

# Restoring the River South Esk:

A Nature Rich &  
Climate Resilient Catchment



**NatureScot**  
**Nature Restoration Fund**  
**Summary**



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# Introduction

The River South Esk Catchment Partnership was awarded £140k from NatureScot in late 2022 in response to an application to Nature Restoration Fund to undertake a delivery phase for the project 'Restoring the River South Esk: A Nature Rich & Climate Resilient Catchment'. This has been delivered by partners including the River South Esk Catchment Partnership, Esk Rivers & Fisheries Trust, Forestry & Land Scotland, RSPB Scotland, Rottal Estate, Cairngorms National Park Authority and Angus Council. The project's aim was to enable multihabitat nature restoration across multiple Angus Glens and estates addressing Nature Restoration Fund priority themes.

- The project aims to deliver 'Transforming Nature' Habitat and Species and Freshwater Restoration priority outcomes including:
- Creating landscape scale nature networks.
- Restoring water course and floodplain function mitigating the impacts of climate change.
- Returning heavily managed land to a natural state.
- Increasing habitat and species diversity adopting nature-based approaches to managing key ecosystems.

## Project Location

The project is within the Local Authority area of Angus Council. The north of Rottal Estate, Glen Doll and the north of Glen Prosen are within the Cairngorms National Park Authority area. There are locations for restoration proposed in Glens Doll, Clova and Prosen.

The map below shows the locations identified for delivery. Images show wetland, river restoration and moorland sites.



Restoring the River South Esk:  
Nature Restoration Fund  
Delivery Phase



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Figure 1. Map showing the location of Nature Restoration Fund proposed interventions in Glens Clova, Doll and Prosen.



*Figure 2. Glen Prosen is typical devoid of tree cover due to a long history as an upland sporting estate. The image shows typical habitat representation on site.*



*Figure 3. Three wetland areas have been identified for enhancement on Rottal Estate totaling 30ha. The image shows an area to the south east of the estate where works may take place.*





*Figure 4. Like many upland watercourses the 250m long March Burn has been historically straightened has been identified as a priority for restoration.*

## Project Summary

The overall project aim is to increase the biodiversity, climate resilience and ecological coherence of the River South Esk Catchment, delivering long lasting, transformational change in response to the ecological and climate crises. The development phase of the project has allowed progress to towards submitting a delivery phase application to the Nature Restoration Fund in July 2023.

The Partnership's vision is for habitat restoration and creation on the River South Esk and its catchment. We envision a nature-rich, ecologically connected, working upland landscape, from hilltop to riverbed. The partnership project will be an exemplar of landscape scale change, increasing climate resilience and biodiversity in upland Angus. The development phase has allowed the Partnership to identify on the ground ecological restoration opportunities with estimated costs for delivery. A tender process was carried out to identify and develop further detailed proposals. These include:

- Re-meandering 250m of March Burn
- 30ha of wetland habitat
- Installation of up to 104 large woody structure
- 8.7ha of riparian woodland along 17.5km of currently open watercourse
- 6.5 ha of native treeline woodland creation

- 155 ha of native woodland via natural regeneration
- Semi-natural grass and heathland habitat restoration

The following is a brief outline of the tender process per element.

## **Wetland concept design and site selection**

Experienced wetland consultants 35 per cent were instructed by the project team to conduct feasibility studies into the proposed creation of up to five wetlands in the project area. In-depth field assessments of each site were conducted in March 2023. Three sites (Laird's Haugh, Wheen and Adielinn – all on Rottal Estate) were subsequently taken forward to concept design stage in April and then final technical design in June. This work has given the project team significant confidence as we look towards construction in the delivery phase.

We now hold detailed ecological and geomorphic baselines of the sites and an enhanced understanding of how the wetlands will function as part of a new resilient, dynamic landscape. The detailed surveys highlighted important unknown information about the sites including the location of deep peat on the floodplain, which will be left undisturbed during future groundworks.

The information generated by the consultants will be able to inform the EIA/planning process. In terms of challenges, 35 per cent highlighted that the surveys were undertaken at a time of year when many plant species were either insufficiently advanced in terms of development for adequate identification, or not yet in evidence.

