

# Eyes on Ecology



## Commercial Forests - *Much More Than WD4*

In keeping with the principles of sustainable forest management, Veon Ecology has been working with our private forestry clients in the area of Biodiversity Net Gain. The first step in this process commonly being the formulation of Natural Capital Assessment Reports (NCARs), which in turn form the basis of Veon's be-spoke Natural Capital Plans (NCPs) for Forestry.

Veon's NCPs also aim, insofar as is possible, to reduce the risk to the forests from biotic and abiotic factors that could damage or reduce yield and the ecology of the forest.

Since 2021, Veon's CIEEM-trained Ecologists have conducted baseline surveys at more than twenty separate commercial forestry plantation sites. The resulting ecological data recorded has proven that, even at just a macro level, the wealth of biodiversity present across well-

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*NCPs... reduce the risk to the forests from biotic and abiotic factors  
that could damage ... the forest*

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managed commercial forestry plantations exceeds that of the commonly-assumed category of 'WD4', as prescribed by the late Dr Julie Fossitt in her 'Guide to Habitats in Ireland', where 'species diversity is low and single species stands are common'.

### What is Natural Capital?

Natural Capital is the stock of natural resources including geology, soils, air, water, and biodiversity that are present within a surveyed location.

By knowing the extent of the Natural Capital through a given forestry plantation, Veon's ecologists are able to quantify the full contribution it is making to the ecosystems both within and around it.

While Veon's NCARs document has some initial information on the ecological services being provided across a plantation, the follow-on production of our NCPs provides a more solid understanding of the ecological value of a given site intended for biodiversity enhancement by our clients.

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# Veon's Natural Capital Plans within Commercial Forestry

## BIODIVERSITY NET GAIN

'Biodiversity Net Gain' is an approach to habitat development that leaves biodiversity in a better state than before, in such a way that any loss of biodiversity through development will be halted and ecological networks can be restored.

Creating habitats from scratch can come with great risks of failure, especially when the soil and/or hydrology may not be appropriate for the planted or sown species. Colonisation by other plant species and animals may be slow.

Other times, some created habitats seem to persist well - e.g. woodlands in a general sense (although creating the ground flora comes with its own set of challenges), scrub, hedges, simple wetlands, and watercourses - which is encouraging for any strategies developed within forestry sites.

The main components of a habitat are space, food, water, and shelter.

- **Space** - The amount of space an organism needs to thrive varies widely from species to species.
- **Food** - The availability of food is a crucial part of a habitat's suitable arrangement. Too much food can also disrupt a habitat.
- **Water** - Water is essential to all forms of life. Every habitat must have some form of a water supply. Some organisms need a lot of water, while others need very little.
- **Shelter** - An organism's shelter protects it from predators and weather. Shelter also provides a space for eating, sleeping, hunting, and raising young. Shelters come in many forms. A single tree, for example, can provide sheltered habitats for many different organisms.

Veon Ecology's NCPs set out to:

1. Catalogue the biodiversity present within a forest;
2. Propose strategies for the continued protection of the biodiversity identified across the forest and its associated lands;
3. Propose strategies for the further enhancement of the biodiversity across the forest and its associated lands.

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*The ultimate goal for Veon is to achieve this through natural-based solutions, managed in accordance with sustainable forest management practices, to optimise yield while maintaining and enhancing the existing ecology, biodiversity, and landscape value of the forests.*

