BIODIVERSITY DUTY REPORT HIGHLANDS AND ISLANDS ENTERPRISE

2018 - 2020

HIE
Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

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SECTION 1: INTRODUCTORY INFORMATION ABOUT HIGHLANDS AND ISLANDS ENTERPRISE

Highlands and Islands Enterprise is the Scottish Government's economic and community development agency for the North and West of Scotland, covering from Shetland in the North to Argyll, and Arran and the Cumbraes in the South, the Outer Hebrides in the West to Moray in the East. We help build a prosperous, inclusive and sustainable economy across the Highlands and Islands, attracting more people to, live, work, study, invest and visit.

We have staff and offices across our region, helping diverse communities and businesses to develop and grow.

Our three-year strategy 2019-2022 sets out our ambition for each and every part of our region. The opportunities are immense. Our vision and priorities aim to harness our region's potential, working closely with our local, regional and national partners.

We continue to work to attract new regional investments that bring fresh and exciting opportunities in sectors such as space and energy. Recent research has indicated that there are increasing numbers of young people who want to live and work in the Highlands and Islands and we'll work to support this ambition. Increasing the population across the whole of our region is a primary focus of HIE. We'll support this by focusing on growing businesses, attracting investment and strengthening communities.

We don't take a one size fits all approach to development, instead we tailor our support to capitalise on the unique opportunities presented across the region to help each community reach its potential.

HIE has a Board, appointed through the Scottish Government with a diverse and relevant set of skills and experience. Its work is also informed by the Enterprise and Skills Strategic Board.

HIE owns and manages a number of land holdings across the Highlands and Islands, mostly relating to business and light commercial premises. Pertinant to this Biodiversity report, HIE owns land around Cairngorm Mountain (one third of which is leased for sports and leisure activities), Orbost Estate in West Skye, Inverness Campus, Forres Enterprise Park and we also have a long lease option on land on the A' Mhóine in North Sutherland, which is intended to be developed for the Sutherland Space Hub.

The remainder of this report sets out the key things HIE has been involved with and supported through our expertise, policy, influencing, collaborative working and investment. It is set out to cover the areas in the Level 1 template provided by the Scottish Government/NatureScot.

SECTION 2: ACTIONS TO PROTECT BIODIVERSITY AND CONNECT PEOPLE WITH NATURE

HIE has broad powers and a great deal of flexibility about how it acts on its core duties to develop the economy and strengthen local communities.

Across a wide range of activities, there are several examples of how HIE has supported actions to protect biodiversity and connect people with nature.

SUPPORTING BUSINESS GROWTH

Seaweed Nursery Expansion

SAMS Research Services Ltd (SRSL) has been supported by HIE to expand and commercialise its seaweed nursery. The investment has enabled SRSL to commercialise the nursery services; improving biosecurity and increasing the volume of high-quality seaweed seed (seeded line), thereby achieving an acceptable market price to support the growth in demand for seaweed farming enterprises. Benefits include:

- Promoting a low carbon economy through enabling the growth of seaweed farming, as a viable alternative to wild harvesting.
- Seaweed farming produces biomass without the need for fresh water or fertiliser inputs and has minimal onshore requirements.
- Increasing the removal of CO2 from the ocean surface, drawing down atmospheric CO2 concentrations and mitigating the impacts of climate change.

Biomatrix Water Solutions Ltd

Biomatrix is a developer and international exporter of floating ecosystems (plant rafts for cleaning water courses). The company also operates the water purification system, 'The Living Machine', purifying all the grey water at the Findhorn Foundation, prior to the water being used to irrigate vegetable and fruit crops produced locally for the Foundation. The HIE account managed business, is a HIE tenant in Moray at the Enterprise Park Forres. HIE has supported the business through a broad and sustained tailored package including: investment in R&D CapEx, internationalisation, Scotgrad, and mentoring support.

Highland Wildlife Park

HIE is supporting the planned expansion and development of the Highland Wildlife Park. The development aims to deliver an authentic and unique encounter with native and international species year-round. It will provide learning, education, research and community engagement opportunities which will enhance understanding and appreciation of the importance of nature conservation on a local, national and international level. It will attract new audiences with broader environmental interests, who may not be traditional zoo visitors, through the parallel development of the National Wildlife Reintroduction Centre. This unique facility will be the only one of its kind in the UK, and is based on a successful European model. It will build the case for zoos as conservation centres through high-profile work to restore endangered species. The Discovery Learning Centre will become a natural 'gateway' to the Cairngorms National Park's landscapes and wildlife. It has the potential to become a visitor attraction in its own right by providing facilities to deliver authentic experiences relating to nature and heritage, and showcasing the richness and diversity of native wildlife and its place in the world.

Rural Food Tourism Places

Is half-way through a three-year pilot project supported by HIE (£104k, including evaluation) seeking to facilitate diversification of crofting and farming activity through exploration of synergies with the food and drink and tourism sectors. Cohorts in the Uists and Northmavine and Delting in Shetland are being facilitated to explore sustainable economic opportunities which capitalise on, but also respect and nurture natural capital and biodiversity.

Skills development

Can be key to business growth and in this case support has been targeted at Crofting and smallholders to aid recovery from the Covid 19 pandemic. HIE is the main funder for a short term Covid recovery programme of virtual training courses being delivered by the Scottish Crofting Federation, which includes awareness raising of natural capital and biodiversity opportunities.

CAN DO Innovation Challenge Fund Projects

The CAN DO Innovation Challenge Fund is led by Scottish Enterprise (SE) but managed and funded through a partnership with HIE, SG and the Scottish Funding Council (SFC). The two projects detailed below, delivered in the HIE area, have a particularly strong focus on biodiversity outcomes.

