A Draft Framework for Nature Networks in Scotland

NatureScot
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Scotland's Nature Agency
Buidheann Nàdair na h-Alba

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Glossary

30x30

Target 3 in the Global Biodiversity Framework “Ensure and enable that by 2030 at least 30 per cent of terrestrial, inland water, and of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories”. For Scotland 30 by 30 sites are made up of Protected Areas and Other Effective Area-based Conservation Measures.

Corridors

A geographically defined area which allows species to move between landscapes, ecosystems and habitats, natural or modified, and ensures the maintenance of biodiversity and ecological and evolutionary processes. (IPBES)

Ecosystem health

Ecosystem health is a metaphor used to describe the condition of an ecosystem, by analogy with human health. Note that there is no universally accepted benchmark for a healthy ecosystem. Rather, the apparent health status of an ecosystem can vary, depending upon which metrics are employed in judging it, and which societal aspirations are driving the assessment. (IPBES) and ecological and evolutionary processes. (IPBES)

Ecosystem services

Processes by which the environment produces benefits useful to people, akin to economic services. (CBD)

Mainstreaming

In the context of biodiversity, means integrating actions or policies related to biodiversity into broader development processes or policies, such as those aimed at poverty reduction or tackling climate change. (IPBES)

Nature based solution

Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits. (IUCN)

Private finance

Financial flow from the private sector (not under government control)

Protected area

A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. (IUCN)

Stepping stones

A habitat patch in a landscape that facilitates movement or offer refuge to species

Wildlife friendly

Areas that provides a level of food and shelter or similar to support wildlife with minimal levels of disturbance

Summary table of principles

Key Themes and Principles for Delivery of Nature Networks

Delivering Nature Networks
– Nature Networks will be delivered from the bottom up, addressing local needs and objectives in support of national outcomes for nature and people. –

Theme 1: Governance and decision making
– Governance of Nature Networks will be transparent, democratic and accountable and with inclusive and diverse representation. There will be a focus on empowering and equipping delivery partners from across sectors.

Theme 2: Participation, engagement, and communication
– Engagement with partnerships and communities will be inclusive, empowering and facilitate bottom-up activity. – Simple and unifying messaging on Nature Networks across partners with a focus on building people's connection with nature and fostering stewardship. – Scotland's public bodies will be exemplars, supporting the delivery of Nature Networks on their land.

Theme 3: Knowledge and skills
– Nature Networks will be developed using and sharing local knowledge, experience and best-practice, and will support the growth of green skills and jobs

Theme 4: Data, mapping, and monitoring
– We will be adaptive in our approach to delivering Nature Networks and use the opportunity to improve our understanding of developing effective ecological connectivity. – Monitoring approaches for Nature Networks will be developed with, and for, stakeholders to inform management and action that maximises effectiveness of the network. – We will employ innovation and best practice in data collection, management and use. – Mapping and use of data will be collaborative and holistic in approach.

Theme 5: Finance and resourcing

- Public and private funding and finance will be delivered through properly resourced, clearly directed, long-term, simple and accessible means.
- Funding and finance will be based on the principles of fairness, trust and transparency through collaborative working.
- Funding and finance mechanisms will be coherent and will continue to be maintained.

Theme 6 – Policy and Mainstreaming

- Policy and planning levers will be used to safeguard Nature Networks and provide long term assurance
- Coherence across the policy landscape will be maintained.
- Mainstreaming Nature Networks, and wider biodiversity targets, at all levels of government and across the whole of society to encourage shared responsibility, efficient use of resources, and delivery of multiple benefits (additionality)

Scene Setting Context

The biodiversity crisis is of urgent concern both globally, and within Scotland, where species and habitats are in long term decline. Currently nearly 50% of species within Scotland are in decline with more still at historically low levels.

The Scottish Biodiversity Strategy and its associated Delivery Plans sets out action needed for Scotland to be Nature Positive by 2030, and to have restored and regenerated biodiversity across the country by 2045. Biodiversity supports food production through pollination, contributes to our wellbeing, and protects the environment by preventing soil erosion, purifying water, and mitigating flooding.

Furthermore, healthy ecosystems and thriving biodiversity are vital to being able to combat the climate crisis with, globally, 50% of human-made carbon dioxide emissions each year being removed by ocean and land ecosystems.

Scottish Government will shortly be consulting on and introducing a Natural Environment Bill that will introduce legal targets for Scotland with regards to biodiversity and nature restoration.

Scotland's National Strategy for Economic Transformation sets out a vision that by 2032 Scotland will be a wellbeing economy – an economic system which serves the collective wellbeing of current and future generations within safe ecological limits, placing people and the planet at its core. Underpinning this, the Strategy sets out the clear ambition to be demonstrate global leadership in delivering a "*just transition to a net zero, nature-positive economy, and rebuilding natural capital*".

The Nature Networks Framework

This framework aims to catalyse the urgent and transformative action needed across Scotland to implement Nature Networks that help halt and reverse biodiversity loss. It promotes the basic principles which associated action and delivery, at all levels, should be founded upon.

Developed using co-design, this framework is built from the expertise and time given by over 200 individuals from nearly 110 organisations from a broad spectrum of Scotland's sectors and communities. This highlighted the issues and challenges faced, and then the common guiding principles needed to ensure Nature Networks overcome these, are successful, equitable, and deliver for a nature-rich future. Full details of the co-design process can be found in Annex 1.

Developed using co-design, this framework is built from the expertise and time given by over 200 individuals from nearly 110 organisations from a broad spectrum of Scotland's sectors and communities.

Scotland's Nature Network – Vision for 2030

By 2030 Scotland will have evolving, flexible and resilient Nature Networks connecting nature-rich areas allowing wildlife and natural processes to move and adapt to land use and climate change pressures. The networks will help build people's connection to nature, providing biodiversity-rich spaces that deliver local benefits, and meet the priorities of local communities for nature.

Across Scotland, nature-rich areas, important for biodiversity and people, are connected through a series of corridors and stepping-stones of wildlife-friendly habitats. They allow wildlife to move between areas and improve the resilience of habitats and populations of species using them. Nature Networks radiate from, and extend into, all landscapes, across inner-cities to towns and villages, rural areas, mountains, lochs and coasts.

Our protected and conserved areas are the beating hearts in this network and wildlife-friendly connections act as the arteries and capillaries between them. Nature Networks drive nature's recovery, but also help store and capture carbon, and deliver important additional services such as flood mitigation, pollinators, soil health, clean water, and public health and wellbeing, ultimately supporting our commitments to mitigate and adapt to climate change and deliver multiple additional benefits to society.