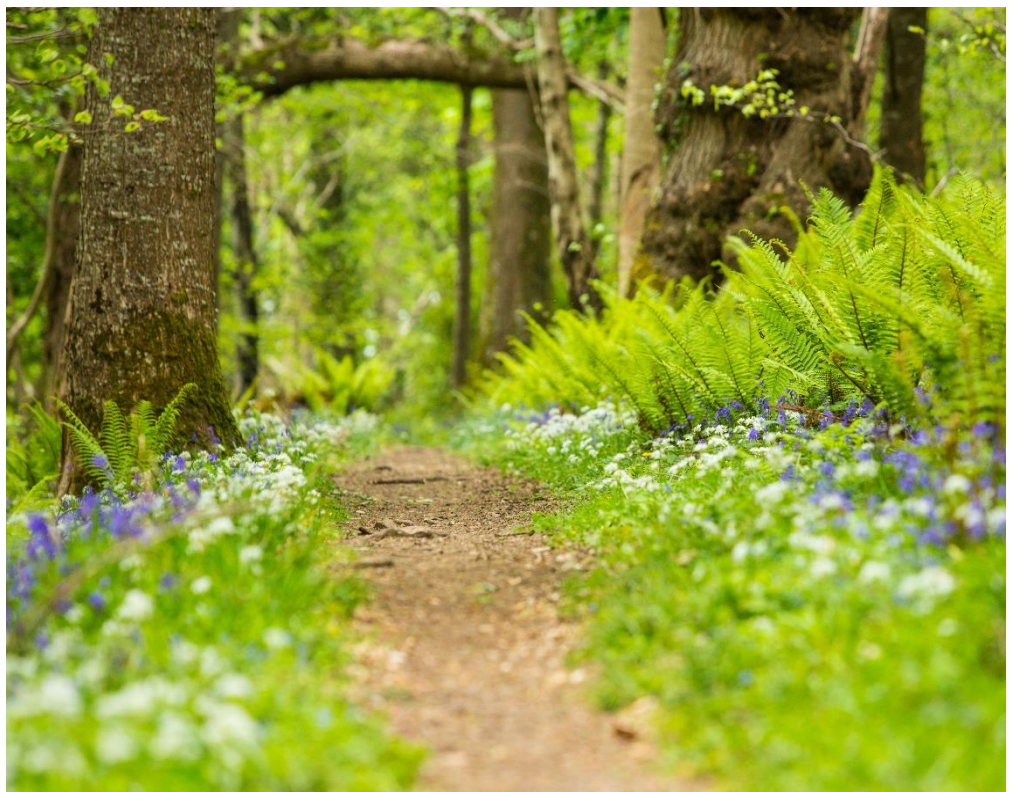
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As a direct outcome to our NCPs, Veon's ecologists can determine the value and quality of Ecosystem Services currently provided within a particular plantation and recommend appropriate nature-based solutions to our clients, developing a bespoke strategy with them that promotes biodiversity in line with BNG guidelines and methodologies while also protecting and enhancing the commercial aspect of a given forestry portfolio.

These recommendations concern site-specific and appropriate nature-based solutions, or 'Green Infrastructure Strategies', tailored in keeping with a client's broader intentions for their forest.

## Green Infrastructure

Green Infrastructure (GI) is commonly defined as 'a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services' in both rural and urban settings. Green Infrastructure is the ecological framework needed for environmental, social, and economic sustainability. These networks conserve natural ecosystem values and functions and provide associated benefits to human populations, including the creation of healthy and attractive places to live.



Individually, each forest has important roles and benefits that it provides. These are strengthened and enhanced when the forests are linked together into a network of green infrastructure with other ecosystems. To measure the social, economic, and environmental benefits of a site, Veon Ecology's NCPs look in detail at how a commercial forest contributes to the following:

- Supporting unique habitats for wildlife, biodiversity, and fragile ecosystems
- Providing or supporting forestry, crop production, agriculture, and energy development
- Increasing opportunities for sustainable land management
- Safeguarding priority habitats and species
- Restoring ecological networks
- Conserving and improving soil quality
- Providing green buffers or green wedges between built up areas
- Improving air quality
- Providing ready access to nature
- Assisting in climate change adaptation, including flood alleviation
- Increasing environmental education and awareness
- Enhancing biodiversity and natural resources
- Improving water quality
- Protecting water resources and abstraction sites and bringing them into multifunctional use
- Safeguarding the distinctive character and openness of landscapes and cultural heritage
- Safeguarding and encouraging beneficial use of local landscape resources
- Protection and conservation of protected landscape sensitivities, including historic landscapes, archaeological assets, built heritage, and cultural heritage

In this context, the Baseline Surveys will report on the present state of a forest and to what extent it is contributing to Green Infrastructure under each of the above categories.