Eliminating Invasive Species

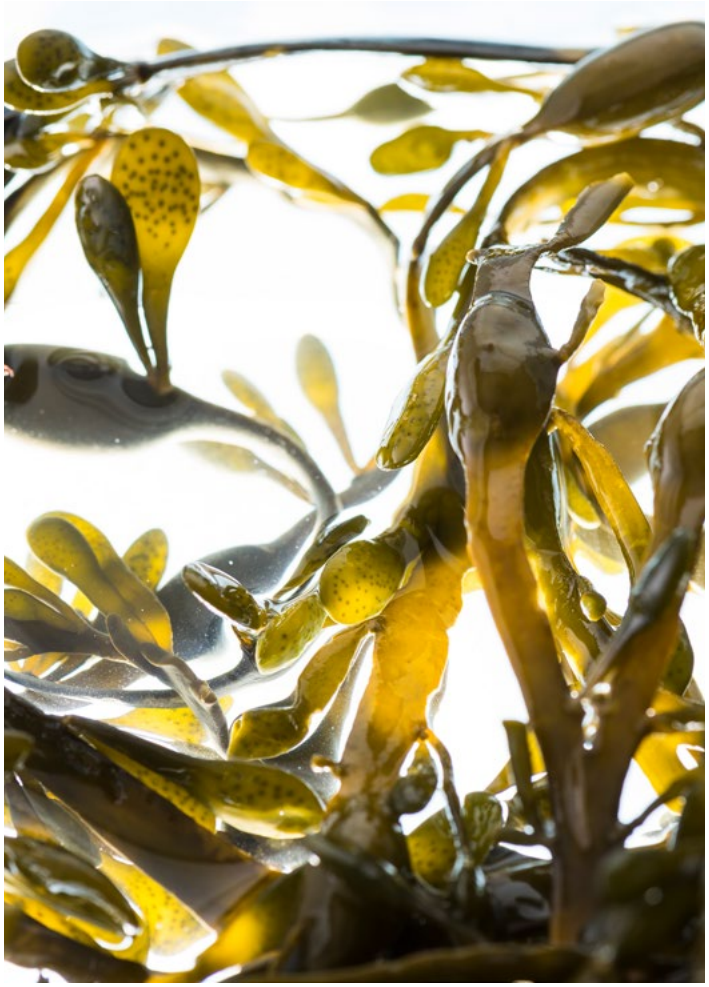
The challenge: In the past 3 years, New Zealand Pygmy Weed (NZP) was introduced and has colonised over 1,200m of the Caledonian Canal in Inverness. The plant has the potential to have significant economic, recreational and environmental impacts. The Caledonian Canal contributes significantly to the economy of the Highland region and is an important environmental asset.

The project: four innovative concepts were developed by companies to reduce the impact of this invasive species. Phase 1has been completed, using an investment of £150k funding (which HIE funded in conjunction with SE) and Scottish Canals. The companies are keen to move forward to Phase 2 which will develop and test the prototype solutions which can reverse the expansion of a non-native invasive species in the Caledonian Canal and elsewhere.

Improving Tree Seed Yields

The challenge: Forest and Land Scotland (FLS) grow saplings in tree nurseries from seeds collected from special seed orchards which take 20 years to establish. There are inherent challenges in maintaining a supply of seed. Therefore, the existing seed stocks must be used more efficiently. FLS's challenge is to develop innovative solutions that can increase the yield from existing and limited seed stock. The CAN DO Fund provided funding and the challenge was run through SG's CivTech process.

The project: An innovative new system called 'Tree Tape' was developed, which is a modification of leading vegetable growing technology, with £120K of support (which HIE funded in conjunction with SE) through the CAN DO fund. FLS conducted full scale field trials at their Newton Nursery near Elgin. The trials of this revolutionary new seed propagation and planting system have proved to be a huge success – achieving an almost 2000 percent increase in per person productivity compared with conventional methods.



KelpCrofting

KelpCrofting is a start-up business which aims to realise the environmental and economic benefits of sustainable seaweed farming in Skye and Lochalsh. Their mission over the next five years is to kick-start the seaweed cultivation industry in Scotland. They aim to become the nation's largest sustainable producers of kelp, and strive to develop a replicable, cost-effective model of seaweed farming that can be adopted by coastal communities to accelerate growth of this emerging blue-green economy in Scotland. Kelp can be used in production of highly nutritious human food and health supplements, as well as biodegradable packaging. HIE has channelled capital finance through the Young Companies Capital Investment Grant and it also received Island Green Recovery Programme. 'Farming' of seaweed in this way is a sustainable alternative to harvesting it from the wild, which can damage natural ecosystems.

CLIMAVORE CIC

CLIMAVORE CIC, based in Portree on the Isle of Skye, aims to promote education, heritage and research of coastal ecologies through the creation of a permanent ecological and cultural centre, the CLIMAVORE Station.

CLIMAVORE CIC participated in HIE's Pathfinder programme in the summer of 2020, focusing on its plan to establish the UK's first intertidal polyculture farm on the Isle of Skye by 2025, creating an open source, cooperative model for sustainable seafood production. Intertidal farms provide innovative ways of cultivating (for food) a variety of low-trophic species (seaweed, oysters, mussels, sea cucumbers) while enhancing water ecology and marine habitats, as well as functioning as a blue carbon sink.

STRENGTHENING COMMUNITIES

HIE's broad strengthening communities activity is a defining feature of the organisation, recognising that success in economic development, particularly in rural areas, is underpinned by strong resourceful resilient communities. The most significant aspect of this, relevant to biodiversity outcomes, is our asset-based community development activity, where HIE acts as an agent in delivering The Scottish Land Fund. This is a programme which supports community organisations across Scotland to purchase land, buildings and other assets. Funded by the Scottish Government, grants of up to £1 million are available. The current programme runs from 2016-2021 with an annual budget of £10 million. Delivered in partnership between HIE and the National Lottery Community Fund, we have a team of advisers to help clients develop their projects. This approach empowers communities to take ownership of land assets and to plan their management approach. In several cases community management plans align with the objective to protect biodiversity and connect people with nature.