Building connectivity means linking existing habitats in the landscape as well as restoring areas with newly created habitats. This makes existing connections more wildlife-friendly and establishes new connections where there were previously gaps or barriers. Nature Networks will evolve and adapt and allow species to move at all scales, allowing ranges to expand and shift in order to adapt to change.

National Parks and landscape-scale projects and initiatives can act as strategic hubs at the national and regional level. Protected areas and other effective area-based conservation measures (those areas contributing to Scotland's 30 by 30 target) are core areas, guiding connection at regional and local levels. Networks develop through bottom-up activity by local people and decision-makers, supporting national, regional or local priorities, through co-design and partnership working. This has ensured that

networks deliver local benefits and priorities whilst supporting national connectivity and coherence.

A toolbox supports the development of the networks. There may often be multiple options for developing connectivity or removing barriers to it. Stakeholders collaborate to solve these challenges using the tools that fit their needs. Proposals supporting connectivity are recognised, valued, and prioritised to facilitate their establishment. A blend of public and private finance is available to support this and people know how and where to access it. Landowners, land managers, and communities are involved and engaged in decision-making around network creation and management.

Nature Networks are seen as a public good, providing ecosystem services such as clear air and water, as well as health and wellbeing benefits, and highlight the importance of Scotland's nature to people and the economy. They act as a vital tool to mainstream biodiversity not only in policy but throughout society and people's connection with nature. Nature Networks deliver the benefits of biodiversity for people to people's doorsteps.

> Nature Networks drive nature's recovery, but also help store and capture carbon, and deliver important additional services such as flood mitigation, pollinators, soil health, clean water, and public health and wellbeing, ultimately supporting our commitments to mitigate and adapt to climate change and deliver multiple additional benefits to society.

What is a Nature Network?

Definition

A Nature Network connects together nature-rich sites, including restoration areas and other environmental projects, through a series of areas of suitable habitat, habitat corridors, and stepping-stones.

The primary purpose of a Nature Network is ecological connectivity. This connectivity is required for fully functioning and healthy ecosystems. It is key for healthy, robust populations and metapopulations (separate populations of the same species with individuals able to move between them) of animal and plant species by allowing them to move across landscapes, maintain genetic diversity, and to adapt to pressures such as climate change.

A Nature Network works at the national, regional and local scale to provide benefits to nature, and people through the ecosystem services it delivers, such as clean air and water, flood mitigation, health and wellbeing benefits.

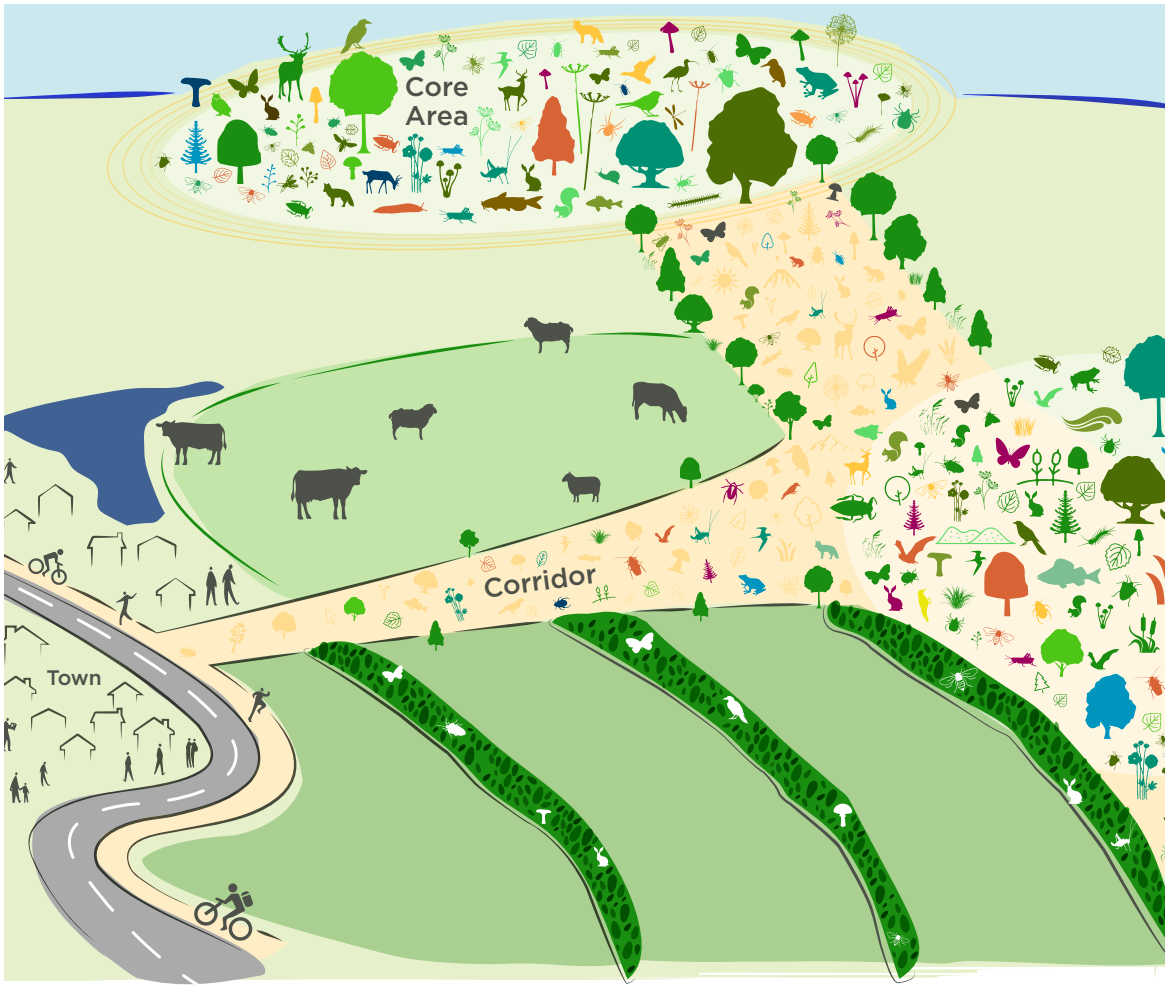
Why are Nature Networks needed in Scotland?

One of the main drivers of biodiversity loss is land use change and resulting habitat fragmentation. Habitat fragmentation is the process by which larger areas of habitats are broken-up into smaller patches that become isolated from each other. In Scotland this has arisen through changes in land-use over time. Work by NatureScot clearly shows the low level of connectivity of a number of key habitat types across Scotland.

Fragmentation has a number of adverse effects on wildlife including that these 'islands' of natural habitat become too small to support viable populations of species. At the same time the gaps between them become too large or hostile for species to cross. As a result the ability to adapt to wider-scale pressures, further land-use change, and climate change is lost.

