

Biodiversity Target Guidance

Pathways to Nature Restoration and Resilience

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BORD BIA
IRISH FOOD BOARD



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1 Introduction

Biodiversity is a term which describes all aspects of biological diversity, especially species richness, ecosystem complexity, and genetic variation.

1 Introduction

Biodiversity is a term which describes all aspects of biological diversity, especially species richness, ecosystem complexity, and genetic variation. It came into widespread use in the 1980s and these days it is a term frequently used as a descriptor for the number (or mass) of species present within an area.

Ireland's history and creation means that it has a unique biodiversity, not found anywhere else in the world. This biodiversity has also been assessed as contributing at least €2.6 billion each year to the Irish economy through the ecosystem services it provides¹. Ecosystem services are the benefits provided by ecosystems that contribute to making human life both possible and worth living, and include the production of oxygen, water regulation, the pollination of crops, the fertilising of soil, defining recreational and tourism services and far more.

Development has been a major driver of habitat degradation and biodiversity loss within Ireland. As the number of people have increased in the country, so has the country's need for resources, and the cost to biodiversity has not always been taken into consideration. In the countryside, areas of 'high biodiversity' may include woodland, species rich grasslands, hedgerows, bogs, rivers and loughs. In suburban areas these areas may be small in scale, with gardens providing a significant

quantity of the greenspaces supporting biodiversity. In densely urban environments biodiversity is often found in edge habitats, near rivers and canals. Birds will be found nesting on or in buildings, flowers growing through the cracks in pavements and foxes may roam the streets.

The National Biodiversity Data Centre reports that a decline in wetlands, soil erosion, agriculture and forestry industries and poor hedgerow management have led to increasing levels of biodiversity loss. Climate change, pollution and invasive non-native species also put additional pressure on native biodiversity, further accelerating its loss.

Following the publication of the National Parks and Wildlife Service's (NPWS) 2019 Habitats² and Species³ Conservation Assessments, in May 2019 the Dáil voted upon and declared both a National Climate and Biodiversity Emergency⁴. The reports determine that 85% of Ireland's European priority habitats, and 30% of Ireland's European protected species are at risk. Included within this was the assessment that one third of the 98 wild bee species in Ireland were close to extinction while another 60% of birds commonly occurring in Ireland are now on the red⁵ or amber⁶ lists.

33%
of the 98 wild bee species in Ireland are close to extinction

60%
of birds commonly occurring in Ireland are now on the red or amber lists

1 Bullock, C., Kretsch, C., and Candon, E. (2008). The Economic And Social Aspects Of Biodiversity. Benefits and costs of Bio-diversity in Ireland. The Stationery Office. Available at: <https://www.cbd.int/doc/case-studies/inc/cs-inc-ireland-en.pdf>

2 NPWS (2019): The Status of EU Protected Habitats and Species in Ireland: Habitat Assessments. Volume 2. Available at: https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol2_Habitats_Article17.pdf

3 NPWS (2019): The Status of EU Protected Habitats and Species in Ireland: Species Assessments. Volume 3. https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf

4 Dáil Éireann Debate – Wednesday 29th May 2019. Available at: <https://www.oireachtas.ie/en/debates/debate/dail/2019-05-29/35/>

5 British Trust for Ornithology. The Red List (Ireland) – High Conservation Concern. Available at: <https://www.bto.org/our-science/projects/birdtrack/bird-recording/birds-conservation-concern/red-list-ireland>

6 British Trust for Ornithology. The Amber List (Ireland) – Medium Conservation Concern. Available at: <https://www.bto.org/our-science/projects/birdtrack/bird-recording/birds-conservation-concern/amber-list-ireland>

1 Introduction

Companies use ecosystem services and natural resources resulting from biodiversity in various forms and thereby have a large impact on nature. Therefore, even by just considering economic reasons, companies depend on the conservation of biodiversity and a steady decline in biological diversity can become a risk for many businesses in the future. At the same time, a proactive approach can help protect biodiversity and ecosystem services and create new business opportunities.

The Irish Government has a goal to “Mainstream biodiversity into decision-making across all sectors”⁷. The food production industry is well positioned to foster “sustainability by consumption” and to support the protection of biodiversity. Through acting to conserve biodiversity we can also make important contributions to human health⁸, and those greenspaces and habitat enhancement measures we create will enhance the wellbeing⁹ of those who frequent them. The vision of Ireland with wild places, native woodlands and country lanes spilling with wildflowers is a significant contributor to tourism industries and local economies, and by doing more to preserve and enhance our biodiversity we can hopefully enjoy the multitude of benefits it brings.

On a global level, the United Nations has developed the **17 Sustainable Development Goals** to focus on the solutions and actions that are needed to be taken to tackle biodiversity loss. Biodiversity and ecosystem service conservation form the basis of SDGs 14 ‘Life below water’ and 15 ‘Life on land’, and their contribution to ecosystem services and human wellbeing underpins the achievement of all other sustainable development goals (SDGs). Specifically **Goal 15** ‘life on land’, calls for 12 targets to be adopted globally to protect biodiversity as well as conserve and restore terrestrial and freshwater ecosystems, restore degraded lands and forests and prevent invasive alien species, among others, whilst **Goal 14** ‘life below water’ calls for 10 targets to be adopted to conserve and sustainably use the oceans, seas and marine resources for sustainable development.



⁷ Department of Culture, Heritage and Gaeltacht. National Biodiversity Action Plan 2017 -2021. Available here: <https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf>

⁸ Chivian, Eric (Ed.). “Biodiversity: Its Importance to Human Health”, Interim Executive Summary of Harvard University’s Center for Health and the Global Environment (2003, 2nd edition). Available here: <https://www.dcnanature.org/wp-content/uploads/fundraising/Biodiversity-Importance-to-Human-Health.pdf>

⁹ Naeem et al (2016) Biodiversity and human well-being: an essential link for sustainable development. Proc. R. Soc. B. 283: 20162091. Available at: <https://www.dcnanature.org/wp-content/uploads/fundraising/Biodiversity-Importance-to-Human-Health.pdf>

2 Biodiversity and Your Organisation

A critical step is to begin to identify some basic aspects of your company's relationship with biodiversity.