Examples of SLF projects approved over the last three years, with natural capital/biodiversity outcomes include:

Cambusbarron Community Development Trust (CCDT)

purchased the Gillies Hill Woodland, an area of 64.7ha, with a plan to develop the derelict land and gardens of the castle area, introduce wood pathways, small enterprises, sustainable forestry and outdoor activities. CCDT has an active woodland management plan, ensuring the environmental value of this area is maintained and enhanced.

Drongan, Rankinston and Stair Regeneration Group (DRS)

is purchasing Hannahston Woods from the current estate owners to provide a local amenity and woodland area for the Drongan community in East Ayrshire. Hannahston Wood was originally a farm then became a coalmine, an opencast mine and was restored to become Hannahston Community Woodland in 2006. It has benefitted from extensive planting to produce a varied woodland landscape with mixed woodland and a range of habitats and species.

Mull and Iona Community Trust (MICT)

purchased the 200ha Ardura Forest situated near the small hamlet of Lochdon, 7 miles south of Craignure on the Isle of Mull. MICT plans to sell 116ha of mature conifer timber under a standing timber sale agreement, and the purchaser will harvest the timber over a two-year period. The cleared areas will be replanted with broadleaf trees with 50ha being planted for commercial broadleaf timber and the remainder for broadleaf amenity woodland, increasing the biodiversity of the site and encouraging people to connect with it.

The Langholm Initiative

was awarded £1m by the Scottish Land Fund in 2020 as part of a £3.8m package, which included donations from various Trusts and £200,000 through crowdfunding.

The Initiative acquired 5,200 acres of land from Buccleuch Estates between Langholm and Newcastleton. Known locally as 'Langholm Moor', the land includes areas of moorland, woodland, permanent and rough grazing pasture, nine houses and three steadings with associated outbuildings. Large parts of the land are situated within a designated Site of Special Scientific Interest (SSSI) and Special Protection area due to the geology, upland habitats and presence of hen harriers.

Langholm Initiative will create a nature reserve and seek National Nature Reserve (NNR) status for it. This will improve the environment and boost local tourism. They plan to create a Hen Harrier observatory, develop an all-abilities riverside path, improve way-marking and interpretation of the landscape and create learning opportunities in the landscape.

Existing woodlands are a mix of broadleaves and productive conifer and will provide a modest but steady income stream in future years. Natural regeneration will be encouraged by the Tarras Water and new native woodland planting in the area known as the Haunches/Cronksbank. As with the landscape, the woodlands will provide opportunities for teaching rural and forest skills courses to schools, apprentices and older people.

The North West Mull Community Woodland Company

added the 1821ha Isla of Ulva to forest land already under community ownership in 2018. Whilst repopulation and economic regeneration are key drivers for the acquisition, those aspirations will be achieved in a way that fully values, respects, interprets and celebrates the natural capital and biodiversity of the island and its surrounding marine environment. It's a key asset for supporting the sustainable tourism potential for the island.

Innovation can also take the form of exploring financial viability of new business models and processes and this is the case for the following project undertaken on behalf of seven Orkney island communities working together.

Orkney Horticulture Cluster

involves the aspiration for several off-mainland Orkney islands to explore opportunities for local enhanced horticulture providing locally grown produce. HIE has procured a contractor and acted as the coordinator for a feasibility study providing the business cases for options for each of the seven island communities. Funding for the study was secured through the Island Green Recovery Programme. The study includes prospects for high value crops, and adoption of vertical farming techniques, if they can prove technically and commercially viable at an appropriate scale. Animal feed production, replacing imports, is also being investigated.

CASE STUDY - LÀRACH INBHIR NIS, – INVERNESS CAMPUS

The Inverness Campus, Làrach Inbhir Nis, in Gaelic, is one of HIE's most significant projects. It covers a 35ha site, between the A9 and the South bound railway line on the East side of Inverness.

The campus development was underpinned by a 15-year landscape and habitat management plan (LMHP), which continues to inform the evolution of the campus. The LMHP sets out the guidance and management structure to achieve Stewardship/Scottish Design looking to the Future. The stewardship of the LMHP and increased campus development is being led by HIE's consultants, HarrisonStevens, and is also bonded to various collegiate and post graduate studies within the University of the Highland and Islands (UHI). This integration of Citizen Science monitoring, identification of further habitat enhancements and wider tie-ins to city and regional studies on amphibian and aquatic habitats puts the campus at the heart of learning, research and best practice in integrated resource management. An opportunity to have this landscape lead and inspire excellence in biodiversity, study and commerce.

https://www.invernesscampus.co.uk/media/10211/landscape-and-habitat-management-plan-72dpi.pdf

The campus core of green infrastructure is not only the focus of social activity (12ha have been developed as fully accessible community green space), it is also the genesis of many food chain and ecological pyramids and targeted habitat creation. Four double oak lined plot boundaries that radiate from the central core as wildlife corridors with ecologically rich mixed native hedges within them. The core's riparian (between land and water) planting, grassland and meadow systems are intrinsically linked to the planted boundary woodlands and on to green infrastructure of the wider city.

Other biodiversity aspects of Làrach Inbhir Nis, / Inverness Campus include:

- Planting around 600 semi mature trees and over 3000 saplings
- Including bird boxes and bat boxes across the site
- Maintaining mature trees and planted native species across the community parkland
- Hedging to separate plots to provide safe passageways for wildlife
- As well as being great for the atmosphere of the Campus and looking good, our lochans also serve the very practical purpose as the Campus SUDS system
- 'Stars' of the Campus are the swans which took up residence in the lochans before the Campus opened to the public. They have continued to live there for past six years, each year having a family of between 5-8 cygnets
- The Campus features a number of stream and waterways crossing the site. Where possible the banks of each of these has been left relatively untreated – again to allow for natural habitats

SECTION 3: MAINSTREAMING BIODIVERSITY

The steps HIE has taken to incorporate biodiversity measures into its wider policies, plans or strategies.