It is well recognised that to tackle biodiversity decline action must be taken to increase the total amount of biodiversity-rich habitats protected or conserved and ensure they are better connected. This is the aim of increasing our protected and conserved areas for nature to reach the 30 by 30 target whereby at least 30% of land and sea will be protected for nature by 2030 (see the 30 by 30 Framework). Nature Networks will ensure that sites contributing to 30 by 30, and other important areas for biodiversity, are well-connected and so provide maximum benefits to biodiversity.

Scotland's Nature Networks are focussed on the terrestrial environment, improving connectivity on land and fresh water from our mountain tops to our coastal communities.



Nature Networks will ensure that sites contributing to 30 by 30, and other important areas for biodiversity, are well-connected.

What will make up Scotland's Nature Network

Each Local Authority in Scotland will have a spatially defined Nature Network. The core areas in this network, the important areas for biodiversity being connected together, will include all those sites that are contributing towards 30 by 30 (Protected Areas and Other Effective Area-based Conservation Measures). In the instance of not meeting the criteria for 30 by 30, other sites that are of local importance for biodiversity (e.g. Local Nature Reserves and Local Nature Conservation Sites) along with areas being restored for nature, will connect and contribute towards the Nature Networks.

The connections between these core areas will be delivered primarily through ecological corridors, and where this is not possible, through 'stepping stones' of suitable habitat. An ecological corridor is a natural or semi-natural habitat or landscape element that facilitates the movement of individuals or propagules (e.g. seeds) across landscapes, especially between otherwise isolated habitats or populations.

Important principles of Ecological Corridors

- Corridors complement and facilitate the ecological function of the areas they are connecting together.
- Corridors in a network should be of ecologically adequate size, with conservation objectives and management specific to the desired outcomes of a given link within a network
- Corridors should be maintained in the long-term to ensure they remain effective

Ecological corridors can encompass areas of landscape that are multifunctional in use, as long as this does not conflict with their primary objective, ecological connectivity, for example because of disturbance.

Further information can be found in the "Ecological Networks Protected Areas Review - Ecological Networks Think Piece"

The current picture in Scotland

The concept of, and evidence for, Nature Networks is not new. Nature Networks will build on, benefit from, and have overlaps with existing partnerships, commitments, and work across Scotland, including initiatives such as;

- Local Authorities implementation of their **Forestry and Woodland Strategy**, **Local Biodiversity Action Plans** or their **Open Space Strategies**, which align the work of various council services to deliver a variety of benefits for people and nature.
- **Green Networks**, delivering social and economic benefits to communities through improving the access to, use of, and quality of greenspaces, such as Central Scotland Green Network.
- **Green and blue Infrastructure projects** within Scottish towns and cities delivering ecosystem services and societal and economic benefits whilst providing climate change adaptation.
- **Active travel networks**, focussing on active travel but with great potential to deliver for nature.
- Grassroots projects being undertaken by NGOs and local communities across Scotland such those undertaken by the Rivers Trusts, BugLife's B-Lines, Edinburgh Nature Network, or the ambitious Cairngorms Connect project to name a few.
- **Nature Restoration Fund** (NRF) projects contributing to transforming Scotland's nature and improving connectivity.
- Strategic policy work such as the Pollinator Strategy for Scotland 2017–2027 or the major investments through Agri-Environment Climate Scheme payments on farms and crofts across Scotland.

Key policy drivers

Nature Networks are a Programme for Government commitment and key delivery mechanism of the Scottish Biodiversity Strategy which states that Nature Networks across our landscapes will underpin the resilience and health of species and habitats. They also contribute to Scotland's Environmental Strategy and align with international targets, as expressed in the Global Biodiversity Framework, and efforts such as the EU Trans-European Nature Network.

Nature Networks are embedded throughout the fourth National Planning Framework (NPF4) as a key means of ensuring positive effects for biodiversity from development. Across multiple policies the leading role that Local Authorities will have in facilitating the design and implementation of Nature Networks, through Local Development Plans (LDPs) for example, is clear.

Policy 3 LDPs should facilitate the creation and conservation of Nature Networks and strengthen connections between them so as to support improved ecological connectivity. Development proposals will be required to contribute to the enhancement of biodiversity, including by restoring degraded habitats and building and strengthening Nature Networks.

Policy 4 Spatial strategies, whilst protecting and restoring important natural assets, should establish and grow Nature Networks.

Policy 6 LDPs, as well as identifying and protecting existing woodlands, should identify their potential for enhancement and improved ecological connectivity through helping to support and expand Nature Networks.

Policy 8 Where green belts are in use, or proposed, they should support Nature Networks where appropriate.

Further opportunities for implementation may be identified through existing or updated Local Biodiversity Action Plans, Climate Change plans and/or other existing or new mechanisms such as those developed under the SBS Delivery Plan, to achieve connectivity within and across urban, peri-urban and rural landscapes.

Nature Networks are embedded throughout the fourth National Planning Framework (NPF4) as a key means of ensuring positive effects for biodiversity from development.

How will Nature Networks be delivered?

The Nature Networks Framework and Toolbox (as detailed below) will help guide and support the delivery and implementation of Nature Networks. In each Local Authority, Nature Networks will be clearly spatially defined and articulated so that everyone understands their purpose. They will be designed as long term features of our landscape, providing stability for nature and certainty for management, finance, and developers. The design, co-ordination, and delivery of Nature Networks at the local level will be led by Local Authorities.

Nature Networks will require a collaborative and bottom-up approach, within a culture of partnership and open working. They will take a landscape approach to connectivity alongside a place-based approach to engagement and delivery involving local communities. Nature is dynamic and the development of governance and management for Nature Networks will seek to incorporate sufficient flexibility to reflect this.

Like the Scottish Biodiversity Strategy, Nature Networks will adopt a 'whole-of-society' approach. Diversity and inclusion will be at the heart of decision-making and delivery, continuing co-design and co-production in planning, implementation, and management phases. Open working and active sharing will be encouraged, allowing Nature Networks to be adaptable and scalable to place-based demands, needs, and timescales. This includes iterative working with an understanding that seeking perfection, or the risk of failure when trialling new methods, will inform our approach but not prevent action.

Nature Networks and scale

Nature Networks will be delivered at the local scale and support local priorities, such as those identified through Local Biodiversity Action Plans, but these local networks will also join together to deliver a network that spans Scotland, supporting national and regional conservation objectives and priorities.

Key Principle – Delivering Nature Networks

Nature Networks will be delivered from the bottom up, addressing local needs and objectives in support of national outcomes for nature and people.

Locally: There may often be multiple options of how to best connect areas of importance for nature and local knowledge and ecological conditions are likely to dictate which the best options to pursue are.

