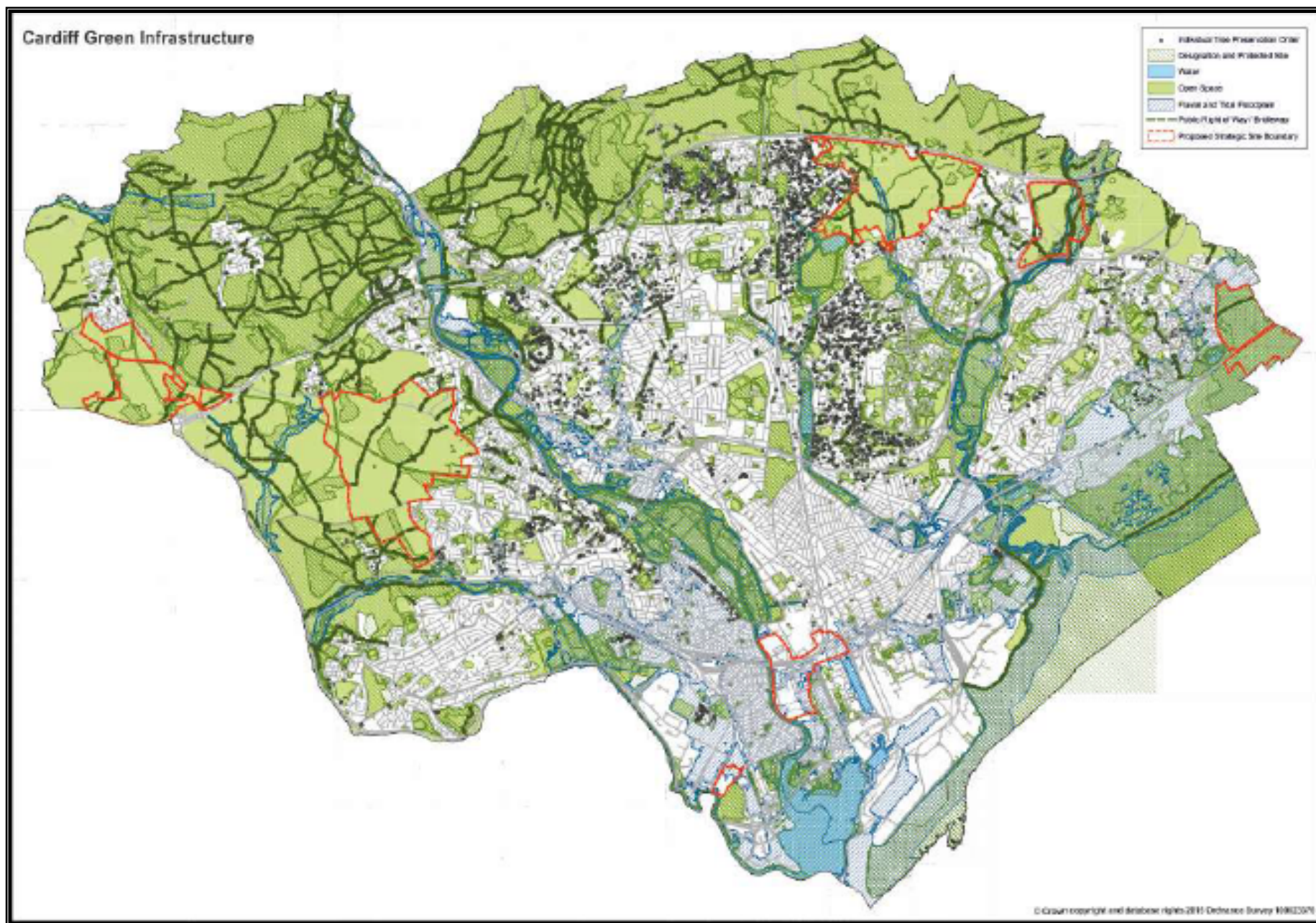
4.2 City wide plan

4.2.1 Despite having a lot of information about open space provision in Cardiff, collated for the Open Space Study and Accessible Natural Greenspace study, both of which support the Local Development plan, there is still a considerable area of green infrastructure that remains unmapped (mainly private gardens). The mapping exercise in preparation of this plan has utilised information already held by the authority to ensure that the data can be kept up to date in its current format. If additional data is collected for use in this record set, it is important to ensure that the information can continue to be collected on a regular basis to make sure the data set remains relevant.