2 Biodiversity and Your Organisation

Interactions with biodiversity are far reaching, but a critical step is to begin to identify some basic aspects of your company’s relationship with biodiversity. A suggestion of questions to ask yourself when starting to consider your company’s relationship with biodiversity are detailed in Table 1 below.

Please note a [glossary of biodiversity terms](#) can be found in section 2.1.

Table 1: Starting Points for Considering Biodiversity

Questions	Questions
<p>Where is your business situated? <i>Are you in an urban, sub-urban or rural environment? Look at aerial imagery: are there trees, woodland, hedgerows or watercourses nearby? How do they connect into the wider landscape?</i></p>	<p>What land management do you currently undertake on your premises? <i>How do you manage any green space on site? Do you use any pesticides or herbicides, if so which ones?</i></p>
<p>Does your company sit within or close to a nationally or internationally protected site?¹⁰ <i>It could mean your local area holds important species, features or habitats that hold national or international importance.</i></p>	<p>Who are your interested parties? <i>Do you have local community groups, business associations, customers or suppliers who might be interested in your land management practices?</i></p>
<p>Does your company comply with all legal requirements relating to nature conservation?</p>	<p>What direct relationships does your business have with biodiversity? <i>Honey production, growing crops, raising livestock</i></p>
<p>What is the plot(s) of land that your business is situated on like? <i>Is everything tarmacked? Are there ‘green’ spaces on site to protect or enhance, or is there space to create these? Are there opportunities to enhance surrounding wildlife corridors? Do you have outdoor lighting on site?</i></p>	<p>What indirect relationships does your business have with biodiversity? <i>Buying ingredients</i></p>
<p>Are there any invasive species present? <i>Management of invasive species can bring about positive impacts for native biodiversity.</i></p>	

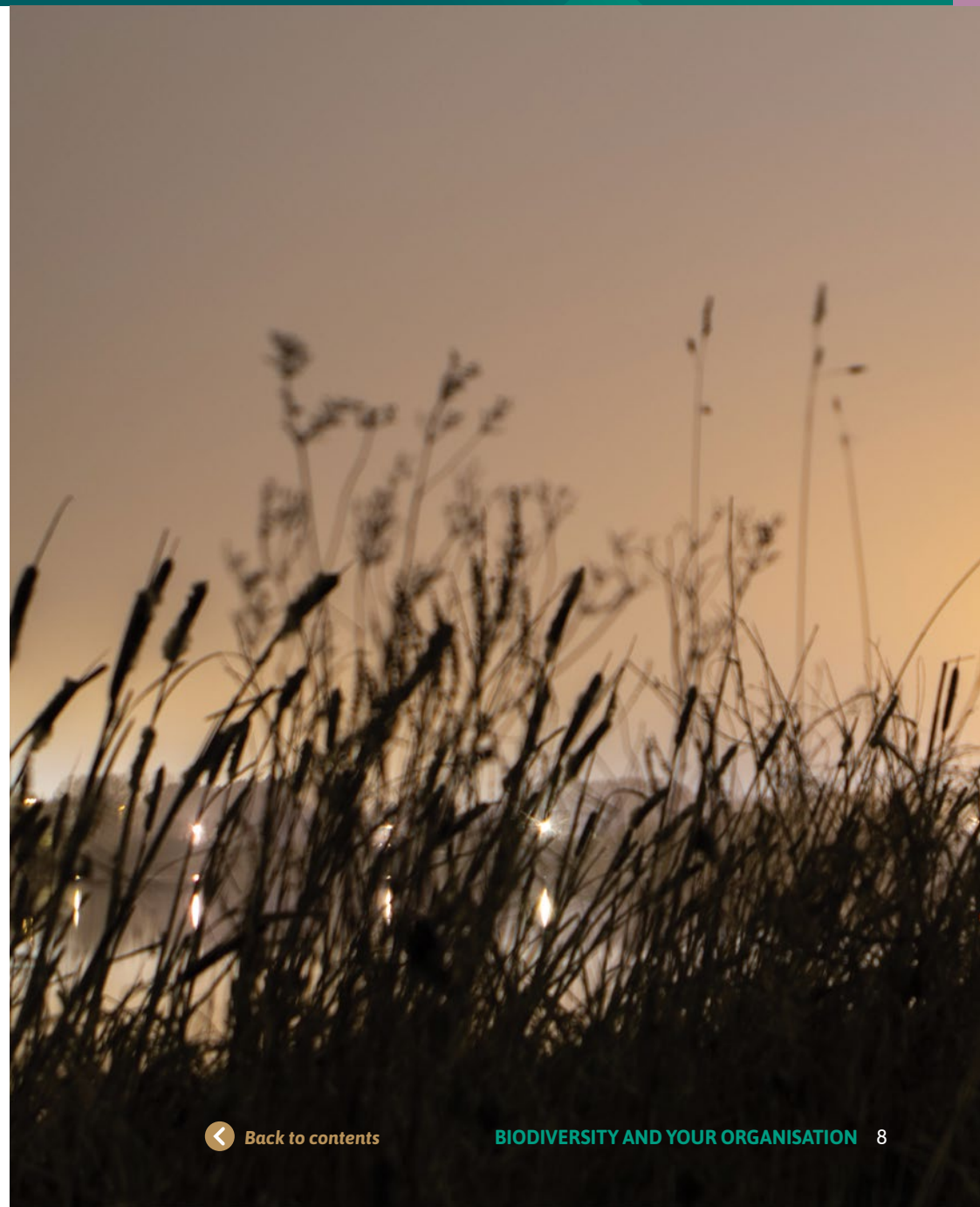
10 National Parks & Wildlife Service Ireland. Designated site mapping tool. Available at: <http://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba>

2 Biodiversity and Your Organisation

The results of the previous questions are an important first step and can help tailor opportunities for action and can be useful indicators of biodiversity for the benefit of the company and the wider community.