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*Since the economic, social, environmental and physical benefit of green spaces and networks are understood to be of importance, Veon's NCPs feature a be-spoke Green Infrastructure strategy that can be integrated into the forest management plan.*

### NCA Accounting

*Ecosystem Extent Accounts* record the total area of each ecosystem, classified by type within a specified area, i.e. the ecosystem accounting area. Ecosystem Extent Accounts are measured over time by ecosystem type, thus illustrating the changes in extent from one ecosystem type to another over the accounting period.

*Ecosystem Condition Accounts* record the changes in the condition of the ecosystem over time and provide valuable information on the health of ecosystems.

*Ecosystem Services Flow Accounts* seek to place both an economic and social service value on the ecosystem being studied. For example, the water table in a rural location will often provide both drinking and sanitary water services to a household, alleviating the need to buy in this vital resource while also enabling other economic activity to occur.

*Monetary Ecosystem Asset Accounts* seek to assign value on biodiversity stocks, and any changes in the biodiversity within the ecosystem being surveyed. For clarity, this includes accounting for ecosystem degradation and enhancement.

### ECOSYSTEM SERVICES

Ecosystem services are generally defined as “ecosystem services, outputs, conditions, or processes of natural systems that directly or indirectly affect human wellbeing, and which have an impact on our survival and quality of life”.

There are four types of ecosystem services:

1. Provisioning
2. Regulating
3. Cultural
4. Supporting

Classic examples of Ecosystem Services include the contribution of pollinators and other organisms towards food production, and the attenuation of flooding in residential areas provided by riparian buffers and wetlands.





## Natural Capital Accounting (NCA)

Veon Ecology's NCPs identify and propose solutions for any potential challenges recognised in achieving biodiversity enhancement goals within commercial forestry.

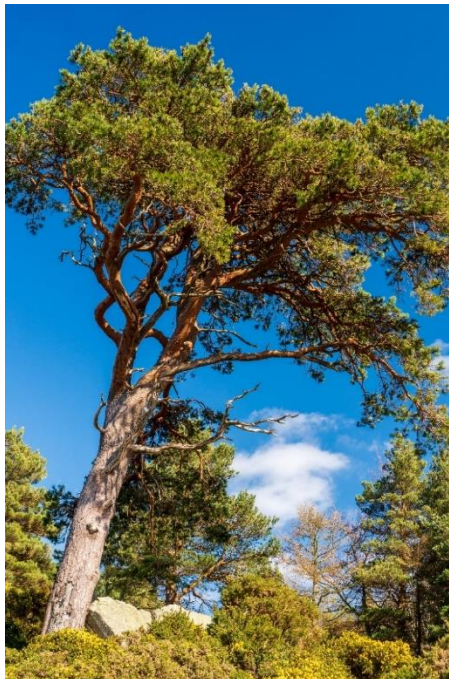
Through Ecosystem Accounting (EA), or the more commonly-used alternative term 'Natural Capital Accounting (NCA)', Veon's Ecologists measure the changes in the stock of natural capital at a variety of scales and integrate the value of ecosystem services into accounting and reporting systems at several levels.

NCA Accounting is built on five core elements which provide data and information about the functions of ecosystem assets and the ecosystem services they produce, namely:

1. Extent
2. Condition
3. Physical Services Flow
4. Monetary Services Flow
5. Monetary Asset

### Nature-Based Solutions

'Nature-Based Solutions' are an umbrella concept for ecosystem-related approaches. Nature-Based Solutions are actions to "protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively." Simultaneously, they provide human well-being and biodiversity benefits.



Using this context, Veon's NCPs consider and, as appropriate, report on a forest property under each of the following five categories:

#### 1. Ecosystem Restoration approaches:

- Ecological restoration
- Ecological engineering
- Forest landscape restoration

#### 2. Issue-specific ecosystem-related approaches:

- Ecosystem-based adaptation
- Ecosystem-based mitigation
- Climate adaptation services
- Ecosystem-based disaster risk reduction

#### 3. Infrastructure-related approaches:

- Natural infrastructure
- Green infrastructure

#### 4. Ecosystem-based management approaches:

- Integrated forestry management
- Integrated water quality management

#### 5. Ecosystem protection approaches:

- Area-based conservation approaches, including protected area management

Veon Ecology's NCARs for any given forest plantation consider, and recommend where possible, the inclusion of local Green Infrastructure proposals on a site-by-site basis, by identifying Green Infrastructure resources within each forest location, and in the proximate locale of the respective boundaries of the plantation.