4.3 Towards a Spatial Strategy

- 4.3.1 Mapping the spatial layout of ecosystems and the natural capital stock within them is important for understanding the interactions that give rise to beneficial processes and ecosystem services. For example, linkages between ground water, surface water and rainfall within in the area of a river catchment mean that impacts on any one of these can affect hydrological processes within the catchment and the ecosystem services linked to these processes, such as clean water provision. Equally, the social value of ecosystem services relates spatially to where they are consumed.
- 4.3.2 The UK National Ecosystem Assessment (UK NEA) provides a measure of ecosystem service provision at the national scale. The relevant scale for mapping ecosystem services remains a matter of debate as ecosystem management decisions can be taken at the national, regional or local level. Local scale areas are based more on natural landscape boundaries, such as an area of similar geology like chalk downland or a river catchment. (POST Note No. 377).
- 4.3.3 The objectives set out in Section 3 above, together with the Environmental Information for Well-being Assessments', document, provided by Natural Resources Wales for the Cardiff Public Service Board, and with other spatial evidence as it becomes available, will be used to generate a Green Infrastructure Spatial Strategy. This Spatial Strategy will illustrate the areas of multi-functional green infrastructure, and the linkages between these areas. More importantly, it will also illustrate the opportunities to enhance the green infrastructure network, together with the areas where that network is weak or vulnerable. These opportunities and weaknesses will be addressed by amendments to the list of projects in the Green Infrastructure Implementation Programme.
- 4.3.5 The Green Infrastructure Spatial Strategy will be broadly in accordance with the Strategic Schematic Framework on page 19 of the Cardiff LDP Masterplanning Framework. In relation to areas identified as Strategic Developments Sites identified in the Cardiff LDP, the Green Infrastructure Spatial Strategy will be in broad accordance with the Site Specific Schematic Frameworks as set out Policy KP2 of the Cardiff LDP.
- 4.3.6 The spatial strategy will have to reflect the aspirations of initiatives such as the Pollinator Action Plan, the Local Nature Plan (LBAP), and the River Valleys Action Plans etc. Subsequently, the projects set out in the Green Infrastructure Implementation Programme will contribute to the delivery of those initiatives.
- 4.3.7 Figure 3 below shows the green infrastructure resource in Cardiff, as currently mapped.

Figure 3. Cardiff's green infrastructure resource as currently mapped.



5.0 Management of Cardiff's Green Infrastructure Resource

5.1 Existing green infrastructure

5.1.1 The green infrastructure resource, as set out in section 1.5 above, is owned and managed by a range of stakeholders. Table 3 below outlines the range of types of green infrastructure in Cardiff and indicates if and how the resource is managed at a strategic level.

Table 3: Green infrastructure types and strategic management

Green infrastructure elements	Ownership	Strategic Management
Undeveloped countryside and coastline	Various public and private	Local Development Plan (CCC) Wales Coastal Path (CCC – Rights of Way) Coastal flood plain management (CCC – Drainage / Natural Resources Wales) Special Protection Area (CCC – Strategic Planning / Natural Resources Wales / Welsh Government / EU)
Landscape, geological and heritage features contributing to the city's setting	Various public and private	Local Development Plan (CCC) CCC – Strategic Planning Cadw NRW
The strategically important river valleys of the Ely, Taff, Nant Fawr and Rhydney	Various public and private	Local Development Plan (CCC) NRW River Valleys Partnerships
Biodiversity interests including designated sites and the connectivity of priority habitats and species	Various public and private	CCC – County Ecologist NRW
Trees (including street trees), woodlands and hedgerows	Various public and private	CCC – Highways Service CCC – Parks Service CCC – County Ecologist CCC – TPO Officer
Parks, playing fields, green play areas and open spaces	CCC / Local Community Councils	CCC – Parks Service Local Community Councils
Growing spaces including allotments, community orchards and larger gardens	CCC / Local community Councils /	CCC – LDP CCC – Parks Service Food Cardiff

	Community based groups	
Holistic integrated surface water management systems	Various public and private	CCC – Drainage NRW
Private open spaces (Golf courses, private gardens, hotel grounds etc.)	Various mainly private	Where appropriate, via the planning service: CCC – County Ecologist CCC – TPO Officer

5.2 Green Infrastructure Group

5.2.1 As Table 3 demonstrates, different service areas within Cardiff Council deliver on different aspects of the management of green infrastructure. Therefore a co-ordinating Green Infrastructure Group has been established within the Council to build on the growing recognition of the importance of green infrastructure and the inclusion of green infrastructure policies in the adopted LDP. The Green Infrastructure Group also aims to develop and promote a more holistic approach to delivery, particularly in relation to management of the existing resource and securing good quality green infrastructure in new developments.

5.2.2 The Green Infrastructure Group's remit is to influence Council policy, to progress the Green Infrastructure implementation Programme, and to maintain and enhance green infrastructure where appropriate. The group brings together officers from the Planning, Drainage, Parks, Air Quality and Rights of Way services and includes officers dealing with landscape and urban design, maintenance and management, SuDS and flood protection, biodiversity and nature conservation, tree protection, allotments and community growing, long distance routes, rights of way, tackling air pollution, and volunteer involvement.

5.2.3 The group is involved in developing grant bids for existing green infrastructure and has developed a co-operative approach to addressing specific issues to inform those involved in the regulatory planning process to provide joined up assessment and response on major planning applications.

5.3 Providing green infrastructure within new developments

5.3.1 All new developments will need to satisfy the requirements for green infrastructure as set out in the Supplementary Planning Guidance (SPG) for Green Infrastructure. This Green Infrastructure SPG includes a series of Technical Guidance Notes which set out in more detail the interpretation of planning policy in relation to specific topics such as Open Space, trees and soils, ecology and biodiversity, and Public Rights of Way.

5.4 Green infrastructure Implementation Programme

5.4.1 Responsibility for the design, provision and maintenance of green infrastructure rests with a wide range of organisations and individuals. The delivery of this plan will only be successful if the Implementation Programme is based on partnership and co-operation.

