

Nature and Biodiversity: a guide for development



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Contents

Preface	3
Introduction	4
Section 1: Context and Key Concepts	7
Section 2: Embedding Nature and Biodiversity	14
Section 3: Biodiversity Net Gain and Natural Capital Throughout a Project Life Cycle	22
Section 4: Legal and Policy Overview	27
Appendices	36



Preface

The Environmental Industries Commission's Nature Guide came about through my desire to set forth some practical handrails for the non-nature specialist in infrastructure development.

The last couple of years have seen an array of policies and regulations related to nature, biodiversity and green infrastructure in the UK market. Moreover, nature as a topic is complex; there is no singular metric, as there is for climate with carbon. As a result, the policies and regulations are complex and can be intimidating too.

I am grateful that, working with colleagues from across the competitive field of environmental consultancy, we have been able to bring our best brains to this topic and create a resource, that I think will be much used.

The EIC is the perfect vehicle for this type of industry collaboration, and the best part for me was seeing the excitement and motivation of colleagues from across our peer companies to put in the hours and share their rich experience and insights for the benefit of the wider infrastructure development community.

The Guide to Nature and Biodiversity is a comprehensive resource designed to provide a greater understanding of nature-positive terms, tools, and regulations. Aimed at the planning and built

environment sector, it will help readers assess nature and natural capital while providing an overview of possible co-benefits.

While we expect it to be referenced by nature practitioners, the guide is also intended for non-expert project managers and planners, to help them get to grips with the topic. This includes infrastructure asset managers, site facility managers and real estate developers.

What sets this guide apart is its holistic approach to nature and biodiversity. By providing a comprehensive overview, the guide aims to help readers achieve their key aims and objectives in a nature-positive way. Whether you are a nature guru or a streetwise project manager, you will find good stuff in here that will help infrastructure and built environment development have a positive impact on the natural world.

Robert Spencer, FIEMA, FRGS, CGeog

Immediate Past Chair and Founder, EIC Nature & Biodiversity Taskforce
Senior Director, Sustainable Legacies AECOM
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Introduction

The Environmental Industries Commission (EIC) is the leading organisation for environmental businesses.

It is committed to championing new environmental markets, raising the profile of environmental industries and highlighting the positive impact these industries and businesses have on the natural environment.

There is a strong business case for developers to incorporate biodiversity enhancements within new and existing schemes, especially because so many industries and value chains depend on biodiversity.

Moreover, there is now a growing raft of biodiversity and nature-related legislation and policy, as well as increasing demands for corporate organisations to report their impacts and dependencies on nature. However, the speed of change has brought a level of complexity that can make 'nature' a topic that is hard to grasp.

This 'Nature and Biodiversity: a guide for development' is for the non-nature professional involved with development projects. It has been written primarily for scheme developers, programme managers and major contractors, with the aim of providing an introduction to **Biodiversity Net Gain (in England)** and natural capital, and how these apply in practice throughout a development project life cycle.

Box 1: Key terms used throughout the document

Nature

Nature refers to all living and non-living components of the natural world, and their interactions.¹ Nature covers land, freshwater and marine environments, as well as components within them and the atmosphere.

Biodiversity

Biodiversity is a core part of nature. The term refers to the diversity of living organisms (plants, animals, bacteria), their interactions and the ecosystems that they form.

Biodiversity Net Gain (BNG)

BNG is an approach to development that leaves biodiversity in a measurably better state than before the development took place.²

Natural capital

Natural capital can be defined as the world's stocks of natural assets, which include geology, soil, air, water and all living things.³ The core concept of natural capital is about considering the value that nature delivers to society in decision making.

1. 'Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services', Zenodo

2. 'Understanding Biodiversity Net Gain', Gov. UK guidance

3. 'What is natural capital?', World Forum on National Capital



Environmental Industries Commission

This 'Nature and Biodiversity: a guide for development' was produced by the EIC's Nature and Biodiversity Task Force (Box 2). Hereafter, we refer to this guide as the Nature Guide.

Box 2: The Environmental Industries Commission and its Nature and Biodiversity Task Force

The Environmental Industries Commission (EIC)⁴ is the leading organisation for environmental businesses. We are committed to championing new environmental markets, raising the profile of environmental industries and highlighting the positive impact these industries and businesses have on the natural environment. We collaborate with cross-sector organisations for environmental policies to be thoughtful and progressive, for regulations to be clear and enforced, for innovation to be rewarded and for finance opportunities that promote the enhancement of nature to be widely available.

The EIC Manifesto⁵ sets our ambition for

Green Growth, Skills and Prosperity. It outlines our members' priorities, and how we are ready to work with the Government to deliver regulatory and policy improvements.

EIC's Nature and Biodiversity Task Force⁶ explores how development can deliver net gain for nature. Its members have been at the forefront of these discussions for some time, spearheading an emerging movement through their work with progressive clients. The Task Force informs EIC's thought-leadership in this area, responds to government consultations, holds events, writes articles for industry press and regularly welcomes policymakers and industry experts as guests.



This Nature Guide

Emerging frameworks, policies and legislation on nature and biodiversity present risks, but also significant opportunities for developers.

While there are numerous individual topic guides and infographics available,⁷ it can be hard to understand how everything works together to deliver for nature and biodiversity on a development.

To make informed decisions with regard to nature and development as accessible as possible to developers across the UK's built environment, we produced this Nature Guide to provide a summary of the key concepts and how BNG (in England) and natural capital can be applied throughout a project life cycle.

4. See 'About us', EIC

5. 'EIC's Manifesto for Green Growth, Skills and Prosperity: Priorities for the next UK government', EIC

6. 'Nature and Biodiversity', EIC.

7. See, for example, the [UKGBC Biodiversity Net Gain Infographics set](#)



Sections of the Nature Guide

This guide is crafted with flexibility in mind, allowing you to dive directly into the sections that matter most for your current project. There's no need to follow a linear path—choose your own journey through the content based on your unique requirements.

For areas where established, reliable information is available, we've curated a selection of references and external links. These resources are handpicked to complement our insights and broaden your understanding.



Top tip: Make the most of the guide's navigation features. You can jump to different sections, use the scrolling buttons on the bottom right of the page, or simply use the home button. These features are designed to help you navigate the guide more efficiently.

The guide comprises the following sections:

Section 1. Context and Key Concepts

We set the scene for the Nature Guide, outlining the context in which it was conceived, and we introduce the key concepts of BNG and natural capital.

Section 2. Embedding Nature and Biodiversity

We describe key dependencies by industry on nature and highlight why the ongoing decline of nature is a significant risk to industries and their supply chains. We describe how to manage nature-related risks and the benefits of embedding nature and biodiversity into decision making, especially by effectively applying the mitigation hierarchy. This section provides case studies to illustrate how to deliver the best outcomes for nature and biodiversity on development projects.

Section 3. Biodiversity Net Gain and Natural Capital Throughout a Project Life Cycle

We set out a good practice approach as to how BNG and natural capital can be applied throughout a project life cycle. We use the Royal Institute of British Architects (RIBA) Plan of Work Stages⁸ as a core framework, presenting good practice recommendations for actions to be taken at each stage. We link these actions to industry guidance on BNG and natural capital approaches to thread together these guidelines into an accessible, step-by-step framework.

Section 4. Legal and Policy Overview

Within this section we take a detailed look at the development of UK policy and law relating to nature and biodiversity, to understand how this has changed and where it might be heading. As well as providing a narrative on the evolution of UK policy and law on this subject, we provide detailed appendices relating to relevant policies and papers, plus an 'at a glance' section which highlights the existing UK legislation and planning policy of most relevance to developers.

Note: this guide was written as details on mandatory BNG were emerging and does not constitute advice on meeting legal requirements; rather, it sets out current understanding of good practice.

Section 1: Context and Key Concepts

Nature is under threat as never before. The World Wide Fund for Nature (WWF) Living Planet Report 2022 revealed that global wildlife populations had decreased by 69% on average since 1970.⁹

For the UK, the 2023 State of Nature Report¹⁰ states that, since 1970, the abundance of species studied in the UK has declined by 19% on average, with birds (43%), amphibians and reptiles (31%), and fungi and lichens (28%) showing the biggest declines.

Habitat loss is also a significant issue in the UK. Currently, just 2% of grassland meadows that existed in the 1930s remain,

and those that survive are small fragments and vulnerable to destruction.¹¹ Just 7% of Britain's native woodlands are in good ecological condition.¹² The drivers of these declines are numerous and include land management practices, urbanisation, pollution, fisheries, the establishment of invasive non-native species and climate change.¹³

Society is increasingly recognising the value provided by natural ecosystems – for example, cleaning air, absorbing carbon, pollinating plants and improving our mental well-being. There are growing efforts at international and national levels to halt and reverse the ongoing loss of nature. This is most recently evidenced at a global level by the agreement in 2022 of the Kunming-Montreal Global Biodiversity Framework (Box 3).¹⁴

Box 3: The Kunming-Montreal Global Biodiversity Framework

The Kunming-Montreal Global Biodiversity Framework (GBF) was adopted during the fifteenth meeting of the United Nations Conference of the Parties (COP15). This historic Framework, which supports the achievement of the Sustainable Development Goals, sets out an ambitious pathway to reach the global vision of a world living in harmony with nature by 2050.

The mission of the Framework for the period up to 2030, towards the 2050 vision, is:

To take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet by conserving and sustainably using biodiversity and by ensuring the fair and equitable sharing of benefits from the use of genetic resources, while providing the necessary means of implementation.



THE BIODIVERSITY PLAN
For Life on Earth

9. 'Living Planet Report 2022', WWF

10. 'State of Nature 2023'

11. 'Importance of Meadows', Save Our Magnificent Meadows

12. 'State of the UK's Woods and Trees 2021', Woodland Trust

13. 'Importance of Meadows', Save Our Magnificent Meadows

14. 'COP15: Final Text of Kunming-Montreal Global Biodiversity Framework', Convention on Biological Diversity

The ongoing loss and degradation of nature is one of the greatest risks to the global economy. More than half of the world's GDP – an estimated \$44 trillion of economic value generation – is moderately or highly dependent on nature and its services.¹⁵ Businesses face physical, regulatory, reputational and market risks from the continued decline in nature.¹⁶

Moreover, the restoration of nature provides economic opportunities. The WWF's Living Planet Index 2018 shows that nature underpins global economic activity worth an estimated US\$125 trillion.¹⁷ Furthermore, as the Dasgupta Review¹⁸ into the Economics of Biodiversity showed, governments and businesses can no longer afford for nature to be absent from accounting systems.

From a developer's perspective, there is a strong business case for incorporating biodiversity enhancements into new and existing schemes.

This business case¹⁹ includes:

- securing the long-term viability of business models;
- increased operational efficiency and cost savings;
- increased market shares;
- predictable and stable supply chains;
- better relationships with stakeholders and customers;
- access to new markets, products and services.

As well as the business case for biodiversity, there is now a raft of biodiversity and nature-related legalisation and policies, in addition to increasing demands for corporate organisations to report their impacts and dependencies on nature. There are also multiple tools and approaches, and various concepts relevant to nature, biodiversity and development. A helpful introduction to the terminology has been provided by the Institute of Environmental Management and Assessment (see Box 4.), but below we focus on some of the key concepts in more depth.

Box 4: The IEMA Buzzword Guide

The Institute of Environmental Management and Assessment (IEMA) produced an accessible guide to buzzwords used in the industry in relation to biodiversity and natural capital policy and practice. The aim was to promote a shared understanding of what these concepts mean in practice and how they can help transition economies to being truly sustainable. As well as defining key concepts, the guide signposts readers to sources of the most authoritative definitions available in the industry.

Access the guide [here](#).

15. 'Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy', World Economic Forum

16. 'The Business Case for Nature', Business For Nature

17. 'How much is nature worth? \$125 trillion, according to this report', World Economic Forum

18. 'Final Report – The Economics of Biodiversity: The Dasgupta Review', HM Government

19. 'The Business Case for Nature', Business For Nature



Key concepts

This section introduces the key concepts of BNG and natural capital. It also highlights the future direction of Environmental Net Gain.

While the focus of the guide is on policy in England, Boxes 5–8 outline the evolving approach to biodiversity and natural capital in relation to development for Scotland and Wales. These approaches are similarly habitats based where it comes to biodiversity, and there is much similarity in the principles and approaches being adopted across the devolved nations.

Biodiversity Net Gain (BNG)

BNG is an approach to development that leaves biodiversity in a measurably better state than before the development took place.²⁰ In practice, BNG is achieved by following the mitigation hierarchy (see section below on mitigation hierarchy) to avoid and reduce impacts as far as possible, and creating wildlife-rich habitats to achieve measurable, long-term gains. This requires a habitat design and management plan based on sound ecological principles.

The design and implementation of BNG is underpinned by ten Good Practice Principles,²¹ which include additionality (where BNG outcomes are beyond those that would have occurred anyway) and contributing towards local conservation priorities. Section 4 describes the legal requirements for developments to achieve BNG. These are being introduced under the Environment Act 2021 for most developments requiring planning permission in England between 2024 and 2025, depending on the size and consent requirements of a project.

Box 5: Positive Effects for Biodiversity in Scotland

Positive Effects for Biodiversity in Scotland Scotland's fourth National Planning Framework (NPF4) published in 2023 sets out requirements for development to deliver positive effects for biodiversity. Primarily under Policy 3, it requires all developments to contribute towards the enhancement of biodiversity.

This means development proposals must demonstrate that the project conserves, restores and enhances biodiversity in accordance with national and local guidance. At the time of writing, the Scottish Government stated that 'positive effects' can be qualitative or quantitative and had commissioned research on the use of a biodiversity metric in a Scottish context.

Key references for Scotland's Positive Effects on Biodiversity Policy

Scotland's fourth NPF can be found here: [National Planning Framework 4](#)

Nature Scot's Guidance to support the practical implementation of policy 3(c) of NPF4 is here: [Developing with Nature guidance](#)

This guidance includes determining the scale of biodiversity enhancement to be delivered by development, and information to include in the Planning Application.

Scottish Government Biodiversity draft planning guidance: [Scottish-Government-draft-planning-guidance-biodiversity](#)

This guidance sets out expectations for implementing and delivering NPF4 policies which support the cross-cutting NPF4 outcome 'improving biodiversity'.

20. 'Biodiversity Net Gain: An Introduction to the Benefits', Natural England

21. 'Biodiversity Net Gain: Good Practice Principles for Development', CIEEM

Box 6: Net Benefits for Biodiversity Wales

Recently updated policy by the Welsh Government is for development to deliver a net benefit for biodiversity (NBB).²² This is defined as ‘the concept that development should leave biodiversity and ecosystems in a significantly better state than before, through securing immediate and long term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site’. This requires consideration of biodiversity in terms of species and habitats, as well as ecosystems and the resilience of those ecosystems (as set out under the DECCA Framework).

Key definitions for Wales Net Benefits for Biodiversity²³

The Convention on Biological Diversity defines ecosystems as ‘a dynamic complex of plant, animal and micro-organisms and their non-living environment interacting as a functional unit’.²⁴

The key feature of ecosystems is that they

are fully integrated systems with ‘emergent properties’ arising from interactions between the living and non-living elements of which they are composed.

Ecosystem resilience is defined as ‘the capacity of ecosystems to deal with disturbances, either by resisting them, recovering from them, or adapting to them, whilst retaining their ability to deliver services and benefits now and in the future’.²⁵

The DECCA Framework sets out attributes of ecosystem resilience:

- diversity between and within ecosystems;
- the extent or scale of ecosystems;
- the condition of ecosystems including their structure and functioning;
- the connections between and within ecosystems; and
- adaptability of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change, for example.

The mitigation hierarchy

BNG is a policy for development to generate long-term and measurable improvements in biodiversity, primarily through the restoration and creation of wildlife-rich habitats. Fundamental to this is the iterative application of the mitigation hierarchy throughout a project life cycle. The mitigation hierarchy is to first avoid impacts on biodiversity as far as possible, and then to reduce these impacts before mitigating damage and, as a last resort, compensating for residual losses.

While principles of the mitigation hierarchy have been applied in resource management for more than a century,²⁶ now the required outcome is an overall improvement in biodiversity. Yet the mitigation hierarchy is not only good practice; it is also cost effective for developers, as avoiding and reducing habitat clearance, especially of ecologically valuable habitats, will reduce the extent of measures needed to meet policy requirements.