Local Nature Networks will connect people and communities to nearby important areas for nature, deliver local priorities and work with other mechanisms of delivering connectivity at the local level e.g. enhancing active travel routes and existing initiatives such as Green Networks.

Regionally: Nature Networks will build on connections at the local level and look at opportunities to deliver strategic connectivity regionally and support national objectives and priorities. This will need to be facilitated across administrative boundaries to ensure strong connectivity between landscapes, larger-scale features and areas of importance, such as National Parks or river catchments.

Working regionally enables the connection of neighbouring networks, further increasing the ability for dispersal, strengthening populations and improving their resilience to pressures.

Nationally: Nature Networks should connect together across administrative boundaries and through strategic regional elements. They should be able to facilitate large-scale expansion and shifts in species ranges at a national level, particularly in response to climate change. They should identify strategic approaches to support delivering wider ecosystem resilience, diversity and ecosystem services.

The Nature Networks toolbox

The Nature Networks Toolbox will be a 'live' resource for local authorities, partnerships, organisations, and groups, to facilitate the design and implementation of Nature Networks at the local and regional level. This will allow for efficiencies in designing and implementing Nature Networks and support strong alignment in approaches across Scotland. The Toolbox will evolve over time and its contents decided through working with target users to ensure it provides the information that can lead to practical implementation activities. Basic elements may include;

- Learning from existing and proposed projects for Nature Networks, e.g. through case studies and best practice
- Guidance and signposting to potential resources
- Connectivity and opportunity mapping tools
- Information on public and private funding, finance and investment.

Delivery principles

The following sections are based on the key themes arising from the co-design workshops. They outline the key challenges raised and the agreed principles and approaches tackle those challenges and deliver what is needed to ensure we reach our vision for Scotland's Nature Network.

Theme 1: Governance and decision making

Challenges and barriers

- A lack of oversight and coordination for delivering ecological connectivity.
- A lack of accessible information to make informed decisions.
- Variations in, including lack of, resource, knowledge and ways of working across Local Authorities.
- Lack of clarity on roles and responsibilities for national bodies, local government, landowners, land managers and those who use the land.
- A lack of diversity and representation.
- Lack of awareness regarding needs to remove barriers to involvement of underrepresented groups.

Taking on the challenge

The governance of Scotland's Nature Networks requires a clear structure with defined roles and responsibilities at national, regional, and local levels. Local design and delivery should allow for place-based engagement and identification of local challenges and needs, as well as ownership and guardianship within local communities.

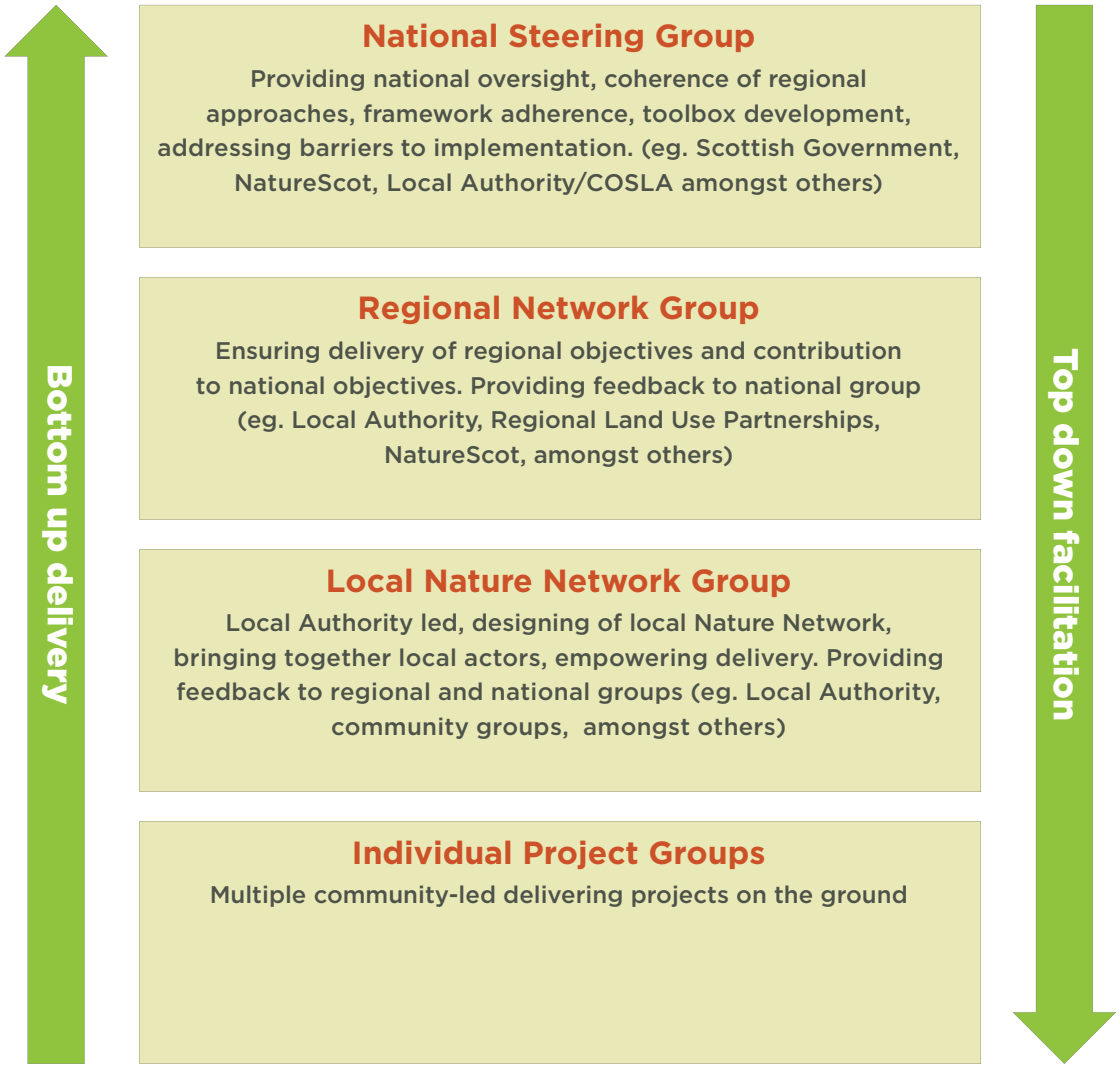
Effective partnership and collaboration are key to successful implementation, and decision-making at all levels should be evidence-driven. Equity, diversity, and inclusion principles will be applied in governance and decision-making, with representatives of seldom-heard groups (e.g. those from groups with protected characteristics) as well as associated groups (e.g. Local authorities, communities, and land owners and managers) involved throughout.