5.4.2 The Implementation Programme is a live document, continually under review, consisting of a series of green infrastructure projects, many of which are aspirational, but equally many of which are in progress.

5.5 Biodiversity and Resilience of Ecosystems Duty Action Plan.

5.5.1 The BRED Action Plan appears as a separate document, and together with the Green Infrastructure Plan, forms the BRED Forward Plan. For the purposes of the Forward Plan as required by Section 6 of the Environment Act, the two documents should be read in conjunction, but the Green Infrastructure Plan also provides the background and context for all other GI documents such as the GISPG, the GI Spatial Strategy (in progress) and the GI Implementation Programme.

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Biodiversity and Resilience of Ecosystems Duty Action Plan

Part of the Forward Plan as required by Section 6 of the Environment (Wales) Act 2016

1.0 Introduction

1.1 From March 21st 2016, public bodies such as Cardiff Council have a new statutory under Section 6 of the Environment (Wales) Act 2016. The new duty is a requirement to ‘*seek to maintain and enhance biodiversity*’ in the exercise of their functions, and in doing so to ‘*promote the resilience of ecosystems*’. This is known as the Biodiversity and Resilience of Ecosystems Duty or ‘BRED’ for short.

1.2 To aid compliance with this duty, the Environment Act requires Cardiff Council to prepare and publish a plan setting out how it proposes to comply with this new duty. This is referred to as the ‘BRED Forward Plan’. Current guidance from Welsh Government is that this Forward Plan need not be a standalone document, but that it can be incorporated into other plans or strategies. Subsequently, during 2019 Cardiff Council is required to publish a report setting out what it has done to comply with this new duty.

1.3 In complying with this duty a public authority must have regard to:

- Any guidance produced by Welsh Ministers, including the already-published ‘*Guidance for Section 6 – The Biodiversity and Resilience of Ecosystems Duty Frequently Asked Questions*’
- The list of the living organisms and types of habitat which in the Welsh Ministers’ opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in Wales, published under section 7 of the Act
- The State of Natural Resources Report published under section 8 – The ‘SoNaRR’ report - which was published in 2016
- Any area statement published under section 11 for an area that includes all or part of an area in relation to which the authority exercises functions. The Area Statement for the South Central Wales area is anticipated in Spring 2020

2.0 Context

2.1 The City of Cardiff Council Green Infrastructure Plan draws together current and future work programmes that deliver, promote and sustain Cardiff’s green infrastructure. Green infrastructure is about multi-functional, connected green spaces that make the best use of land - at the same time providing green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits.

2.2 Co-ordination and promotion of inter-departmental working within Cardiff Council will make the best use of financial resources and avoid duplication of effort by providing a central resource for green infrastructure development actions. This in turn will promote and foster improved partnership working both within the Council and with external bodies from the private, public and voluntary sectors. The document is intended to provide a simple but

coherent context to green infrastructure in Cardiff, without excessive detail, to ensure that the overview of information can be maintained and updated within the Council's diminishing resources.

- 2.3 The Green Infrastructure Plan incorporates an Implementation Programme, and the present BRED Action Plan is one of a series of plans within that programme. It relates closely to other plans and projects, in particular the Local Nature Recovery Action Plan, which will replace the old Cardiff Local Biodiversity Action Plan, and which will set out how local nature conservation action will be coordinated in the Cardiff area.

3.0 Approach

- 3.1 Guidance on implementation of the BRED is provided by Welsh Government, and current draft guidance states that as far as possible, the BRED Forward Plan should be guided by the 6 objectives of the Nature Recovery Action Plan for Wales (NRAP¹) which have been identified in order to contribute to reversing the decline of biodiversity in Wales.

- 3.2 The NRAP objectives are:

Objective 1: Engage and support participation and understanding to embed biodiversity throughout decision making at all levels.

Addressing this objective demands corporate change, and the integration of biodiversity values, both economic and intrinsic, into decision making so that the value is recognised, accounted for and acted on at an early stage.

Objective 2: Safeguard species and habitats of principal importance and improve their management

Species and habitats are wonderful and awe-inspiring and we have a moral obligation to protect them and their genetic variety for future generations. They are the building blocks of our ecosystems and their functions, from which we derive many services and benefits, and we need to ensure we have resilient populations of species to support these.

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

Action is needed across the whole of Wales to recover biodiversity and build the resilience of our ecosystems. We know many of our habitats are degraded in terms of the biodiversity they can support. We need to be able to recognise this wherever they occur, in both urban and rural areas, for example in parks, and on farms, understand how to restore these habitats, and put this into practice at every opportunity.

¹ Previously referred to as the Nature Recovery Plan for Wales, this can be found [here:-
https://www.biodiversitywales.org.uk/Nature-Recovery-Action-Plan](https://www.biodiversitywales.org.uk/Nature-Recovery-Action-Plan)

Objective 4: Tackle key pressures on species and habitats

The UK National Ecosystem Assessment identified changing land management practices, through agriculture and urbanisation, pollution and invasive non-native species as key pressures leading to habitat and species loss and fragmentation. This, together with acidification and eutrophication, has changed the quantity and quality of habitats and the species they can support.

Objective 5: Improve our evidence, understanding and monitoring

To help nature to recover we need to inform the delivery of action by a better understanding of the ecology and science of our habitats and species, their status and trends, and the pressures and drivers leading to changes.