HIE has adopted a joined-up approach across the organisation in responding to net zero ambitions. As such we consider this will have implications for improved understanding and consideration of biodiversity across all our investments. HIE has recognised the key links between climate change and biodiversity.

Key steps being progressed include:

- training 45 Climate Champions;
- incorporating climate change within individuals' bi-annual performance appraisal process;
- reviewing guidance for a more robust climate change/low carbon impact assessment within investment appraisal processes; and
- establishing a measurement framework for HIE's activities which incorporates net zero with implications for biodiversity.

This work started during 2020 and is expected to be complete and applied during 2021. In this regard, we collaborate with organisations such as Zero Waste Scotland to adopt and refine best practice.

We'll encourage contractors to adopt low carbon practices through our procurement approach, applying greater weight in tender scoring to their contribution to net zero. Our current procurement strategy updated in August 2020 highlights that our processes will consider the social, economic and environmental wellbeing of the areas affected by our contracts. Regarding community benefits we may seek against larger procurements, is to 'reduce impacts on protected areas, buildings or sites.

In addition, HIE actively promotes good practice across all aspects of its work through its own website and through sponsorship of awards such as VIBES. HIE ran a low carbon month of events during November 2020 raising the profile of low carbon activity to our client base and stakeholders in collaboration with the innovation centres and All-Energy Scotland. We have a dedicated low carbon webpage, featuring a wide range of initiatives and innovation.
www.hie.co.uk/lowcarbon

The ultimate aim is for net zero to be a thread throughout all that HIE does, both internally and externally, leading to enhanced outputs and impacts from all our interventions. We aim to place HIE at the global forefront of best practice for the transition to net zero and help make the Highlands and Islands an exemplar region.

SECTION 4: NATURE-BASED SOLUTIONS, CLIMATE CHANGE AND BIODIVERSITY

Integration of biodiversity into nature-based solutions to the climate emergency and other socio-economic outcomes

NATURE BASED SOLUTIONS

HIE's approach to this has mainly been applied on our own land holdings and is demonstrated by the Làrach Inbhir Nis, case study in Section 2 and through the examples below:

Enterprise Park, Forres

Similar to the approaches undertaken with the Inverness Campus, Enterprise Park, Forres has incorporated significant tree and hedge planting, meadows, wildlife corridors, water features, a pathways networks for cycling and walking, drystone walls and green roofs on the Horizon Scotland and some other buildings. We also use a landscape maintenance regime that is wildlife and plant friendly. The vacant sites are not cut in the nesting season to encourage ground nesting birds, only being cut in the autumn after the wildflowers have set their seeds. The landscaped areas are planted with site appropriate species that require minimal maintenance; fencing is removed once planting is established. The water feature at Horizon Scotland has been converted to a SUDS scheme and planted with a mix of species to filter the runoff and boost biodiversity of aquatic insects such as dragonflies. All of which contribute to enhancing the biodiversity on this 40ha site.

Alness Point Business Park

The Alness Business Park, based on the coastal site of a former RAF flying boat station on the Cromarty Firth, has incorporated significant tree and hedge planting, retained significant blocks of mature mixed woodland, a large lochan, gravel pathways and drystone walls all of which contribute to enhancing the biodiversity on an approximately 20ha site.

European Marine Science Park, Dunstaffnage, Oban

The 1.3ha science park brings together marine science and innovation companies with the staff and students of a world class marine research institution, the Scottish Association for Marine Science, and provides access to a wide range of facilities. Businesses locating at the European Marine Science Park benefit from innovating and collaborating as a cluster and also from the immediate proximity to the marine environment. The collective contribution of this cluster to our understanding of the marine environment and to the health and productivity of seas and oceans is of global significance for biodiversity.

HIE supports innovation activities; the following is an example of a company innovating around nature-based solutions:

Seawater Solutions

In 2018, Seawater Solutions (SS) launched the first seawater farm in the UK, taking degraded coastal farmland in South Ayrshire and turning it into an artificial saltmarsh where seawater is used to grow high-value crops like Samphire. This is the first instance of seawater being used to grow food on redeveloped farmland in Europe and represents the most environmentally promoting method of farming developed to date. Various systems were developed by the company, including irrigation systems and processes to mimic natural saltmarsh ecosystems. The main objectives of this innovation and approach are to:

- Encourage high carbon capture on farmland
- Increase yields and soil health
- Promote organic, no-tillage, and regenerative farming practices
- Promote wildlife
- Defend coastlines from rising sea-levels
- Produce high-value 'superfoods' such as Samphire for domestic and international markets
- Increase farmer incomes in a context of diminishing market returns

HIE has supported the company through the Make Innovation Happen collaborative fund, which is now working with the Glenshiel Estate on the shores of Loch Duich, to develop a 0.6ha pilot site on abandoned crofting land. This will integrate food production, carbon capture and sale, and ecotourism in the long term.

Steps HIE has taken to incorporate biodiversity outcomes into partnership initiatives, wider strategies or initiatives of relevance to climate change

Climate change and net zero

HIE understands the links between climate change, natural capital, biodiversity and the circular economy. Net zero is featured in our three-year strategic plan and our annual operating plans are putting increasing emphasis on net zero activities. HIE recently committed to support the Highland Council to work with communities throughout it's area to understand and prioritise actions that will mitigate the potential impact of climate change in their communities.. HIE is also engaged in similar adaptation conversations in all other parts of the HIE region, predominately through Community Planning Partnership (CPP) structures.