> **Key Principle – Governance and decision-making**
>
> Governance of Nature Networks will be transparent, democratic and accountable and with inclusive and diverse representation. There will be a focus on empowering and equipping delivery partners from across sectors.

Next steps

NatureScot will work with stakeholders to establish national and regional structures and support the development of local delivery mechanisms and explore the needs of a central information and communication hub.

Clearly defining the governance structure is necessary to support implementation and the joining up of individual local Nature Networks. An indicative model is proposed below for National, Regional and Local governance. The governance of Nature Networks will be integrated with, and feed into, the governance structure as outlined within the SBS Delivery Plan.



Proposed governance for Nature Networks

Theme 2: Participation, engagement and communication

Challenges and barriers

- Conflicts between different land-uses and tension between economic, environmental and social priorities.
- Silo working and misaligned management.
- A lack of accessible information causing difficulty in identifying land owners, preventing meaningful partnership working and cross-boundary solutions.
- Damaged relationships and mistrust between groups.
- Disjointed communication, engagement, and messaging between delivery partners.

Taking on the challenge

Effective participation is essential to build Nature Networks. Early engagement and partnership working takes time and resources, and barriers to participation need to be removed. This includes empowering trusted messengers to lead within their communities. Whether this is a local community or a sector (e.g. farming or forestry), those open to, or already promoting, biodiversity friendly approaches that support Nature Networks should be worked with and provided the necessary tools to be drivers of change. The support required, and therefore who will be best placed to offer it (Local Authorities, NatureScot or other public bodies) will vary, and so at all levels of Nature Networks governance there must be an openness to working with others.

We need to ensure that the benefits of Nature Networks are clear and understood by all with messaging easily tailored to framing and values of key distinct groups. Likewise the role that communities, land owners, public and private bodies play in delivering these benefits should be easily understood. Particularly important is the role of public bodies as exemplars in delivery of Nature Networks.

Nature Networks can also play a crucial role in Scotland's Just Transition. A place-based approach to engagement can encourage people to care for their local network, ensuring that it benefits everyone and helps tackle inequalities not further embed them.

Key Principles – Participation, engagement, and communication

- Engagement with partnerships and communities will be inclusive, empowering and facilitate bottom-up activity.
- Simple and unifying messaging on Nature Networks across partners with a focus on building people's connection with nature and fostering stewardship.
- Scotland's public bodies will be exemplars, supporting the delivery of Nature Networks on their land.

Next steps

A national campaign to raise awareness and understanding of Nature Networks. Partners will be supported through the Toolbox to develop clear and consistent messaging on the purpose, value, and role individual areas plays in the wider network and for Scotland's biodiversity, climate and people. Communication will highlight links to nature-based solutions and climate action, complementing the Make Space for Nature and Let's Do Net Zero campaigns.

NatureScot to work with other public bodies to review their land holdings, in line with their Biodiversity Duty, to identify areas that could support the delivery of Nature Networks.

Theme 3: Knowledge and skills

Challenges and barriers

- A lack of expertise, knowledge, skills and resources in ecology and ability to engage with communities in key delivery partners, such as local authorities and contractors.

Taking on the challenge

The successful delivery of Nature Networks will depend on combining evidence and data with local knowledge and expertise. To create these networks, it's essential to harness the experience gained from previous work on improving connectivity, both between areas important for biodiversity and between local communities and biodiversity. In addition, we must identify the existing skills, knowledge, and resources within regions to incorporate them, facilitate open working, and promote sharing among partners to benefit nature.

While developing approaches, plans, and tools to aid in Nature Network implementation, we must continue to consider knowledge and skill gaps, especially within Local Authorities. Since biodiversity and associated ecosystem services aren't limited by Local Authority boundaries, the development of effective Nature Networks will require sharing knowledge, resources, and skills across Local Authority areas. Nature Networks will support the SBS-led push to mobilise education and green skills development to increase understanding of our relationship with nature and take positive action to secure its sustainable use.

Key Principle – Knowledge and Skills

Nature Networks will be developed using and sharing local knowledge, experience and best-practice, and will support the growth of green skills and jobs

Next steps

The Nature Network Toolbox will be the primary means of taking this work forwards; provide guidance, facilitate peer-to-peer learning, and resource sharing to address the knowledge and skill gaps. In developing the Toolbox, NatureScot will work across organisations and sectors to bring together information that will meet the challenge. Continue to improve Nature Network linkages with NPF4 policy guidance such as the Developing with Nature Guidance.

Theme 4: Data, mapping and monitoring

Challenges and barriers

- Limited information about effective functional connectivity for many species or habitats.
- A lack of available and accurate data for much of Scotland's area and often stored and shared in different ways making evidence-informed decisions difficult.

Taking on the challenge

The collaborative, partnership approach to delivering Nature Networks will require high standards and innovation in how data is collected, managed, and used. This will ensure that we can drive maximum value from data and efficiency in how we collect and use it at all scales.

Data collected needs to be openly available in a suitable national repository, to facilitate consistent data standards and monitoring. This should bring together all relevant maps and data. It must be simple, straightforward, resource and expertise light, and accessible to all level of data literacy and follow FAIR principles (Findable, Accessible, Interoperable, and Reusable).

Mapping and site identification will be supported by tools that bring together biodiversity and habitat connectivity, ecosystem services, social dynamics and the policy landscape at a range of scales. Geographical data and mapping tools, local knowledge, and practical considerations will form the basis of robust opportunity mapping with capacity and demand being considered by bringing in the wider community. Like data, mapping tools need to be light on resource and expertise to ensure their accessible for users, particularly those with resource pressures.

The monitoring of areas making up 30 by 30 will follow the principles and approaches set out in the 30 by 30 Framework. To ensure these areas are effectively being connected for biodiversity, the corridors linking them will also need to be appropriately monitored. This will focus on the level of implementation of networks and how effective they are at delivering connectivity (see How we'll measure success).

> The collaborative, partnership approach to delivering Nature Networks will require high standards and innovation in how data is collected, managed, and used.

Scottish Government, NatureScot and other public bodies will work with local authorities, communities, sectors, and landowners and managers to ensure that those people able to make the most impact understand the importance of their contribution and their responsibilities regarding Nature Networks. Where new monitoring methodology is required, this will be co-designed with the groups responsible for data collection.

Monitoring data needs to be used not simply as a means of demonstrating success, but crucially to inform management decisions required to deliver it. It is important that data collected is communicated to all relevant groups in an accessible manner for the end user.

Whilst the general ecological principles are clear, in many cases our understanding of how to deliver effective functional connectivity is limited. For instance, there are knowledge gaps around the size of core areas, barriers, species interactions and risks. Nature Networks therefore provide a good opportunity for improving our understanding and use this to adapt and improve our approach to delivering increasingly effective networks.