For example, mandatory BNG in England requires use of the Statutory Biodiversity Metric²⁷ to demonstrate that a minimum 10% increase in ‘habitat units’ has been achieved. The Biodiversity Metric has been designed to support the mitigation hierarchy by favouring retention and enhancement of habitats over the loss and creation of habitats. Using the Metric, one hectare of semi-natural woodland clearance for a development could require the creation of ten hectares of semi-natural woodland to achieve BNG. The land requirements and cost of doing so should prompt reconsideration of the design to avoid and reduce the amount of woodland clearance.

22. ‘Addressing the nature emergency through the planning system: update to Chapter 6 of Planning Policy Wales’, Welsh Government

23. ‘Ecosystem Resilience in a Nutshell 1: What is ecosystem resilience?’, Natural Resources Wales

24. ‘Article 2. Use of terms’, The Convention on Biological Diversity

25. ‘Article 2. Use of terms’, The Convention on Biological Diversity

26. ‘First Things First: Avoid, Reduce ... and only after that – Compensate’, WWF

27. ‘The Statutory Biodiversity Metric and tools’, HM Government



Natural capital

The 25 Year Environment Plan²⁸ defined natural capital as the sum of our ecosystems, species, freshwater, land, soils, minerals, air and seas. These are all elements of nature that either directly or indirectly bring value to people and the country at large. They do this in many ways but chiefly by providing us with food, clean air and water, wildlife, energy, wood, recreation and protection from hazards.

The 25 Year Environment Plan states an ambition to ‘expand the net gain approaches used for biodiversity to include wider natural capital benefits’. Embedding a natural capital approach in long-term decision making is at the forefront of the Plan agenda, which states that ‘over the next 25 years, our policy choices will be better-informed with a natural capital approach’.

A natural capital approach integrates the concept of natural capital into decision making, as highlighted by Defra’s Enabling a Natural Capital Approach (ENCA).²⁹

At its simplest, a natural capital approach involves the consideration of nature as an asset that benefits people. This can help to identify solutions to achieving policy and project goals through the recovery and enhancement of nature, instead of nature being seen as a constraint to policy or development. This now provides a standard analytical approach to considering nature that is recommended by the Government³⁰ and business.³¹

Alongside the 25 Year Environment Plan, HM Government recognises natural capital in the Plan for Growth,³² highlighting the key message from the Dasgupta Review that achieving a sustainable and resilient economy in Britain will be underpinned by the protection and enhancement of our natural assets, on which it depends. Such strategies have trickled down into policy in England, including the National Planning Policy Framework (2023),³³ which includes various clauses recognising the ‘wider benefits’ delivered by nature and specifically states that ‘planning policies and decisions should contribute to and

enhance the natural and local environment by recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services’. In addition, the National Infrastructure Commission (2021)³⁴ recommends that infrastructure developers should consider the impact of infrastructure development on natural capital and take the opportunities to contribute to the environment and biodiversity as part of development.

It is important to note, however, that while there are industry-recognised frameworks for a natural capital approach, there is not a single natural capital method given the site- and project-specific nature of its application.

Box 7: Natural Capital in Planning Policy, Scotland

Natural capital is one of the key indicators for economic performance under the Scottish Government National Performance Framework,³⁵ and the draft Scottish Biodiversity Strategy to 2045³⁶ (currently under consultation) makes a commitment to embedding natural capital in policymaking.

Such ambition is echoed in the policy of Scotland’s fourth National Planning Framework (NPF4). Policy 4 of the framework states the Government’s aim to protect, restore and enhance natural assets through more sustainable management, with the ambition of maintaining and growing nature’s ‘essential benefits and services’. Furthermore, within its very definition of the term ‘infrastructure’, the Scottish Infrastructure Investment Plan³⁷ includes ‘natural assets and networks that supply ecosystem services’.

28. ‘25 Year Environment Plan’, HM Government
 29. ‘Enabling a Natural Capital Approach (ENCA)’, HM Government
 30. ‘The Green Book’, HM Government

31. ‘Natural Capital Protocol’, Capitals Coalition
 32. ‘Build Back Better: Our plan for growth’, HM Treasury
 33. ‘National Planning Policy Framework’, Department for Levelling Up, Housing & Communities

34. ‘Annual Monitoring Report 2021’, National Infrastructure Commission
 35. ‘Measuring progress – Economy’, Scottish Government
 36. ‘Scottish Biodiversity Strategy to 2045: Tackling the Nature Emergency in Scotland’, Scottish Government

37. ‘A National Mission with Local Impact: Infrastructure Investment Plan for Scotland 2021–22 to 2025–26’, Scottish Government

Box 8: Natural capital in planning policy, Wales

The 2016 Environment (Wales) Act³⁸ was introduced to implement legislation on the sustainable management of natural resources, notably in line with the Well-being of Future Generations Act.³⁹ The Sustainable Management of Natural Resources guidance⁴⁰ spawned the development of the Welsh Government's Natural Resources Policy,⁴¹ which is underpinned by the concept of wider benefits from nature and ecosystem services.

The ecosystem service concept has been embedded into Welsh planning policy as a result of new requirements concerning green infrastructure under Policy 6.2 of the Planning Policy Wales (2024).⁴²

The delivery of ecosystem services is core to the concept of green infrastructure under this policy and hence ecosystem services should be considered under the requirement to integrate green infrastructure into development. Additionally, planning authorities must take into account the principles of the DECCA Framework (see Box 6), within which two of these ('diversity' and 'condition') include the functioning of ecosystems services within their definitions. Furthermore, part of one of the three core outcomes of the subsequent (aforementioned), forthcoming NBB policy for Wales is that developments should deliver multiple benefits for the well-being of local people.

Environmental Net Gain (ENG)

The 25 Year Environment Plan set a future direction for development to achieve ENG. The Plan stated the Government's intention to 'embed a "net environmental gain" principle for development to deliver environmental improvements locally and nationally'. It also described that ENG means achieving BNG first and then going further to 'achieve net increases in the capacity of affected natural capital to deliver ecosystem services'. The plan also set out the intention to enable strategic, flexible and locally tailored approaches that achieve ENG while ensuring economic growth and reducing costs, complexity and delays for developers.

See the EIC's '[Delivering environmental net gain: an EIC position paper](#)' for further details.

38. '[Environment \(Wales\) Act 2016 Factsheet: Overview of the Environment \(Wales\) Act](#)', Welsh Government

39. '[Well-being of Future Generations \(Wales\) Act 2015: the essentials](#)', Welsh Government

40. '[Environment \(Wales\) Act 2016 Factsheet: Sustainable Management of Natural Resources](#)', Welsh Government

41. '[Natural Resources Policy](#)', Welsh Government

42. '[Planning Policy Wales](#)', Welsh Government



Section 1: About the Authors

Dr Sally Fraser CEnv, MCIEEM
Senior Associate Director, Ecology
(Biodiversity Net Gain Lead), Jacobs

Sally is the Biodiversity Net Gain (BNG) Lead at Jacobs where she led development of a BNG Core Delivery Team. Sally's role includes staying at the forefront of policy and technical developments and strengthening the relationship between disciplines at Jacobs to maximise the benefits of nature led decision making and design. Sally has worked on projects across the UK including nuclear power stations, wind farm and energy from waste developments, transport schemes, pipelines, residential and commercial developments. Sally is also Vice Chair of the EIC Nature and Biodiversity Taskforce, a CIEEM BNG Training Team member and on the Editorial Board for CIEEM's In Practice magazine.

Claire Wansbury FCIEEM FLS
CEcol CMLI CEnv - AtkinsRéalis
Fellow and Technical Director

Claire is one of the UK's top experts on BNG with over 30 years' experience. She was the Society for the Environment's Environmental Professional of the Year 2023, and is a co-editor of the Institution of Civil Engineers' Manual of Blue-Green Infrastructure. Claire is a leading expert in Natural Capital, working to build a shared understanding of the value of benefits our natural world provides to people, our society and our economy.

Helen Dunn, Technical Director
Natural Capital, AECOM

Helen is an environmental economist with experience across the public and private sector. Her team at AECOM work for a range of clients and sectors to integrate nature and biodiversity into decision making including undertaking natural capital accounting and valuing natural capital.

Helen is a member of the EIC nature and biodiversity group, and a steering group member of the NCI (Natural Capital Initiative) and the Capital Coalition's Value Commission project.

Section 2: Embedding Nature and Biodiversity



Depending on nature

Biologically diverse ecosystems contribute to human security by providing goods such as food, water and raw materials, or services (indirectly) through, for example, carbon capture, climate regulation, crop pollination and nutrient cycling.

These contributions, often coined ecosystem services, are fundamentally linked to our social and economic well-being, with research from The World Economic Forum's 2020 'Nature Risk Rising' report⁴³ revealing that around half of the world's total GDP is moderately or highly dependent on nature. Just a few ways in which industries depend upon nature's resources are shown in Figure 1.

Figure 1. Examples of key dependencies of cross-sector industries on nature



43. 'Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy', World Economic Forum



Why nature in decline is a risk to industry

With so much dependency on nature, it is clear to see how the ongoing decline of nature creates volatile trade markets and a vulnerable economy.

The World Economic Forum estimates that 50% of the economy is threatened from biodiversity loss, with 80% of threatened species directly impacted by economic activity.⁴⁴ Our natural resources are finite and struggling to cope with the pressures of increasing economic demand, creating ecological imbalance and weakened adaptive capacity. An example of this includes the over-extraction of minerals, soil and water for industry, which creates ground and surface water pollution, loss of biodiversity, erosion and water stress, with direct effects on human health and security.

Another example of the risks to industry of nature decline is Invasive Non-Native Species (INNS). These can outcompete native species and encourage the spread of new pests and diseases which can affect human health and food security, create environmental and infrastructure damage and cost the UK economy a staggering £4 billion a year according to a study led by CABI.⁴⁵ Many developers in the UK have faced financial and legal implications imposed by Japanese knotweed (*Reynoutria japonica*) being present within a development site, with remediation costs estimated by CABI at £247 million per year.

"We need nature recovery."

If nature is not given a chance to recover, species will become extinct, causing ecosystems to collapse, and the services they provide will diminish, impacting primary industries, such as construction and agriculture that depend on nature the most. The ripple effect would then continue to supply chains, affecting market stability, physical security and business continuity.

A real commitment to proactive nature restoration is essential to increase climate resilience, stabilise the economy and protect the health and well-being of future generations, and development has a role to play in this. Concern over the future security of our planet is felt worldwide, with the Global Risks Perceptions Study 2023 involving more than 1,200 experts citing 'biodiversity loss and ecosystem collapse' as one of the fastest deteriorating global risks over the next decade.⁴⁶

Industries need to act quickly and strategically in conjunction with nature by protecting, enhancing and creating natural spaces to support biodiversity, restore natural processes and become more adaptable to the effects of climate change.⁴⁷

To help achieve this, developers will need to move away from the 'grey infrastructure' model and instead incorporate a 'green infrastructure' approach, providing ecological, economic and social benefits through nature-based solutions.

Developers that go beyond corporate responsibility will reap the economic and environmental benefits that will come from protecting our natural environment and are uniquely placed to drive industry into a sustainable future.

44. '50% of the global economy is under threat from biodiversity loss', World Economic Forum

45. 'Invasive non-native species cost UK economy an estimated £4bn a year, new CABI-led study reveals', CABI

46. 'The Global Risks Report 2023: 18th Edition', World Economic Forum

47. 'The Global Risks Report 2023: 18th Edition', World Economic Forum



Managing nature-related risks

Managing biodiversity risks on any project can be considered in similar ways to managing health and safety.

Managing risks from pre-feasibility or option selection stages through to the end of construction and into operation requires input at the right time from suitably competent people, a concept that will likely be familiar to most project managers.

Good biodiversity management therefore requires early engagement with suitably qualified ecologists, who will be able to help define and manage these risks. Ecologists, alongside other technical discipline experts, can also identify opportunities for nature recovery, for example by supporting the development of nature-based solutions to different aspects of a project.⁴⁸

The British Standard for Biodiversity BS42020,⁴⁹ a code of practice for planning and development, sets out the requirements for managing biodiversity on projects, including the need to engage suitably qualified ecologists. The Chartered Institute of Ecology and Environmental Management (CIEEM),⁵⁰ the professional body for ecologists and environmental managers in the UK and Ireland, has a large range of guidance on the appropriate procedures and competencies for carrying out ecological assessments on development projects.

Statutory Nature Conservation Bodies (SNCBs) also have advice specifically for developers. The British Standard BS 8683:2021 sets out a process for designing and implementing BNG specifically.⁵¹ The details of assessment and development of nature recovery opportunities become more specific as a project develops through each stage (see Section 3).

48. 'IUCN Global Standard for Nature-based Solutions: A user-friendly framework for the verification, design and scaling up of NbS', IUCN

49. BS42020 : 2013 Biodiversity : Code of Practice for Planning and Development'

50. Chartered Institute of Ecology and Environmental Management



Applying the mitigation hierarchy

The most important consideration in deciding how best to manage risks and recovery is the mitigation hierarchy (see Section 1). This should always be followed, much as the hierarchy of risk management in safety is followed.

Avoiding the loss of high-value habitats reduces risk for the developer and is better for nature. Competent ecologists should be engaged to provide baseline assessments and inform decision making to avoid developing areas that are of high biodiversity value. Not only does this avoid damage to habitats that may have no other protection under planning legislation, but it also saves developers having to reinstate large amounts of biodiversity.

Assessing biodiversity risks and recovery opportunities on any project is very iterative – at each stage, as more detail on the development emerges, biodiversity should be considered again. This is especially important for projects that have a long life cycle, because biodiversity data has a limited lifespan, beyond which it is considered potentially out of date. The CIEEM provides advice on the lifespan of ecological reports and surveys.⁵² So careful planning of surveys to help you understand your biodiversity baseline is needed, to ensure that the right information is collected at the right time.

By following the mitigation hierarchy and by engaging with suitably qualified ecologists as early as possible on a project's life cycle, the opportunities to avoid loss and include restoration in a project are much greater.

51. 'BS 8683:2021: Process for designing and implementing Biodiversity Net Gain. Specification', BSI Knowledge

52. 'Advice note on the Lifespan of Ecological Reports and Surveys', CIEEM

Where necessary, it is preferable to carry out compensation on the development site or as close to it as possible. However, this may not always be feasible, either because there is no space on site or because the land adjacent to the site is not suitable, or because the developer may not have access to or ownership of adjacent land.

Again, it is essential to engage with ecologists early on so that the need for compensation can be identified. This allows more time to develop an appropriate set of compensatory measures. This may include planting trees or wildflower meadows as part of the landscape design of a development, or negotiating the use of land elsewhere for compensation. It can also include agreements to fund existing nature recovery projects. Box 9 demonstrates the benefits to BNG of applying the mitigation hierarchy.

Box 9. A case study in application of the mitigation hierarchy

The East West Rail (EWR) Alliance consists of AtkinsRéalis, Network Rail, Laing O'Rourke and VolkerRail, delivering East West Rail Phase 2 (EWR2). With the support of the Department of Transport and East West Railway Company, the EWR Alliance is committed to delivering a 10% Biodiversity Net Gain (BNG) on EWR2, one of the largest UK infrastructure projects to make this commitment to date.

Achieving cost-effective 10% BNG on such a large scheme meant that the Alliance needed to challenge existing design methods and place collaboration at the heart of the process. This required extensive engagement, bringing together ecologists, designers and construction teams early in the planning process to avoid and minimise losses, thereby applying the mitigation hierarchy at every stage of design and construction.

This environment-led, shared-ownership approach to design was ground-breaking, and its inherently inclusive approach meant that the risk of problems being identified at a later date were reduced. Substantial savings were made through reduced habitat loss, and where habitat loss was unavoidable, this was identified early and mitigation measures were applied.

The project's position pivoted from one of substantial net loss to a net gain during the design and construction process. Further habitat creation works and associated costs required to reach the 10% BNG had been reduced by 70%, equating to a cost saving of more than £4 million pounds, without compromising the scheme's benefits to nature.

Provided by Atkins





Enhancement and delivering wider benefits

It is important to be aware that meeting the requirements for BNG is not business as usual.

BNG goes beyond mitigating and compensating for impacts and requires quantified net gains in biodiversity. If implemented successfully, BNG should support policy protections for nature at the same time as harnessing a contribution from development to meeting the challenges of nature's recovery and can also deliver wider benefits, evidenced as potentially providing additional natural capital value. Delivering BNG can therefore act as a golden thread to the delivery of wider policy requirements and ENG.