Objective 6: Put in place a framework of governance and support for delivery

Underpinning these actions there is also need for a governance structure that is fit for purpose to support and deliver action on the ground. We need to ensure we have the skills, personnel, expertise and functions in place to deliver our objectives and embed biodiversity into decision making at all levels.

- 3.3 Objective 1 will be achieved by ensuring that the Green Infrastructure Plan as a whole and the BRED Action Plan in particular are embedded throughout Cardiff Council. Objectives 2 to 5 relate more to the specific actions that are needed to support biodiversity and ecosystem resilience. Objective 6 will be achieved at a National scale by Part 3 of the NRAP, but it is important at a local scale that there is governance within an individual organisation to allow effective implementation of the BRED Forward Plan.

4.0 Implementation

- 4.1 As set out above, the BRED Forward Plan need not be a standalone document, and our approach is that the Green Infrastructure Plan, currently in draft form will deliver this forward plan. The Green Infrastructure Plan is based upon six objectives. These objectives, which are set out below, relate to Green Infrastructure in its entirety, and so are wider in scope than the NRAP objectives above. Achieving the Green Infrastructure Objectives will therefore lead to delivery of the NRAP objectives.

4.2 Green Infrastructure Plan Objectives:

- **Objective 1:** To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.
- **Objective 2:** To ensure that Cardiff's green infrastructure is enhanced and managed in a way that increases resilience to the changing climate and provides protection for people and places.

- **Objective 3:** To maximise the contribution that green infrastructure makes to Cardiff's economy by enhancing the city's attractiveness for business, tourism and living.
- **Objective 4:** To increase the potential physical and mental health benefits from a good quality, natural environment by improving, promoting and creating connected, multi-functional green infrastructure in Cardiff.
- **Objective 5:** To use Cardiff's green infrastructure to provide opportunities for people to access the outdoor environment and to participate in learning, training and volunteering to foster social inclusion and equality and improve life chances.
- **Objective 6:** To build upon Cardiff's reputation as a vibrant, green and attractive city by continuing to enhance and sustain the green infrastructure that underpins the city's unique qualities and sense of place.

4.3 In the delivery of each of these objectives, activities can be grouped into two categories:

Regulatory compliance – Cardiff Council has statutory duties in relation to, for example, protected species and designated sites, which are set out in legislation and in national and local policy. The BRED Forward Plan should identify where these obligations are relevant in order to ensure full compliance.

Proactive enhancement – There are many opportunities to undertake practical nature conservation work and to enhance wildlife as part of the Council's functions. The BRED Forward Plan should identify such opportunities and, as part of the Green Infrastructure Implementation Programme, take steps to ensure that these opportunities are taken.

5.0 Embedding the Biodiversity and Resilience of Ecosystems Duty

5.1 Table 1 below sets out a series of delivery actions, which are derived the Green Infrastructure Implementation Programme. This Programme is a live document, and consists of a series of projects and initiatives which if implemented would serve to maintain and enhance Cardiff's green infrastructure. The list of projects and initiatives is ongoing and continually updated, as projects are completed and new ones are proposed.

5.2 However, closer engagement with individual Service Areas will be required to raise awareness of the Biodiversity and Resilience of Ecosystems duty within Cardiff Council. Therefore a series of workshops would be held with Service Area leads in order to agree a series of action plans which would:

- Establish the impacts that the function of that Service Area and its activities may have upon green infrastructure
- Seek ways of addressing any significant adverse impacts that a Service Area's activities may have upon green infrastructure

- Develop a Service Area Green Infrastructure Action Plan to consolidate agreed measures to avoid, mitigate and if necessary compensate for impacts upon green infrastructure
- Include measures to enhance green infrastructure within that action plan, as required by the Biodiversity and Resilience of Ecosystems duty
- Set out objectives, targets, monitoring and reporting for any agreed actions.

5.3 In this way, when awareness of the Biodiversity and Resilience of Ecosystems Duty is raised across the Council as a whole, for example via the Council's web page, the intranet and staff newsletters etc, there would be a process in place to address queries and support proposals and initiatives arising from staff.

5.4 Some examples of how the council's functions which may interact with green infrastructure include:

- Planned maintenance of council housing stock may risk disturbance to bats, which are protected species and which may roost in the roofs of these buildings
- Grounds maintenance at the wrong time of year may cut wildflowers and so eliminate a food source for pollinators
- The creation of new schools offers the opportunity to create biodiversity features such as green roofs, which also contribute to sustainable drainage (SuDS)
- Trees, bushes and hedges in the right place can ameliorate air quality, for example around schools and public realm

5.5 As Service Area engagement progresses, the Green Infrastructure Implementation Programme as in Table 1 below will be further updated with Service Area Green Infrastructure Action Plans and their subsidiary actions.

6.0 Reporting

6.1 Before the end of 2019 and before the end of every third year after 2019, Cardiff Council must publish a report on what it has done to comply with its duty to seek to maintain and enhance biodiversity and promote the resilience of ecosystems. According to advice on the Section 6 duty provided by Welsh Government, the plan may be published in any chosen format which is publicly accessible, including on the public authority's website. Best practice would be that this is on the corporate section of the website. When completed, or at a stage where it can be shared with the Welsh Government, the S6 plan should be sent to Adran.Section6@gov.wales.