Another important step is determining the materiality of biodiversity to your organisation. Assessing the degree to which your company relies on or may be impacting existing biodiversity can help determine the scale of any biodiversity enhancement measures which you may wish to implement. A proposed system for helping you determine the materiality of biodiversity to your organisation is outlined in Table 2 below.

Please note that energy consumption and greenhouse gas production for the construction and maintenance of facilities, cooling, energy management on site, as well as transport and its negative impacts on the climate, play an important role for the food retail sector. These actions can have an indirect impact on biodiversity through climate change. However, these areas are better covered in the [Origin Green Guidance - Pathways to Net Zero](#) and are not further discussed here.



2 Biodiversity and Your Organisation

Table 2: Material Determination Table¹¹. This can be completed based on your company's direct activities only, or for companies with close working relationships with suppliers, the scope can be broadened to include them.

IMPACT ON	CORPORATE ACTIVITY	YOUR SCORE
Ecosystem / Biodiversity	Are corporate activities associated with land use?	No: 0 Points Insignificantly: 1 Point Significantly: 3 Points
	Do any of the company's (and/or direct suppliers) sites operate in the vicinity of a protected area or areas with high biodiversity value? e.g. sites designated for nature conservation, bogs, woodland	No: 0 Points Yes: 3 Points Unknown: 3 Points
	Do any of the company's sites process mineral raw materials or inputs derived thereof?	No: 0 Points Insignificantly: 1 Point Important input: 3 Points
	Do any of the company's sites process raw materials stemming from plants or animals or inputs derived thereof?	No: 0 Points Insignificantly: 1 Points Important input: 3 Points
	Do any of the company's sites use genetically engineered agricultural products or corresponding products?	No: 0 Points Yes: 3 Points
	Do any of the company's sites own land with outdoor space?	No outside areas: 0 Points Small areas: 1 Point Bigger areas: 2 Points Big areas: 3 Points
	Do greenspaces or other ecologically valuable structures (biotopes) exist on the company premises?	None: 0 Points One biotope: 2 Points Several biotopes: 3 Points
	Historically, has the company ever restored habitats and/or compensated for damages to nature?	Not relevant, no impacts: 0 Points Yes: 1 Point No: 3 Points

11 Table extracted, with amendments, from the Business and Biodiversity Campaign, Fact Sheet: Biodiversity in the Food Industry - Food Retail. Available from: <https://www.business-biodiversity.eu/en/food-industry>

2 Biodiversity and Your Organisation

IMPACT ON	CORPORATE ACTIVITY	YOUR SCORE
Overuse of natural resources	Is water a significant input for the company (and/or direct suppliers)?	<i>Insignificantly: 1 Point Significantly: 2 Points Very significantly: 3 Points</i>
	Does the company or its suppliers operate in water scarce regions ¹² ?	<i>No: 0 Points Yes: 3 Points Unknown: 3 Points</i>
Alien invasive species	Is the company aware of any alien invasive species ¹³ on its premises?	<i>No occurrence: 0 Points Yes: 1 Points Unknown: 1 Points</i>
	Does the company carry out international deliveries or procure through international imports?	<i>No: 0 Points Insignificantly: 1 Point Significantly: 2 Points</i>

Results

0-8 POINTS = immaterial significance

9-13 POINTS = medium significance

13+ POINTS = high significance

¹² Catchments.ie - water catchment data. Available at: <https://www.catchments.ie/>

¹³ Invasive Species Ireland: Species Accounts. Available from: <https://invasivespeciesireland.com/species-accounts/>

2 Biodiversity and Your Organisation

2.1 Glossary

Biotope:

A whole or part of any habitat defined by the dominant organisms which live in it; e.g. heather moor.

Ecosystem:

A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.¹⁴

Ecosystem Services:

Benefits that people obtain from ecosystems including clean air, water provision, and food provision.

• **Direct Ecosystem Services:**

Benefits people gain directly from the ecosystem; e.g. food provision, water provision, flood regulation, pest and disease Management.

• **Indirect Ecosystem Services:**

Benefits gained from indirectly from the ecosystem; e.g. the formation and storage of organic material; nutrient cycling; soil creation; and the assimilation, neutralisation and detoxification of wastes.

Greenspace:

Any vegetated land or body of water within an urban area.

Wildlife Corridor:

A strip of natural habitat connecting populations of wildlife otherwise separated by cultivated land, roads, etc.

¹⁴ United Nations (1992) Convention on Biological Diversity. Available at: <https://www.cbd.int/convention/articles/?a=cbd-02>



3 Introduction to Biodiversity Management

Biodiversity management refers to the conscious decision making process to manage and support biodiversity, which may occur alongside society's requirements.

3 Introduction to Biodiversity Management

The management of biodiversity within a given area can be consciously or unconsciously carried out. As humans we have shaped the world, finding ways to get the resources we need to set up our modern societies, so too have we been undertaking biodiversity management. For example, the felling of native woodland can lead to a reduction in habitat for birds, invertebrates, bats, pine marten, red squirrels and more. Another example would be the regular fertilising and mowing of grassland habitat which reduces the suitability of the grassland for wildflowers and reduces pollinator habitat.

The term 'biodiversity management', however, tends to refer to conscious decision making to manage and support biodiversity, which may occur alongside society's requirements. For example, the creation of wildlife ponds in quiet corners of a site, or the planting of species rich hedgerows along field boundaries.

The traditional mitigation hierarchy is a framework (Figure 1) which is used as a tool in biodiversity management. The tool is used to help prevent the company and any future development bringing about negative impacts to biodiversity from a project/activity/development. Actions which go beyond the mitigation hierarchy and improve biodiversity over and above the requirements for avoidance, mitigation or compensation are termed enhancements (for example, the creation of larger and higher biodiversity habitats and beyond those required for mitigation and compensation purposes)..

The biodiversity management relating to Origin Green should aim to be enhancing existing biodiversity, and not considered as mitigation for development elsewhere. Any future development may require further, site specific, mitigation and should only be considered relevant should they result in the enhancement beyond these purposes.