Developers should be aware that mandatory BNG in England is a significant new requirement that, while likely to be led by ecologists, is necessarily an interdisciplinary

activity requiring collaboration proportionate to the scale of the impacts and project requirements. Engineers need to be on board to design out impacts and consider nature-based solutions. Landscape architects, soil scientists and hydrologists, among others, will be needed to deliver habitat restoration and creation schemes, and financial expertise may be needed to navigate new nature markets. See Box 10 for a case study in delivering BNG and associated wider benefits.

Beyond delivering mandatory BNG and ultimately ENG on development projects, these approaches are being adopted at the strategic level to support company disclosure of their impacts and dependencies on nature against frameworks such as Environmental Social Governance (ESG), Task Force for Climate Related Disclosures (TCFD) and Task Force for Nature Related Financial Disclosures (TNFD).

Box 10. A case study: Embedding biodiversity in design

Maximising Environmental Outcomes Through Embedding Biodiversity in Design

Central 1 section of HS2 Phase One in the UK, incorporating the Chiltern Tunnels and Colne Valley Viaduct, being delivered by the Align Joint Venture.

Jacobs, working as part of the Align integrated project team delivering the Central 1 section of HS2 Phase One, has been instrumental in turning a forecast 20% deficit in biodiversity units in the preliminary design into an estimated gain of 10%.

This has been achieved by developing a set of fundamental design and sustainability principles allowing an integrated, multidisciplinary approach to habitat creation, while breaking down historic distinctions between ecological mitigation, often delivered during the enabling works, and the permanent works landscape design, and seeking out all opportunities to maximise biodiversity.

A key part of the delivery of the Central 1 section is to use the arisings from the excavation of the Chiltern Tunnels and other construction materials to create 127 hectares of new chalk grassland, woodland, wood pasture and wetland habitats on the Colne Valley Western Slopes site.

This will substantially enhance the local natural environment and will be a major contributor in meeting HS2's carbon reduction and biodiversity targets for HS2 Phase One. The design was the overall winner of the HS2 Design, Engineering and Environment Awards in 2022.

Provided by Jacobs



The role of innovation

The BNG and natural capital field is one of increasing innovation from rapidly improving methods of data measurement and tools, new solutions being trialled for delivering solutions, and growing business and finance sector engagement for contributing to the meeting of environmental goals.

There are a growing number of innovative tools for monitoring the environment and environmental change, including use of drones, remote sensing data and eDNA techniques (see Box 11). These applications can provide significant real-time data on biodiversity and natural capital in cost-effective ways alongside more traditional monitoring approaches.

Improvements in monitoring and measurement provide an important foundation for implementing nature-positive actions and helping to provide the assurance of delivery of these outcomes. This is also driving demand for new types of green jobs.

Box 11. Innovation Case Study

AECOM Natural Capital Laboratory

The Natural Capital Laboratory (NCL) is a five-year collaborative project in Scotland, bringing together AECOM, conservation charity the Lifescape Project, the University of Cumbria, and landowners Emilia and Roger Leese. Located in the Scottish Highlands, the NCL is a live, collaborative research project to design, test and commercialise new techniques for measuring and valuing environmental and social impacts of land management activities.

This involves 'rewilding' 100 acres of land in the Scottish Highlands to restore native forest, to inspire people to connect with the environment and to reintroduce lost species.

Alongside this, the laboratory has been set up to develop:

- innovative approaches for capturing data on social and environmental change, such as drones, artificial intelligence (AI) and remote sensing;
- a 'capitals accounting framework' that records, quantifies and values the environmental, economic and social changes across six capitals;
- engaging ways of communicating the benefits of rewilding, such as virtual reality (VR) and digital platforms.

The initial focus of the NCL has been to support and inform the rewilding plan for the

site itself. Collecting baseline data by using drones, AI, remote sensing and ground-breaking environmental DNA techniques has enabled the rewilding and site management plan to be evidence-led. Furthermore, a key development has been the first-ever digital natural capital accounting platform.

The platform allows technical information to be uploaded and users to access this in a visual and engaging manner through images, live feeds, charts and videos. Collaboration across the project partners is delivering significant value in driving forward real advancements in natural capital research and implementation.

Provided by AECOM

An area of innovation has been the increasing use of nature-based solutions (NbS) that can substitute or complement the use of grey infrastructure. NbS are defined as techniques that involve using nature as part of the solution to environmental issues, such as to mitigate or adapt to climate change, to manage flood and coastal erosion risk, to provide health, social or liveable cities or improved water quality.⁵³ This also has strong overlaps with blue-green Infrastructure, which is defined as:

*Strategically planned network of natural and semi-natural areas designed and managed to deliver a wide range of ecosystem services e.g., Green: parks, open spaces, playing fields, woodlands, street trees, allotments, private gardens, green roofs and walls, and soils. Blue: rivers, streams, canals and other water bodies.*⁵⁴

Examples of NbS include sustainable urban drainage (SuDS) for reducing surface water run-off, constructed wetlands for improving water quality, investing in woodland restoration for carbon and developing green infrastructure in urban environments (e.g., green roofs, street trees) to improve air quality. In all these cases, there are a range of co-benefits that NbS also deliver for people and the environment.

Innovation is similarly occurring in approaches to funding and financing nature recovery. It has been estimated that between £44 billion and £97 billion is needed over the next ten years to meet domestic nature-related goals.⁵⁵ The UK Government is trialling investment opportunities in nature through new investment funds to scale up investment by business and the financial sector. There is also a focus on creating the right conditions for investment by development of high integrity ecosystem investment standards⁵⁶ to help environmental markets to develop and create new revenue streams for nature.

Box 12. A Playbook for Nature-positive Infrastructure Development

FIDIC (International Federation of Consulting Engineers), WWF & AECOM (2023): A Playbook for Nature-positive Infrastructure Development

This resource provides a guide for infrastructure practitioners to identify and select potential solutions for their projects, contributing to the shift towards nature-positive infrastructure. Structured around the analysis of nearly 200 existing projects implemented around the world, the guide provides a summary of the current state of understanding, ambition and implementation, as well as a series of case studies.

Access the guide [here](#).

53. 'Wellbeing and prosperity for everyone through a healthy natural environment', Ecosystems Knowledge Network

54. 'IEMA launches Biodiversity and Natural Capital Buzzword Guide', IEMA

55. 'The Finance Gap for UK Nature', Green Finance Institute

56. 'Nature markets: A framework for scaling up private investment in nature recovery and sustainable farming', HM Government



Section 2: About the Authors

Dr Julia Baker, Technical Director of Nature Services, Mott MacDonald

Julia is the Nature Services lead at Mott MacDonald, and lead author of the UK's Good Practice Principles on BNG (2016), co-author of practical guidance on BNG (2019) and she chaired the first British Standard on BNG (BS 8683: 2021). Julia runs professional training courses on BNG and has designed and delivered BNG on numerous infrastructure projects including major railway improvements. Julia is Chair of the EIC's for Nature & Biodiversity Task Force.

Jo-Hannah Rees, Ecology Coordinator, Sanctus Ltd

Jo-Hannah works as an Ecology Coordinator within a multi-disciplinary team at Sanctus Ltd, providing ecological project management for complex remediation schemes within the UK.

Her role involves carrying out scoping surveys on brownfield land or water courses, applying for environmental permits, coordinating protected species surveys, or providing an ecological watching brief during construction activities. Jo-Hannah promotes nature positive approaches in her personal and professional life and strives to improve working practises within the construction industry to reduce impacts to habitats and species.

Caroline McParland, Technical Director, Ecology at WSP

Caroline leads on HRA and Ecological Impact Assessments for energy projects, drawing on 20 years' consultancy experience. Caroline's particular focus regards Scotland, where she has contributed to consultations on biodiversity policy in Scotland's fourth national Planning Framework (NPF4) and providing advice to the Scottish Government on practical delivery of biodiversity targets in planning policy.

Vikki Patton, Nature Positive Services, UK Lead at Ramboll

Vikki is the UK Lead for Nature Positive Services at Ramboll, delivering biodiversity solutions for development projects and corporate clients. She has been closely involved in the development of the UK's Biodiversity Net Gain process since 2016, contributed to the practical guidance on BNG published in 2019, participated in the Small Sites Metric industry steering group, and delivers BNG training for the UK industry on behalf of CIEEM. Her team undertakes BNG assessments to meet policy and legal requirements across the UK, and have adapted the UK metric to measure biodiversity change in client projects in over 20 countries globally.

Section 3: Biodiversity Net Gain and Natural Capital Throughout a Project Life Cycle

This section provides an outline of how to embed BNG and natural capital during a project life cycle. Good practice for both concepts is set out across different stages of the project life cycle, from project inception to operation.

These actions are summarised as steps across flow charts (Figures 2 and 3) that are set against the backdrop of the Royal Institute of British Architects (RIBA) Plan of Work Stages and the broad stages of the local authority planning process. The action for each step is described in **Appendix 3.1** together with references to guidance on how to deliver these actions.

With reference to **Appendix 3.1**, while the BNG and natural capital steps have both been divided across RIBA stages, the step numbering system does not imply comparability between BNG and natural capital actions, i.e., Step 2a for natural capital does not necessarily need to be delivered in parallel to the equivalent step for BNG.

Note: this guidance is intended to support good practice and does not constitute advice or guidance on meeting legal requirements of mandatory BNG.

To supplement the flow charts, below are considerations when interpreting the subsequent processes and in delivering BNG and/or natural capital approaches across the project life cycle.

Life cycles

For the ease of comprehension, both the BNG and natural capital approach delivery processes have been presented in linear, step-by-step methodologies, which can be easily separated across the RIBA stages in the subsequent process flow charts. In reality, however, the delivery of both BNG and natural capital approaches is necessarily highly iterative and requires substantial flexibility under any given project context. Targets, strategies and methodologies will all need to be reactive to changing information on design, environmental context and policy. It is assumed that core ecological concepts underpinning both BNG and natural capital are understood and have not, therefore, been defined here (see Section 1 for an introduction to these key concepts).

Good practice

The project life cycle process flow charts are indicative and should be taken as a good practice guide only.

There are regional variations and design and statutory consultation variations between different solutions which affect when design elements should commence. For example, Lead Local Flood Authorities (LLFAs) will generally demand that, for a Planning Application to be validated, drainage designs are progressed to RIBA Stage 3, meaning that if the preferred BNG solution in development is water-based, it will need its design advanced commensurate with the drainage designs.

Although natural capital may be subject to Town and Country Planning Act (TCPA) controls in some circumstances, there is no legal mandate for the application of a natural capital approach. This means that although there is some commonality with the BNG delivery process at a high level, the application of a natural capital approach to the project life cycle is much less defined, without centralised guidance or required deliverables.

All surveys, assessments and reporting should be carried out by suitably qualified and experienced specialists in line with industry expectations, including those set out by governing bodies like the CIEEM and relevant British Standards (see Section 2 for further detail on British Standards).

Scheme design

The design and delivery of BNG and the equivalent for natural capital, which is optimising natural capital benefits, will inherently differ through the investment and development process. This is because BNG is regulated and managed via the TCPA, whereas natural capital is an unregulated space. While outcomes for natural capital may be positive as a downstream consequence of BNG, natural capital is also affected by a broader range of other socio-economic and geographical factors.

Natural capital, for example, is highly spatially specific. Planting a new area of woodland at one site may deliver equivalent biodiversity units at another, given that habitat conditions are broadly similar. In contrast, the capacity for said area of woodland to

deliver flood regulation benefits, as an example of only one ecosystem service, would vary markedly between locations depending on physical flood risk and the presence of downstream receptors.

When designing any scheme, developers should be cognisant not just of the beneficiaries of BNG and natural capital, but also of those who may be disadvantaged by it. Additionally, developers should ensure they have considered, minimised and sufficiently mitigated against any loss (including financial and social loss) in their assessment and design, particularly where this could compromise successful scheme delivery.

Delivery

The mechanics of BNG will inherently vary between regions and scheme types. In addition, the delivery of BNG will almost certainly continue to evolve with industry and regulatory evolution and innovation. However, there are consistent themes between RIBA, against which the BNG and natural capital processes have been mapped, and other key project delivery life cycles, e.g. those for National Significant Infrastructure Projects.

The importance of early engagement

In the BNG delivery process, early engagement particularly with regulators and co-consultants is fundamental to a successful project. Strategic decisions early in the life cycle are often likely to have the most significant impact on BNG outcomes; hence early engagement is vital for delivery of BNG with optimal outcomes and for project cost- and time-efficiency. Early engagement also provides an environment where better understanding of the challenges is to help drive future innovation in the sector.

Early engagement in the natural capital delivery process is important for the same reasons and thus to minimise delivery risk to any potential consenting or assurance requirements associated with natural capital, environmental net gains or wider organisational goals (e.g., net zero or nutrient neutrality) in which natural capital plays a role, and likewise to maximise opportunities to contribute to such goals.

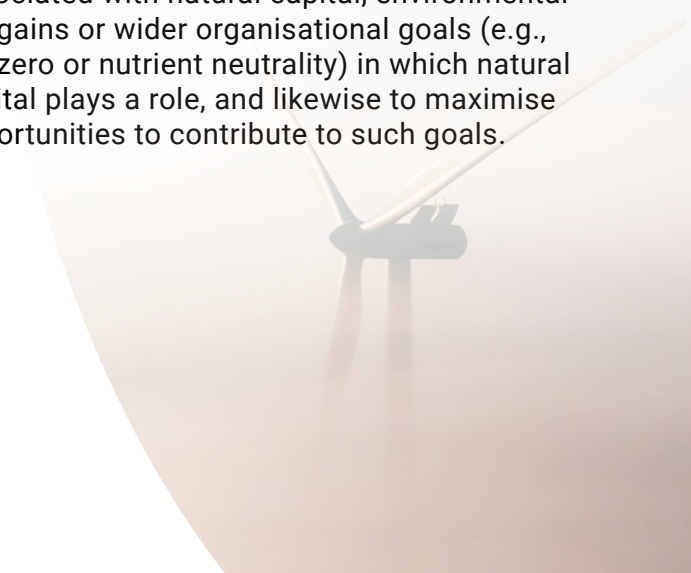
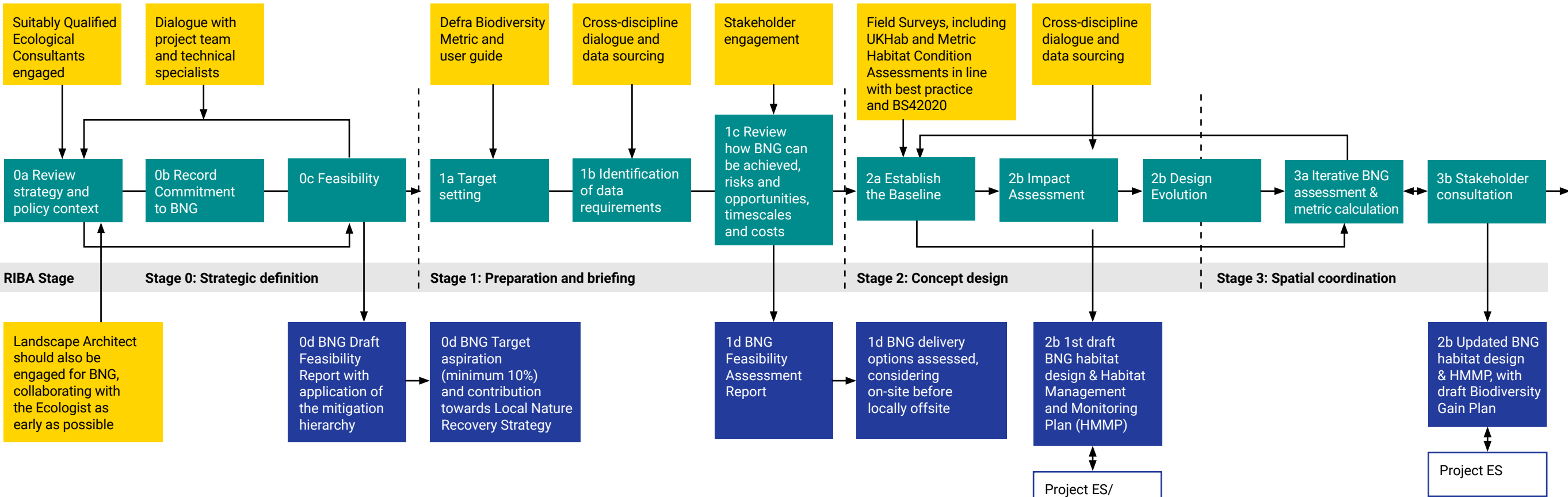
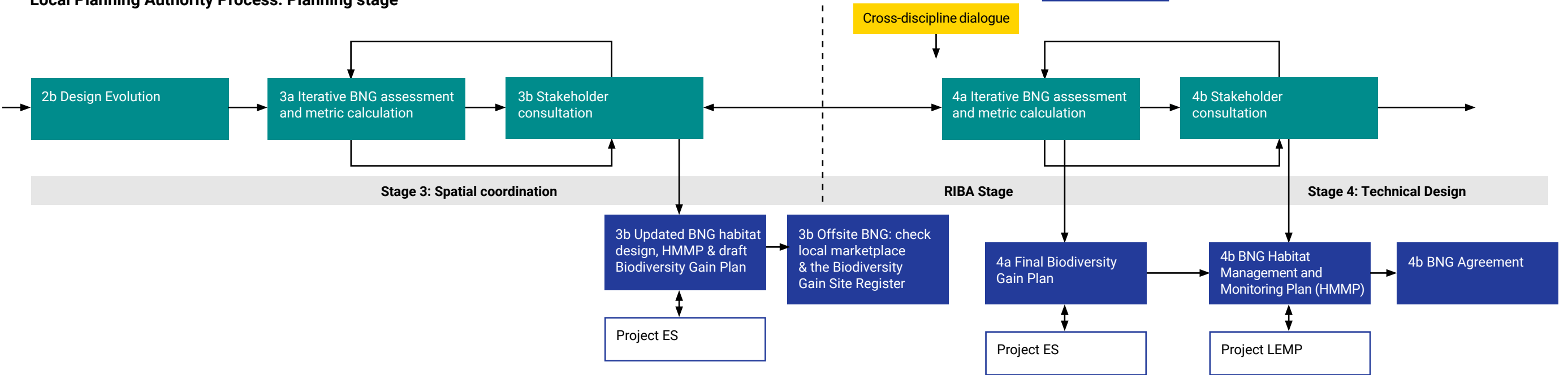