6.2 Public authorities who are required to publish a plan **must review** that plan in the light of this report. This could include an evaluation of:

- how well corporate planning systems have considered and committed to maintaining and enhancing biodiversity and ecosystem resilience
- how well the Nature Recovery Action Plan objectives are being met, including the use of best available evidence

- how the aspects of ecosystem resilience have been used pro-actively
- any measures of biodiversity and ecosystem resilience that can be applied (for example, contributing to WFG Act National Indicators)
- notable achievements for habitats or species

Draft reporting guidance has been produced by NRW / WG, and is attached at Appendix 1.

Table 1. Green Infrastructure Implementation Programme 2019 - 2022

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.										
1.1	Pollinator projects									
1.1.01	Development of Council wide pollinator action plan	Yes					Yes		2, 4	Internal action plan delivered through partnerships
1.1.02	Implement Pollinator action plan	Yes					Yes	Yes	2, 4	Partnership working with Friends groups and volunteers
1.1.03	Pollinator partnership work - Urban Buzz programme	Yes					Yes	Yes	2, 4	Partnership working with Urban Buzz team
1.1.04	Elm project - providing breeding ground and food sources for hairstreak butterflies	Yes					Yes		2	Linked with Urban Buzz project

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.										
1.1.05	Cardiff Bay Barrage - creation and management of wildflower areas	Yes							6	Staff and volunteers
1.2	Biodiversity projects									
1.2.01	Grangemoor Park management plan	Yes					Yes		2, 3, 4, 5, 6	Implementation with volunteer groups
1.2.02	Moundfield - implementation of motte and woodland management work	Yes					Yes		4, 5, 6	Implementation with volunteer groups
1.2.03	Flatholm grassland improvement	Yes		Yes	Yes		Yes		2, 4, 5	Staff and volunteer activities to manage grassland
1.2.04	Glamorganshire Canal improvements	Yes		Yes	Yes		Yes		2, 3, 4, 5, 6	Delivery of improvements

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.										
1.2.05	Thornhill Primary School - management of Great Crested Newts	Yes		Yes			Yes		5	School grounds management
1.2.6	Flatholm - Elder habitat improvement for gull nesting	Yes		Yes	Yes		Yes		2	Staff and volunteer activity
1.2.7	Cardiff Bay wetland reserve - management of water features	Yes					Yes		2, 6	
1.2.8	De-silting of ponds at Forest Farm, Pontprennau and Beechtree Park St Mellons.	Yes			Yes		Yes		6	External contractors
1.2.9	De-silting of upper ponds at Parc Cefn Onn	Yes					Yes	Yes		External contractors (part of HLF park restoration programme)

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.										
1.2.10	Installation of swift tower at Cardiff Bay Barrage	Yes					Yes		2, 6	Partnership with RSPB
1.2.11	Installation of bat and dormice boxes at Parc Cefn Onn	Yes		Yes			Yes	Yes		Volunteer / in house action
1.2.12	Upper meadow management and restoration at Parc Cefn Onn	Yes				Yes	Yes	Yes	2, 4, 5, 6	In house / external contractors
1.3	Invasive non- native species projects									
1.3.01	Mink trapping on sites across Cardiff	Yes		Yes			Yes			In house management of mink along rivers and water courses

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.										
1.3.02	Invasive plant species control (Japanese Knotweed, Himalayan Balsam, Parrots Feather etc.	Yes					Yes	Yes	2, 6	Volunteer and external contractor activity
1.4	Strategic actions on biodiversity									
1.4.01	Carry out SINC reviews on private land	Yes			Yes		Yes		6	Wildlife trusts carrying out reviews
1.4.02	Ecosystem Services mapping project	Yes	Yes	Yes	Yes		Yes			External consultant
1.4.03	Local Nature Reserve Strategy	Yes			Yes		Yes		2, 4, 5, 6	External consultant
1.4.04	Development of Soil Strategy	Yes					Yes	Yes		External consultant
1.5	Collation of data on biodiversity									

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 1: To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.										
1.5.01	i-Tree survey of Cardiff	Yes	Yes	Yes	Yes		Yes			External consultant

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 2: To ensure that Cardiff's green infrastructure is enhanced and managed in a way that increases resilience to the changing climate and provides protection for people and places.										
2.1	Flood prevention projects									
2.1.01	Flood protection work in Cardiff Parks						Yes			
2.1.02	Nant Fawr / Roath Brook flood protection work						Yes			Implemented by NRW
2.1.03	Reen management in Parks	Yes	Yes				Yes			Internal staff / volunteers / external contractors
2.2	Sustainable Drainage projects									
2.2.01	Greener Grangetown project		Yes				Yes		1, 6	
2.3	Resource management projects									

Ref	Action	Regulatory / policy delivery or compliance achieved through action								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 2: To ensure that Cardiff's green infrastructure is enhanced and managed in a way that increases resilience to the changing climate and provides protection for people and places.										
2.3.01	Reduce consumption of potable water on allotments						Yes			Allotment holders
2.3.02	Removal of asbestos from allotment sites						Yes		4	Allotment holders
2.4	Implementation of SAB legislation									
2.4.01	Development of GIS assessment tool for SAB		Yes				Yes		1, 3, 4, 5, 6	Consultant in association with Drainage section
2.5	Green infrastructure enhancements									
2.5.01	Additional tree and vegetation planting to address air quality issues						Yes			In house delivery