HIE's area teams work with local business and communities and this place-based approach can bring different organisations together around a common vision for the area. In the Orkney Islands the local asset base and strength of the area has led to strong collaboration around energy innovation. The examples of success in Orkney can be an inspiration and model for other areas and possibly support innovation in other local assets including natural capital and nature-based solutions. The linked video https://www.orkney.com/news/green-recovery (c. 9mins) courtesy of Orkney.com

Scottish Forum on Natural Capital

HIE is a member of Scotland's Natural Capital Forum, an initiative which brings together public, private and third sector organisations to protect and enhance Scotland's natural capital. The forum currently chaired by NatureScot has hosted four high-level public sector roundtables since they were first convened in 2017. These roundtables are used to shape how we progress the SG commitments on natural capital, share expertise, explore approaches and develop joint actions and have led to a stronger strategic relationship with NatureScot.

Strategic relationship with NatureScot

HIE has an ongoing and strengthening relationship with NatureScot, where we are identifying shared areas of interest, for example, climate change, crofting, peatland restoration, nature- based skills and employment, nurturing natural and cultural heritage. HIE has also participated in assessment of applications to, and Board oversight of, the EU funded Natural and Cultural Heritage Programme. These discussions will filter through into future operating plans.

Strategic relationship with Zero Waste Scotland

HIE and Zero Waste Scotland (ZWS) are working collaboratively across several work streams, including to raise internal and external awareness regarding the circular economy, which can often lead to innovation in sustainably using natural capital, rather than synthetic products which create long term waste.

Cairngorms National Park

The majority of the Cairngorms National Park (CNP) falls within the HIE area giving HIE the opportunity to collaborate in several partnership groups associated with the Park.
HIE is a partner in the Cairngorms National Park Partnership Plan 2017-2022.

Cairngorms Economic Steering Group

HIE is part of the Cairngorms Economic Steering Group, actively pursuing economic development which is compatible with maintaining and enhancing the natural capital of a national park and its biodiversity objectives.

HIE works with the Cairngorms National Park Authority on a range of actions. In response to the CNPA Green Recovery Plan, published in June 2020, we're involved in the following:

- Cairngorms Tourism Emergency Response Group
- Seeking resource (people, partners) to research, investigate and plan for how the Park builds resilience, sustainability and diversification into the Cairngorms economy – an innovative approach to economic development with climate and sustainability at the centre.
- Cairngorms Dark Skies Observatory Project
- Badenoch Great Place Project – a partnership of organisations and communities who work and embed heritage (natural and cultural) at the heart of their plans.

HIE thoughts on the main climate change related challenges for biodiversity over the next three years

- Increasing the value of carbon pricing has potential to yield income for community landowners and encourage greater activity in biodiverse land management practices. With the appropriate policy for Scotland regarding the role of our land for carbon sequestration, there is significant potential to generate income from private sources benefitting social enterprises who own and manage land. Here the challenge is to coordinate the approach and policy framework to ensure this is possible. Without this framework, private companies might seek to 'buy' sequestration from landowners at a value and for a purpose which does not maximise the return for Scotland and the local area.

- HIE's role in the blue economy will be significant and we need to influence the environmental sustainability of development of new products using the marine economy, such as seaweed cultivation and derivation of biofuels form algae. The challenge is in identifying the future value of markets for such products, on the basis that they are sustainably cultivated and how we can scale development appropriately to attract private investment while protecting this valuable resource.
- Marine sequestration has potential to attract investment but the science is not yet sufficiently robust to formalise this. In other words, investors might pay Scotland to improve the biodiversity and quality of its marine ecosystem. There is a challenge in building the science base around the potential value and methodology of marine sequestration and agreeing nationally and internationally how this can be monetised.
- There is a significant role for the region's business base to embrace a circular economy. There is significant innovation and potential high value business growth opportunities building on natural product chemistry, biofuels and non-synthetic natural products. Supporting businesses (especially SMEs) to innovate and adapt their products and services to derive value from the circular economy, as a way of reducing the pressure on biodiversity, will be a challenge while such businesses remain under enormous pressure to recover from the economic impact of the Covid pandemic.

SECTION 5: PUBLIC ENGAGEMENT AND WORKFORCE DEVELOPMENT

PUBLIC ENGAGEMENT

Focus Magazine

Twice a year HIE publishes Focus magazine online and in print celebrating the highlights of its work over the preceding six months. https://www.hie.co.uk/about-us/focus/
The Winter 2019 edition included an interview with Chris Stark, Chief Executive of the UK Committee on Climate Change discussing a 'role for all' in tackling climate change. The same edition highlighted the international expansion of the Moray companies AES Solar and Biomatrix Water (see Section 2) and an article on recent innovations from the European Marine Science Park cluster including around the challenge of marine plastic waste.

The Winter 2020 edition includes an article focusing on net zero and a green recovery.

#GoPlaces

HIE has a campaign based approach to promoting best practice and encouraging sharing of ideas and innovation at a place-based level. We call this approach #GoPlaces to emphasise the place focus of these multi-media (web content, case studies, webinars, social media blogs and posts) themed campaigns of influencing. An example of a recent theme was low carbon month held in November 2020.

The objective of that activity was to co-ordinate the low carbon theme across HIE, its partners and clients to give inspiration and promote innovation. By doing that we increased the visibility of what HIE is doing on low carbon and what we can offer our clients by way of support. We also use this theme to focus internal activity on low carbon, new ways of working, how we travel/ use technology, what waste we generate, improving health, and nurturing natural capital and valuing biodiversity.

Science Skills Academy

The Science Skills Academy initiative, with Newton Rooms currently established in both Thurso and Fort William and a third coming to Dingwall, is providing climate and biodiversity awareness raising to 10–14 year olds in Highland region through video and specific modules relating to use of land and forestry.

