The River South Esk
Catchment Partnership

Restoring the River South Esk
A Nature Rich & Climate Resilient Catchement

Nature Restoration Fund
Delivery Phase Report | April 2026

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Introduction

The River South Esk Catchment Partnership was awarded £1,401,907 from NatureScot in January 2024 in response to an application to Nature Restoration Fund (NRF) to undertake a delivery phase for the project **'Restoring the River South Esk: A Nature Rich & Climate Resilient Catchment'**. This project has been delivered by the following partners:

- River South Esk Catchment Partnership;
- Forestry & Land Scotland;
- Esk Rivers & Fisheries Trust;
- RSPB Scotland;
- Rottal Estate;
- Cairngorms National Park Authority; and
- Angus Council.

The project's aim was to enable multi-habitat nature restoration across multiple Angus Glens and estates, addressing NRF priority themes. 'Transforming Nature' Habitat and Species and Freshwater Restoration priority outcomes included:

- 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.

This report outlines project delivery, outputs, challenges and mitigation as well as long-term monitoring and project legacy.

Project Summary

The overall project aim was to increase the biodiversity, climate resilience and ecological coherence of the upper River South Esk Catchment, delivering long lasting, transformational change in response to the ecological and climate crises.

The Partnership's vision is for habitat restoration and creation on the River South Esk and its catchment, envisioning a nature-rich and ecologically connected, working upland landscape, from hilltop to riverbed. The Partnership project is an exemplar of landscape scale change, increasing climate resilience and biodiversity in upland Angus.

The project's development phase carried out in 2023 allowed the Partnership to identify on the ground ecological restoration opportunities with estimated costs for delivery. These included:

- Re-meandering 244m of the March Burn;
- Creation of new wetland habitat systems across 25 ha over three sites;
- Installation of up to 104 Large Woody Structures;
- 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; and
- Semi-natural grass and heathland habitat restoration

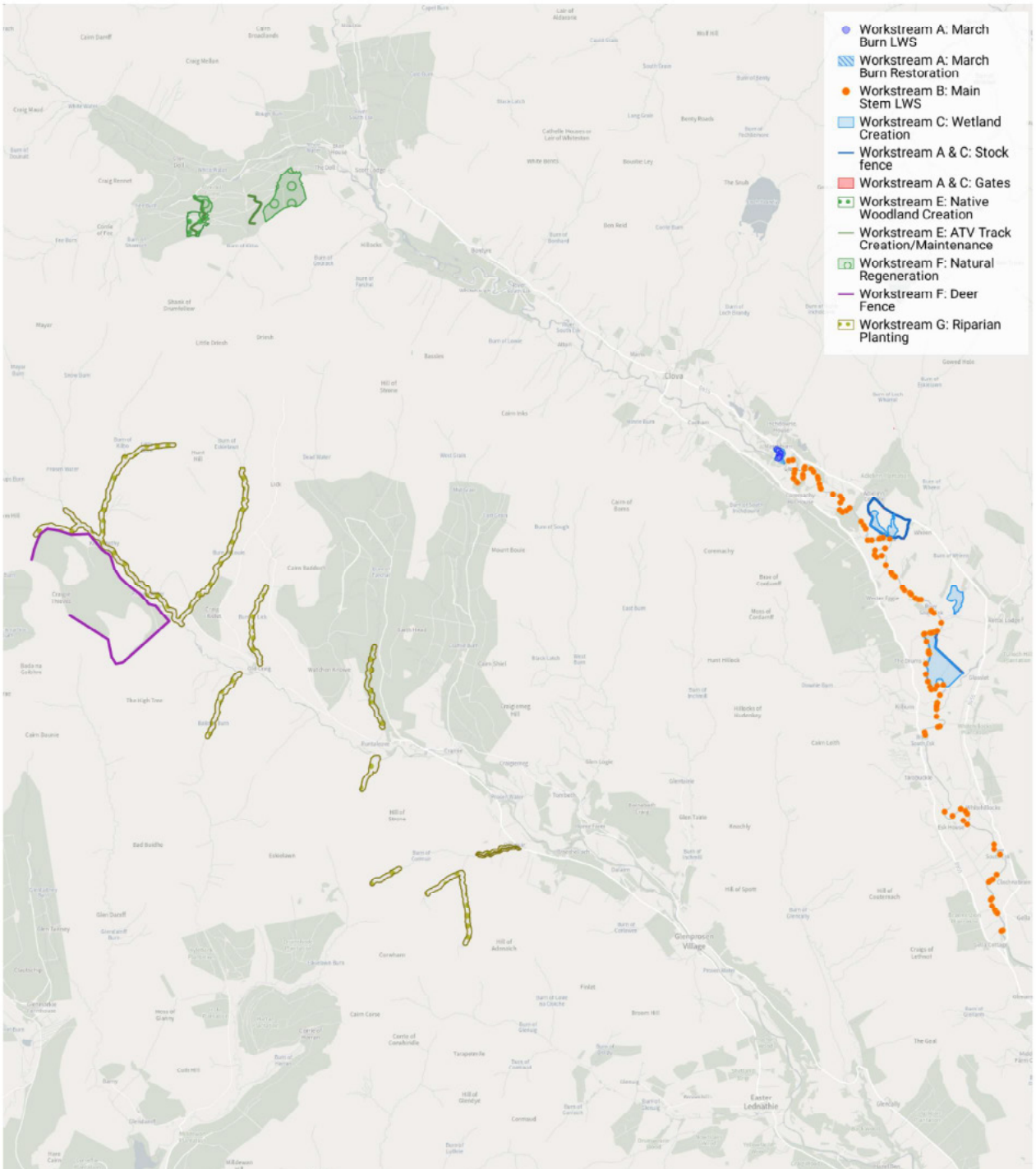
In July 2024, a delivery phase application was submitted to NRF outlining time scales for delivery of the above outputs, estimated costs and capital, and in-kind support from project partners. The project's lead applicant was Angus Council on behalf of the River South Esk Catchment Partnership and three landowners, Rottal Estate, Clova Estate and Forestry and Land Scotland signed 10-year landowner agreements issued by NatureScot. At this time, NRF did not fund dedicated project staff, and the partner consortium managed the project throughout. Project delivery from 2024-26 is summarised in this report.