Ref	Action	Regulatory / policy delivery or compliance achieved through actions								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 3: To maximise the contribution that green infrastructure makes to Cardiff's economy by enhancing the city's attractiveness for business, tourism and living.										
3.1	Wales Coastal path projects									
3.1.01	Installation of road crossing from Lamby Way to Parc Tredelerch					Yes	Yes		4, 5, 6	
3.1.02	Design coastal path layout around Lamby Way tip					Yes	Yes		4, 5, 6	
3.1.03	Implementation of footpath network					Yes	Yes		4, 5, 6	
3.1.04	Links into Living Levels project					Yes	Yes		2, 4, 5, 6	
3.2	Rights of way projects									
3.2.01	Preparation and implementation of Green Lane network plan					Yes	Yes			
3.3	Improving access to parks and green spaces									

Ref	Action	Regulatory / policy delivery or compliance achieved through actions								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 3: To maximise the contribution that green infrastructure makes to Cardiff's economy by enhancing the city's attractiveness for business, tourism and living.										
3.3.01	Delivery of Parc Cefn Onn 'Into the Garden and Beyond' park restoration and access project					Yes	Yes	Yes	4, 5, 6	Park users with a wide range of physical impairments
3.4	Protecting and conserving historic structures in the landscape									
3.4.01	Conservation of Bishops Palace			Yes			Yes	Yes	6	Partnership working with local residents and Cadw
3.5	Evidencing the importance of green infrastructure									
3.5.01	Installation of people-counters in parks					Yes	Yes	Yes	4, 5, 6	Collation of data on use of parks

Ref	Action	Regulatory / policy delivery or compliance achieved through actions								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 3: To maximise the contribution that green infrastructure makes to Cardiff's economy by enhancing the city's attractiveness for business, tourism and living.										
3.5.02	Implementation of regular satisfaction surveys on Green Flag parks						Yes	Yes		
3.5.03	On site monitoring of park use at Parc Cefn Onn						Yes	Yes		Monitoring of HLF funded project

Ref	Action	Regulatory / policy delivery or compliance achieved through actions							
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action
Objective 4: To increase the potential physical and mental health benefits from a good quality, natural environment by improving, promoting and creating connected, multi-functional green infrastructure in Cardiff.									
4.1	Interpretation in parks and green spaces								
4.1.01	Installation of wildlife explorer trails in various parks	Yes		Yes	Yes		Yes	Yes	1, 3, 5, 6
4.1.02	Installation of historic and other interpretation boards in parks and green spaces	Yes		Yes	Yes		Yes	Yes	1, 3, 5, 6
4.2	Waymarking and trails in green spaces								
4.2.01	Development and promotion of orienteering trails					Yes	Yes		
4.2.02	Implementation of cycling code of conduct in parks						Yes		
4.3	Access improvements								
4.3.1	Implementation of access audits in Green Flag parks					Yes	Yes	Yes	

Ref	Action	Regulatory / policy delivery or compliance achieved through actions							
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action
Objective 4: To increase the potential physical and mental health benefits from a good quality, natural environment by improving, promoting and creating connected, multi-functional green infrastructure in Cardiff.									
4.4	Activities in parks and green spaces								
4.4.01	Installation of fishing platforms at Parc Tredelerch						Yes		
4.5	Web and cloud based interpretation								
4.5.01	Continued development of Outdoor Cardiff website						Yes		
4.5.02	Development of Sprytar interpretation in six Cardiff parks						Yes		

Ref	Action	Regulatory / policy delivery or compliance achieved through actions								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 5: To use Cardiff's green infrastructure to provide opportunities for people to access the outdoor environment and to participate in learning, training and volunteering to foster social inclusion and equality and improve life chances.										
5.1	Development of volunteering opportunities									
5.1.01	Development of volunteer hub at Forest Farm	Yes		Yes	Yes	Yes	Yes	Yes		Volunteer training and development and co-ordination of activities
5.1.02	Design and production of volunteer handbook						Yes			Volunteer training and development
5.1.03	Employment of volunteer co-ordinator to manage an enhanced volunteer programme	Yes		Yes	Yes	Yes	Yes			Volunteer co-ordination (individuals, Friends groups, private companies etc)

Ref	Action	Regulatory / policy delivery or compliance achieved through actions								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 5: To use Cardiff's green infrastructure to provide opportunities for people to access the outdoor environment and to participate in learning, training and volunteering to foster social inclusion and equality and improve life chances.										
5.2	Support for existing volunteers and other groups									
5.2.01	Annual programme of Friends Forum activities (3 per annum)							Yes		Supporting networking of Friends groups to encourage better interaction and co-ordination between groups
5.2.02	Support for groups to deliver health related activities						Yes	Yes		Support to cover walking for health role (no longer funded) and Trumper service (Parc