Having gained a basic understanding of the significance of biodiversity to your business, and your businesses interactions with it, you should be positioned to start understanding the scale of biodiversity management and/or enhancement measures you may wish to implement.

Origin Green members work in a wide range of different environments, and at a wide range of scales. As such it isn't possible to provide a one size fits all approach for biodiversity enhancement measures, but the following techniques should help you tailor a programme that works for your organisation.

Figure 1: Mitigation Hierarchy



The mitigation hierarchy tool prioritises the avoidance of actions which may bring about negative impacts, then seeking to mitigate to reduce any negative impacts to biodiversity which cannot be avoided, and lastly compensation measures should be used to off-set unavoidable remaining impacts.

4 Biodiversity Targets in Your Origin Green Plan

Process to establishing an Origin Green biodiversity target within an Origin Green Plan.

4 Biodiversity Targets in Your Origin Green Plan

4.1 Initial Site Review

The first step to developing biodiversity targets is understanding and documenting what is currently present within your target area. Your target areas may include land that your company, employee(s) and/or supplier(s) own, or community-owned land that your company agrees to enhance. It could also include land where the management will be supported by an external organisation or non-governmental organization (NGO) such as the Irish Wildlife Trust (IWT) or local Rivers Trust (RT), following agreement with them and the landowner.

As part of doing this it is advised that you check whether your proposed site is within a designated area¹⁵ which may already be protected for wildlife conservation purposes. Should your site be one of these areas then it is advised that consultation is carried out with your local authority's Heritage or Biodiversity Officer to ensure that any biodiversity enhancement measures proposed do not unintentionally harm the protected area.

Ecological surveys may be required for sites prior to carrying out enhancement works. The need for these is considered unlikely should proposed measures include only the installation of nesting and roosting boxes for wildlife. Similarly, habitat creation or enhancement works planned on already highly managed land (e.g. bare ground, manicured lawns, ornamental flowerbeds) are unlikely to require ecological survey. However, surveys are recommended for sites with semi-natural or natural habitats to ensure that any priority habitats or species are identified and protected and can be suitably incorporated into proposed biodiversity targets.

These ecological surveys can be used to target enhancement measures, or, can be conducted to a methodology which enables "Biodiversity Net Gain" calculations which can be used as a quantifiable metric for reporting biodiversity enhancement.

Whether or not ecological surveys are undertaken, creating a detailed photographic record of the site is recommended for reporting purposes and gaining support from employees by demonstrating the improvements made. Having set 'photo points' throughout the site where photographs can be taken on subsequent years to monitor changes is highly encouraged.

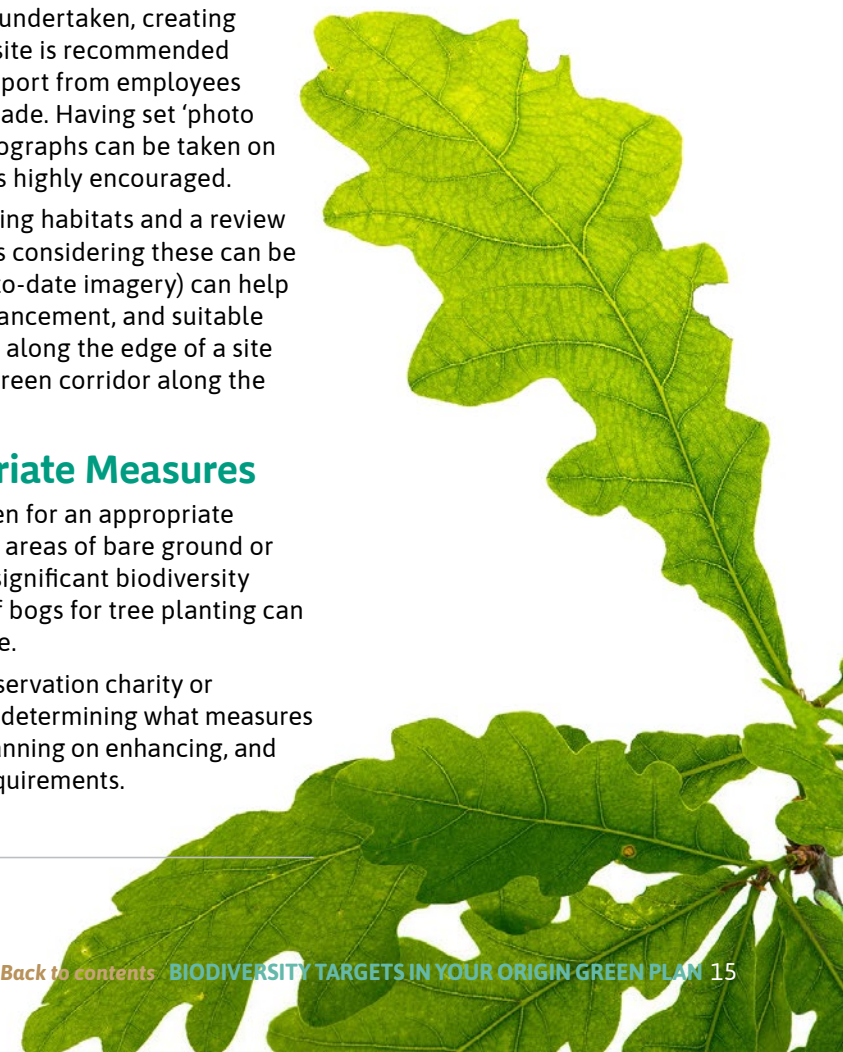
A walk around of the site and surrounding habitats and a review of aerial imagery (such as Google maps considering these can be dated or utilising a drone for more up-to-date imagery) can help determine key areas of the site for enhancement, and suitable measures. E.g. a species rich hedgerow along the edge of a site could be used to enhance an existing green corridor along the edge of the site.

4.2 Determining Appropriate Measures

An appropriate measure must be chosen for an appropriate location; the planting of native trees in areas of bare ground or improved grassland can bring around significant biodiversity improvements, but the management of bogs for tree planting can lead to a reduction in biodiversity value.