Key Principles – Data, mapping and monitoring

- We will be adaptive in our approach to delivering Nature Networks and use the opportunity to improve our understanding of developing effective ecological connectivity.
- Monitoring approaches for Nature Networks will be developed with, and for, stakeholders to inform management and action that maximises effectiveness of the network.
- We will employ innovation and best practice in data collection, management and use.
- Mapping and use of data will be collaborative and holistic in approach.

Next steps

Develop a mapping tool for use by local authorities and other delivery partners to help plan and implement local Nature Networks.

The Nature Networks Tool box will highlight and signpost to a number of tools, dependant on the users need, to assist decision-making. Guidance will be provided in how to bring together multiple stakeholders and ensure meaningful collaboration in data sharing and opportunity mapping exercises.

Look to developments from 30 by 30 work for how to better utilise data.

Theme 5: Finance and resourcing

Challenge and barriers

- Difficulty in ensuring long-term action for nature restoration and management due to competing demands, insufficient finance and resources.
- Funding is often inaccessible and time and resource-intensive to utilise.
- Funding is sporadic, overly targeted at only a few stages of projects, comes with delays and barriers, and is often too short-term.
- Although investing in nature brings returns across environmental, social, and economic metrics, there's no clear understanding of how this finance gap can be filled.

Taking on the challenge

Nature Networks require sustained and long-term funding that is accessible at all stages of delivery. Funders, public or otherwise, must recognise the importance of wider landscape connectivity and facilitate and reward the collaborative working required to achieve this. Funding schemes should be designed collaboratively with end users and ensure fairness and equitability with allocation decisions made with local and regional level representation.

The value of maintained ecosystems and the multiple benefits provided should be better articulated to ensure adequate support goes to projects or areas allowing for sustainability in the long term.

There should be national level coordination and facilitation to ensure clarity over Nature Network components and goals, and a clear, long-term strategy that looks across all of Scotland's area, habitats, and species.

Identifying opportunities as part of a Nature Networks can help target finance from developments to important areas for biodiversity connectivity under Policy 3 of NPF4.

Key Principles – Finance and Resourcing

- Public and private funding and finance will be delivered through properly resourced, clearly directed, long-term, simple and accessible means.
- Funding and finance will be based on the principles of fairness, trust and transparency through collaborative working.
- Funding and finance mechanisms will be coherent and will continue to be maintained.

Next Steps

Relevant existing, or new, funding schemes will be reviewed and developed to ensure they complement and work with Nature Networks where possible, and do not inadvertently lead to further fragmentation. Ensuring funding streams such as, nature restoration fund, peatland action fund, agricultural support, such as Agri-Environmental Climate Scheme payments, and forestry grant schemes support the creation of Nature Networks will be critical to their success, maximising the return on public spend. The work is being led by NatureScot and the administrators of individual funding schemes.

The Biodiversity Investment Plan aims to increase state funding and private finance, channelled not only into 30 by 30 core areas but the wider network. The development of further private finance for Nature Networks will be based on the principles for responsible investment in natural capital.

> Nature Networks require sustained and long-term funding that is accessible at all stages of delivery.

Theme 6: Policy and mainstreaming

Challenges and barriers

- Biodiversity and the benefits it provides are still undervalued, with a lack of public and political awareness, hindered by inaccessible language.
- A complex policy and support landscape, causing a lack of consistency in compliance and delivery.

Taking on the challenge

Given their scale and spread over different land-uses, Nature Networks provide the ideal opportunity to facilitate cohesion and alignment of seemingly disparate policy areas.

Policy and planning levers will be the primary means of ensuring Nature Networks are established and maintained in the long term, with flexibility allowing for their adaption and resilience to change (e.g. climate). Nature Networks will permeate a vast array of land uses and so enable mainstreaming of biodiversity across a wider policy landscape such as agriculture, forestry, energy, housing, industry, education, health, and transport.

Mainstreaming must also extend beyond government, into the wider economy and public arenas, similar to that of mainstreaming of climate action, and taking the whole of society approach advocated for in the Global Biodiversity Framework, SBS, and Edinburgh Declaration. This 'mainstreaming' of biodiversity will grow over time, allowing Nature Networks to evolve. With limited resources at all levels of government there will be a need to prioritise key policy areas. At national level, given the key role that nature-based solutions will play in tackling the twin crises of biodiversity loss and climate change, priorities will focus on mainstreaming biodiversity across planning, forestry, agriculture, and climate in the first instance, with further alignment across education, transport, and health also explored.

Connecting people and places is central to many Policies (e.g. open space, green networks, active travel). It's also a key aim of Nature Networks so there is scope to integrate and align implementation mechanisms to achieve multiple policy outcomes benefiting people and place.

Related policy areas and their relevance to Nature Networks, and the wider SBS, are indicated in Annex 2. This is by no means an exhaustive list and demonstrates both the complexity of the policy landscape and the ability for Nature Networks to cut across a broad spectrum of it.

Key Principles – Policy and Mainstreaming

- Policy and planning levers will be used to safeguard Nature Networks and provide long term assurance.
- Coherence across the policy landscape will be maintained.
- Mainstreaming Nature Networks, and wider biodiversity targets, at all levels of government and across the whole of society to encourage shared responsibility, efficient use of resources, and delivery of multiple benefits (additionality).

Next steps

Work with the SBS delivery plans, and through governance structures, to identify policy linkages and take opportunities.

How we will measure success

Nature Networks connect together important places for biodiversity and communities and will deliver multiple benefits to restore nature and help mitigate and adapt to climate change.

As described in the Data, mapping and monitoring section, monitoring and reporting will be used to influence the management and development of Nature Networks at all scales. It will also shape the governance of, and support provided for, Scotland's Nature Network.

Measurement of success will therefore consider the following:

- The health of the important places for biodiversity that the networks connects together
- The progress of Local Authorities in mapping Nature Networks
- The progress in implementing Nature Networks
- The effectiveness of ecological corridors/connections
- The effectiveness of the approach at a National level.

The health of our important places for biodiversity

As part of an ecosystem health approach to monitoring and assessing the health of protected and conserved areas their interaction to the wider landscape and connectivity to other areas – their Nature Network connections - will be incorporated into this assessment. This work will be taken forward primarily by 30 by 30.

Local Authority success in spatially identifying Nature Networks

Each Local Authority will have a defined number of important areas for nature and settlements that must be incorporated into their Nature Networks and so an easily counted number of connections to be made. Measures will need to be put in place to report against progress to having each of these connections mapped in meaningful way.