Cairngorm Ranger Service

Cairngorm Mountain Ranger Service (CMRS) is deployed and funded by Cairngorm Mountain (Scotland) Limited to provide stewardship of the Cairngorm Estate, on behalf of HIE and to advise on the use and care of the Estate.

CMRS works with organisers to ensure the environmental integrity of the mountain and to avoid disturbance to wildlife and others enjoying the wild aspects of the mountains.
The Cairngorms are a fantastic place to visit, to learn about the natural history, wildlife, plant life and see first-hand efforts to strike a balance of conservation and recreation. The CMRS also offer small scale talks and walks about this incredible area which can be suited to groups' needs.

VIBES Scottish Environment Business Awards

HIE is one of the eight strategic partners which forms VIBES. The awards aim to encourage the efficient use of resources, enhance the competitiveness of businesses, improve environmental performance and support the wider goals of sustainable development including social benefits through community and staff involvement. Inspiring finalists have included Dornoch Environmental Enhancement Project (DEEP), led by the Glenmorangie Company in partnership with Heriot-Watt University and the Marine Conservation Society. Their award recognised the combining of distillery effluent treatment with the reintroduction of oysters to the Dornoch Firth ecosystem. Biomatrix Water Solutions Ltd, mentioned in section 2, is another award winner

WORKFORCE SKILLS AND TRAINING

All staff conferences

The last two all staff conferences, which HIE has held virtually, have had keynote speakers on climate change, Chris Stark, Chief Executive of the UK Committee on Climate Change.
More recently, ZWS CEO, Iain Gulland and Moray based businessman, Lewis Maclean, Managing Director of Maclean Bakery, did a double act powerfully raising awareness of circular economy theory, opportunities and successfully implemented practice.

Circular Economy webinars with Zero Waste Scotland

HIE has hosted a series of webinars where ZWS has raised awareness of the broad range of approaches and opportunities for developing a circular economy. Webinars have been held at team and directorate level and in some cases HIE clients have attended. ZWS has also offered some support directly to HIE's clients, raising awareness of potential business changes which reduce pressure on biodiversity.

Climate change champions training

HIE is training a cohort of around 40 staff on the science, the policy, and the solutions to net zero. As trained climate champions, they will use their learning to help support a just transition across the region.

Opportunities that HIE staff take in practical actions

Climate change app
HIE staff are currently volunteering to beta test a new climate change app for Reshape technologies. This innovative App raises awareness of climate change and enables users to better understand lifestyle choice impacts and track their carbon footprint.

SECTION 6: RESEARCH AND MONITORING

Research activities that HIE has undertaken to help develop understanding and awareness of biodiversity

Elements from Inverness Campus (Làrach Inbhir Nis,

As well as the 15-year landscape and habitat management plan, the Campus has benefitted from several reports commissioned on biodiversity – ecology, planting, specific species management which have raised understanding and awareness and informed Campus development over the years.

Sutherland Spaceport

Measures to minimise the impact of construction and launch activities on biodiversity are central to HIE's plans and have been prepared in consultation with statutory bodies including NatureScot, the Scottish Environment Protection Agency and the Highland Council. A comprehensive suite of environmental impact assessments, carried out by a range of specialists over two and a half years, was a central element of HIE's successful planning application to the Highland Council. Space Hub Sutherland represents the first time on continental Europe that an orbital spaceport received planning permission, as such, elevated levels of research, analysis and innovation were required to ensure space launch activities could coexist in harmony with the rich biodiversity found at the site.

Cairngorm Estate

A large part of the annual environmental monitoring by Cairngorm Mountain (Scotland) Limited, in relation to the mountain railway, is fieldwork carried out and reported by the Ranger Service.

The Visitor management plan is supported by a detailed monitoring plan, delivered through the Ranger Service.

There have also been studies of the impact of the Reindeer herd, and a mountain scrub survey.

Follow-up actions and monitoring HIE has undertaken to assess the impacts of the actions it has taken

Cairngorm Estate

Counters on designated pathways on the estate provide vital data, which together with on the ground surveys has led to strategic investment in pathways, concentrating walkers onto these sensitively reinforced routes and allowing the adjacent fragile landscape flora and fauna the opportunity to recolonise and repair.

The Ranger service also uses its environmental monitoring knowledge to channel visitors such that sensitive habitats and breeding species suffer less disturbance.

Significant trends and highlighted areas of celebration or concern shown up through monitoring

Cairngorm Estate

The detailed environmental monitoring plan had a recent 20 year up-date, which shows good trends of year-on-year improvements and proved that the funicular railway has not adversely impacted the designated sites.

There is positive evidence of natural tree regeneration at higher altitudes on the estate, associated with human pressure disturbing deer in those areas. This also reflects historical HIE activities associated with tree planting which together have had the effect of raising the tree line by around 200m.

Dotterel are a key bird species on the estate and were a significant driver for some of the management strategies, such as the 'closed system' for the funicular. Encouragingly, the environmental monitoring is revealing that Dotterel population numbers are stable, and some birds are even breading within the transitional (ski) area, see map below.

Ring Ouzel numbers are increasing as evidence through ringing records. Water vole numbers are also improving.

Data collected and added to the National Biodiversity Network or your Local Records Centre?

Cairngorm Estate

Environmental monitoring data collected by the ranger service, on the significant habitats and species present on the estate, including around significant species such as Dotterel are shared with national and local records centres and NatureScot.