The project ended in March 2026, and outputs identified above were delivered, excluding the installation of large wood structures. Challenges posed by the second wettest start to the year recorded in Angus in 2026, limited the final area of wetland creation however all three sites were successfully enhanced. Woodland elements took place as planned with modifications if needed.

Project Location

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

The map below shows the location of Restoring the River South Esk proposed interventions in Glens Clova, Doll and Prosen.



Project Procurement and Permissions

Prior to the commencement of physical works, a lengthy period of the project was spent going through procurement and planning permission processes. These are outlined below.

Procurement

The project adhered to NatureScot and Angus Council Procurement guidelines and procedures. Angus Council committee process was followed, and the project team was supported by the Council's Infrastructure Commissioning Team. The following contractors were appointed for each element of the project.

March Burn Restoration

- Design and site supervision – cbec eco-engineering
- Construction – McGowan Environmental Ltd

Wetland Creation

- Technical review and planning - cbec eco-engineering
- Design and site supervision – 35 percent
- Construction – JML Contracts Ltd

Planning Permission

Planning Permission was required for the March Burn restoration and the wetland elements of the project. Both applications were presented at their prospective Committees. No objections were received.

March Burn Restoration

The Cairngorms National Park Authority granted planning permission for **APPLICATION NUMBER: 2025/0053/DET** `Proposed restoration of March Burn including realignment of river channel, removal of lower section of river embankments, infilling and regrading of river channel and river embankment, installation of large wood green bank protection and large wood structures, the formation of an inset floodplain and wetland scrapes, and associated works' on 17th June 2025.

Wetland Creation

Angus Council granted planning permission for **APPLICATION NUMBER: 25/00311/FULM** `Creation of three wetland areas (Adielinn, Wheen and Laird's Haugh) within the wider floodplain on the north side of the River South Esk in Glen Clova including associated works at River South Esk Restoration Areas Glen Clova for Angus Council' on 18th September 2025.

Under The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009, developments greater than two hectares are classified as major developments. Due to the combined area of works (including excavations, machinery compound and vehicle access routes) at the wetland creation sites being over this threshold, it was determined that the works would constitute a major development.

To comply with the relevant legislation, the project team conducted Formal Pre Application Consultation in March 2025. This involved:

- Two public events at Rottal Estate outlining the wetland site proposals
- Letters sent to neighbouring properties, Community Councils and local MSP/MPs
- Newspaper adverts in the Angus Courier advertising the public events and information on how to submit feedback

Habitat Regulations Assessment

A Habitat Regulations Assessment was submitted to NatureScot who determined that the proposal would not adversely affect the integrity of the River South Esk Special Area of Conservation provided that adequate mitigation measures were implemented.

Environmental Impact Assessment Screening

Angus Council determined that an Environmental Impact Assessment was not required.

SEPA Controlled Activities Regulations license

An application was made for a SEPA Controlled Activities Regulations (CAR) License in May 2025 under **license CAR/S/5010161**.

Project Outcomes

The following section outlines the background, construction phase and outcomes achieved per habitat focused theme. Appendix 1 to this document 'Construction photographs of March Burn and Wetland Creation Sites' show activity during the construction phase in greater detail.

March Burn Restoration

Background

The March Burn is a tributary of the River South Esk that borders both Rottal and Clova Estates. Prior to 2025 the straightened section was approximately 244m and had artificial embankments on both banks. Evidence suggests the lowermost ~150m of the burn was straightened before 1862, while the section immediately downstream of the road appears to have been straightened between 1969 and 2008 (see figure 1).

The project's aim was to restore the March Burn to a more natural state by encouraging natural river processes and reconnection to the floodplain by removal or lowering of the embankments. This will improve the quality of in-stream habitat for salmonid fish and invertebrates and increase the resilience of the burn in flood and drought conditions.

During the project's earlier development phase cbec eco-engineering led on an options appraisal for the re-meandering of the March Burn resulting in a detailed design of the preferred option to take forward to delivery. Due to the budget available and short length of the Development Phase, cbec eco-engineering were only able to progress the work to concept design stage and not include further modelling and flood risk assessment.

Construction Phase

Prior to construction, cbec eco-engineering were appointed to complete the design and modelling for the remeander of the March Burn. The final modelling and design for the work, along with Pre-Construction, Health & Safety, Bill of Quantities and Risk Register documents were completed in January 2025.

McGowan Environmental Ltd were awarded the construction contract with cbec eco-engineering carrying out site supervision and Ecological Clerk of Works.

Construction commenced in September 2025, with the new channel for the upper section the first area to be excavated. Before the new channel could be connected to the old channel, Esk Rivers & Fisheries Trust (ERFT) conducted a fish removal using electrofishing equipment. A total of 238 juvenile Atlantic Salmon and Trout were removed from the channel. Fish nets were situated at the upper and

lower ends of the channel to prevent the ingress of salmonid fish from being in the area during construction.

During construction, high flows were experienced due to heavy rain, which briefly washed away fish nets providing mitigation. A further fish removal was conducted by ERFT, which removed a further 197 juvenile salmonid fish and fish nets were re-installed.

The historical river channel was used as a template for the realignment of the burn, and a buffer zone was created to allow livestock exclusion supporting riparian vegetation native tree establishment.

Large Wood Structures were incorporated into the new channel to further encourage river processes, and wet woodland will establish further at the downstream end of the channel near the confluence with the South Esk.

Outcome

Following construction, a straight river channel disconnected from its floodplain, has now become a meandering, reconnected channel, allowing flood waters to dissipate (see figure 2). The total length of the channel did not change significantly, preconstruction measuring 244m in length, and the new channel 249m. However, the quality of the habitat for aquatic organisms will improve.