Should you be working with a local conservation charity or organisation they will likely help you in determining what measures may be suitable for the land you are planning on enhancing, and advise you on ongoing management requirements.

¹⁵ National Parks & Wildlife Service: Protected Sites in Ireland Available at: <https://www.npws.ie/protected-sites>



4 Biodiversity Targets in Your Origin Green Plan

A selection of measures you may wish to include within your project are detailed below:

HEDGEROW PLANTING

Benefits

Native species rich hedgerows can provide valuable foraging, commuting and/or breeding habitat for a wide range of species including pollinating insects, birds, hedgehogs, bats, badgers and more.

Having a 1.5-2m border at the hedgerow base that is protected from fertilizer and pesticides will allow wildflowers to naturally grow and further enhances the habitat for invertebrates.

To create or enhance connectivity between other natural and semi-natural habitats can help enhance wildlife corridors in your area.

Recommended resources

The National Biodiversity Data Centre's "How-to-guide: Hedgerows for Pollinators" provides valuable advice on species composition, location and management requirements for maximum biodiversity gain.

Trees on the Land provides native trees and hedging plants to farmers, smallholders, councils, community groups, schools, colleges, sports clubs, golf clubs, gardeners and other landowners: <https://www.treesontheland.com/>

TREES AND WOODLAND (PLANTING)

Benefits

The planting of native trees can provide valuable habitat and resources for a range of species including pollinating insects, birds, bats, red squirrels and pine marten (site dependent).

The planting of trees in woodland blocks can create functional woodland habitat providing habitat for a wide range of species whereas the planting of treelines helps create wildlife corridors between other green features in the landscape.

Things to avoid

Make sure you're not planting trees on high value habitats. If you're in an area of peatland or high-quality grassland habitat, other restoration measures may have overall higher biodiversity and ecological benefits.

Recommended resources

"Our Trees: A guide to growing Ireland's Native Trees in Celebration of a New Millennium" provides details on choosing species, planting and managing planted tree. <https://www.ringofgullion.org/wp-content/uploads/2015/09/OurTrees.pdf>

Trees on the Land provides native trees and hedging plants to farmers, smallholders, councils, community groups, schools, colleges, sports clubs, golf clubs, gardeners and other landowners: <https://www.treesontheland.com/>

The All-Ireland Pollinator Plan identifies native pollinator friendly trees that can be planted in their [businesses guidance document](#).

4 Biodiversity Targets in Your Origin Green Plan

ORCHARDS

Benefits

The planting of orchards can provide valuable habitat and resources for a range of species including pollinating insects, birds and bats, but windfall apples can provide food for various mammals.

While apple trees aren't native to Ireland they've been grown for hundreds of years for their crops. Irish Heritage varieties are recommended which have been bred for the Irish climate to more likely produce higher biodiversity benefits, and larger crops.

Recommended Resources

The Orchard Project have a series of [series of guides](#) on the creation and management of Orchards. Please note their variety selection is UK centric.

The People's Trust for Endangered Species have a [guide](#) on the management of traditional orchards to increase their value for biodiversity.

Irish Seed Savers work to protect heritage fruit varieties. <https://irishseedsavers.ie/>

TREELINES AND WOODLAND (*Shelters and Fencing*)

Benefits

Protect saplings and young trees from grazing by rabbits and deer, allowing the trees to successfully establish, whereby they might otherwise fail.

RIPARIAN (*waterside*) FENCING

Benefits

Fencing off of waterside areas, from livestock or other types of intensive land management, can help allow riparian vegetation and natural habitat corridors along the watercourses edge to establish. This can lead to the enhancement of habitat for pollinators, birds, bats, otters, badgers and water vole.

It can also help reduce riverbank erosion, improving habitats for freshwater invertebrates, fish and other species that rely on the river for their food supply.

4 Biodiversity Targets in Your Origin Green Plan

CREATING DARK CORRIDORS

Benefits For sites particularly with treelines, watercourses and hedgerows surrounding them, the creation of dark corridors within your site can be of value. These can enhance the site for foraging bats and other twilight and nocturnal species such as badgers, foxes and owls.

Resources **Bat Conservation Ireland's "Bats and Lighting" guidance notes** provides on reducing the impacts of lighting on suitable foraging and commuting habitats, which is applicable to a range of species, and for bat roosts.

BATBOX

Benefits Bat boxes can be used to create roosting and breeding habitats for bats. These can be included when constructing buildings, or affixed onto trees or pre-existing buildings.

Management Requirements Wooden bat boxes are generally only recommended in indoor scenarios, e.g. in barns. Woodcrete/woodstone bat boxes, which are longer lasting, are advised for outdoor settings.
It's advised that these are installed near habitats which provide bat foraging potential (e.g. woodland, watercourses, hedgerows, scattered shrubs). The enhancement of green corridors through hedgerow and tree planting can further improve these habitats.

Resources **Bat Conservation Ireland** provide **guidance** on building, installing and monitoring bat boxes.

BIRD-BOXES

Benefits Installing bird boxes around your site can lead to an increase in the number of birds in your area.
There are a wide variety of nest boxes, from the 'traditional style' with round holes for entry, to swift bricks, owl nest boxes and more. The wider the variety of types of nest boxes erected, the more likely that they'll be used. However, a barn owl nest box in an urban environment, or a wagtail/dipper nestbox away from the river, are unlikely to attract their target species.

Things to avoid Don't buy or decorate your bird boxes to be brightly coloured. This can increase the risk of predation of birds using the boxes.

Resources **Birdwatch Ireland** provide **advice on different types of nest boxes and their installation**, and a sell a wide variety of different types.

4 Biodiversity Targets in Your Origin Green Plan

HEDGEHOG FENCING AND NEST BOXES

Benefits

Hedgehogs will often follow green corridors of hedgerows, woodland and shrubs to get around. As solid walls and fences have gone up between properties and gardens this has reduced their movements significantly and is resulting in declines for the species.

Creating holes at the bottom of fences approximately 13cm x 13cm is enough to enable hedgehog passage, and help provide them with access to wider habitats.