Figure 2: BNG Tasks by Project Stage

Local Planning Authority Process: Pre-application stage



Local Planning Authority Process: Planning stage



Local Planning Authority Process: Construction and occupation stage

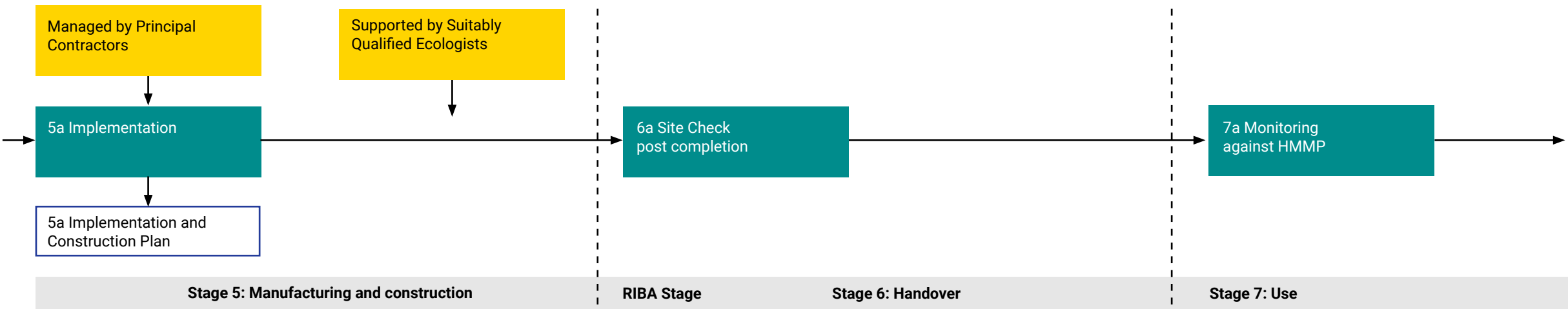
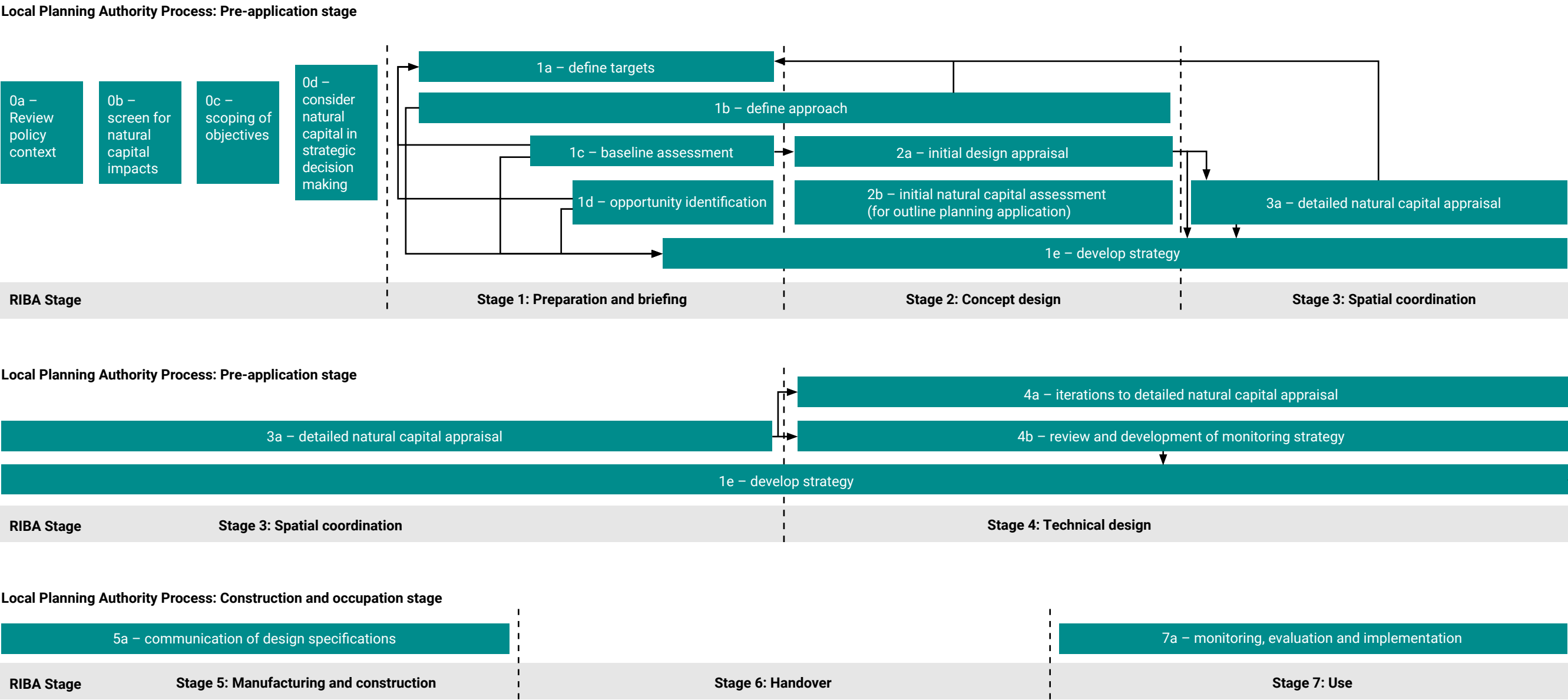


Figure 3: Natural Capital Tasks by Project Stage



Section 3: About the Authors

Oliver Seville, Environmental Consultant,
Environment Practice, AtkinsRéalis

Oliver is a natural capital specialist who is passionate about applying innovative approaches to the infrastructure sector to understand the dependency of society and economy on nature's ecosystem services. Oliver uses environmental valuation techniques to drive better outcomes for both sustainability and client organisations, helping to manage risk and maximise benefits to society and environment.

Oliver works collaboratively across disciplines to best evidence the benefits delivered by our natural environment and has developed bespoke approaches, methodologies and industry guidance to help make the business case for nature and nature-based solutions.

Kevin McGee, Associate Director
(Geoenvironmental), Cundall

Kevin's role extends beyond the ground engineering remit into energy sector, natural capital and zero carbon design. Kevin integrates natural capital and biodiversity into the built environment, and examines how the energy sector and natural capital can work together.

Dr Sarah Cox – Divisional Director
- Ecology, Temple Group

Dr Sarah Cox is a chartered ecologist and environmentalist with a PhD in conservation biology. She is head of ecology at Temple and chair of the CIEEM Registration Authority.

Laura Covington,
Principal Consultant at Ecus

Laura is a chartered Environmentalist terrestrial ecology lead at Ecus. With a background in ecology, Laura is an expert in valuing the environment both at a landscape and project scale working cross discipline to embed nature throughout the life cycle of projects.

Section 4: Legal and Policy Overview

This section will consider the evolution of policy and legislation related to biodiversity over the past 50 years, driven by the critical decline in biodiversity in the UK and worldwide and with the growing recognition of humanity's dependence on nature.

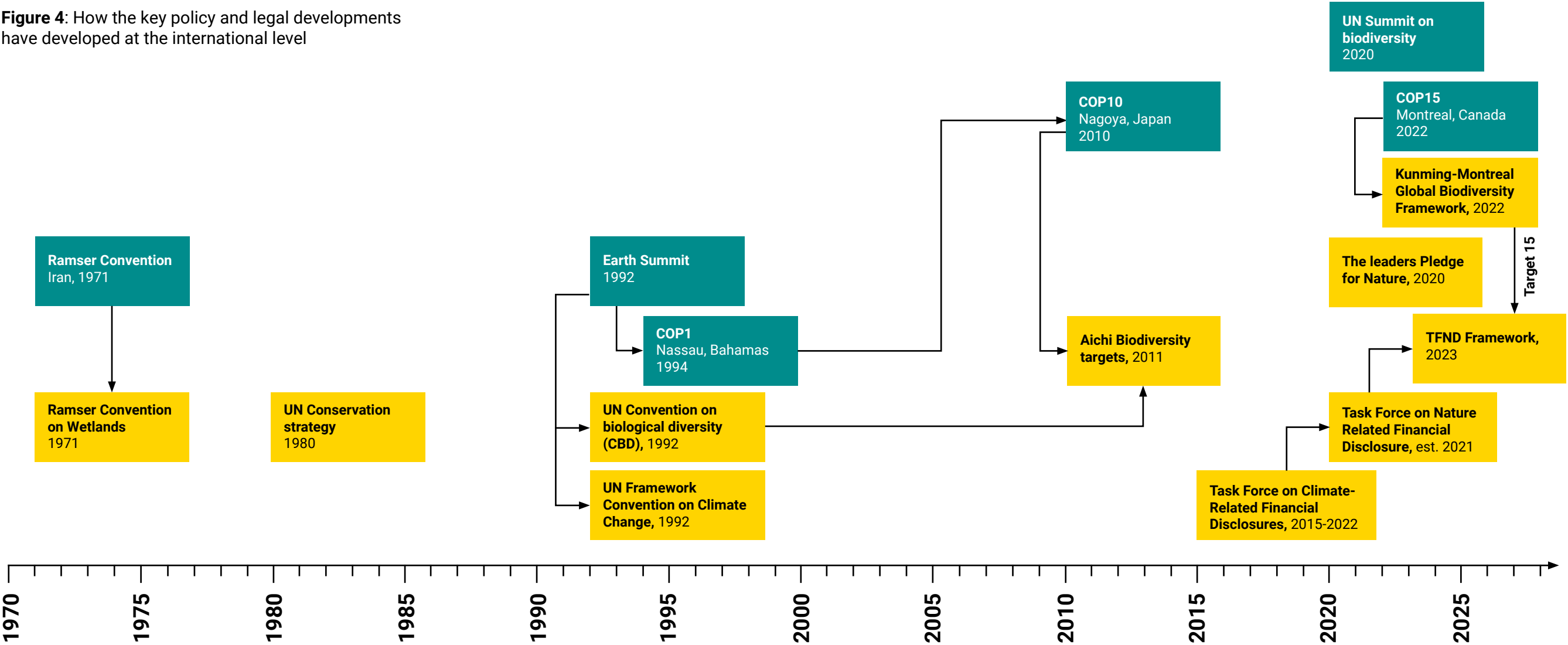
Recently there has been the start of a transition in the drafting of legislation from an anthropocentric worldview to a more ecocentric approach, emphasising the importance of holistic ecosystem protection rather than selective conservation efforts. There is a growing appreciation of the interconnectedness of biodiversity loss and climate change disruption, recognising them as two sides of the same planetary emergency.

The section will set the stage for a comprehensive discussion on the evolving landscape of the policy and law on biodiversity and highlight the urgent need for transformative policies and actions to protect and restore our planet's rich biodiversity.

The section is supported by the following detailed Appendices:

- **Appendix 4.1** Key Biodiversity Terms Used in International and UK Law
- **Appendix 4.2** At a Glance: UK Legislation and Planning Policy of Most Relevance to Developers
- **Appendix 4.3** UK Policy, Government Commissioned Papers and UK Regulator Reports
- **Appendix 4.4** Key Organisations for Biodiversity

Figure 4: How the key policy and legal developments have developed at the international level





International treaties and laws

The global decline in biodiversity has prompted the development of a comprehensive framework of international treaties and laws aimed at protecting and conserving nature's rich ecosystems. These legal instruments have played a pivotal role in shaping biodiversity conservation policies and practices worldwide, including in the United Kingdom.

Recognising the Interdependence of Humans and Nature, the **Ramsar Convention** of 1971⁵⁷ for the Protection of Wetlands stands as a landmark agreement, marking one of the first international recognitions of humanity's dependence on the natural environment. By acknowledging the critical ecological functions of wetlands, the Ramsar Convention laid the foundation for a more holistic approach to biodiversity conservation.

The 1980 **United Nations World Conservation Strategy**⁵⁸ marked an important shift in global environmental consciousness, emphasising the limits to biodiversity exploitation and the need for sustainable development. This pivotal document underscored the urgency of balancing human needs with the preservation of natural resources for future generations.

The **Earth Summit** of 1992,⁵⁹ which is widely considered the most significant environmental conference in history, gave rise to two landmark agreements: the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD) of 1992.

The CBD, the first global treaty to address biodiversity conservation comprehensively, established three overarching goals:

- Conservation of biological diversity;
- Sustainable use of biodiversity components;
- Fair and equitable sharing of benefits arising from the utilisation of genetic resources.

Under the Convention, the parties meet, usually every three years, as the Conference of the Parties (COP). The first COP was held in 1994 (in Nassau, Bahamas), and the most recent of the series, COP15, was held in Montreal, Canada, in 2022.

The CBD's Strategic Plan for Biodiversity 2011–2020, adopted at COP10 in Nagoya, Japan, established the **Aichi Biodiversity Targets** 2011,⁶⁰ a set of 20 ambitious goals to be achieved by 2020. Target 5, for instance, aimed to halt and reverse the loss of natural habitats.

The **Global Biodiversity Outlook 5**,⁶¹ published in 2020, and the most comprehensive assessment of global biodiversity loss to date, revealed a severe decline in species and ecosystems worldwide. While some Aichi targets were partially met, none was fully achieved. The report highlighted the unprecedented rate of biodiversity loss, with more than one million species facing extinction.

In response to the stark warning of the sixth mass extinction, the United Nations initiated additional urgent measures. **The Leaders Pledge for Nature**, 28 September 2020,⁶² launched by 64 countries in 2020, reaffirmed the need to reverse biodiversity loss by 2030 for sustainable development:

We are in a state of planetary emergency: the interdependent crises of biodiversity loss and ecosystem degradation and climate change – driven in large part by unsustainable production and consumption – require urgent and immediate global action.

57. 'Convention on Wetlands of International Importance especially as Waterfowl Habitat'

58. 'World Conservation Strategy: Living Resource Conservation for Sustainable Development', International Union for Conservation of Nature and Natural Resources

59. 'Earth Summit'

60. 'Aichi Targets', Convention on Biological Diversity

61. 'Global Biodiversity Outlook 5', Convention on Biological Diversity

62. 'Leaders' Pledge for Nature: United to Reverse Biodiversity Loss by 2030 for Sustainable Development'

The **UN Summit on Biodiversity 2020** further emphasised the urgency to halt biodiversity decline. The Summary of the President of the General Assembly⁶³ warned of the devastating consequences of inaction, highlighting the inextricable link between biodiversity loss and climate change:

Biodiversity loss and ecosystem degradation are currently among the top threats facing humanity. As the impacts of climate change are becoming more visible, biodiversity loss will also become pervasive and ultimately devastating.