Post-construction, several high-water events resulted in new features being created in the new channel, including point bars and deeper pool areas that will be important refuges for invertebrates and juvenile fish during low water. Surveys and modelling have identified lateral movement due to natural river processes which will further shape the dynamic new system.

A monitoring framework is being developed with cbec eco-engineering and Abertay University to catalogue the changes to the new channel over time. Juvenile fish and invertebrate surveys are planned for summer 2026, with salmonid spawning surveys planned for November/December 2026.

Figure 1: The historically straightened March Burn shown in 2024, prior to restoration, is shown in figure one.

Figure 2: The remeandered March Burn in March 2026 in shown post restoration alongside new wetland scrape areas is shown in figure two.

Wetland Creation

Background

A network of well-connected wetlands is a feature missing in the upland areas of Angus. To restore the habitat, missing from the Glen Clova floodplain for centuries a network of wetlands of varying sizes were proposed as part of the project (see figures 3, 6 and 8).

The wetlands were purposefully designed in areas likely to benefit Glen Clova's healthy breeding wading bird population, providing new feeding and breeding habitat for wading birds, stop-over sites for migratory birds, new habitat for wintering wildfowl and will benefit native amphibians, invertebrates, and fish populations. Alongside an increase in species and habitat resilience, the wetlands will support water being held in the upper catchment for longer. Slowing the input of water into the mainstem of the River South Esk during high intensity rainfall events will support resilience to drought during periods of low rainfall and extreme heat.

Wetland consultants 35 per cent developed technical designs for three sites (Laird's Haugh, Wheen and Adielinn – all on Rottal Estate) in 2023 as part of the project's Development Phase. Resulting from this, detailed ecological and geomorphic baselines formed abasis for the construction phase as well as an understanding of how the wetlands would function as part of a new resilient, dynamic landscape.

The detailed surveys highlighted important unknown information about the sites including the location of deep peats on the floodplain, which was left undisturbed during groundworks.

Construction Phase

Creation of three new dynamic wetlands on Rottal Estate (Laird's Haugh, Adielinn and Wheen) in line with the Habitats and Species and Freshwater Restoration NRF priorities took place between October 2025 and March 2026. Construction works were carried out by JML Contracts Ltd and site supervision was carried out by 35 percent. For a summary of Wetland creation features and areas across the three sites shown in detail (see Table one).

Following a pre-construction Technical Review by cbec eco-engineering a small number of minor changes to the three site Technical Designs produced in the development phase were made. In addition, an updated Groundwater Dependent Terrestrial Ecosystem assessment was conducted after consultation with SEPA. Due to works at Adielinn and Laird's Haugh incorporating a short section of riverbank reprofiling, an Application to Register: Engineering registration was completed.

High stage offtakes were constructed from the River South Esk mainstem at Laird's Haugh and from Adielinn Burn at Adielinn. These allow water to be brought into the wetlands at times of spate, whilst reducing sediment and nutrient loads, thus improving water quality.

The works were low intervention, used site-worn materials and their enhancement supports ecological connectivity to neighboring sites. Wetland construction took place between October 2025 and March 2026 and is outlined below:

Adielinn: October 2025 – January 2026

At Adielinn, a high stage offtake from the Adielinn Burn was created, passing through two sediment traps, into a large scrape and cluster of three scrapes. To the east of the excavated areas, five bunds were constructed to hold water back and enhance existing wetland habitats. Additional features included a vehicle access bridge and fish gabion barrier.

Figure 3: Adielinn wetland site in August 2025 pre-construction is shown in figure three. The darker areas of rush indicate the wet ground where new wetland features were to be located.

Figure 4: Adielinn wetland site in April 2026 post-construction is shown in figure four. Water is being retained in several of the newly formed wetland features and will vary in sync with rainfall in the upper catchment.

Figure 5: Adielinn fish gabion barrier is shown being installed Laird's Haugh in late 2025 in figure five.

Laird's Haugh: January – March 2026

At Laird's Haugh, a high stage offtake from the River South Esk was planned to feed into a large network of reprofiled ditches and new wetland features (see figure 7). A raised water table caused by an exceptionally wet January (please refer to Challenges and Mitigation section for more detail) rendered ground conditions on some sections of the site unworkable (see figure 18) and as a result, construction timescales were adapted to ensure the project deadline was met.

The construction of a high stage offtake will introduce new water into the system to create new wetland habitat, hold water for longer on the floodplain, enhancing the overall biodiversity of the site. A large scrape was created, ditches reprofiled and two bunds installed. A fish gabion barrier and vehicle access bridge were installed (see figure 5).

Figure 6: Laird's Haugh wetland site in August 2025, pre-construction is shown in figure six. The darker areas of rush highlight the existing wet ground and ditch network where the new wetland features were located.

Figure 7
Laird's Haugh wetland site in April 2026, post-construction is shown in figure seven. Water is being held back on the floodplain in the southeastern end of the site.

Wheen: February – March 2026

At Wheen, three bunds were installed between drumlins to hold water back in an existing wetland area, where small deposits are also present, enhancing the on-site habitats. A new pool was created immediately north of the existing on-site pool with a new bund installed. The existing pool outlet pipe was raised to extend the open water features currently found at the site (see figure 9).

At all sites, spoil from the excavated areas was placed in agreed locations and spoil was re-turfed to minimize the extent of bare ground, hastening the recovery of the sites following groundwork.

Figure 8: Wheen wetland site in August 2025, pre-construction in figure eight with an existing pool and archaeological interest on site visible.

Figure 9: Wheen wetland site in April 2026, post-construction is shown in figure nine. Extended newly formed wetland areas are visible as are archaeological features which are more prominent doe t low winter vegetation on site.

Despite the need to reduce the overall area of wetland creation at Laird's Haugh site, the project's wetland aims have been achieved through a close working relationship with all parties. To ensure effective communication, a WhatsApp messaging group was set up and a weekly meeting was held to ensure the project team were sighted on progress and made aware of any challenges in good time.