Resources

NHBS sell a range of [hedgehog nest and hibernation boxes](#), and fenceplates for hedgehog holes.

GREEN ROOFS

Benefits

Green roofs can create green spaces where there once was none. These roofs provide valuable habitat directly for invertebrates, which produce foraging opportunities for bats and birds.

In addition they also have additional benefits relating to air and water quality, energy usage, and storm water runoff.

Resources:

[Green Roofs Over Dublin](#) provides [further information](#) about the construction and effectiveness of green roofs.

INVERTEBRATES HOTELS

Benefits

Invertebrate hotels create foraging and sheltering habitat for a wide variety of invertebrate species including bees, cavity nesting bees, ants, beetles, woodlice and spiders.

You can either make your own or buy commercially available hotels. Very large hotels should be avoided as they are more likely to harbour disease or attract predators. It is better to have multiple smaller hotels.

Maintenance

Some degree of maintenance is required. For self-made hotels you may wish to add additional materials or additional structural support as required. Commercial hotels often have a limited lifespan and will require regular replacing.

Resources

- Bioweb** has tutorials for making your own insect hotel.
- [How-to-Guide – Creating wild pollinator nesting habitat](#)
 - [Make your own bee hotel](#)
 - [All Ireland Pollinator Plan's How-to-guide to Nesting Habitats](#)

4 Biodiversity Targets in Your Origin Green Plan

BEE BANKS

Benefits

Of the 98 wild bee species in Ireland, 77 are solitary bees, and 62 of these are ground nesting. By creating earth banks/exposing bare ground you can create habitat for these 62 ground nesting species, which can often be overlooked in conservation efforts.

Maintenance:

Once a year, in late autumn, clear off any vegetation that has grown over the banks to keep the ground clear. Never use any pesticides or herbicides on an area meant for solitary bee nesting.

Resources

The **All Ireland Pollinator Plan** has a [guide](#) for creating nesting pollinator habitat.

NATIVE MEADOWS

Benefits

Reducing mowing to create native meadows provides foraging habitat for pollinating insects and other invertebrates. These meadows can also provide valuable foraging habitats for terrestrial mammals, birds and bats.

Maintenance

Native meadows require regular ongoing maintenance. This includes keeping short over the winter months. Following this the meadow should only be cut again in early spring, and late summer, ensuring that all cut material is removed. Wildflowers are easily outcompeted by grasses and other plants, and areas set aside as wildflower meadows should not be fertilised or cut regularly over the summer months.

Resources

The **All-Ireland Pollinator Plan** has many [resources](#), including tutorial videos for creating and managing a native wildflower meadow.

PONDS

Benefits

Ponds are one of the easiest, and most rewarding habitats to create opportunities for wildlife. They provide homes for freshwater insects, breeding resource for amphibians, and a foraging and water source for a variety of other species including birds, bats and mammals.

Things to avoid

Stocking your pond with fish and non-native plant species will reduce the pond's biodiversity value.

Resources

The **Wildlife Pond Handbook** by Louise Bardsley, provides guidance in creating and maintaining a wildlife pond.

4 Biodiversity Targets in Your Origin Green Plan

PEATLAND RESTORATION

Benefits

Blocking ditches and drains within damaged peatland can help restore the ecosystem. This enhances habitat for invertebrates, amphibians, small mammals and birds. In addition it provides carbon storage, and water retention which can help as a form of natural flood management.

Resources

NatureScot provides a [guide](#) for assessing the status of your peatland which is applicable across countries.

The **Irish Peatland Conservation Council** host a [peatland management and restoration toolkit](#).

The **Global Peatland Restoration Manual** includes practical techniques for [improving your peatland habitat](#), and suggestions for monitoring.

INVASIVE SPECIES MANAGEMENT

Benefits

Removing invasive species can allow native biodiversity to re-establish and increase species diversity.

Resources

Invasive Species Ireland has [guidance](#) on identifying and managing invasive species.

Note:

If a company is seeking to develop biodiversity primary supplier targets, they can refer to the [All Ireland Pollinator Plan - Farmland: Action to help Pollinators](#)

Further farmland supplier guidance will be provided later this year.

4 Biodiversity Targets in Your Origin Green Plan

4.3 Demonstrating Biodiversity Gain, and Selecting Metrics

Once you've chosen your site and determined some possible biodiversity enhancement techniques you wish to implement, you need to choose a metric by which your biodiversity enhancement measures can be measured and monitored for years to come.

It is a requirement that your Origin Green biodiversity target has an appropriate metric (a key performance indicator) which will allow your company to determine objectively whether your biodiversity target is being met as planned.

For those undertaking larger scale projects where habitats and landscape will change (site expansions, change of land use or large scale long term vegetation changes), Biodiversity Net Gain¹⁶ calculations can be used to help plan and quantify the impact on habitat biodiversity and provide comparative metrics suitable for wider reporting purposes. This can provide quantifiable 'before' and 'after' figures, however would not necessarily be useful for monitoring from year to year or quantifying changes in animal species numbers as these calculations may require specialist ecological input.

Another option is a photographic record. By taking photos of your site from year to year from set 'photo points' this can be particularly effective at demonstrating the enhancement of a site where measures such as tree planting have been implemented.

However, the collection of biological data can really enhance a project. It can provide you with quantifiable data from year to year to see how your project is doing and can help you target additional measures. There are a variety of ways this could be done including dedicated annual wildlife surveys (Bioblitz's) to record the total number of species on site. However for most, citizen science programmes should provide you with useful metrics, and they are often tied in with an organising body who can provide further advice on supporting your target species.

Citizen Science Programmes

There are a wide variety of citizen science programmes for recording biodiversity, and it's not possible for this document to cover them all. Not all programmes will be suitable for all enhancements, however this list will attempt to summarise which programmes may be useful for various enhancement types. In some instances, whilst your project may not strictly fit into the category for being eligible, conducting the methodology provided in the surveys can still provide you with quantifiable information.

For most projects an insect-based survey, combined with bird and/or plant recording should allow for documentation in the changes in biodiversity as your project progresses.