## **Large Wood Structure design**

Experienced geomorphological consultants cbec were appointed to lead on the large wood structures (LWS) feasibility assessment. Their detailed study has resulted in recommended locations for the LWS and delivery costs. A total of 104 locations for installation of LWS was suggested by cbec, prioritised based on the potential impact on the river and floodplain environment, with 21 high priority locations, 40 moderate priority, and 43 low priority.

The report will form the basis of discussions with tenant farmers and angling stakeholders on the locations for LWS that will provide maximum benefit to the river and the people of Glen Clova. Due to the timing of the development phase of the project and delivery phase application period, a Fresh Water Pearl Mussel (FWPM) survey has not been able to be conducted, and this will need to be carried out before any construction work commences to ensure FWPMs are not disturbed.

## **March Burn Remeander Proposal**

Cbec led on the options appraisal for the re-meandering of the March Burn resulting in a detailed design of the preferred option to take forward to delivery. The work enabled the project team to enhance the understanding of the

hydrology of this part of the upper catchment. Due to the budget available and short length of the Development Phase, cbec were only able to progress the work to concept design stage and not include further modelling and flood risk assessment. The work presented a unique challenge in that the burn forms the legal boundary between Rottal and Clova Estates resulting in discussions between both parties and wider project team on the implications of the work. Agreement was reached however, mostly in part due to the strong working dynamic of the project team.

## **Breeding bird surveys**

Breeding bird surveys by Gavia Environmental were conducted in April and May 2023. The surveys specifically took place on Airlie Estate in areas adjacent to proposed riparian tree planting. Existing data from Rottal Estate was sufficient to assist the project team so no surveys were conducted there. The results from the bird surveys were compared by RSPB Scotland to data from 2019, 2021 and 2023 to ensure confidence in tree planting proposals. Despite the Development Phase extension to June 2023, our project budget (as stipulated by the grant offer) had been confirmed, meaning that surveys in only April and May were possible thus missing out on the standard three-visit approach for breeding wading birds. However, based on visits to the project area by RSPB Scotland staff, the warm, dry April/May appeared to indicate an earlier breeding season than usual for wading birds and the shortened survey window is still likely to have captured all territories.

# **Aims and Outcomes**

As referred to in the previous Project Summary section, specific on the ground interventions have been identified and will be used to support a Nature Restoration Delivery Phase application as project outputs. These include:

## **Wetland creation (30 ha)**

Creation of three new dynamic wetlands on Rottal Estate (Laird's Haugh, Adielinn and Wheen) over 30ha, in line with the Habitats and Species and Freshwater Restoration NRF priorities. These wetlands will be low intervention and align with adjoining habitats to increase ecological connectivity. At all three sites existing channels will be enhanced to create larger wetland features, scrapes constructed of varying depths and fixed weir bunds and additional shallow bunds will hold water back with reprofiled drains creating more edge habitat.

High stage offtakes from the River South Esk at Laird's Haugh and Adielinn Burn at Adielinn, into the wetland features will reduce sediment and nutrient loads, improving the river's water quality. The designs are sympathetic to the existing geomorphic features and will complement existing habitats on the floodplain such as deep peat at Laird's Haugh and Wheen. The wetlands will not only provide new feeding and breeding habitat for wading birds, but stop-over sites for migratory



birds, new habitat for wintering wildfowl and will benefit native amphibians, invertebrates, and fish populations. The wetlands will restore features missing from the Glen Clova floodplain for centuries, and increase species and habitat resilience, ensuring that water is held in the upper catchment for longer.



Figure 5. Three areas for wetland enhancement were identified in Glen Clova. The image shows their location and potential connectivity.

### **Remeander of March Burn (250m)**

To restore the straightened section of the March Burn (see figure 4), the artificial flood embankments will be removed, and the channel will be realigned to encourage natural river processes. Surveys and modelling have identified the historical river channel that will be used as a template for the realignment of the burn, which will be provided with a generous buffer zone to allow lateral movement due to natural river processes. The buffer zone will be fenced off from livestock to allow the buffer zone to vegetate and native trees to establish. Large Wood Structures will be incorporated into the new channel to further encourage river processes, and wet woodland will be created at the downstream end of the channel near the confluence with the South Esk.