Feature	Description	Area (m2)
Adielinn – habitat creation (excavations)		
Inlet channel, sediment traps, channel-end wetland	Seasonally wet	9920
Large scrape	Linked to final ditch	6564
Cluster of three scrapes	Linked to final ditch	3850
	Total	**20,334**
Laird's Haugh – habitat creation (excavations)		
Inlet channel	High-stage inlet	2939
Ditch widening	Typically wet	4016
Scrape	Seasonally wet	3761
	Total	**10,716**
Wheen – habitat creation (excavations)		
Wetland pool	Typically wet	1,560
	Total	**1,560**
	Total – all sites	**32,610**

Table 1: Wetland creation features such as excavations, scrapes ad cannels across the Adielinn, Laird's Haugh and Wheen sites are described in table one.

Outcome

Across the three sites, the project has created approximately This 6.1 ha of new wetland habitat within a 25-ha boundary. This includes 3.2 ha of new excavated features, either typically or seasonally wet, in the form of new inlet channels, scrapes, pools and reprofiled ditches.

In addition, a network of newly installed clay bunds surrounding each of the three sites will slow the flow of water and create 2.9ha of newly wetted areas.

This 6.1 ha of new wetland habitat will play an important role in enhancing the biodiversity across the wider sites they are located within. Included in the projects supporting information submitted to NRF, were As-Built Surveys for each site produced by consultants' 35 Percent (see figure 10).

The new wetlands, in combination with existing habitats will assist with the maintenance of low flows by holding back water and will improve water quality,

particularly at Adielinn and Laird's Haugh, by removing fine sediments and nutrients that otherwise would enter the river. These water quality improvements may benefit species such as Freshwater Pearl Mussel and Atlantic Salmon.

The incorporation of bunds at each of the sites will ensure the current drainage of the sites is slowed, supporting the reduction of flood peaks downstream. Water being retained within the wetland features will raise groundwater tables helping maintain river levels during low flow conditions. Water will move more slowly through the system via sub-surface seepage in comparison to the historic situation where water has drained rapidly from sites via drainage channels.

Encouragingly, changes to biodiversity have been immediately visible. In early March 2026, 90 Whooper Swans were recorded at the newly established Adielinn wetland, likely on their return migration to Iceland. Whooper Swans in the upper part of Glen Clova are relatively scarce; and this already highlights the importance of these new habitats for migratory species.

Shortly after the completion of all three sites, displaying Lapwing and Snipe were recorded. A full breeding bird survey will be carried out in spring/summer 2026.

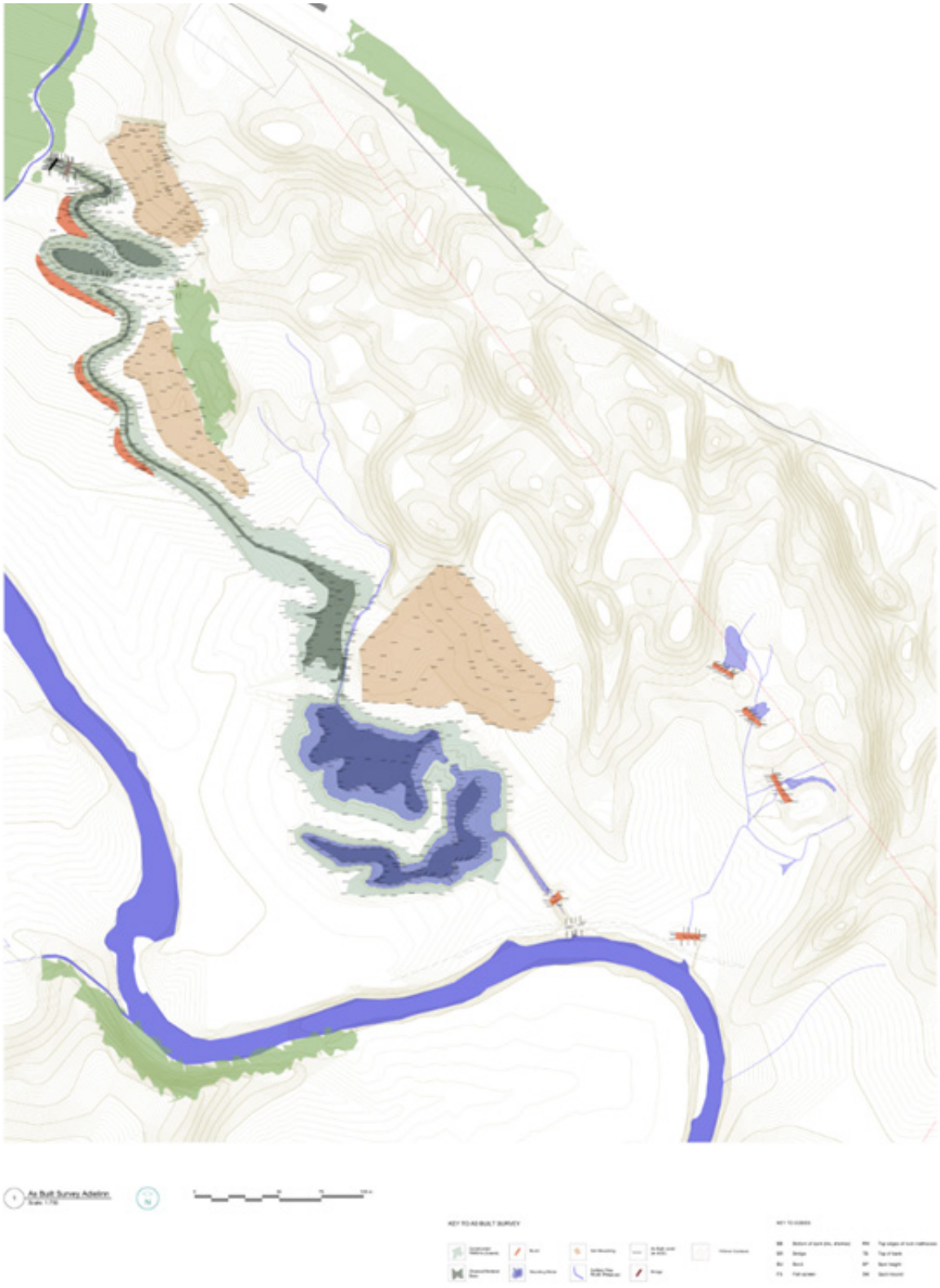


Figure 10: As-Built Surveys for each site were produced by consultants' 35 Percent and figure 10 shows an example of the Final As-Built Survey for Adielinn Wetland.