Ref	Action	Regulatory / policy delivery or compliance achieved through actions								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 5: To use Cardiff's green infrastructure to provide opportunities for people to access the outdoor environment and to participate in learning, training and volunteering to foster social inclusion and equality and improve life chances.										
										Cefn Onn Project)
5.3	Educational use of green space									
5.3.01	Organised school trips to Flatholm						Yes			Covering boat trip cost for Flatholm visits
5.3.02	Organised school visits to Forest Farm						Yes			Covering bus hire costs to Forest Farm
5.3.03	Development of joint education package for Bute Park and Cardiff Bay wetland area						Yes			Covering transport costs for schools

Ref	Action	Regulatory / policy delivery or compliance achieved through actions								Delivery focus
		Nature Recovery Action Plan	SAB	Protected species	Designated sites	ROWIP	WBFGA	Other plans (see comments)	Other GI objectives met via action	
Objective 6: To build upon Cardiff's reputation as a vibrant, green and attractive city by continuing to enhance and sustain the green infrastructure that underpins the city's unique qualities and sense of place.										
6.1	Development of green infrastructure in Cardiff									
6.1.01	Subsequent LDP informed by evidence base arising from Green Infrastructure Assessment as required by Planning Policy Wales	Yes	Yes	Yes	Yes	Yes	Yes			In house partnership working on GI issues
6.1.02	Review the function of the River Corridor action plans	Yes	Yes	Yes	Yes	Yes	Yes			In house
6.2	Management of green infrastructure									
6.2.01	Develop management plans for existing parks and trails	Yes	Yes	Yes	Yes	Yes	Yes			In house
6.2.02	Review the Parks and Green Spaces Strategy						Yes			In house

6.2.03	Raise awareness across the City Council of environmental obligations and the importance of GI	Yes	Yes	Yes	Yes		Yes			All service areas
6.2.04	Development of service area GI action plans	Yes	Yes	Yes	Yes		Yes			All service areas
6.2.05	Survey of public attitudes to tree planting						Yes			In house

Appendix 1 Section 6 Biodiversity Duty – Draft Reporting Guidance

1. INTRODUCTION

Under subsection (7) a public authority must, before the end of 2019 and before the end of every third year after 2019, publish a report on what it has done to comply with subsection (1).

A public authority that has published a plan under subsection (6) must review the plan in the light of each report.

This guidance will help you to produce your section 6 report, and also to evaluate action so that you can review and revise where necessary your section 6 plan.

The report will help you to assess the extent to which your authority's response to s6 is being successfully implemented, and identify any changes necessary from established trends identified in any earlier reports. The report will also provide transparency for the public authority's response to its s6 duty, and act as a useful communication tool for stakeholders, the community and business groups.

In order for your report to be as accessible as possible it should be published online.

1. BACKGROUND

(Section 6 introductory text to be added – to include ref to FAQ Annex and to be aligned with Best Practice guidance text.)

2. FORMAT AND CONTENT OF REPORTS

Organisations are encouraged to identify their own ways of reporting - this could again be part of your ordinary reporting systems and/or process, such as annual reports, or as a specific document.

However, this guidance suggests a format and contents list you can use to report actions if you choose to do so.

Aspects that are usefully included in reports are:

- Key findings, in the form of a 1-2 page Executive Summary
- Introduction to the PA, its functions and context in both the local area and in public service delivery – including a reference to which group of organisations you are in (see Figure 1 below)
- The actions carried out by the PA to comply with the duty
- Highlights/Key Outcomes/ Indicators/Performance measures
- Any Monitoring and Evaluation plan
- Review of the Plan, including an analysis of how the actions have met the Nature Recovery Action Plan objectives, what more could be done and how the s6 plan will be updated.

The broad structure of the report should remain the same from iteration to iteration in order to provide ease of analysis between successive reports and build on preceding results.

Good use of illustrative material such as charts, graphs and maps will also make the report more accessible.

Figure 1: Types of organisations and possible s6 actions

Group 1 – organisations that do not own or manage land beyond their own grounds, and whose functions are not directly connected to biodiversity and/or land management – for example Commissions, DVLA - actions related to buildings management, procurement, sustainability, awareness raising, training

Group 2 – organisations that do not own or manage land beyond their own grounds, but whose functions are connected with biodiversity and/ or land management, or who can influence those who own or manage

land – for example Universities, Sport Wales - actions as per Group 1 above PLUS cascade funding criteria, education and training (for eg)

Group 3 – organisations that own or manage land beyond their own grounds, whether their functions are connected with biodiversity and/or land management or not – for example Dwr Cymru, Local Authorities, NRW, Welsh Government - actions as per Groups 1 and 2 above PLUS land management to maintain and enhance biodiversity, and promote resilience.

3. ACTION REPORTING TEMPLATE

Actions should have been carried out to maintain and enhance biodiversity, and in so doing, promote the resilience of ecosystems.

It is suggested that the 6 objectives of the NRAP are used to guide action – see FAQ and best practice guidance.

The following template could be used to report actions:

<u>Action</u>	<u>Result</u>	<u>Costs, Benefits and Impacts</u>	<u>NRAP objective(s) met</u>	<u>Evidence provided (e.g. links to outputs)</u>

4. HIGHLIGHTS/KEY OUTCOMES

Include in your report:

- Examples and Case Studies of best practice including systems and processes
- Key biodiversity gains – how have you contributed to nature’s recovery and reversing the decline of biodiversity?
- Links to well-being – how has your action for biodiversity improved outcomes for well-being (health, social cohesion, economic outputs)
- Cost savings and efficiency – how has biodiversity been valued in the exercise of your functions, including preventative action by considering the long term benefits over the short term gains.