SECTION 7: BIODIVERSITY HIGHLIGHTS AND CHALLENGES

HIE's main achievements for biodiversity over the reporting period

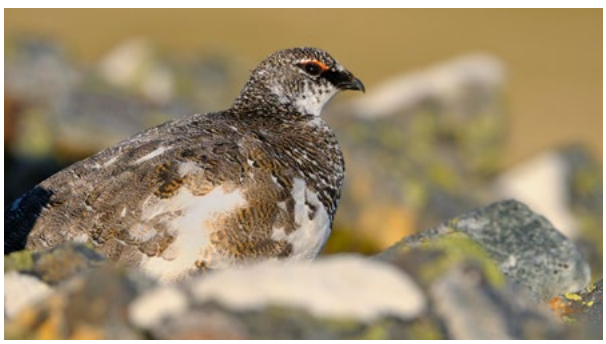
CAIRNGORM ESTATE

Cairngorm Estate is owned and managed by Highlands and Islands Enterprise (HIE). The Estate covers 1418 hectares, of which 598 are leased for sports and leisure activities, the yellow and white areas on the above map.

Cairngorm Estate is one of the most important upland estates in Scotland in conservation and recreation terms. It is the home of rare and internationally protected species and habitats. It lies at the core of the Cairngorms National Park and is its most important visitor attraction. The estate is a key driver of the economy of the surrounding area and a focal point for rural development and recreational activities.

The environmental value of the Estate is recognised in national and international designations for habitats, species and geomorphology. The Estate forms part of the most extensive upland plateau in the UK and is likely to play an increasingly important role as a refuge for species that are vulnerable to climate change. The educational value of the Estate, partly delivered through the Ranger Service, interacting with the public and interpreting this environment, has been recognised but not fully realised. The potential to interpret the sensitive and sustainable management of the mix of recreation and conservation in this fragile habitat could have international significance.

The management of Cairngorm Estate, relative to biodiversity, with its complex balance of management zones, objectives and challenges is one of HIE's biodiversity highlights. Success, (see also other content in this report) has been based on strong partnership working with Cairngorm Mountain, relevant agencies, most notably NatureScot, the knowledgeable ranger service, and the broader visiting pubic which access the estate, and the rest of the Cairmgorms.



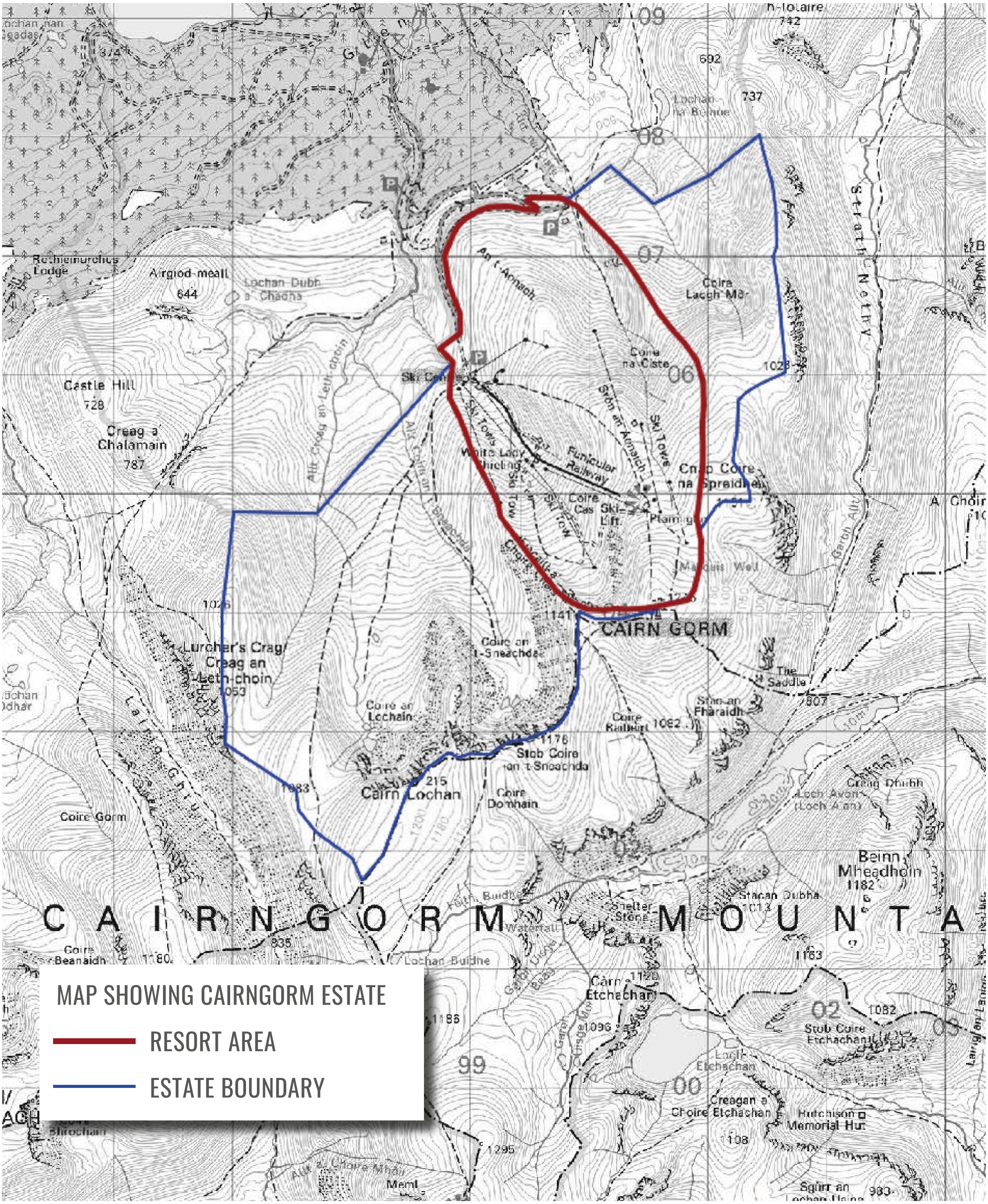
Renewable energy innovation as a means of mitigating climate change

The Highlands and Islands has long been recognised as a leader in the deployment of renewable energy technology and indeed the region is home to many world firsts. Orkney is home to the world's first and only grid connected wave and tidal energy test site. Technology developers from 11 countries have tested 30 different wave and tidal energy converters at the site, several which have produced world firsts themselves. The region is home to the world's first commercial scale tidal stream project; the Atlantis' Meygen project in the Pentland Firth. Continued development of and support for the sector via Government and its agencies means that marine energy has a crucial role to play in the mitigation of climate change, not just in Scotland, but globally, through the export of knowledge and expertise built here in the Highlands and Islands.