Large Wood Structures

During the projects development geomorphological consultants cbec eco-engineering were appointed to provide a large wood structures (LWS) feasibility assessment. The resulting study identified 104 locations for installation and project costs (see figure 11) 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 throughout the section of River South Esk from Gella Bridge to the confluence with the March Burn.

The structures would perform a specific purpose at each location, considering the physical setting and geomorphological condition of the river. The LWS would 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 were bar apex structures; medial structures; and bank protection structures.

The installation of LWS was 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 can also 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 can be slowed, reducing the input of fine sediments into the river, and protecting agricultural land within the floodplain.

The construction of LWS was programmed for delivery in years 2024/25 of the project. Due to the late start of the project and procurement delays, the installation LWS did not take place in the main stem of the River South Esk during the delivery phase of the project. In early 2026 funding has been received from the Cairngorms National Park Authority to deliver the construction plan identified in the original feasibility study.

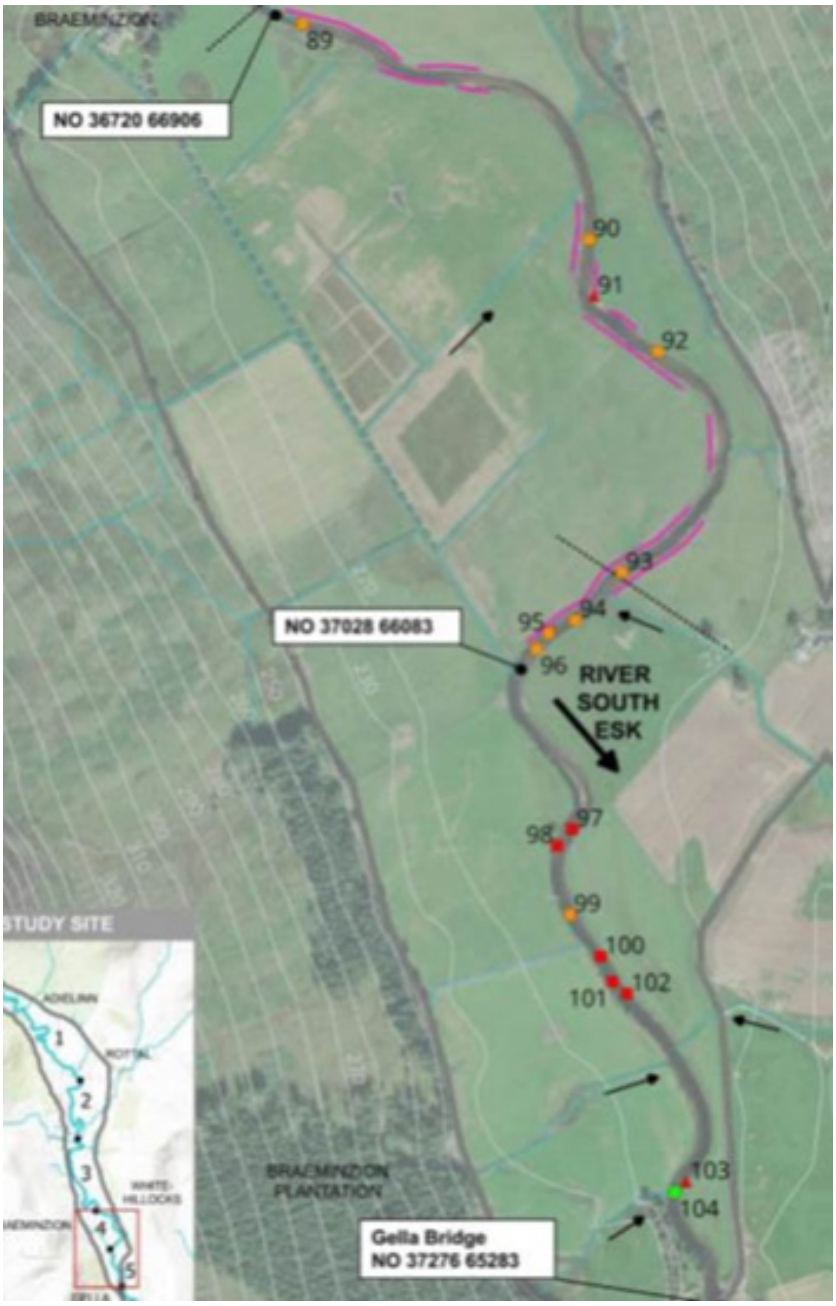


Figure 11: The mainstem of the River South Esk can support large wood structures and a number identified locations are shown in figure 11.

Native Woodland Creation

Background

The upper reaches of the Angus Glens have historically been intensively managed for grouse shooting resulting in a largely treeless landscape (see figure12). Native woodland creation in the area was identified as a priority project element, benefiting climate change resilience, biodiversity, and carbon sequestration. In addition, it can reduce diffuse pollution and improve soil retention security in the River South Esk upper catchment. Alongside tree planting and natural regeneration, the need for both species and structural diversity in habitats, low-density early succession scrub habitat both on high ground and managed scrubland on low ground was identified as priority. Forestry and Land Scotland have managed this project element on the publicly owned Glen Prosen Estate and Glen Doll and in most workstreams contributed 10% towards financial costs. Three key workstreams were identified, being native treeline woodland creation, through natural regeneration and Riparian Woodland Creation. These are outlined in more detail in the following section.

Figure 12: Glen Prosen is typical devoid of tree cover due to a long history as an upland sporting estate. Figure12 shows typical habitat representation on site.