By removing the flood embankments, the burn will be reconnected to the floodplain, which will improve flood and drought resilience and reduce pressure on in-stream substrates during spate events. Realignment of the river channel will improve the physical habitat present by increasing the length of channel. The in-stream habitat will be improved by providing a mosaic of river features, such as pools, glides, riffles and runs, that provide habitat for different life stages of salmonid fish and invertebrate species.

## River Restoration on River South Esk - Large Wood Structures (5 km)

The installation of up to 104 Large Wood Structures (LWS) throughout the section of river from Gella Bridge to the confluence with the March Burn. These structures will be designed to undertake specific purposes at each location, considering the physical setting and geomorphological condition of the river at that location. The LWS will be designed to create new habitat for aquatic species; to improve existing habitat; and to stabilise sections of eroding riverbank. The three types of LWS considered for use in the project are bar apex structures; medial structures; and bank protection structures.

The installation of LWS is intended to optimise the in-stream habitat for juvenile and adult salmonid fish by providing physical habitat in areas that this is lacking, and to kick-start natural fluvial river processes to increase habitat diversity. The structures will contribute to climate resilience by slowing water movement, reducing flood peaks, and providing cooler refuge areas for aquatic species. Finally, by providing natural bank protection, the rate of erosion of riverbanks will be slowed, reducing the input of fine sediments into the river, and protecting agricultural land within the floodplain.



Figure 6. The mainstem of the River South Esk can support large wood structures in a number of locations. An example of the Prioritisation process is shown in figure 6.

## **Native Treeline Woodland Creation (6.5ha)**

The project aims to increase biodiversity through the creation of 6.5 ha of low-density native treeline woodland and scrub.

To further boost biodiversity and the conservation of less common species, sub-montane willow species such as dark-leaved willow will be planted to increase its abundance in the area along with other less common tree species such as aspen. This area of native woodland creation will also improve resilience in the long term for the adjacent montane heath communities by reducing the threat from non-native conifer regeneration.

The project will also remove invasive non-native conifer regeneration from semi-natural grass and heathland habitats for the resilience and protection of biodiversity of high-quality montane heath, alpine grassland and tall-herb communities and improve access to these biodiverse and rare habitats for targeted deer management to reduce negative browsing pressure impacts.

## **Native Woodland Creation through Natural Regeneration (155ha)**

As part of wider ambitions to stimulate a diversity of semi-natural woodland and heathland habitats over 155 ha of previously intensively managed moorland (see figure 2) through enclosure and reduction in browsing and trampling pressure will allow the existing ground flora to bounce back from historic over grazing, creating a more diverse and pollen rich habitat along with reducing soil compaction and erosion through poaching. The fence will also encourage natural regeneration of native woodland trees and shrubs from the remnant species clinging onto the two rock crags that will be enclosed.

## **Riparian Woodland Creation (8.7 ha)**

The project will deliver 8.7 ha of new native riparian woodland and establish a native seed source for future natural regeneration within a 30m strip along 17.5 km of currently open watercourse. The woodland will be planted using site suitable native trees in deer and mountain hare proof fencing enclosures at an average of 0.5 ha per 1 km of watercourse.

# Challenges and Mitigation

The following section outlines the main challenges encountered during the development phase.

## Timing

A significant challenge has been around the initial estimate of timings for specific activities deadlines. When preparing the Development Phase application, the timing of some activities was based on expectation of what would be appropriate rather than a working knowledge and experience. As previously mentioned, the project has been a learning curve for many partners. Having worked through the initial phase, our judgement for this application has advanced significantly.

The very tight deadlines, due to a delayed start of project have again provided valuable lessons in risk management and building project resilience.

## Tenant Engagement

Engagement with sitting agricultural and sporting tenants, as well as residential tenants has been a large part of the requirements of this project. Any proposed land use change or change to the management of land requires the agreement not only of the landowner, but also the tenants who manage and occupy the land. To carry out effective tenant negotiation within the timeframe provided for project development has been a significant challenge.

The time required to share and refine proposals and negotiate how title and remuneration would be structured to allow for changes in land management, has been conducted with care and consideration, but with the result that no project areas under tenancies are able to be taken forward in a delivery phase application.