The region also played host in 2006/7 to the world's first deep-water offshore windfarm demonstrator which paved the way for large scale commercial leasing rounds for offshore wind in the waters around the UK. Some of these projects, like Beatrice for example, are now producing enough power annually for 450,000 homes. Without the innovative technology being deployed and tested in often challenging conditions, offshore wind would never have achieved the rapid and remarkable cost reduction we have seen to date. The technology is now one of the very cheapest forms of power generation and is expected to be the principal means of producing clean electricity to support the UK's transition to net zero.

Our communities have also played a crucial role in adopting clean technologies and are reaping the benefits. All across the Highlands and Islands the benefits of income derived from renewable installations (onshore wind and hydro, principally) can be seen. The decentralisation of energy systems and the advent of local energy systems provides further opportunities to develop, test and roll out new technologies which will all support climate change targets, whilst also demonstrating to other countries around the world what is possible.

LÀRACH INBHIR NIS, (INVERNESS CAMPUS) SEE CASE STUDY IN SECTION 2 ABOVE, FOR COMMITMENT TO AND ONGOING DELIVERY OF A POWERFUL BALANCE OF ECONOMIC, SOCIAL, AMENITY AND BIODIVERSITY OUTCOMES.


MAP SHOWING CAIRNGORM ESTATE
RESORT AREA
ESTATE BOUNDARY
CAIRN GORM
CAIRNGORM MOUNTA
Castle Hill
728
Creag a' Chalamain
787
Airgiod-meall
644
Lochan Dubh a' Chadha
Rothiemurchus Lodge
An t-Aonach
Coire Laogh Mor
Coire na Ciste
Sron an Aonaich
Ski Tows
Funicular Railway
White Lady Shieling
Cnap Coire na Spreidhe
Ptarmigan
Marquis' Well
Coire an t-Sneachda
Coire an Lochain
Lurcher's Crag/ Creag an Leth-choin
1053
Stob Coire an t-Sneachda
Cairn Lochan
Coire Domhain
Coire Raibeirt
Stac an Fharaidh
The Saddle
807
Loch Avon (Loch A'an)
Creag Dhubh
Beinn Mheadhoin
1182
Stacan Dubha
Shelter Stone
Coire Gorm
Lochan Buidhe
Cairn Etchachan
Loch Etchachan
Creagan a' Choire Etchachan
Hutchison Memorial Hut
Stob Coire Etchachan
Strath Nethy
Lochan na Beinne
737
692
742
Sgùrr an Lochan Uaine

Space

The North of Scotland offers efficient access to sun synchronous polar orbits allowing small satellites to pass over any given point of the Earth's surface at the same local mean solar time. Circling the Earth in less than two hours, these orbits are ideal for satellite observations related to climate change, meteorology, crop analysis, peatland management and biodiversity. Knowledge gained through the observation of Earth's climate from space has been essential to discover, monitor and address the impacts of the 21st century climate emergency, and space will continue to support the development of plans to protect biodiversity for future generations. The potential development of space ports in Shetland, Sutherland, the Western Isles and Argyll will have a key role to play in this area.

HIE is keenly aware of the potential environmental impact of space launch, and in the development of Space Hub Sutherland, we are working closely with Moray based aerospace company Orbex, which is currently developing an innovative, more environmentally friendly launch vehicle. The company's "Prime" vehicle is 30% lighter than similar-sized models and powered by bio-propane, a clean-burning, renewable fuel that reduces carbon emissions by 90% compared to standard kerosene-based fuels. Manufactured in Forres, Scotland, Prime has been designed from the outset to leave no orbital debris and to be re-usable, utilising an innovative low mass concept to recover the main stage.

HIE's aspiration is for Space Hub Sutherland to be the world's first carbon neutral launch site through use of low carbon fuels, reusable launch vehicle stages, peatland restoration, launch near to manufacture and climate monitoring by Scottish satellites.

Blue economy

HIE is prioritising effort in support of the Blue Economy of the region, while being cognisant of the importance of our pristine and diverse marine environment. Economic opportunities particularly around seaweed and marine biotechnology will be one area of focus, recognising the growing number of seaweed farming projects and new businesses already under development. Balancing our desire to help businesses grow, innovate and capitalise on this marine resource with ensuring community benefit and environmental protection will be a key consideration as we plan ahead.

Main challenges over the next three years?

1. Attracting private investment: The bioeconomy, especially in relation to the region's significant coastal and marine resource, has vast potential for economic growth in the region. This also runs a risk of starting activity which degrades this important habitat. Growing this innovative aspect of our economy will require significant investment, not all of which is affordable by public sector alone. The challenge will be to coordinate effort well enough to offer a scale sufficient to attract private investment while also ensuring the natural resource is managed sustainably and not degraded in the process. The same challenge in attracting investment to support regional growth can be applied to other areas of economic growth and opportunities presented by the natural environment. For example, production of high protein animal feed as a substitute for soya-based feed which is in common use. This feed-source has a significant detrimental impact on biodiversity abroad.
2. Supporting a business, social enterprise and community transition to both value and gain value from our natural assets is an essential component of protecting or enhancing biodiversity. However, the perception currently is that this is costly to business, not profitable. The challenge here is to change the narrative and the enablers of an economy that can be based on high value nature and that respects the value in conserving that.

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