Native Treeline Woodland Creation

Background

This element aimed to increase biodiversity through the creation of 6.5 ha of low-density native treeline woodland and scrub. Less common species, including dark-leaved willow, were planted along with aspen. This improves resilience in the long term for the adjacent montane heath communities by reducing the threat from non- native conifer regeneration (see figure 13).

The removal of invasive non-native conifer regeneration from semi-natural grass and heathland habitats also took place. This will support biodiversity in areas of high-quality montane heath, alpine grassland and tall-herb communities. It will also improve access for targeted deer management by reducing negative browsing pressure impacts.

Construction Phase

In March 2025 the restoration of 630 m of ATV track and the creation of a further 860 of new low impact ATV track took place. This will facilitate deer management in a range of habitats including new native treeline woodland, high-quality montane heath, alpine grassland and tall-herb communities, semi-natural grassland and heathland.

Work proposed for financial year (FY) 2024/25 included the control of non-native tree regeneration over 31 ha in preparation for the creation of new native treeline woodland and protection of the previously mentioned habitats. Due to a shortage of Forestry & Land Scotland (FLS) resources and contractor availability, this could not be delivered in the financial year.

However, the Nature Restoration Fund (NRF) opened applications for additional works during 2025/26, and the project was awarded additional funding. Native tree regeneration control took place over October – December 2025 over 30.7 ha. This was split over three sites to protect semi-natural grasslands and upland heath and prepare the site for future treeline woodland to be created by FLS following additional planned fencing.

Planting was initially intended for the end of FY 2024/25, but due to issues delivering the non-native regeneration control (see above) it could not be delivered. FLS liaised with NRF, and FLS proposed covering 100% of costs for the purchase of the trees using underspend from regeneration control work and a small increase in NRF funding for completion of the project in FY 2025/26. This increased FLS' contribution from 10% to a total of 19% of this element of the project.

In February – March 2026, 6.5 ha of treeline woodland was created, planting 4,230 native trees in small groups. 3,500 trees were protected using tree shelters; the remaining 730 alder and willow were planted unprotected. The initial proposal included planting sub-montane willows, these trees were not available at the

time of the project and have been replaced with native eared and grey willows. FLS have collected cuttings and seed for dark-leaved willows and are currently creating seed orchards for developing planting stock in the future, which will be used to beat-up this project site.

Outcome

The workstream has resulted in the creation of a resilient transitional new native 6.5 ha treeline woodland at an altitude between 400 and 550 m (see figure 14). It will link to developing and future native riparian woodland along the Fee burn and high-quality montane heath and scrub habitats above the site.

The woodland consists of 1,000 locally rare aspen along with birch (1,000), rowan (500), Scots pine (500), eared willow (600), grey willow (400) and alder (230). All trees are of local provenance except for aspen, which are from a Staffordshire seed zone but from pure Scottish Speyside origin. The woodland has left space for additional planting of rare sub-montane willows in the future.

Out with the treeline woodland, over 7 ha of biodiversity rich existing and developing high-quality montane heath, alpine grassland and tall-herb communities have been protected from the threat of non-native tree regeneration and given space to grow and extend. Additionally, over 13 ha of semi-natural grassland and upland heath have been protected from non-native tree regeneration. This will be planted soon by FLS to create a mosaic of further low-density treeline woodland and priority habitats. These will blend a more natural and biodiverse transition from plantation Scots pine though to the high-quality montane/alpine habitats above. These habitats are now more resilient to deer browsing due to enhanced access for deer management. Improved accessibility will also facilitate access for future planting, maintenance, non-native tree control and fencing.

Figure 13: The area identified for the Native Treeline Woodland Creation element is shown in figure 13 as it was in November 2024 prior to works.

Figure 14: The area identified for the Native Treeline Woodland Creation element is shown in figure 14 in Mach 2026 after works to remove non-native tree regeneration and native tree planting.

Native Woodland Creation through Natural Regeneration

Background

This element aims to support a diversity of semi-natural woodland and heathland habitats over 155 ha of previously intensively managed moorland. By enclosure creation and a reduction in browsing and trampling pressure, soil compaction and erosion through poaching will be reduced (see figure 15). Ground flora will recover by creating a more diverse and pollen-rich habitat. Fencing will also encourage natural regeneration of native woodland trees and shrubs form the remnant species in enclosed rock crags.

Construction Phase

For this element, the initial proposed fence line was changed prior to construction in agreement with NRF to extend further north and include a 1,500 m section of the upper Prosen Water to minimise overall fencing and maximise riparian planting opportunities. The final output of 155 ha area proposed for natural regeneration remained.

Following a framework mini-tender in the summer of 2024, a contractor was appointed and started construction of a 6km high quality deer fence to encompass an area totaling 184 ha. The fence was constructed using low ground pressure machines to minimise ground disturbance and impacts and was completed in September 2024. Polyethylene pipe water gates designed to deal with high fluctuations in water levels have worked well during flood events.

There have been small issues with rabbit / hare proof gates across forest roads and netting having to be replaced, however FLS completed works in March 2026 to install hardcore and robust wooden sills below gates to create a better fit and remove the need for netting.

Outcome

The workstream has resulted in 184 ha of previously heavily browsed heath and acid grassland being protected from browsing and trampling, with the additional benefit of protecting over 6 ha of riparian woodland creation (see following section). Formal survey results are not complete regarding natural regeneration within the enclosure; however, it is evident that vegetation is responding well to the reduced deer browsing. Existing willows, previously not visible above heather, are becoming visible on the hillside. Due to the planning, siting and marking of the fence line, there have been no recorded bird strikes. However, it is important to note that strikes are not always found due to scavengers picking up carcasses and black grouse monitoring is ongoing.

Figure 15: Enclosure creation shown in figure 15 will reduce browsing, trampling pressure, and erosion through poaching supporting the natural regeneration of native woodland trees and ground flora.

Riparian Woodland Creation

Background

This project element has delivered 8.7 ha of new native riparian woodland and established a native seed source for future natural regeneration within a 30m strip along 17.5 km of currently open watercourse (see figure 16). Woodland has been 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.