The most recent COP, COP15 held in Montreal in December 2022, resulted in the adoption of the **Kunming-Montreal Global Biodiversity Framework (GBF)**.⁶⁴ This landmark agreement, endorsed by 188 governments, outlines four global goals and 23 targets to address biodiversity loss by 2030. Target 3, the '30 by 30' goal, commits signatory nations to protect at least 30% of their land and marine areas by 2030.

Defra published a paper, 'Delivering 30by30 on land in England', in December 2023.⁶⁵

International treaties and laws have played a crucial role in shaping global biodiversity conservation efforts. The recognition of humanity's dependence on nature, the call for sustainable development and the setting of ambitious targets have all contributed to a heightened awareness of the importance of biodiversity conservation. The Kunming-Montreal Global Biodiversity Framework marks a renewed commitment to reversing biodiversity loss and securing a sustainable future for all.



Natural capital developments

Meanwhile, at the global level, work has also been carried out by the Capitals Coalition, which has published extensively, including its **Biodiversity Guidance**.⁶⁶ The Biodiversity Guidance is a step-by-step approach to incorporating biodiversity into natural capital assessments. It is designed to help businesses and financial institutions understand the value of biodiversity and how to incorporate this value into their decision-making processes. The guidance is based on the Natural Capital Protocol,⁶⁷ which is a framework for measuring and valuing natural capital.

At a global level, a natural capital approach can play a transformative role by encouraging the flow of global finance away from industries and projects that are inherently damaging to biodiversity (such as the manufacture of pesticides and fertilisers) into those that are beneficial for biodiversity. An important development here is the **Task Force on Nature-related Financial Disclosures (TNFD)**.⁶⁸

Closely aligned to the Task Force on Climate-related Financial Disclosures (TCFD), TNFD provides a disclosure framework for organisations to report and act on nature-related risks and opportunities. The ultimate aim is to shift global financial flows towards nature-positive outcomes.

The TNFD framework was published on 18 September 2023 ready for market adoption. There are four concepts at the heart of the TNFD framework: nature-related dependencies, impacts, risks and opportunities. TNFD can be said to have an ecosystem services approach as it assesses a business's dependency upon nature.

63. ['United Nations Summit on Biodiversity: 30 September 2020: Summary of the President of the General Assembly'](#)
64. ['Kunming-Montreal Global biodiversity framework: Draft decision submitted by the President'](#), Convention on Biological Diversity

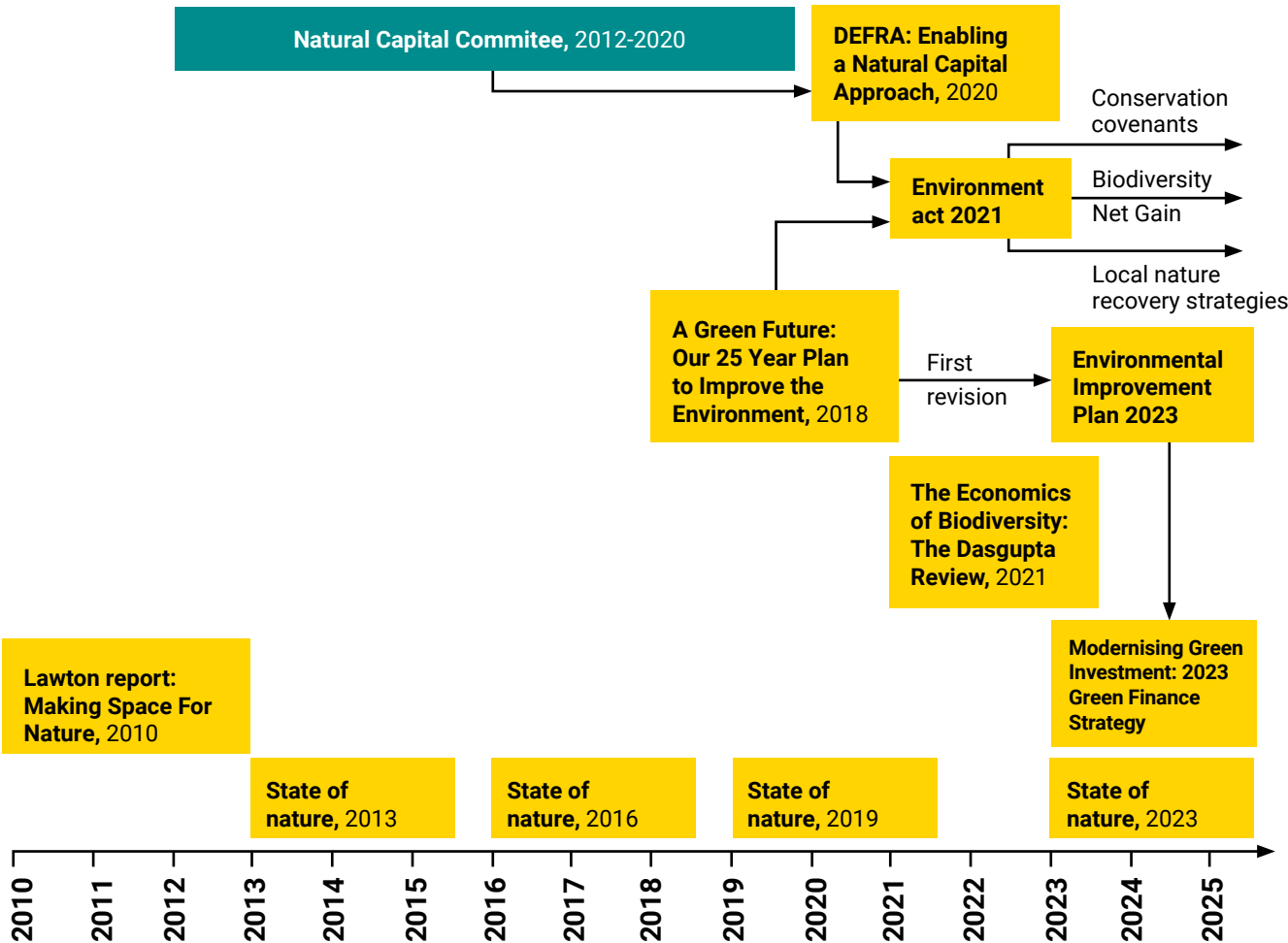
65. ['Delivering 30by30 on land in England'](#), Defra
66. ['Integrating Biodiversity into Natural Capital Assessments: A series of Biodiversity Guidance to accompany the Natural Capital Protocol'](#), Capitals Coalition

67. ['Natural Capital Protocol'](#), Capitals Coalition
68. [Taskforce on Nature-related Financial Disclosures \(TNFD\)](#)

UK policy and legislation

The traditional UK approach to biodiversity was to provide protection for certain designated conservation sites (such as Sites of Special Scientific Interest) and for certain listed species, particularly under the Wildlife and Countryside Act 1981. This approach was generally encouraged by Directives from the European Union (EU), in particular the Birds Directive 1979 (with the creation of Special Protected Areas) and the Habitats Directive 1992 (with the creation of Special Areas of Conservation). While these measures were critical for supporting wildlife, biodiversity across the UK still continued to fall, largely owing to the loss of (non-designated) habitats and the intensification of agriculture. A series of recent papers and legislation is illustrated in Figure 5.

Figure 5. Timeline for UK papers and legislation



A major strategic rethink was provided by the **Lawton Report**, Making Space for Nature in 2010. This noted the ongoing loss of biodiversity in England and concluded that England's habitats were too small and too fragmented to prevent further loss of species, with remaining priority habitats concentrated within protected areas and largely lost outside those zones. A new and much bolder approach was needed:

The essence of what needs to be done to enhance the resilience and coherence of England's ecological network can be summarised in four words: more, bigger, better and joined.⁶⁹

The Lawton Report was fundamental in showing what needed to be done, but the big question that remained was how that was going to be achieved in practice. The history of nature conservation is littered with any number of good intentions and targets that are seldom achieved. But recently there has been much progress in understanding the economics of nature.

69. 'Making Space for Nature: A review of England's Wildlife Sites and Ecological Network'

Through the science of ecosystem services monetary values can be ascribed to nature. These monetary values can then be incorporated into decision making and, through these values, markets can be set up through which biodiversity credits can be traded. Such an approach has always been deeply controversial as it can be said to commoditise nature and could well lead to the very wealthy buying up biodiversity in order to trade and to make profit.

The decline of biodiversity across the UK has reflected the global trend, and currently the UK is one of the most nature-depleted countries in the world. One of the major problems in quantifying the loss has been the lack of reliable data.⁷⁰ The leading reports that have charted changes to UK biodiversity are the **State of Nature reports**.

There have been four reports to date: 2013, 2016, 2019 and 2023.⁷¹ These reports take a 1970 baseline, and there has been a dramatic decline in biodiversity since then. As the report makes clear, the 1970 baseline will

have been far lower than the baseline at, say, the start of the 20th century. Nevertheless, in the 43 years since 1970, UK biodiversity has declined at a truly alarming rate. For example, the 2023 State of Nature report assesses the average change of the decline of the 228 priority species between 1970 and 2021. By 2021, the index had declined to 37% of its (100%) baseline value in 1970.

A change of thinking was needed, and this was evidenced by the publication of the Government paper **A Green Future: Our 25 Year Plan to Improve the Environment in 2018**.⁷²

This was heavily based upon ecosystem services and connectivity of habitats and was an important part of the germination of the Environment Act 2021 referred to later. This paper was updated in 2023 as the **Environmental Improvement Plan 2023**.⁷³

Meanwhile, as international thinking on natural capital was evolving, this was reflected in the UK primarily through the **Natural Capital**

Committee (NCC). This was an independent advisory committee which ran from 2012 to December 2020. Many of the functions of the NCC have now transferred to the Office for Environmental Protection. The natural capital approach has been taken up by the UK Government, as is clearly shown in Defra's **Guidance Enabling a Natural Capital Approach (ENCA)**.⁷⁴



Environment Act 2021

Much of the thought described above has culminated in the Environment Act 2021.⁷⁵ This includes elements of natural capital thinking using market-based solutions by attributing value to habitat. In addition, it takes thinking from the paper 'A Green Future' referred to above, about looking strategically at the country as a whole and putting in place strategic plans at national and local levels through the Local Nature Recovery Strategies. These are looked at in more detail below.

70. For insect declines, see Dave Goulson, Silent Earth (Vintage Digital, 2021)

71. **'State of Nature'**

72. **'25 Year Environment Plan'**, HM Government

73. **'Environmental Improvement Plan 2023'**, HM Government

74. **'Guidance: Enabling a Natural Capital Approach (ENCA)'**, HM Government

75. **Environment Act 2021**





Biodiversity Net Gain (BNG)

The broad mechanics of BNG are shown in **Figure 2**. The legislation is set out in Part 6 of the Act: Nature and Biodiversity. The main parts of this, for this first phase of England's mandatory BNG, are:

- Sections 98–101, Biodiversity gain in planning;
- Sections 102–103, Biodiversity objective and reporting.

The key section is 98, Biodiversity gain as a condition of planning permission, which inserts a new Schedule 7A into the Town and Country Planning Act 1990. This schedule makes provision for biodiversity gain to be a condition of planning permission in England and contains the mechanisms under which it operates. Paragraph 2 states:

2(1) The biodiversity gain objective is met in relation to development for which planning permission is granted if the biodiversity value attributable to the development exceeds the pre-development biodiversity value of the onsite habitat by at least the relevant percentage.

3 References to the biodiversity value of any habitat or habitat enhancement are to its value as calculated in accordance with the biodiversity metric.

Part 2 of Schedule 7A mandates that a development cannot begin until a Biodiversity Gain Plan has been submitted to the planning authority and the plan is approved by the local authority. Gathering all the information needed to complete a Biodiversity Gain Plan will be of critical importance.

For this first phase of mandatory BNG, the Statutory Biodiversity Metric is published⁷⁶ along with the Biodiversity Metric User Guide and the Habitat Condition Assessments: these are statutory instruments. A collection of guidance relating to applying the policy is also provided.⁷⁷

Defra published six sets of BNG regulations and guidance, in four areas as follows:

- For the site register: setting up the register⁷⁸ and associated penalties and fees;⁷⁹
- Exemptions from BNG;⁸⁰
- Defining 'irreplaceable habitat';⁸¹
- Modifications to the Town and Country Planning Act 1990⁸² and other consequential amendments.⁸³

BNG is to be embedded as a central part of the English planning regime. The mechanics of the system have been built so that once planning permission is granted, a biodiversity gain condition will automatically be attached to the planning approval. Once planning permission has been granted, a Biodiversity Gain Plan must be submitted which must establish that there will be a BNG of at least 10%. This Gain Plan must then be approved by the local planning authority before any development can begin.

76. 'Guidance: Statutory biodiversity metric tools and guides', HM Government

77. 'Collection: Biodiversity net gain', HM Government

78. 'The Biodiversity Gain Site Register Regulations 2024'

79. 'The Biodiversity Gain Site Register (Financial Penalties and Fees) Regulations 2024'

80. 'The Biodiversity Gain Requirements (Exemptions) Regulations 2024'

81. 'The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024'

82. 'The Biodiversity Gain (Town and Country Planning) (Modifications and Amendments) (England) Regulations 2024'

83. 'The Biodiversity Gain (Town and Country Planning) (Consequential Amendments) Regulations 2024'



Local Nature Recovery Strategies (LNRS)

Sections 104–108 of the Act mandate the creation of LNRS. These are based loosely around the current planning authorities with some adjustments for the way the landscape functions. There are expected to be around 48 LNRS and these will govern the way BNG policy is made at local level in order to ensure that habitats are created in ways that maximise the biodiversity value at local and national scale. Defra has produced statutory guidance.⁸⁴



Conservation covenants

Part 7 of the Act introduces conservation covenants, which are a novel feature. Where a landowner is selling biodiversity units to a developer, there must be a legal commitment on behalf of the landowner to carry through the changes to the land for which the landowner has been paid. The legal agreement that then comes into play is the conservation covenant, and this operates not between the developer (buyer) and landowner (seller) as you might expect, but between the landowner and a 'responsible body'.

Details of who can be a responsible body are set out in Section 119 of the Act and can include charities involved in conservation – so a local wildlife trust would be an obvious example. Defra has also provided guidance on conservation covenants.⁸⁵

84. 'Local nature recovery strategy statutory guidance: What a local nature recovery strategy should contain', Defra

85. 'Guidance: Getting and using a conservation covenant agreement', HM Government



Section 4: About the Authors

Simon Boyle, Environmental Law
Director, Landmark Information Group

An environmental lawyer with extensive experience working in manufacturing and data companies. Simon has been closely involved in rights of nature, wild law and has written on rewilding and wilderness protection.

Recently Simon helped to develop novel biodiversity assessment reports based on earth observation techniques.

Stephen Poole,
Poole & Co

Stephen is a freelance expert on the economics and taxation of farming and land management. Involved at ground level in numerous live cases and working with Landmark as an expert on BNG. Also the author of a book on the area published by Croner-I under the title Practical Farming: Poole.