Progress in implementing Nature Networks on the ground

Spatially identified Nature Network connections will most likely represent a mix of areas already good for nature and those areas in need of some form of new management or habitat restoration to allow them to contribute to connectivity for nature. Measures will once again be needed to report against progress on implementation of Nature Network connections.

The quality of connection between important places for biodiversity within Local Authority areas

The connections between sites will inevitable vary in their scope and scale across the network. Areas such as National Parks may opt for whole landscape scale connections that might not be viable in other parts of the country. It is important however that all connections are ambitious in their nature and provide genuine benefits to biodiversity or functional connectivity. Local Authorities will need clear guidance on acceptable levels and means of connection and there should be a means by which this can be reported on.

The effectiveness of the approach

Whilst Nature Networks will be delivered from the bottom-up there is a clear need for a system-level assessment of the effectiveness of the approach being taken. This should present and analyse performance at all levels in delivering effective Nature Networks across Scotland, how well the principles of this framework have been applied and, most importantly consider how, where and when we need to act in order to adapt our approach.

Local Authorities will need clear guidance on acceptable levels and means of connection and there should be a means by which this can be reported on.

Annex 1 - Co-designing the Frameworks for 30 by 30 and Nature Networks

The 30 by 30 and Nature Networks frameworks sought to follow a co-design approach in their design and development. This highly collaborative process saw stakeholders from across Scotland work together to design the frameworks that will lead to us reaching 30% of land protected for nature by 2030 and the roll out of Nature Networks. Due to their interlinked nature, the two frameworks were co-designed in tandem. Overall, the co-design process engaged 316 people from 130 organisations and groups.

What is a co-design approach?

Co-design is a design-led process that uses creative and participatory methods. In this context, it is when an organisation and stakeholders work together to design or rethink a service, policy or project.

Co-design is often mistakenly used as an umbrella term for all forms of user involvement. However, while consultation and feedback mechanisms seek advice and opinions from users, co-design allows us to design services in close collaboration.

By using a co-design approach, NatureScot looks to identify and address challenges collaboratively, by working with one or more stakeholders in the private, public and voluntary sector, and citizens. The core objective of co-design is to move away from consulting with stakeholders to co-creating services and policies with them. Co-design principles and methods can be applied throughout the whole project or programme cycle. This can include collaboration in terms of the design, production, planning, implementation, delivery, and evaluation of services and policies. The process is iterative, meaning the output, whether a service, project or policy remains representative of those involved in the co-design process.

Co-design principles

There are many ways in which co-design can be delivered and it is not one size fits all. There are, however, a number of key principles that need to be followed to ensure co-design is enacted.

Some key principles include;

- Openness through inclusion, transparency, and use of shared language
- Equal value is given to expertise by lived experience and expertise by profession or education
- Respect and trust between all participants with shared decision-making power

Co-design model

The 30 by 30 and Nature Network projects used the Double Diamond design model to inform the co-design approach. The Double Diamond is a visual representation of the design and innovation process, dividing the process into four phases;

Discover: explore the problem or challenge, building understanding amongst participants
Define: clearly define the challenge
Develop: explore and develop multiple potential solutions
Deliver: select a single solution(s) and prepare for implementation

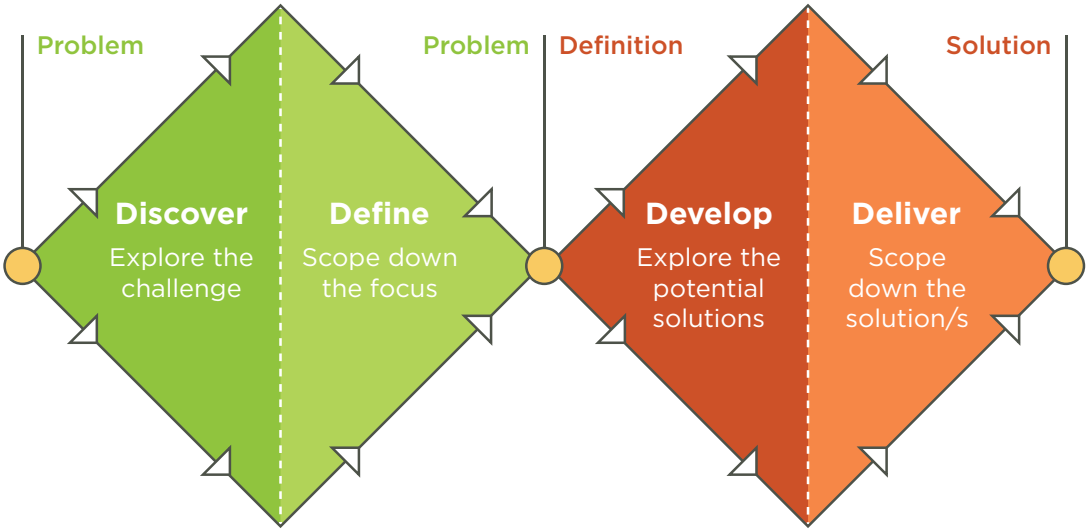


Figure: Diagram illustrating the Double Diamond design model

Launch event

The Discover phase was launched in June 2022 with a 30 by 30 and Nature Networks webinar. This first phase helps people understand, rather than simply assume, what the problem is that we are looking to address. This event set the scene by introducing the challenge, context, and parameters we were working within. The event asked interested parties who attended to start thinking creatively and ambitiously about what 30 by 30 and Nature Networks could look like. The launch event was attended by 131 stakeholders from 45 organisations with speakers from across the nature-based sector.

When asked in the initial opening event, the majority of stakeholders expressed interest in contributing to the project through workshops, therefore the primary method for this co-design process was through a series of workshops, hosted online to ensure the best level of accessibility.

Discovery workshop

It was important to apply a participatory approach not only to problem-solving or idea-generating but also when defining the challenge to ensure we are uncovering and solving the "right" problem and true needs. The closing of the Discover phase and beginning of the Define phase was achieved through the Discovery Workshop. This workshop brought together 98 participants from 78 organisations, this time delving deeper into the two projects separately to identify present challenges. After an introduction, participants, or co-creators, worked in either a 30 by 30 or Nature

Networks breakout group of eight to 10 members and two NatureScot facilitators. Co-creators explored the issues and challenges they face in relation to 30 by 30 and Nature Networks and defined them down into key challenge themes. These themes formed the based for the next iteration of solution-based workshops.

Themed solution-based workshops

Moving into the second stage of the Double Diamond, the solution-based workshops looked to again explore the potential 'solutions' possible, and together, defined and decided the solutions to feature in the frameworks. These solutions were in the form of high-level principles that would need to feature in the frameworks in order to combat the current challenges and ensure we reach our 30 by 30 and Nature Networks ambitions. A total of 87 participants, from 59 organisations, formed 14 workshops.