Initial plans were to construct a series of ex-closures and small enclosures measuring between 5 x 5 m up to 100 x 20 m, totaling approximately 11,300 m of deer fencing with rabbit netting. Following an assessment of deer presence and movement on site since the FLS purchase in November 2023 the proposal was reassessed in early summer 2024.

The new plan utilised existing deer and stock fencing where possible and a large natural regeneration fence to encompass the significant riparian area. The total amount of fencing vastly increased the area protected to facilitate future additional native woodland creation and habitat restoration. With agreement from NRF the new plan included a total of 5,700 m of deer fencing which included upgrading >1,000 m of existing stock fence, 1,040 m of new stock fence with rabbit netting and 1,470 m of existing stock fence upgraded with rabbit netting. It enclosed a total of 121.25 ha for new native woodland creation and habitat restoration. The plan also included the removal of > 3,800 m of old, unneeded stock fence from the landscape.

Construction Phase

Following a mini-tender over the summer of 2024 a fencing contractor was appointed to deliver the updated and agreed fencing plan. Work commenced on the riparian fencing in September 2024 and was completed by the end of November 2024. The new fencing plan came in well under the initial agreed budget.

FLS agreed with NRF to using some of the fencing underspend to delivery more riparian ex-closures and small enclosures in Glen Doll Forest, building on work completed under the 2019 Biodiversity Challenge Fund project (501219) and other riparian ex-closure work FLS had done in the forest in 2016. In March 2025 the additional work constructed 15 new deer fenced ex-closures measuring a total of 1,020 m, enclosing a further 0.8 ha ready for future native riparian planting along the River South Esk, White Water, Fee Burn and their tributaries

The initial intention was for FLS to plant the additional ex-closures in 2025/26. However, NRF opened applications for additional works for the FY 2025/26 and the project was awarded additional funding to purchase trees and plant the ex-closures during the FY 2025/26.

When assessing estimated and agreed planting budgets in 2025, covering the purchase of trees and the screef and flat planting created in 2023 it became clear that both the cost of trees and the cost of tree planting, mainly due to increases in minimum living wage and employer NI contributions at both the tree nursery and planting end of the equation, the initial 2023 budget was woefully under estimated.

In addition, FLS had not completed the planting of the treeline woodland, initially proposed for FY 2024/25 due to issues around the non-native regeneration clearance. FLS therefore proposed to NRF the additional riparian ex-closure planting be included in the project, but that FLS would cover the cost of all trees, increasing FLS' contribution from 10% up to 39% of the planting costs for Glen Prosen and 63% of the planting costs in Glen Doll (approx. £5,500), for a modest NRF budget increase of around £1,200.

With funding agreed with NRF, planting was awarded through mini-tender and delivered in March 2026.

Outcome

The workstream has delivered the establishment of significant areas of new native riparian woodland along the banks of an impoverished riparian zone in the upper Prosen Water catchment.

In Glen Prosen a total of 16,255 native trees have been planted creating over 15.6 ha of new native riparian woodland, almost 7 ha more than originally planned. This is in addition to the extensive area enclosed and is suitable for further new native woodland creation and priority habitat restoration.

All trees are of local provenance except for aspen, which although having a Staffordshire provenance, is mainly of Speyside origin. Across the Glen Prosen sites the woodland consists of over 3,700 locally rare aspen, with alder (4,000), downy birch (3,700), rowan (675), hazel (400), bird cherry (500), Scots pine (500), eared willow (1,500), grey willow (1,200) planted on suitable soils and aspects. Within the lower glen towards the southeast of the site, it is suitable for a wider variety of species than the northwest where higher elevation and poorer soils are reflected in the species mixture.

In the Glen Doll riparian ex-closures a total of 1,515 native trees have been planted, with 1,315 inside ex-closures, consisting of aspen (372), downy birch (575), rowan (198), hazel (100) and alder (70) with a further 200 alder planted outside the ex-closures next to the watercourses.

This links into existing thin but well-established mature riparian woodland further downstream. The planting will in time provide shade and dappled light along stretches of water, that recent temperature recordings highlight as at dangerously warm levels for salmonids. Leaf litter entering the river will increase invertebrate numbers providing more prey for fish.

Although the planting is still at relatively low levels along the watercourses in the Glen, they will provide a seed source for future natural regeneration and enclosures provide opportunities for further riparian planting over the next 10 years. In Glen Doll, the new ex-closures compliment established 2016 and establishing 2019 riparian planting. This will provide a future seed source and the start of resilient riparian woodland as the forest is restructured.

Figure 16: Riparian ex-closures have been constructed at several riparian sites in Glen Prosen. These will aid in the regeneration of native species alongside native tree planting. An example is shown in figure 16.

Ongoing Monitoring

Ongoing monitoring of restored habitat areas will be carried out by project partners in wetland, river and woodland areas. More details are included below.

Wetland Creation monitoring

A structured and forward-looking monitoring approach has been developed to support the long-term evaluation of the wetland creation works at Glen Clova. Recognising that short-term or partial monitoring within the remaining project period would offer limited value, the project prioritised the development of a durable monitoring framework, alongside targeted capital investment, to enable meaningful longitudinal monitoring as future funding becomes available.

This work has been delivered at two complementary levels:

1. Catchment-scale Monitoring Framework

A Wetland Monitoring Framework and accompanying guidance have been developed to provide a consistent, ecosystem-based approach to monitoring wetland creation in the project area. The framework defines overarching monitoring objectives, indicators, and recommended methodologies, structured around four core aims:

- successful establishment of wetland habitat;
- colonisation by wetland fauna;
- development of ecological functionality; and
- provision of evidence to support adaptive management.

The framework adopts a multi-indicator approach, integrating vegetation, hydrology, fauna and habitat structure to provide a holistic understanding of wetland conditions and trajectory. It has been designed to align, where appropriate, with the principles of the Cairngorms Nature Index, while remaining a practical, site-scale monitoring and management tool rather than a composite reporting index.