Appendices



Appendix 3.1 Detailed BNG and Natural Capital Tasks by Project Stage

RIBA Stage	(Relevant) RIBA Tasks	Biodiversity Net Gain – What is happening	BNG step number	Available guidance	Guidance link	Natural capital step number	Natural Capital – What is happening	Available guidance	Guidance link
Stage 0 – Strategic Definition Stage Outcome: Best means of achieving client outcomes confirmedw	General Not about design or practical details. Stage focuses on making the right strategic decisions and capturing these in the business case. Site surveys should be carried out to understand the context before delivery of a comparative analysis of the pros and cons for a range of (strategic) options to ratify the best option to delivery on client requirements. Conservation Define client requirements (aims for the project). Begin site appraisals to understand risks and opportunities that may affect client requirements (e.g., protected wildlife). Planning Strategic appraisal of the site, including planning policy context, site designations, etc. Sustainability Develop high-level but measurable sustainability outcomes. Undertake site appraisal of sustainability opportunities and constraints.	Review of national, regional and local policy context in relation to achieving biodiversity net gains (local nature recovery strategies, ANGSt Standards, Local Plan commitments, etc.). The preparation stage of the BNG process is undertaken as early as possible in the project life cycle. For small-scale projects, this can be when initial design ideas and a budget/programme are discussed. For large-scale projects, this can be the optioneering or masterplanning stages.	0a review strategy and policy context	Baker, J., Hoskin, R. and Butterworth, T. (2019). Biodiversity Net Gain: Good Practice Principles for Development, Part A: A Practical Guide. CIRIA Environment Act 2021. British Standard 8638: Process for designing and implementing biodiversity net gain – Specification (BSI, 2021). CIEEM/IEMA/CIRIA have set out case studies for BNG alongside their practical guide. BSI Little Book of Biodiversity Net Gain to accompany the BS. Government guidance on BNG. CIEEM guidelines on Preliminary Ecological Appraisal British Standard 42020: Biodiversity: Code of Practice for Planning and Development (and Supporting Smart Guide). Defra Statutory Biodiversity Metric.	https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development-a-practical-guide/ https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development-a-practical-guide/ https://cieem.net/resource/biodiversity-net-gain-case-studies/ https://www.bsigroup.com/en-GB/standards/bsi-knowledge/sustainability/the-little-book-of-biodiversity-net-gain/	0a review policy context	Review the national, regional and local policy and regulatory context concerning the concept of natural capital which affects the delivery of your scheme. Requirements for adjacent concepts which may require a natural capital approach include Environmental Net Gain (ENG), nature positive approaches, multi-capital approaches or requirements for wider environmental, social and economic benefits.	Key policy documents may include the 2018 25 Year Environment Plan which sets out an ambition to embed a natural capital approach in decision making (and subsequent 2023 Environmental Improvement Plan). The National Planning Policy Framework includes various requirements for net gains and the HM Treasury Green Book guidance on appraisal, which now advocates for the use of a natural capital approach for the appraisal of environmental effects.	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020
		Record a commitment to achieving at least 10% BNG within key project documentation alongside the wider project aspirations in relation to ENG. This includes a number of elements relating to the definition of aspirations for the site (targets/approach) and a qualitative review/analysis of opportunities for achieving BNG – i.e., strategic vision for BNG opportunities. Input from BNG specialists/ecologists on strategic options for potential to achieve BNG. This point marks the start of an iterative process and there are no fixed outputs at each stage. Each subsequent stage builds on what has been set out already to comply with the mitigation hierarchy and current guidance on BNG to avoid a focus on numbers only and ensure positive outcomes for the environment. The outputs of this phase include a policy review alongside strategic goals for BNG aligned with ENG and sustainability/net zero aims. There must be a commitment to implement the BNG Good Practice Principles, and fundamentally the mitigation hierarchy throughout the life cycle of the project. A measurable target for BNG should be defined alongside reference to the drivers for achieving BNG (i.e. corporate voluntary commitment or policy). Outline and define possible funding streams to design and implement BNG and to maintain and monitor BNG over the long term. This must be shared to all relevant parties, including supply chain, design team and stakeholders. Thoughts for adoption of innovative approaches, design elements and technology to be tabled at this point to shape future discussions.	0b record commitment to BNG	Mandatory Biodiversity Net Gain in England: Technical Guide CIEEM	https://www.gov.uk/government/collections/biodiversity-net-gain https://cieem.net/resource/guidance-on-preliminary-ecological-appraisal-gpea/ https://www.bsigroup.com/LocalFiles/en-GB/biodiversity/BS-42020-Smart-Guide.pdf https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides#:~:text=The%20statutory%20biodiversity%20metric%20tool,the%20statutory%20biodiversity%20metric%20tool.	0b screen for natural capital impacts	A screening exercise should be undertaken to assess whether the proposed scheme is likely to impact upon natural capital assets and thus whether a natural capital approach is likely to be recommended for inclusion within the decision-making process.	The HM Treasury Green Book includes a series of natural capital screening questions which can be used to identify whether your proposal is likely to affect natural capital. Further guidance on completing this process is provided under Section 3.3 of Defra's Enabling a Natural Capital Approach (ENCA) guidance, which is recommended for review.	https://www.gov.uk/government/publications/enabling-a-natural-capital-approach-enca-guidance/enabling-a-natural-capital-approach-guidance#natural-capital-policy-project-appraisal
		Suitably qualified ecologist must assess feasibility of achieving BNG and informing project optioneering and vision. Initial scoping of outcomes in relation to BNG (alongside those for ENG and sustainability) in the context of project and policy and objectives. The detail in this assessment depends on the information available at this point. Projects with impacts on irreplaceable habitats cannot achieve BNG. Identifying such impacts is vital at this stage so avoidance can be undertaken. High level/initial biodiversity baseline assessment undertaken by competent person(s). Desk-based studies supplemented by field survey where possible (Preliminary Ecological Appraisal – PEA) to include information on species, protected sites and habitats alongside possible impact pathways. This must detail all assumptions and caveats to the assessment to be addressed in subsequent phases.	0c feasibility			0c scoping of objectives	Based on the outcomes of the screening exercise and the review of the policy context, an initial scoping of the scale of the ambition with regard to the desired outcomes and targets for natural capital (and/or inclusive concepts such as ENG or multi-capitals) should be carried out and recorded. This can be redefined and/or refined at a later stage as feasibility, constraints and opportunities become clearer.	Refer to Step 1 ('setting out the vision') from the Natural Capital Committee 'How to do it: natural capital workbook', (henceforth referred to as the 'NCC workbook') provides appropriate guidance for the completion of this step. In doing so, consider also the wider policy goals which could benefit from a natural capital approach (e.g. sustainability and Net Zero aims) and may thus help you to better define your vision for natural capital. Further detail is provided in the Step 3.2 of the ENCA guidance.	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957503/ncc-natural-capital-workbook.pdf https://www.gov.uk/government/publications/enabling-a-natural-capital-approach-enca-guidance/enabling-a-natural-capital-approach-guidance#natural-capital-policy-project-appraisal
		Draft feasibility report preparation can commence to inform options. This is an iterative process as the initial concept is developed. This details how the aspirational BNG targeted (at least 10%) can be achieved against project vision and options, and the measures needed to maximise the likelihood of success, including mechanisms for delivery (on-site, off-site, open market units or statutory credits), or a clear statement that it cannot, with the reasons for this provided. This includes potential risks as well as opportunities, including direct, indirect and cumulative impacts on species, protected sites and habitats. This would also include an assessment as to how the mitigation hierarchy has been applied; whether BNG can be achieved on-site or off-site (or a combination of both); likely level of difficulty and timescale for achieving target BNG; priorities and concerns of stakeholders/areas of conflict; and costs and benefits of achieving BNG for each option considered. This can include whole life cycle costs for small projects at this stage. This can be part of the project's feasibility report or included within a PEA. Where a PEA has been carried out, this could include UK Habitats Classification survey and condition assessment (as per the Biodiversity Metric) to provide an initial calculation of biodiversity units.	0d feasibility report			0d consider natural capital in strategic decision making	Strategic decisions on the nature of the development or intervention, such as decision making and optioneering around broad-scale concepts, options and locations and large-scale design elements, will ultimately have the greatest impact on natural capital. When strategic decision making is taking place at this stage as described, which could have impacts for natural capital (this should be evident from the outcomes of the screening assessment), consulting natural capital specialists on the potential impacts and the recommended solutions should be considered. It is important to consider potential risks and opportunities concerning the ambition for natural capital (set during the scoping) when such decisions are being made.		

RIBA Stage	(Relevant) RIBA Tasks	Biodiversity Net Gain – What is happening	BNG step number	Available guidance	Guidance link	Natural capital step number	Natural Capital – What is happening	Available guidance	Guidance link
Stage 1 – Preparation and Briefing Stage Outcome: Project Brief approved by the client and confirmed that it can be accommodated on the site	General Project Brief produced which considers client requirements in greater detail in context of the specific site. Stage is about developing information required by the design team. Feasibility studies may be required, and, in some instances, several options might be prepared but are neither vetted nor appraised at this stage.	Definition of clear and measurable targets for at least 10% BNG in line with policy and client requirements/ ambitions and aspirations for ENG/natural capital. Details of intended strategy for delivery to include on-site or off-site provision and/or the purchase of open market units or statutory credits. On-site refers to land within the redline boundary of a project. Off-site is all land outside the on-site boundary, regardless of ownership.	1a target setting	Meet BNG requirements, steps for developers	https://www.gov.uk/guidance/meet-biodiversity-net-gain-requirements-steps-for-developers	1a define targets	Throughout this stage, as more information becomes available on feasibility, the nature of potential natural capital impacts and planning authority requirements, efforts should be made to define clear and measurable targets for natural capital and/or inclusive concepts (see Step 0a). Targets should be set in line with policy, regulatory requirements, ambition of relevant stakeholders and newly available environmental data and information on design feasibility. Defining the natural capital approaches to be employed (see Step 1b) will also help to facilitate this process.		
	Conservation Undertake specialist site surveys. Assess the impact of the project on significance and draft a statement of significance.	Definition of what data to use, what spatial scales, whether this needs to be collected or exists already, what does the team look like to deliver. The above could be included within the project brief to inform sustainable design.	1b identification of data requirements			1b define approach	The natural capital approach is a concept which is inclusive of a range of methodologies, which can be applied throughout the project life cycle. As such, the scope of natural capital approaches to be employed to assess the performance of the scheme against the ambitions set out, including the metrics, and (if desired) to help support and inform the design of the scheme to deliver on said objectives, will need to be defined. This process will need to include definition of the data requirements, including those from other environmental specialisms, and the nature of specialist input required to deliver the desired methodologies. The above could be included within the project brief to inform sustainable design. This process may result in natural capital ambitions and targets being revisited. Similarly, the natural capital approach and related methodologies may evolve throughout RIBA Stages 1 and 2 as the data available does so.	Taking a proportionate approach is key here relative to the scale of the ambition and the likely scale of the impacts on natural capital (identified during Step 0b). The criteria set out at the start of Step 3.4 of the ENCA guidance could provide a reasonable indicator as to whether a natural capital approach is recommended and thus whether it would be suitable to seek guidance from a natural capital specialist to help define the scope of such an approach: 'Where nature-based options have been identified for the shortlist appraisal, or where the screening questions suggest potential environment effects of any proposed option.' As per Step 3 of the NCC workbook, there is a range of natural capital methodologies and metrics with varying levels of detail, which may be suitable to support your natural capital approach. Specialist input is thus likely to be valuable to help define what is proportionate. Annex 6 of the NCC workbook gives a flavour of the methodologies and data available to support your approach.	https://www.gov.uk/government/publications/enabling-a-natural-capital-approach-enca-guidance/enabling-a-natural-capital-approach-guidance#natural-capital-policy-project-appraisal https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957503/ncc-natural-capital-workbook.pdf
	Planning Undertake a site appraisal and confirm the requirements for, and scope of, an Environmental Impact Assessment. Identify planning expertise required, e.g., landscape architects, ecologists, etc.	Identify the skillsets and specialists required for delivery, to include engineers, design team, ecologists, landscape, water, air quality, soils, agriculture, social value, heritage, noise and arboriculture.	1b Cross discipline dialogue			1c baseline assessment	A baseline natural capital assessment is strongly recommended at this stage, which provides the required understanding of current state of natural assets relevant to the scheme and the wider benefits they deliver from which to forecast the potential impacts of the scheme. A baseline assessment should first identify the baseline extent and condition of natural capital assets relevant to the scheme – i.e., those which could be directly or indirectly affected by its implementation. Should a BNG baseline be being delivered for the scheme (see Step 2a of the BNG guidance), the quantification of habitats within the Biodiversity Metric according to UK Habitats Classification System should provide an appropriately detailed account of the extent of natural capital assets, and thus represents a substantial efficiency. From this, the analysis should then look to understand the ecosystem service delivery potential of the asset base and its value to the potential multiple beneficiaries. The nature of the outputs – e.g., qualitative, quantitative or monetary – will depend on the scope of the methodologies and metrics agreed as part of the outcome of Step 1b. This process should also help to identify new opportunities, dependencies and risks, which may have consequences for the natural capital ambitions and approaches or for the design of the scheme itself. It may be appropriate that the baseline assessment is iteratively revised throughout RIBA Stage 1 as more design and environmental data becomes available. An initial, high-level assessment could help to identify opportunities and risks early and the assessment refined to better understand these factors.	Steps 2 and 3 of the NCC workbook cover the baseline assessment process. Step 2, 'understanding where you are starting from', explains the premise for an initial baseline assessment, which can then be progressed to a more detailed assessment (Step 3, 'building the evidence base').	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957503/ncc-natural-capital-workbook.pdf
	Sustainability State clear and deliverable sustainability outcomes in the project brief. Verify local authority sustainability requirements."		1b Cross discipline data sourcing			1d opportunity identification	Further, more specific steps can be taken to identify opportunities to restore, maintain, enhance and/or create natural capital assets and thus to optimise ecosystem service outcomes for beneficiaries in line with the ambition for natural capital identified at Stage 0. Delivery of the baseline assessment should provide the necessary information to identify options for further analysis.	Step 4 of the NCC workbook, 'identifying and weighing up your options', explains the broad principles for natural capital opportunity identification.	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957503/ncc-natural-capital-workbook.pdf
		BNG feasibility assessment report detailing how BNG can be achieved against project vision and options, and the measures needed to maximise the likelihood of success, or a clear statement that it cannot, with the reasons for this provided. This includes potential risks as well as opportunities, including direct, indirect and cumulative impacts on species, protected sites and habitats. This would also include an assessment as to how the mitigation hierarchy has been applied; whether BNG can be achieved on-site or off-site (or a combination of both); likely level of difficulty and timescale for achieving target BNG; priorities and concerns of stakeholders/areas of conflict; and costs and benefits of achieving BNG for each option considered. This can include whole life cycle costs for small projects at this stage. This can be part of the project's feasibility report or included within a PEA. Where a PEA has been carried out, this can include a UK Habitats Classification System survey and condition assessment, as per the Biodiversity Metric, to provide an initial calculation of baseline biodiversity units.	1c Risks and opportunities, timescales and costs			1e develop strategy	Having completed steps 1c and 1d, you should have sufficient information to develop a natural capital strategy to achieve the desired outcomes in line with your increasingly refined vision for natural capital. A clear strategy for achieving your goals is crucial for minimising potential delivery risk and to maximise outcomes.	Development of the strategy is covered by Step 5 of the NCC workbook, 'implementation and evaluation'. Much like previous steps, the strategy will be continually refined and revised throughout RIBA Stages 2 and 3 as more data becomes available. But at this stage it is important to set out a strategy as far as is possible to help influence decision making early and to ensure preparedness in lining up requirements for data, resourcing and engagement.	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957503/ncc-natural-capital-workbook.pdf