30 by 30 = 50 participants, 41 organisations	**Nature Networks = 52 participants, 39 organisations**
– What's included in 30 by 30 – Monitoring – Management – People – Funding and resources – Policy and legislation	– What are Nature Networks? – Land management and ownership – Data, mapping and monitoring – People – Knowledge and skills – Governance – Finance and resources – Policy

NatureScot also facilitated bespoke discussions with organisations or communities who reached out. This included a youth-focused event run in partnership with YoungScot, and events with Planning Aid Scotland and The Heather Trust.

In the interest of transparency and openness, all workshop details and outputs feature on the NatureScot website along with a method for those who weren't able to attend to input. As the Develop phase moved to Deliver, the core 30 by 30 and Nature Network team within NatureScot drafted the framework based on the workshop outputs. An iterative process took place, reviewing and refining the framework before it went out to public consultation. Both frameworks also benefited from a 'sense-check group' of key stakeholders. The role of the group was to have those who have an overview of the policy and practice landscape, flag if there were any issues resulting from the workshops.

30 by 30 sense check group	**Nature Networks sense check group**
– Scottish Government – NatureScot – SEPA – Forestry and Land Scotland – Forestry Commission – Cairngorms National Park	– Scottish Government – NatureScot – Loch Lomond and Trossachs National Park – COSLA – Edinburgh City Council

Annex 2 – Policy landscape

National Policy/ legislation	Relevance to nature restoration and connectivity
Environment Strategy	Supported via the Scottish Biodiversity Strategy (SBS) and associated Delivery Plan (DP)
Scottish Biodiversity Strategy to 2045 & associated Delivery Plan (in development)	Nature Networks and '30 by 30' are key implementation aspects of the SBS & DP to achieve the aims of halting biodiversity loss by 2030 and reversing loss by 2045.
Biodiversity Duty	Implementation of Nature Networks will help public bodies meet their statutory obligations.
Climate Change Plan Climate Change Adaptation Programme	Nature Networks and 30 by 30 will help to integrate Nature-based Solutions across communities, in order to meet carbon reduction and climate adaptation targets, through woodland creation, peatland restoration, creation of new protected areas, ecological connectivity; and supporting biodiversity within and across community areas.
Peatland Action Plan	Restoration across peatland areas provides multiple benefits including to climate change, flooding, water quality, and biodiversity.
National planning framework 4	Integration of Nature Networks within NPF4-Policy 3 seeks to ensure positive effects for biodiversity within the planning system, and to ensure connectivity across and between rural, peri-urban and urban areas. Additional provisions are provided to conserve protected areas through the planning system.
Developing with Nature Guidance | NatureScot	Associated guidance produced by NatureScot sets out how a nature-rich approach should be implemented and appropriate measures for biodiversity enhancement. Guidance setting out the Scottish Ministers' expectations for implementing the system of local development plans - so that they deliver new-style, place-based, people-centred and delivery-focussed plans, including provisions for their role in facilitating Nature Networks.
National Marine Plan and regional marine plans	Supporting the wider SBS & DP through marine planning approaches to manage human impact upon the marine environment.

National Policy/ legislation	Relevance to nature restoration and connectivity
Marine Protected Areas	Underpinning the SBS & DP, through the restoration of marine ecosystems, and halting and reversing declines in marine species. 37% of Scotland's seas are already protected. Nature Networks will provide connectivity of restored areas at coastal boundaries.
Coastal erosion and flood risk management | Scotland's Marine Assessment 2020	Nature Networks and 30 by 30 will support the restoration of coastal areas, bringing benefits to coastal erosion and flood prevention.
River Basin Management Plan for Scotland 2021-27	Taking a Nature Networks approach through enabling partnership working to improve the condition and quality of Scotland's waterways, support habitat restoration and ensure community access to green & blue spaces.
Scottish Wild Salmon Strategy and associated implementation Plan 2023-28	Restoring high quality, functioning ecosystems through river catchment approaches, which connect across marine, coastal and river habitats, including the restoration and creation of riparian woodlands, is a great example Nature Network approach.
Scotland's Forestry Strategy 2019-29 and associated Implementation Plan 2022-25	Underpinning the SBS & DP through habitat restoration and creation, providing connectivity and improving species diversity.
UK Forestry Standard (currently under review)	The UK Forestry Standard (UKFS) is the reference standard for sustainable forest management across the UK, and applies to all woodland, regardless of who owns or manages it. The document covers key different elements of sustainable forest management, i.e. biodiversity; climate change; historic environment; landscape; people; soil; water.
Land Reform Bill - new legislative proposals for land reform	Nature Networks will encourage the development of land management approaches for nature restoration, which align to local priorities, opportunities and public policy.
Land-use Strategy 2021-26 including the development of regional land-use partnerships (RLUPs)	Aligned to the SBS, taking a landscape view of sustainable land use, through regional partnerships to meet across landscape scale partnerships which support nature restoration and halt species declines.

National Policy/ legislation	Relevance to nature restoration and connectivity
Delivering our vision for Scottish Agriculture	Consultation on how Scottish Government proposes to transform support for farming and food production, to become a world leader in regenerative agriculture.
Agricultural Reform Route Map	Outlines the processes and steps to be taken to transition from the current support framework to a new regime to deliver the vision for agriculture.
Just Transition - Land Use and Agriculture (www.gov.scot)	A discussion paper that sets out the need to deliver a Just Transition to a net zero, nature positive Scotland, across key land use areas - including forestry, peatland restoration and agriculture. Nature Networks are a key delivery area to help create opportunities and benefits for people across Scotland; provide the skills that people need to tackle the nature crisis; empower a green recovery; prioritise wellbeing.
Invasive non-native species - Wildlife management (www.gov.scot)	Invasive non-native species are one of the largest causes of biodiversity loss in Scotland and the second largest negative pressure on our protected areas. Delivering strong and resilient Nature Networks and 30 by 30 network will require action to control or eradicate invasive non-native species to prevent them using the networks to spread further.
Non-native species: code of practice (www.gov.scot)	The Code sets out guidance on how you should act responsibly within the law to ensure that non-native species under your ownership, care and management do not cause harm to our environment. GB Strategy outlining how collaborative working will detect and prevent new and existing invasive non-native species from establishing and spreading.
Rural Land Use Partnerships	Regional Land Use Partnerships (RLUPs) are partnerships facilitating collaboration between local and national government, communities, land-owners, land managers, and wider stakeholders. They will enable natural capital-led consideration (for instance in developing Nature Networks or the 30 by 30 suite) of how to maximise the contribution that our land can make to address the twin climate and biodiversity crises.

Note: This annex is illustrative and is not an exhaustive list of cross-policy areas which relate to nature restoration.

Acknowledgements

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