5. MONITORING, MEASURES AND INDICATORS

It is not realistic or necessary for all actions to be monitored but some key areas will need to be included consistently in each report. This will be for you to determine based on those elements crucial to delivering your section 6 plan.

Include in your report any metrics that you measure within your organisation that relate to biodiversity and resilience. The table below shows examples of the types of metrics you might collect.

Note that this first reporting round should establish what data is being collected by whom, and the range of possible indicators. Evaluation of reports will look for consistency, and potential measures and indicators for future reporting rounds.

Table 1: Possible monitoring measures for actions

NRAP Objective	Process Measure examples	Outcome Measure examples
1	Commitments made in policy documents, valuation tools in use Awareness raising activities, outdoor education	Valuation metrics Number of people aware of biodiversity values
2	Designations Action plans Species projects	Site, species and habitats status and trends Data from planning Annual Monitoring Reports Condition surveys
3	Connectivity improvements Green Infrastructure Assessments completed	Habitat restored Habitat created
4	Use of nature based solutions Pollution incidents tackled Reduction in use of pesticides and herbicides	Reduction in INNS
5	Numbers of Planning Consultations using biodiversity evidence	Increased data availability – data supplied to LERCs
6	Numbers of people in the organisation receiving training, Funding provided, Relevant volunteer days undertaken Investments	Capacity improvements

We will also be looking to link measures and indicators to the State of Natural Resources Report, Area Statements and State of Nature Reporting.

6. REVIEW

You will need to review your actions and report, in order to make any revisions to your section 6 plan. This is for your own internal improvement processes, however it would be useful to include this in your Report in order to assist with a Wales wide evaluation of the section 6 duty.

Some review questions are suggested below:

- Strategic review, to assess whether the approach is achieving its main objectives (has the decline in biodiversity been reversed?), and whether it is “on track” in terms of the level of implementation.
- Policy monitoring, to highlight any policies which are not functioning effectively, and to highlight how such issues will be addressed.
- Conclusions and recommendations; e.g. identify any improvements/changes to the way the public authority will meet its s6 duty.
- What new biodiversity issues have occurred in the area or in local/national policy (key recent contextual and national policy changes, future prospects)?
- How relevant, appropriate and up-to-date is the Authority’s strategy and its key policies and targets?
- What actions have been developed or delayed in relation to the plan’s delivery and timing?
- What has been the effectiveness of delivering policies to discourage inappropriate decisions?

You may also want to consider the level of change your actions have achieved:

Level 1 – change within organisations – for example, corporate commitments, internal audits

Level 2 – change to organisational structure or to influence external organisations – for example, governance, integrated reporting, funding provided to others for biodiversity work

Level 3 – change to influence wider society – for example, collaborative and co-designed projects which include the local community they will affect

These levels are inter-related - some organisations will need to change structures in order to change behaviour for example (eg architectural design); for some changing behaviour may lead to changing awareness, for others vice versa.

Further detail to consider for each NRAP objective: –

What have been the key enablers? E.g. ENRaW funding, a systemic internal review

Barriers? E.g. lack of information or access to information

NRAP sets out the things we need to do to reverse the decline in biodiversity. Use these questions to work through how your organisation is contributing to that

1. How has biodiversity been embedded throughout decision making at all levels?
 - What systems have been used? For example Environmental Statement, Local Well-being Plan, Well-being Statement, s6 Plan, Business planning and budget monitoring, Performance management systems, Internal consultations or audits
 - How does your process contribute to your main strategic aim?
 - How has participation and understanding been increased and supported?
 - What stakeholders have been involved in the decision making process?
 - What have you started doing that you weren't doing previously (additionality)?
2. How have species and habitats of principal importance been safeguarded?
 - Has their management improved?
 - What biodiversity gains have been made? Does this need to be balanced against losses of species and habitats? If so, what has been lost?
 - How has the Planning System been used to maintain and enhance biodiversity?
3. How has the resilience of ecosystems been promoted?
 - Have you contributed to creating Resilient Ecological Networks? (networks joining up designated sites and other biodiversity hotspots)
 - Resilience attributes addressed – diversity, extent, condition, connectivity and therefore adaptability
 - Habitats restored and created
4. How have key pressures on species and habitats been tackled?
 - Nature based solutions e.g delivering urban and bio-verse Green Infrastructure
 - Reducing fragmentation, habitat loss through land use change and development, pollution, INNS, over exploitation and mitigating climate change
 - What have you stopped doing?
5. How has evidence, understanding and monitoring been improved?
 - Evidence gathered and shared
 - Use of best available evidence demonstrated
 - Research undertaken
 - Monitoring of outcomes
 - What further evidence do you need?

6. How has capacity, governance and support for action been shown?
- Who is responsible for the s6 duty in your organisation's constitution?
 - How have the WFG and SMNR principles been demonstrated, particularly involvement, participation
 - Staffing and resources
 - Volunteers
 - Local Nature Partnerships and Action Plans
 - Support for other organisations and projects, e.g. Wildlife Trusts, Environmental groups

7. EVALUATION AND FUTURE PLANNING

How will the results of your review be incorporated into your s6 plan? What is its governance?