Should you desire other species to be captured in your data it's worth discussing this with your local wildlife trust or wildlife monitoring groups (e.g. bat groups), or commissioning additional ecological surveys.

+ *The National Biodiversity Data Centre have published a **Beginners Guide to Recording Biodiversity.***

¹⁶ CIEEM: Biodiversity Net Gain. Available at: <https://cieem.net/i-am/current-projects/biodiversity-net-gain/>

4 Biodiversity Targets in Your Origin Green Plan

Insects

PEOPLE FOR BEES <i>Hosted by: IWT</i>	
Overview	Citizen science project that trains people in creating bee habitat and monitoring bee populations on their local patch.
Recommended for:	Greenroof installation, wildflower meadows, bee banks and orchards.
Get Involved at:	https://iwt.ie/people-for-bees/
BUMBLEBEE MONITORING SCHEME <i>Hosted by: National Biodiversity Data Centre</i>	
Overview	Programme for recording bumblebees. Requires a monthly survey between March and October of your chosen site using a fixed route.
Recommended for:	Hedgerows, wildflower meadows, bee banks and orchards.
Get Involved at:	https://www.biodiversityireland.ie/projects/monitoring-scheme-initiatives/bumblebee-monitoring-scheme/
BUTTERFLY MONITORING SCHEME <i>Hosted by: National Biodiversity Data Centre</i>	
Overview	Programme for recording butterflies. Requires a survey between April and September of your chosen site using a fixed route. One survey a week is encouraged.
Recommended for:	Hedgerows, wildflower meadows, bee banks and orchards.
Get involved at:	https://www.biodiversityireland.ie/projects/monitoring-scheme-initiatives/butterfly-monitoring-scheme/
FLOWER INSECT TIMED (FIT) COUNT <i>Hosted by: National Biodiversity Data Centre</i>	
Overview	Survey involves watching a 50x50cm patch of flowers for 10 minutes between April and September. Multiple surveys are encouraged but not essential.
Recommended for:	Greenroof installation, hedgerows, wildflower meadows, invertebrate hotels, bee banks and orchards.
Get involved at:	https://pollinators.ie/record-pollinators/fit-count/



4 Biodiversity Targets in Your Origin Green Plan

Insects continued

DRAGONFLY IRELAND 2019-2024 (DRAGONFLY MONITOR) <i>Hosted by: National Biodiversity Data Centre</i>	
Overview	<i>Dragonfly Monitor, which is the best programme from a monitoring perspective, requires a minimum of four surveys – two in May or June, and a further two in July and early September.</i>
Recommended for:	Pond creation, riparian management

Birds

IRISH GARDEN BIRD SURVEY <i>Hosted by: BWI</i>	
Overview	<i>Survey involves recording the highest number of bird species visiting their area between December and February each year. Surveyors asked to keep note of the highest number of each bird species visiting their area every week.</i>
Recommended for:	Greenroof installation, hedgerows, trees and woodland planting and bird box programmes.
Get involved at:	https://birdwatchireland.ie/our-work/surveys-research/research-surveys/irish-garden-bird-survey/
BIRDTRACK <i>Hosted by: British Trust for Ornithology</i>	
Overview	<i>Recording programme for birds. There's no formal methodology, just get out and record what birds you see. From the perspective of repeatability and comparability between years – ensuring effort levels for surveying are equal between years is key. (i.e. doing a set number of hours spaced evenly throughout the year)</i>
Recommended for:	Greenroof installation, hedgerows, trees and woodland planting and bird box programmes.
Get Involved at:	https://www.bto.org/our-science/projects/birdtrack



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Plants

GARDEN WILDFLOWER HUNT <i>Hosted by: Botanical Society of Britain & Ireland (BSBI)</i>	
Overview	Recording programme for recording native wildflowers. Repeating year to year could help you document change in types and numbers of species present.
Recommended for:	Native meadows, trees, hedgerows and invasive species management.
Get Involved at:	https://bsbi.org/garden-wildflower-hunt

Mammals

IRISH HEDGEHOG SURVEY <i>Hosted by: National University of Ireland, Galway & the NBDC</i>	
Overview	This project involves surveying with a footprint tunnel or a trail camera for 5 nights in a row between the start of May and the end of September.
Recommended for:	Hedgerow
Get Involved at:	https://www.irishhedgehogsurvey.com/



4 Biodiversity Targets in Your Origin Green Plan

4.4 Key Considerations From a Management Perspective

- **Who owns the land?** Have you got permission?
- **Are there any constraints to how the land or buildings can be managed?** Can only smaller trees species be planted due to buildings nearby? Does your building have suitable strength to support a green roof?
- **Who will be responsible for delivering the project?** Do they have the required authority, competence and resources (e.g. financial, human and/or materials) to manage the target and deliver on associated initiatives?
- **Who will be responsible for monitoring the project?** Will you do this in house? Or will you require a third party such as an ecologist.
- **Who will be responsible for undertaking any further management of the land in order to ensure its long term success in increasing biodiversity?** If for example you decide to create a native meadow, who's going to be responsible for ensuring an appropriate management plan is implemented? Or if trees are planted who will be responsible for caring for them and for what timescale?
- **What resources are required to support the project after it's been initially implemented?** Will you require particular or specialist tools? If a tree fails will you replace it? What if a nest box becomes damaged?
- **How will you engage staff and management with the target?** How will you motivate staff and encourage ownership of the target and maximise the chance of success? Will you get them involved in enhancing and monitoring your chosen area?
- **Who outside the business needs to be involved in the target or have the results communicated to them?** Do you need to consult adjacent landowners, suppliers, regulators or other stakeholders to ensure the achievement of the target, or could you draw on their input and expertise as partners?
- **Can the company integrate the biodiversity targets to support the the below company actions?**
 - UN Sustainable Development Goals;
 - ISO 14001: 2005; and/or,
 - Corporate Social Responsibility objectives currently running in the company.



4 Biodiversity Targets in Your Origin Green Plan

4.5 Setting SMART Targets

When setting your targets you will need to consider the area of land you have, the resources available to implement and monitor the target, and the level of significance of biodiversity to the business.