## Procurement

Project geography means gathering three quotes is at times a significant barrier, especially where site visits are required to develop quotes. Lack of procedure for use of retained consultants, such as farm managers, foresters, and estate managers, poses challenges for private rural businesses.

The following section outlines the ways the project team addressed challenges, mitigating them through public engagement.



## Community Engagement

Engagement with the community over the Development Phase plans was an important part of the project. Contact was made with local interest organisations, and community groups. Information about the project and the plans, including maps, that were being scoped was made available online and information was shared through social media platforms.

The project committed to engagement with those who came forward with insights, questions and opinions about the project and significant project management time was dedicated to conversations with interested parties.

A public engagement event was held on 21st March 2023 at The Steading, Rottal Estate in Glen Clova. The event was held from 2 until 6pm to make it accessible to as many people as possible in the community. Representatives from the project and partner organisations were there to discuss the project in more detail and maps and timelines were made available for people to see and take away with them. The event was well attended with 20 people from the community and other groups. People who could not attend were able to contact the project team directly to discuss the project in detail and provide their feedback on the proposals.

The event gave the opportunity for people to better understand what was being proposed and provide a point of contact for the project. The feedback from the event was overwhelmingly positive. The key points that were taken away from the event were:

- Community concerns about flooding, especially in Dykehead and Cortachy villages. As well as further down the catchment.
- Benefitted from insights from local ecologists, biologists and naturalists.
- Learnt about other projects underway with cross over elsewhere in the national park.
- Encountered huge appetite for participation and other organisations seeking engagement and coordination of those resources.
- A need to manage expectations about the pace of delivery, the parameters of the scope of the funding and balancing other land uses.

The key outcomes of the engagement event:

- That from our proposals for opportunities for citizen science and volunteering as part of the project in conjunction with Buglife Scotland.
- A need to continue the conversation and keep platforms up to date with information about the project.
- To tap into local expertise where possible.

Community engagement is ongoing and will feature as a core part of the project delivery phase of successful.

## Interest Groups & Stakeholders

We have engaged with:

- Angus Council – Flood Risk and Structures Team, Environment and Climate Change Team, Planning and Sustainable growth Service
- Scottish Land & Estates
- SEPA
- NatureScot – Regional, local, specialist & NRF officers on key actions and wider priorities context
- Cairngorms National Park Authority
- Scottish Forestry
- BugLife Scotland
- Tayside Biodiversity Partnership
- Scotia Seeds
- Woodland Trust
- James Hutton Institute
- Public consultation on land use changes with local and interested parties

Wide consultation and regular discussion with stakeholders in the area has allowed the project team to foresee challenges and have relationships in place to be able to find timely solutions.

## Plans for the 10-year compliance period

Landowner agreements were signed at the beginning of the development phase. If successful in being able to carry out a delivery phase, further landowner agreements will be signed, and a Memorandum of Understanding will be in place with delivery partners. Again, if successful in and reaching the delivery phase, monitoring and will be delivered by project partners, a monitoring framework will be developed as part of the project and the ongoing ecological changes onsite will be communicated via partner channels. fencing and tree tube stock. Small numbers of replacement trees, if required, will be taken from larger orders of site native tree species on order.

# Further works/Project Legacy

Working in partnership across RSECP partners, agencies and landowners has been a positive experience for the RSECP. The partners have welcomed the opportunity to deliver the project as a consortium, with each benefitting from the experience and insights of the others to form a holistic and practicable project. Developing deeper relationships with Angus rural businesses has been extremely valuable and insightful and will hopefully lead to further collaboration.

All parties, many of us delivering a project of this scale for the first time, have acquired experience and skills that will be of benefit us when delivering the next phase, if successful. The Development Phase has allowed us to identify areas for improvement and how to better anticipate and manage risk in preparation for a Delivery Phase application.

## Communications and funding acknowledgement

The NRF grant and NatureScot have been acknowledged in all material produced for this project, including press releases, newsletter items, social media and in presentations given to arrange of audiences.

Partners have provided details of the project on websites where possible and relevant logos have been used.



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Photo credits. River South Esk Catchment Partnership, Kelly Ann Dempsey, Ben Freeman, Forestry and Land Scotland.