RIBA Stage	(Relevant) RIBA Tasks	Biodiversity Net Gain – What is happening	BNG step number	Available guidance	Guidance link	Natural capital step number	Natural Capital – What is happening	Available guidance	Guidance link
Stage 2 – Concept Design Stage Outcome: Architectural Concept approved by the client and aligned to the Project Brief	General Proposals aligning with the Project Brief are produced and iterated based on client and stakeholder review and inputs from design team and specialist consultants (ecologists, landscape architects, etc.). Conservation Evaluate site information to date historic fabric and identify sensitivity, significance, condition and threats. Review of Architectural Concept options from specialist consultants. Planning Use design review to seek comments on the concept proposals, including impacts on the local context and environment. Iterate concept proposals based on inputs from specialist consultants (ecologists). Sustainability Review the concept against intended sustainability outcomes and report and mitigate deviations.”	Establish the project’s baseline. Using suitably qualified ecological consultants (in line with BS42020 and BS8683), building on the initial assessments at stages 0 and 1, provide a completed baseline assessment, based on a UK Habitat Classification System and condition assessment field survey, to inform the BNG feasibility assessment and design evolution. This is the baseline against which the predicted BNG outcomes will be assessed and monitored. This will be completed in conjunction with Ecological Impact Assessment and in line with BS42020. The baseline will provide the baseline biodiversity units generated by each habitat type present and for the project site as a whole. Methods used to collect data must be clearly defined and reported, including any assumptions, caveats and deviations from standard methods, noting any changes during the life cycle and how this may affect the BNG assessment results. Evidence must be provided as to the skills, qualifications and experience of the competent person in line with BS42020 / BS8683. Stakeholder consultation and unit/credit purchase negotiations should be commenced depending on the chosen delivery mechanism/combination of mechanisms. This will include mechanisms for securing habitat for 30 years as a legal requirement through planning obligations or conservation covenants.	2a Establish the baseline	Defra Statutory Biodiversity Metric (noting this will be updated regularly so care needed to ensure the guide remains relevant)	https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides#:~:text=The%20statutory%20biodiversity%20metric%20tool,the%20statutory%20biodiversity%20metric%20tool.	2a initial design appraisal	As the scheme design develops, beginning with the architectural concept, so can begin a programme of increasingly detailed natural capital appraisals, which should look to identify the risks to delivery of the natural capital ambition and the opportunities to support the ambition and thus help to inform the design. The Concept Design should evidence consideration of the opportunities and risks identified thus far. At this stage, available data may constrain the nature of the appraisal to a high-level, technical review of opportunities and risks for delivery. As risks and opportunities are identified, this may require a review of the targets set for natural capital and the developing strategy for achieving the natural capital targets. Risks and opportunities should also be translated to recommendations and communicated to the design teams to positively influence the design to maximise outcomes.		
		Initial assessment of impacts by a competent person. This is an iterative process, following the mitigation hierarchy, and will involve design amendments and re-assessment prior to the design freeze. All caveats and assumptions should be clearly detailed during this process and evidence as to how the mitigation hierarchy has been followed documented to present evidence that the project’s commitment to BNG has been adopted. Biodiversity Gain Plan production. Projects with impacts on irreplaceable habitats cannot claim project-wide achievement of BNG. The project must set out how any impacts will be managed (i.e., compensation measures). The Biodiversity Gain Plan should include how adverse effects on habitats have been minimised; the pre-development biodiversity value (units) of the on-site habitat; the post-development biodiversity value of the on-site habitats; the biodiversity value of any off-site habitat provided in relation to the development; any biodiversity units/credits purchased; and any further requirements as set out by the secondary legislation. The establishment and future management of significant on-site biodiversity units and all off-site units, will need to be detailed in a Habitat Management and Monitoring Plan (HMMP).	2b Impact assessment and design evolution	Biodiversity Gain Plan Creating a Habitat Management and Monitoring Plan (HMMP) for BNG	https://www.gov.uk/government/publications/biodiversity-gain-plan https://www.gov.uk/guidance/creating-a-habitat-management-and-monitoring-plan-for-biodiversity-net-gain	2b initial natural capital assessment (for outline planning application)	At this stage, developers have the opportunity to submit an outline Planning Application for which the completion of a prospective natural capital assessment could be beneficial. Should this opportunity be taken, please refer to the steps detailed under RIBA Stage 3 for guidance on the completion of such an assessment. It is also recognised at this stage, however, that limited data availability could pose a challenge. Assessment at this stage is likely to comprise an early screening analysis, which could help to appraise options and provide an indication of the scope and scale of natural capital impacts associated with the proposed scheme.		
Stage 3 – Spatial coordination Stage Outcome: Architectural and engineering information spatially coordinated	General Fundamentally about testing and validating the Architectural Concept, to make sure that architectural and engineering information prepared at Stage 2 is Spatially Coordinated. Detailed Design Studies are undertaken to layer more detail on to the design. Conservation Identify and record any risks to significance, sensitivity and conservation principles and mitigate any deviation from the conservation Project Outcomes. Planning Undertake Design Studies to test in more detail the impacts of the proposals on the local context and environment, informed by specialist consultants. Prepare the environmental impact assessment, heritage statement, design and access statement and supporting planning documents. Submission of planning application. Sustainability Undertake Design Studies to test the Sustainability Outcomes.	Iterative design development and refinement of Biodiversity Gain Plan and HMMP as design is updated and changed. Record evidence for iterations. The competent person must record, with justification, how the trading rules are applied during the design to achieve the BNG target with reference to published guidance. Evidence on design options considered with justification included in the Biodiversity Gain Plan. This includes references to best practice guidance on creation, enhancement, monitoring and management as required. Measures to incorporate climate change resilience should also be included.	3a Iterative BNG assessment	CIEEM Good practice requirements for delivering Biodiversity Net Gain (On- and Off-Site).	CIEEM-Good-Practice-Requirements-for-Delivering-Biodiversity-Net-Gain-On-and-Off-Site-July2021.pdf	3a detailed natural capital appraisal	As detailed design information becomes available, a more detailed natural capital appraisal of the scheme can be carried out, forecasting the impacts on natural assets and subsequent changes to ecosystem service benefits delivered to beneficiaries. While other factors may be included, this process will need to assess the anticipated changes in the extent of natural assets as a result of the intervention to support an understanding of the change in ecosystem service benefits. It is worth noting that, akin to the guidance for the baseline assessment (Step 1b), efficiencies can be achieved here by utilising the outcomes of the Biodiversity Metric assessment for the scheme to quantify the changes in habitat extent (Step 2b of the BNG guidance). Iterations to the assessment are recommended should new design data become available which suggests new or previously not understood impacts to natural capital are anticipated. The appraisal should help to identify risks and opportunities in the context of the agreed targets and ambitions for natural capital. In light of the risks and opportunities identified, the targets set and the strategy set out for achieving the targets may need to be reviewed and risks and opportunities can be communicated as recommendations to the design teams to better the outcomes for natural capital.	As per Step 1b, there are a range of methodologies, tools and approaches for carrying out natural capital assessment (appraisal), and the appropriate approach will depend on your context. The HM Green Book 4-step approach to assessing natural capital effects does, however, provide a broad framework, which could be useful to follow (see Step 3.4 of the ENCA guidance). The ENCA Natural Capital Assessment template 3.0 is a useful tool to guide the user through this multi-step process. Should economic valuation of the ecosystem service impacts be a part of the appraisal, Section 2 of the ENCA guidance (‘Economic valuation of the environment’) should be carefully considered.	https://www.gov.uk/government/publications/enabling-a-natural-capital-approach-enca-guidance/enabling-a-natural-capital-approach-guidance#natural-capital-policy-project-appraisal
		Stakeholder consultation on the BNG design undertaken. For smaller projects, this could be reference to local plan priorities / Local Nature Recovery Strategy and / or feedback from the LPA. For larger projects, consultations on the BNG proposals could be included as part of the wider engagement/consultation strategy for the project. Developers who deliver BNG off-site will be required to register these gains on the Biodiversity Gain Site Register. These will be verified by the Operator (Natural England) for a fee. This register details the location of compensation-sites, how many units and of what habitat types are created, and the planning reference of the development to which the units relate. This will help avoid accidental, or fraudulent, double counting.	3b Stakeholder consultation	Record allocation of off-site biodiversity gains to a development	https://www.gov.uk/guidance/record-allocation-of-off-site-biodiversity-gains-to-a-development				

RIBA Stage	(Relevant) RIBA Tasks	Biodiversity Net Gain – What is happening	BNG step number	Available guidance	Guidance link	Natural capital step number	Natural Capital – What is happening	Available guidance	Guidance link
Stage 4 – Technical Design Stage Outcome: All design information required to manufacture and construct the project completed	General Involves the preparation of all information required to manufacture and construct a building. The core documents are the Responsibility Matrix, the Information Requirements and the Stage 4 Design Programme, which is heavily influenced by the Procurement Strategy. Conservation Prepare and coordinate specialist subcontractors’ and conservators’ information, including Final Specifications, embedding the Conservation Strategy,	Iterative improvements/repeats of BNG assessment throughout design development. Finalisation and submission of Biodiversity Gain Plan. Losses and gains in area of each broad habitat type (ha, m2, km) should be presented when quantifying the BNG outcomes. Any time lags shall also be described, with a focus on avoiding these as far as possible. Evidence provided also includes showing that the project’s BNG outcomes would not have otherwise occurred and they are additional benefits to biodiversity (Additionality). The BNG design specification shall include details of all measures proposed, where on or off-site, a detailed programme of delivery and scaled drawings. BNG to be secured in perpetuity or at least 30 years. Spatially referenced BNG data on the biodiversity baseline and BNG design measures shall be submitted in digital format to all organisations involved with the practical implementation and monitoring of BNG.	4a Iterative BNG assessment			4a iterations to detailed natural capital appraisal	In line with Step 3a, should new design data become available which is suggestive of previously unforeseen potential impacts on natural capital, the detailed natural capital appraisal of the scheme can be reiterated to understand the nature of these impacts and to review whether this poses any new risk or opportunity for the agreed targets for natural capital. Likewise, the strategy for achieving the targets set can be tweaked in light of any new information and recommendations for the design specifications set out to achieve the natural capital targets provided to the relevant teams.		
	Planning Negotiate and prepare any applications for non-material or minor material amendments if required, submit to the local planning authority; submit a new Planning Application if material amendments are required. Sustainability Update any target commitments. Mitigate or control as many building performance and climate change impact Project Risks as possible and identify strategies for managing those that remain.	Further stakeholder consultation on the BNG design undertaken. Submission of HMMP. This can be incorporated into a Landscape and Ecological Management Plan (LEMP) or standalone. The BNG Project Developer, consenting authority and organisations responsible for BNG outcome delivery will establish a written BNG Agreement. Signed by all parties, this includes duration of the agreement, delivery mechanism for securing BNG outcomes, agreed payment mechanism and agreed monitoring and reporting frequency. Habitat providers will be required to update the Biodiversity Gain Site Register for their offset site allocations when agreements are made with developers.	4b Stakeholder consultation			4b review and development of monitoring strategy	In line with Step 5 of the NCC workbook, it is recommended that the natural capital strategy developed (Step 1e) includes a plan for monitoring and evaluation of the proposed and forecasted outcomes for natural capital beyond the commencement of the ground works to ensure that delivery risk to these outcomes is minimised. Section 3.5 of the ENCA guidance ('Monitoring and evaluation with natural capital in mind') provides further, practical guidance on the implementation of an effective programme of monitoring for natural capital, which is underpinned by guidance from the HM Treasury Magenta Book.	For development of the monitoring and evaluation strategy, refer first to the summaries provided in Step and Annex 5 of the NCC workbook and Section 3.5 of the ENCA guidance, and second to the HM Treasury Magenta Book guidance for further detail.	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957503/ncc-natural-capital-workbook.pdf https://www.gov.uk/government/publications/enabling-a-natural-capital-approach-enca-guidance/enabling-a-natural-capital-approach-guidance#natural-capital-policy-project-appraisal https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879437/Magenta_Book_supplementary_guide_Handling_Complexity_in_policy_evaluation.pdf
Stage 5 – Manufacturing and construction Stage Outcome: Manufacturing, construction and commissioning completed	General Comprises the manufacturing and construction of the Building Systems in accordance with the Construction Programme agreed in the Building Contract. Conservation Implement requirements and comply with planning conditions. Planning Manufacture and construct the building to comply with the planning permission and any Planning Conditions. Sustainability Manufacture, construct and commission the building to meet the target Sustainability Outcomes (e.g., to reduce carbon, energy or water use, and improve health and well-being). Review any construction stage changes, and report and mitigate any deviation from the Sustainability Outcomes.	Evidence to be documented that the BNG design specification (as part of the HMMP) was included in handover documents and communicated to all key persons in the construction team. If there are any modifications to the design or BNG design the requirements in stage 4a shall be reassessed and documentation updated accordingly. Project Implementation and Construction Plan should include drawings (e.g., detailed landscape planting schedules), management proposals, a construction handover checklist and a timetable for implementation, and should specify those responsible for activities. All personnel involved in the implementation/delivery of BNG must be competent, suitably trained and qualified. Competent person must brief all relevant site personnel on the requirements to deliver BNG and will ensure they are in possession of all relevant documentation including the HMMP and BNG Agreement. All habitats to be retained and protected will be clearly identified and protected. The HMMP will require site checks undertaken by a competent person to be documented.	5a Implementation			5a communication of design specifications	It is recommended that the design specifications for achieving natural capital targets are included in handover documents and communicated to all key persons in the construction team, akin to those required for BNG. The mitigation and enhancements for achieving natural capital targets, akin to Step 5a of the BNG guidance, should be included within the Project Implementation and Construction Plan, with all habitats to be retained and protected clearly identified.		

RIBA Stage	(Relevant) RIBA Tasks	Biodiversity Net Gain – What is happening	BNG step number	Available guidance	Guidance link	Natural capital step number	Natural Capital – What is happening	Available guidance	Guidance link
Stage 6 – Handover Stage Outcome: Building handed over, Aftercare initiated and Building Contract concluded	General Stage 6 starts with the building being handed over to the client, with Aftercare initiated and the Building Contract concluded. Conservation Update the conservation management plan. Planning n/a Sustainability n/a	A site check will be completed by the competent person post-implementation and evidence provided that all relevant activities as set out in the HMMP have been carried out. The project will adopt adaptive management informed by monitoring results. Where required, changes to the management regime will be implemented.	6a Site check post completion						
Stage 7 – Use Stage Outcome: Building used, operated and maintained efficiently	General On the majority of projects, the design team and construction team will have no Stage 7 duties to undertake. However, both teams will be interested in receiving ongoing feedback. Conservation Review and update the conservation management plan and continue monitoring repairs and survey requirements. Planning n/a Sustainability Comply with in-use Planning Conditions in relation to sustainability. Test delivery of the in-use Sustainability Outcomes and report and mitigate any deviation from the Sustainability Outcomes.	The monitoring aspects of the HMMP shall be implemented and reporting requirements agreed at the outset (and as set out in the HMMP) actioned where required.	7a Monitoring			7a monitoring, evaluation and implementation	Monitoring and evaluation (including agreed reporting requirements), according to that plan set out in the natural capital strategy (see Step 4b), should be implemented and actioned.		

Appendix 4.1 Key Biodiversity Terms Used in International and UK Law

Biodiversity

Defined by the Convention on Biological Diversity 1992 (Biodiversity Convention)⁸⁶ as ‘diversity within species, between species and of ecosystems’. Biodiversity has been referred to in many UK policy documents since the Earth Summit of 1992. There is increasing reference to biodiversity in English legislation, especially through the Environment Act 2021.

Biodiversity Net Gain

A key term in the Environment Act 2021. Biodiversity Net Gain is determined by reference to Defra Statutory Biodiversity Metric.⁸⁷ It has been defined by Natural England as ‘an approach to development, land and marine management that leaves biodiversity in a measurably better state than before the development took place’.⁸⁸

Environmental Net Gain

Environmental Net Gain (ENG), also known as net environmental gain, is a principle that seeks to improve the overall state of the environment through development. It aims to ensure that new development projects do not simply mitigate or offset their environmental impacts but instead contribute to a net positive environmental outcome.

The concept of ENG was first introduced by the National Capital Committee (NCC) in the UK in 2017. The NCC proposed⁸⁹ that this should be incorporated as a key policy intent within the Government’s 25 Year Environment Plan, and this was expanded in a subsequent paper in 2019.⁹⁰ The Government initially welcomed this recommendation and stated its intention to embed a ‘net environmental gain’ principle for development.

However, the Government later decided to narrow the scope of its environmental gain policy to focus specifically on BNG. The NCC has criticised the Government’s decision to focus solely on BNG, arguing that it is a narrow approach that does not adequately consider the broader environmental impacts of development. The NCC has called for a more comprehensive approach to environmental gain that takes into account all aspects of natural capital, including air quality, water quality and soil health.

Nature positive

Nature positive is an emerging concept that aims to achieve a state where human actions leave a net positive impact on the natural world. It goes beyond simply minimising or mitigating environmental damage; instead, it strives to enhance and restore natural ecosystems and the services they provide.

The term ‘nature positive’ was first introduced in the Leaders’ Pledge for Nature,⁹¹ a global initiative launched in 2020. The pledge calls for a collective effort to achieve a nature-positive world by 2030, in support of climate action and the Sustainable Development Goals.

The concept of nature positive has been further elaborated in the Nature Positive 2030 report,⁹² published by the Joint Nature Conservation Committee (JNCC) in 2021. The report outlines a framework for achieving a nature-positive world, including key principles, goals and targets.

The principles of nature positive are to:

- Embrace nature’s intrinsic value: Recognise the inherent value of nature, independent of its benefits to humans.
- Prioritise nature’s recovery: Take urgent action to halt and reverse the decline of biodiversity and ecosystem services.