In addition, all biodiversity targets should follow the SMART target objectives. This encourages targets to be set appropriately and better enables the achievement of positive outcomes.

4.6 Don't Forget your Baseline

Once your target area is chosen, and you know which metrics you wish to use for your preferred management options, then undertake your baselines surveys. You can then refer each year back to these surveys to identify target progression.

4.7 Changes to Biodiversity Targets

Targets and associated initiatives can be amended where clear justification is provided. For instance when an Origin Green member acquires or disposes with a site – biodiversity targets may change to reflect the company's existing site ownership. Companies must complete any target updates in line again with the SMART target objectives.

- S Specific.** The target should be defined as clearly as possible, using simple terms and directed to significant areas and/or areas of potential significant improvement.
- M Measurable.** The means of monitoring (e.g. photographs, BioBlitz, biodiversity net gain, citizen science survey) should be identified and the unit of the metric confirmed e.g. are you looking for an increase in the number of plant or target animal species, or an increase in the numbers of plants or animals overall?
- A Achievable.** The business could consider setting ambitious targets that motivate and inspire the company to demonstrate leadership in their sector however this should be balanced by what is achievable.
- R Responsibility.** Assigning responsibility is critical to drive progress, reporting and changes where the target and/or initiatives are not being delivered as planned. Staff without sufficient authority or resources to drive change cannot be expected to achieve targets assigned to them. Delegating a responsible person per initiative is a requirement of the Origin Green Programme. If the company are lacking an available resource a training initiative may help resolve this issue.
- T Time-bound.** Every action supporting the target should have a deadline. Progress towards a goal will be more consistent and likely if those responsible for it have a clear sense of the deadlines against which their progress will be assessed. Milestone targets for each plan year are expected to ensure appropriate reporting.

5 Further Support and Information

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National Bodies

National Parks and Wildlife Service <https://www.npws.ie/>

The National Parks and Wildlife Service is part of the Heritage Division of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs with oversight for

National Biodiversity Data Centre www.biodiversityireland.ie

Biological Records Centre for Ireland, and the co-ordinator of various biological monitoring scheme initiatives including the Flower-Insect Timed Count and Bumblebee Monitoring Scheme. Website also lists partner biological monitoring schemes which could be of use for monitoring targets.

Local Authority Waters Programme (LAWPRO)

<https://lawaters.ie/>

LAWPRO is a local authority shared service working with the 31 local authorities, state agencies, stakeholders and communities. The goal is to meet the requirements of the EU Water Framework Directive to have all natural waters at a good standard by 2027. The programme has two teams; the Communities Team and the Catchments Team, both teams work closely together and operate out of 13 different local authority centres nationwide.

Professional Bodies

Chartered Institute of Ecology and Environmental Management (CIEEM) www.cieem.net

Professional body for ecological consultants and environmental managers throughout the UK and Ireland. Has a resource for finding ecological consultants.

Charities

Irish Wildlife Trust www.iwt.ie

The Irish Wildlife Trust (IWT) is a charity aiming to conserve wildlife and habitats throughout Ireland and manage nature reserves and undertake conservation and outreach projects throughout the country. They run biological monitoring schemes including IWT People for Bees which delivers introductory training on Ireland's bees, bee monitoring and bee friendly habitat creation, and offer a Corporate Support Programme and tailored partnership programmes which can include sponsorship of specific actions on their wildlife reserves to improve biodiversity.

The Rivers Trust www.theriverstrust.org

The Rivers Trust is a body representing local Rivers Trusts throughout Ireland and the UK. Member charities goals tend to be of protecting and enhancing rivers and the biodiversity they support. Charities will undertake riparian corridor and habitat enhancement works, invasive species management, ecosystem monitoring and community outreach activities. Local rivers trusts may be open to working with businesses to improve their nearby riparian habitats and meet biodiversity targets in return for funding and/or volunteer hours.

BirdWatch Ireland www.birdwatchireland.ie

BirdWatch Ireland is focused on the conservation of birds and biodiversity in Ireland. They work in conservation, outreach, policy and science. They run the Irish Garden Bird Survey amongst other research projects and conservation projects, and offer a Corporate Support Programme and tailored partnership programmes.

5 Further Support and Information

Butterfly Conservation Ireland www.butterflyconservation.ie

Butterfly Conservation Ireland are a charity set up in 2008 dedicated to the support of butterflies. They operate a nature reserve in County Kildare and provide advice and information to organisations, the general public and individuals concerning butterfly conservation.

Bat Conservation Ireland www.batconservationireland.org/

Founded in 2004, Bat Conservation Ireland is a charity which aims to promote the conservation of bats. They do this through outreach, conferences and workshops, carrying out active bat conservation projects, and training members of the public to survey their local bat populations.

Native Woodland Trust www.nativewoodlandtrust.ie

The Native Woodland Trust is dedicated to the preservation of Ireland's remaining ancient woodlands, and restoration of Ireland's original climax ecosystem, through the re-creation of woodlands, using only native seed.

Crann – Trees for Ireland www.crann.ie/trees/

Crann is a voluntary tree organisation dedicated to the promotion and protection of trees, hedgerows and woodlands.

Trees on the Land www.treesontheland.com

Trees on the land is a charity organisation that put together and distribute tracks of native Irish tree species for planning programmes.

Irish Seed Savers www.irishseedsavers.ie/

Irish Seed Savers is a charity whose main objective is to conserve Ireland's very special and threatened plant genetic resources. Their work focuses on the preservation of heirloom and heritage food crop varieties that are suitable for Ireland's unique growing conditions. They sell heritage variety apple trees and vegetable seeds.

Irish Peatland Conservation Council www.ipcc.ie

The Irish Peatland Conservation Council is a charity with the aim of protecting a representative sample of the peatlands of Ireland for people to enjoy today and in the future. They do this through protecting and enhancing peatland habitat, advocating for wise management of peatland habitat and educating the public and landowners. They provide guidance in peatland management and details of restoration and monitoring techniques.