### Veon Ecology's NCAR Methodology

There are a wide range of surveys or sampling methods that can be employed when investigating different types of habitats, flora, and fauna groups. Each method has its own merits and limitations.

In addition, each site studied has its specific conditions, which may render certain survey methods more suitable.

Sometimes, Veon ecologists have found it necessary to use a combination of different survey methods, or even specifically-designed methods in some extreme cases.

Through terrestrial habitat surveys, for example, Veon ecologists have identified different types of habitats found within a study area and to delineate their coverage. The results contribute to the creation of our Natural Capital Maps (NCMs), which show the locations of all the different types of habitats within a plantation.

Veon ecologists have the expertise to conduct detailed vegetation surveys

(IVC) of a study area, with floristic analyses at plant community level. Through our NCAR process, our ecologists have conducted dedicated surveys focused on vegetation types across a plantation, to identify and report on plant species of conservation concern. As part of this approach, the presence of rare, protected, and threatened plant species and other species of conservation concern are noted, as they are usually the primary focus.

Veon's NCARs also report on any Invasive floral species that are identified on or nearby a forestry plantation. This will include, but is certainly not limited to:

- Japanese Knotweed (*Fallopia japonica*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Himalayan Balsam (*Impatiens glandulifera*)

Identification of bird species is also conducted in-field, both visually and aurally, by Veon Ecologists trained in Ornithology.

### Baseline Surveys

Due to the varied nature of any Natural Capital assignment, there is an almost unending degree of detail that can be surveyed and reported upon, if a useful baseline is to be achieved which enriches the depth of knowledge about the biodiversity present in a forestry plantation. Our team work with the landowner to determine what depth of detail is required for the intended outcome.

In terms of species-specific surveying, Veon Ecologists have gained greater insights into Ireland's native bat species by direct counting at their roosting sites or foraging areas identified within or in proximity to commercial plantations. Our records are also submitted to Bat Conservation Ireland (BCI) to inform their own national databases.

Similarly, where requested, our Ecologists have conducted Herpetofauna (Amphibians & Reptiles) Surveys, Butterflies and Dragonflies Surveys, and Aquatic Surveys/Stream Invertebrates Survey, to capture the species richness and diversity present within a habitat more accurately.



Based on the data collated from the Baseline Surveys conducted on our client's commercial plantation portfolios during 2021 and 2022, examples of recommendations proposed by Veon's ecologists to assist the client with the process of enhancing biodiversity and habitats with their commercial forest sites, include:

1. Native Hedgerows and Broadleaved plots
2. Wetlands Creation
3. Riparian Zone Planting
4. Pollinator Promotion
5. Monitoring and Surveying
6. Low Impact Silvicultural Regimes

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***Early identification of any ecological constraints ensures that development proposals are not delayed, and appropriate mitigation or compensation are incorporated into the design phase.***

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Forestry, Ecology & Environment

## Conclusion

For commercial forest owners, having a robust and documented understanding of the ecological benefits accruing from their portfolios will enable a greater dialogue on the positive impacts a commercial forest has on the wider environment.

As both corporate and wider societal awareness of Biodiversity Net Gain, Corporate Social Responsibility, and ESG (Environmental, Social and Governance) issues increase, this level of in-depth knowledge of biodiversity awareness and habitat management expertise which Veon provides to its clients will naturally lead to broader benefits, not only at a commercial level but also at an ecological level.

## A Note on the Author

*Daniel Connell is Head of Division at Veon Ecology, the ecology and environmental services division of Veon Ltd.*

*Prior to joining Veon Ecology, Daniel worked for many years as a Freelance Ecologist and Environmental Correspondent. He has experience working on large infrastructural projects including flood relief schemes, forestry, road projects and oil & gas exploration. He has overseen various projects as Ecological Clerk of Works and has carried out extensive terrestrial, freshwater, and marine ecology fieldwork. Daniel has a comprehensive understanding of environmental law and an in-depth knowledge of coastal, wetlands, freshwater, and woodland ecosystems and the respective botanical, avian, invertebrate, and mammal species which inhabit them.*