86. ‘[Convention on Biological Diversity 1992: Text and Annexes](#)’

87. ‘[Statutory metric tools and guidance](#)’, Defra

88. ‘[Biodiversity Net Gain: An introduction to the benefits](#)’, Natural England

89. ‘[Advice to Government on the 25 Year Environment Plan](#)’,

Natural Capital Committee

90. ‘[Advice to government on net environmental gain](#)’,

Natural Capital Committee

91. ‘[Nature Positive by 2030, The Race Is On](#)’

92. ‘[Nature Positive 2030: Summary Report: Investing for healthy nature, people and economy](#)’, Joint Nature Conservation Committee

- Integrate nature into decision making: Consider the impacts of human actions on nature in all decision-making processes.
- Adopt a systems approach: Recognise the interconnectedness of natural systems and address environmental challenges holistically.
- Promote fair and equitable sharing: Ensure that the benefits of nature are shared equitably among all people.

The goals of nature positive are to:

- Halt and reverse biodiversity loss: Achieve a net gain in biodiversity by 2030.
- Restore ecosystems: Restore degraded ecosystems to a healthy and functional state.
- Enhance ecosystem services: Increase the provision of ecosystem services, such as clean air and water, pollination and climate regulation.

Achieving a nature positive world will require a significant shift in how we manage our relationship with nature. It will require a transition to more sustainable practices in agriculture, forestry, fishing and other sectors. It will also require greater investment in conservation efforts and a renewed commitment to protecting the natural world.

Nature-based solutions

Nature-based solutions (NbS) are an emerging approach to addressing environmental challenges by working with nature rather than against it. NbS harness the power of nature to provide a range of benefits.

The concept of NbS is gaining traction around the world, and it is increasingly being recognised as a valuable tool for achieving sustainable development. The United Nations has designated 2021–2030 as the Decade on Ecosystem Restoration, with a focus on promoting NbS.

In the UK, NbS are being explored for a variety of applications, including:

- Restoring peatlands: Peatlands are a valuable source of carbon storage, and their restoration can help to mitigate climate change.
- Creating natural flood defences: Wetlands and woodlands can help to absorb floodwaters and reduce the risk of flooding.
- Using green roofs and walls: Green roofs and walls can improve air quality, reduce energy consumption and provide habitats for wildlife.
- Rewilding land: Rewilding involves returning land to a more natural state, which can help to boost biodiversity and improve ecosystem function.

The UK Government has recognised the potential of NbS and is committed to integrating NbS into its policies and programmes. The Government has also published a number of reports on NbS, including:

- ‘Nature-based Solutions: rhetoric or reality? The potential contribution of nature-based solutions to net zero in the UK’ (January 2022).⁹³
- ‘Working With Nature’, Environment Agency paper (July 2022).⁹⁴

The term ‘Nature-based Solutions’ does not yet appear in UK legislation, but it is likely to become more widely used as the concept gains traction and evidence shows that they are a cost-effective means of dealing with many environmental challenges.

Natural capital

Natural capital refers to the assets and services provided by nature that contribute to human well-being. These assets include ecosystems, species, freshwater, soils, minerals, the air and oceans, as well as natural processes and functions. It was defined by the Natural Capital Committee as ‘that part of nature which directly or indirectly underpins

value to people, including ecosystems, species, freshwater, soils, minerals, the air and oceans, as well as natural processes and functions’.⁹⁵

The concept of natural capital is based on the idea that nature is not just a valuable resource to be exploited, but also a fundamental underpinning of human existence. Natural capital provides everything necessary to sustain human life, including air, water, food, pollination and climate regulation.

The concept of natural capital has been incorporated into a number of government policies and programmes. For example, the UK Government’s 25 Year Environment Plan⁹⁶ includes a commitment to ‘halt the decline of natural capital and restore it on land and at sea’. And the European Union’s Biodiversity Strategy 2030⁹⁷ sets out a goal to ‘put all ecosystems on the path to restoration and ensure that they are managed sustainably’.

The term ‘natural capital’ is gaining traction in global and UK policy. Utilising natural capital and mobilising finance may well be the last chance to halt biodiversity loss and create a sustainable future.

93. **Nature-based solutions: rhetoric or reality?** The potential contribution of nature-based solutions to net zero in the UK’, House of Lords

94. **Working With Nature**, Environment Agency

95. **Natural Capital Terminology**, Natural Capital Committee

96. **A Green Future: Our 25 Year Plan to Improve the Environment**, HM Government

97. **EU Biodiversity Strategy for 2030: Bringing nature back into our lives**, European Commission

Ecosystem services

The Millennium Ecosystem Assessment (MA)⁹⁸ identified four major categories of ecosystem services: provisioning, regulating, cultural and supporting services. They have also been defined by Defra as 'services provided by the natural environment that benefit people'.⁹⁹

Ultimately, the human species is entirely dependent on the services that nature provides for free. The problem has been that they have to date been freely given by nature but have not been properly valued.

See the Environment Agency paper *Working with Nature*,¹⁰⁰ July 2022: Human society exists within nature's web of life and ultimately, we depend upon ecosystems to provide us with essential services. These include clean air and water, fields for crops and livestock, forests for timber and fuel and the drawdown of greenhouse gases which threaten us through climate change. Simply put, humanity would not be able to survive without these ecosystem services, which we receive free of charge.

98. 'Millennium Ecosystem Assessment'

99. *An introductory guide to valuing ecosystem services*, Defra, page 3

100. *Working With Nature*, Environment Agency, page 8



Appendix 4.2 At a Glance: UK Legislation and Planning Policy of Most Relevance to Developers

Legislation / Policy	Description
<u>Environment Act 2021</u>	The Environment Act operates as the UK's new framework of environmental protection. It offers powers to set new binding targets, including for air quality, water, biodiversity and waste reduction. This includes: - Legally binding targets to halt species decline by 2030 (to be developed); - Woodland cover target; - Mandatory 10% BNG for new developments in England; - Protected Sites Strategies and Species Conservation Strategies to support the design of strategic approaches to deliver better outcomes for nature and biodiversity; - Local Nature Recovery Strategies (LNRS) across England to support creation of a Nature Recovery Network (NRN), covering the whole of England. LNRS should guide effective delivery of BNG and other nature recovery measures by helping developers and planning authorities avoid the most valuable existing habitats and focus habitat creation or improvement where it will achieve the best outcomes.
<u>Wildlife and Countryside Act 1981 (amended 1991)</u>	Enacted primarily to implement the Birds Directive and Bern Convention in the UK. Protects specified plants and wild animals. There is emphasis on the protection of birds. It enables the designation of protected areas as Sites of Special Scientific Interest (SSSIs). There is no reference to biodiversity or associated terms in the Act. Refers to the treatment and management of protected species listed as Schedule 1 (birds), Schedule 5 (mammals, reptiles, fish and invertebrates) and Schedule 8 (plants). Under Section 9, it is an offence to intentionally kill, injure or take a scheduled species that is living wild at the time; to possess a scheduled species; to intentionally or recklessly damage, destroy, disturb or obstruct access to the place of refuge used by the protected species. However, these actions can be made lawful through the granting of licences by the appropriate authorities.
<u>Countryside and Rights of Way Act 2000</u>	The protection of SSSIs, established in the Wildlife and Countryside Act, is strengthened in this legislation. S74 refers to the Convention of Biological Diversity (United Nations Environmental Programme Convention on Biological Diversity of 1992).

Legislation / Policy	Description
<u>Conservation of Habitats and Species Regulations 2017 (as amended)</u>	These Regulations combine the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 with regard to England and Wales. They cover the designation and protection of European sites and the protection of European protected species. The Regulations impose restrictions on planning permissions likely to affect Special Protection Areas or Special Areas of Conservation and make it an offence (subject to exceptions) to deliberately capture, kill, disturb or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licences by the appropriate authorities.
<u>Hedgerows Regulations 1997</u>	These Regulations fall under the local authority and are intended to protect important hedgerows from removal. Permission must be requested from a local authority before removing a hedgerow, and permission may not be granted if the hedgerow is considered important.
<u>Protection of Badgers Act 1992</u>	Makes it illegal to wilfully kill, injure, take, cruelly treat, sell, possess or mark a badger. It also makes interference with badger setts illegal, including damaging, destroying or disturbing a sett, intending to do any of these, or being reckless to the consequences of actions which may result in interference. This includes any form of building works. However, these actions can be made lawful through the granting of a licence by the appropriate authority.
<u>National Planning Policy Framework (NPPF)</u>	The NPPF contains the Government's planning policies for England. The NPPF provides the framework for producing Local Plans for housing and other developments, and the background against which planning permission applications are decided. The document makes it clear that planning policies and decisions should contribute to and enhance the natural and local environment.
<u>National Policy Statements (NPS)</u>	National Policy Statements are produced by the Government. They comprise the Government's objectives for the development of nationally significant infrastructure in a particular sector and state, including how these will contribute to sustainable development. There are 12 designated NPS, setting out Government policy on different types of national infrastructure development.
<u>Natural Environment and Rural Communities Act 2006</u>	Established the duty for public authorities to have regard to biodiversity conservation and encourage biodiversity considerations in decision-making processes.

Appendix 4.3 UK Policy, Government Commissioned Papers and UK Regulator Reports

UK Biodiversity Action Plan, January 1994

The UK Government's response to the United Nations Convention on Biological Diversity, part of the Rio Earth Summit in 1992.

An intelligent and aspirational document that recognised the importance of biodiversity and the interdependence of all forms of life. (See paragraph 1.16: 'The inter-dependence and successful functioning of all these parts is a key contributory factor to the healthiness of the planet as a whole.')

Conserving Biodiversity: The UK Approach, Defra, 2007

Adopted an ecosystem approach: *A key underlying principle for the conservation of biodiversity is the Ecosystem Approach, defined by the Convention on Biological Diversity as a strategy for the integrated management of land, air, water and living resources that promotes conservation and sustainable use in an equitable way, and which recognises that people with their cultural and varied social needs, are an integral part of ecosystems. (Section 1.2)*

Lawton Report: Making Space for Nature: A review of England's Wildlife Sites and Ecological Network, 2010

Concluded that England's habitats were too small and too fragmented to prevent further loss of species, with remaining priority habitats concentrated within protected areas and largely lost outside those zones. A new and much bolder approach was needed:

The essence of what needs to be done to enhance the resilience and coherence of England's ecological network can be summarised in four words: more, bigger, better and joined. (Page viii)

A Green Future: Our 25 Year Plan to Improve the Environment, HM Government, 2018

This paper addresses the protection of the UK's environment in broad terms and refers to 'respecting nature's intrinsic value'. Throughout the document there are references to biodiversity terms, including Net Environmental Gain Principle (p32), ecosystem services (p37), biodiversity (p58), sustainable growth (p83), sustainable development goals (p116),

environmental sustainability (p125) and natural capital (p141). However, only one of these terms, natural capital, is properly defined:

Natural capital is the sum of our ecosystems, species, freshwater, land, soils, minerals, our air and our seas. These are all elements of nature that either directly or indirectly bring value to people and the country at large. They do this in many ways but chiefly by providing us with food, clean air and water, wildlife, energy, wood, recreation and protection from hazards. (Page 19)

It could be argued that natural capital is a term that is halfway between the old anthropocentric view and the emerging ecocentric and holistic approach to nature and the environment. Natural capital does take a holistic approach to nature, but largely does so through an anthropocentric lens, with the focus firmly on the benefits that nature provides to people. Natural capital evaluations ultimately result in a monetary value being given to the ecosystem or to any part of it. (Capital means money or wealth owned by institutions or people.)

The Economics of Biodiversity: The Dasgupta Review, February 2021

Commissioned by the UK Government but written as an independent review. Emphasises that the economy is dependent upon nature. Nature has been over-exploited and this puts human societies at extreme risk. The report is critical of the use of GDP as the main measure of economic success as it often causes the destruction of natural capital. Therefore, the review recommends an entirely new measurement called 'inclusive wealth' that includes natural capital as well as human capital and produced capital.

Nature Positive 2030, September 2021

Produced by the Joint Nature Conservation Committee, Natural England, Natural Resources Wales, NatureScot and the Northern Ireland Environment Agency. It consists of two reports, a summary report and an evidence report.

Natural Positive 2030 Summary Report

Becoming Nature Positive means reversing the current declines in biodiversity, so that species and ecosystems begin to recover. This is an essential first step on the path to full nature recovery. The UK has committed to become Nature Positive by 2030 and this can be achieved, as described in this report.

Nature Positive 2023 Evidence Report

Becoming Nature Positive by 2030 requires significantly greater action and investment in nature now. Nine changes can be delivered rapidly, by national and local governments, landowners, businesses and others, that will have particularly high impacts on reversing biodiversity loss this decade.

Working with Nature, Environment Agency, Chief Scientist's Group report, July 2022

Reviews the steady decline of nature in England which threatens ecosystem services upon which human society depends. The continued loss of nature therefore presents an existential threat. Considers a number of nature positive solutions, such as planting trees for carbon sequestration. The dual threats of climate change and loss of biodiversity must be addressed together.

Nature-based Solutions: rhetoric or reality? The potential contribution of nature-based solutions to net zero in the UK, January 2022

The term 'nature-based solutions' is used to mean working with the grain of nature to achieve a range of benefits, including enhanced biodiversity, flood alleviation, better livelihoods for local communities, and contributing to greenhouse gas reductions, either by storing carbon or by preventing its release. Our focus in this report is on the role of nature-based solutions in reducing carbon emissions and sequestering carbon, as part of the Government's plan to achieve net zero emissions of greenhouse gases by 2050. (Summary, page 3).

This report makes many useful observations. It is often assumed that tree planting is the main nature-based solution to be used to help combat climate change. The report shows that the solutions to be used to help achieve net zero extend across many ecosystems – the importance of the restoration of peatlands being one important example. Where trees are to be planted it will be essential to plan for the effects of climate change.

Environmental Improvement Plan 2023: First revision of the 25 Year Environment Plan

This long paper (263 pages) looks how the 25 Year Plan is progressing five years later. It is interesting that the use of biodiversity-related terms has evolved from its parent paper. While the 25 Year Plan had at its heart natural capital, the centre of the Improvement Plan is a systems-based approach (page 27) set around nature-based solutions, which it defines as 'a mechanism by which biodiversity loss, climate change and poverty can be addressed in a sustainable way and are therefore central to the delivery of the global Sustainable Development Goals' (page 204). Other related terms (but not defined) that appear are: Biodiversity Net Gain (pages 20 and 61), nature positive (page 20), ecosystem services (page 21), water positive (page 117). There is a further reference to nature-based solutions (page 188).

Environmental Principles Policy Statement, updated 31 January 2023

Listed here for completeness. These Principles derive from the EU Treaty and have been modified for UK use. There are no references to biodiversity or natural capital.



Appendix 4.4 Key Organisations for Biodiversity

Global organisations

International Union for Conservation of Nature (IUCN)

Founded in 1948, IUCN has become the global authority on the status of the natural world and the measures needed to safeguard it.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

IPBES is an independent, intergovernmental body established by States to strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development.

United Nations Environment Programme (UNEP)

UNEP is the leading environmental authority within the United Nations system. UNEP's work on biodiversity focuses on a number of areas, including promoting sustainable use of biodiversity, conserving threatened species and habitats, and managing environmental risks to biodiversity.

UK

Natural Capital Committee (NCC)

Chaired by Sir Dieter Helm, the Natural Capital Committee was an independent advisory committee that ran from 2012 to December 2020. Many of the functions of the NCC have now transferred to the Office for Environmental Protection.

Joint Nature Conservation Committee (JNCC)

Reconstituted in 2006, a public body that advises the UK Government on UK and international nature conservation.

Environment Agency

Established in 1996, a regulatory body responsible for environmental protection in England.

Natural England

Established in 2006, Natural England is the Government's adviser for the natural environment in England.

Nature Scot

The Scottish Government advisor. Formed in 1992 as Scottish Natural Heritage (SNH). Rebranded (but with no change in functions) to Nature Scot in November 2019.

Natural Resource Wales

Formed in April 2013. Advises on the natural environment in Wales but in addition the responsibilities previously carried out by Environment Agency Wales and Forestry Commission Wales.

The Office for Environmental Protection (OEP)

Created as a statutory body by the Environment Act 2021 and established in November 2021. It covers England and Northern Ireland. Its role is to protect and improve the environment by holding the Government and other public authorities to account.





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