Importantly, the framework is intended to be transferable and scalable, providing a shared methodology that can be applied by catchment partners to future wetland creation projects. This creates the foundation for greater consistency in data collection, comparability of outcomes, and potential for collaboration, including shared equipment, data, and learning across the South Esk catchment and Angus Glens Landscape Scale Exemplar area.

2. Site-Specific Monitoring Plan (Rottal Estate)

Building on the framework, a detailed, contractor-ready monitoring plan has been developed for the Rottal wetland site. This translates the framework into a practical delivery programme tailored to local conditions, setting out what will be monitored, where, when and how, alongside roles, responsibilities, equipment requirements and indicative costs.

The plan identifies site-specific monitoring units across the wetland mosaic and defines a suite of core and supplementary metrics appropriate to the site's design, hydrology and stage of development. Core monitoring includes botanical surveys, hydrological monitoring, breeding and wintering bird surveys, and freshwater macroinvertebrate sampling, supported by supplementary methods such as fixed-point photography, camera trapping, aerial imagery and bioacoustic monitoring.

A clear monitoring calendar, data management approach, and annual review process are included to ensure that data are collected consistently and can be interpreted as time series, enabling trends in habitat development, species colonisation (see figure 17) and ecological function to be understood over time.

Monitoring Infrastructure and Next Steps

Capital investment has focused on establishing reusable monitoring infrastructure, including camera systems and three bioacoustic monitoring units with associated analytical subscriptions. These systems enhance the project's capacity for passive, repeatable monitoring of faunal activity and complement existing survey efforts, including those undertaken by RSPB.

The monitoring approach has been explicitly designed to support collaboration with partners and to integrate with wider catchment-scale initiatives. Opportunities exist to share data, methodologies and equipment across neighbouring landholdings, strengthening the evidence base for nature recovery at a landscape scale.

While full implementation of the monitoring programme will depend on securing future funding, the project has established both a transferable monitoring framework and a site-specific delivery plan. Together, these provide a strong and practical foundation for long-term monitoring, adaptive management, and ongoing evaluation of wetland restoration outcomes, ensuring that the Nature Restoration Fund investment delivers enduring value.

Figure 17: Ecological changes on site began during the construction phase with species taking advantage of newly wetted areas. Figure 17 shows common frogs utilising wet areas for spawning.

Woodland Creation monitoring

Forestry & Land Scotland will carry out the following monitoring over the three workstreams delivered via the project:

Native Treeline Woodland Creation

Planting will be monitored in years one and five for success rates. Any significant failure will be beaten-up with suitable native local provenance trees. If available, this will include sub-montane willows like dark-leaved willows.

All tree tubes will be recorded into FLS spatial mapping programs and programmed for inspection and eventual removal under compliance with UKWAS. Tree tubes will be monitored annually until trees are sufficiently established for removal. Fallen tubes will be corrected as found.

Non-native tree regeneration will be monitored on a five-year cycle and controlled as required to prevent invasion and shading of native trees and/or priority habitats.

Both open habitat and treeline woodland sites cleared of non-native regeneration will be checked regularly by deer contractors/FLS staff during regular stalking activities.

New Native Woodland Creation Through Natural Regeneration

Fencing will be monitored monthly and following any extremes in weather, particularly following heavy snow. Repairs will be made as soon as possible to ensure the integrity of the fence.

The enclosure will be monitored regularly by deer contractors/FLS staff with thermal imaging cameras to check if they are deer free, particularly following any damage to fences or if gates are found open. Any deer break-ins will be dealt with immediately.

The 155ha enclosed for natural regeneration will be monitored on a 5-year cycle for native and non-native tree regeneration. Non-native tree regeneration will be removed.

If in year 10 there is very little native tree regeneration due to the limited seed source, FLS will enrichment plant with suitable native species to help develop a low-density native valley side to treeline woodland to maximise the lifespan of the NRF funded fence.

Vegetation will be monitored on a five-year cycle to look at sward height, species richness and browsing levels as part of a wider habitat monitoring program within Glen Prosen.

Riparian Woodland Creation

Fences will be monitored monthly and following any extremes in weather, particularly high waterfall and heavy snow. Repairs will be made as soon as possible to ensure the integrity of the fence.

Enclosures will be monitored regularly by deer contractors/FLS staff with thermal imaging cameras to check if they are deer free, particularly following any damage to fences or if gates are found open. Any deer break-ins will be dealt with immediately.

All planting will be monitored in years one and five for success rates. Any significant failure will be beaten-up with suitable native local provenance trees.

March Burn Restoration monitoring

At present a monitoring framework is being developed with cbec eco-engineering and Abertay University. This will monitor a range of changes, including the morphology of the new channel on a temporal scale. Juvenile fish and invertebrate surveys will be carried out by the Esk Rivers & Fisheries Trust beginning in summer 2026, with salmonid spawning surveys planned for November/ December 2026.

Wider impacts monitoring

The River South Esk Catchment Partnership, Tayside Biodiversity Partnership and Angus Council will monitor the impact of the project against delivery of local nature, climate and land use strategy including local authority nature and climate statutory reporting.

A key monitoring mechanism in the 10-year period will be the Tayside Local Biodiversity Action Plan 2016 – 26 and its successor which will be shaped by the Scottish Biodiversity Strategy to 2045. The initial multi-habitat project proposal was noted as having potential to deliver 23 % of actions in the Tayside Local Biodiversity Action Plan 2016-26. The plan is the framework for nature restoration project delivery in Angus and Tayside. Monitoring of impact will also shape new plans such as the River South Esk Catchment Partnership's second catchment management plan currently being produced.

In March, the South Esk catchment was confirmed as one of a final list of nine Scottish Biodiversity Delivery Plan 2024 to 2030 exemplars.

The purpose of the exemplar projects is to demonstrate new ways to accelerate and scale up nature restoration, building on the experience of earlier initiatives and the good work delivered on the ground.

NatureScot is working with SEPA, Forestry and Land Scotland, Scottish Forestry and Scottish Water to prioritise and support landscape scale projects across Scotland. Next steps include developing a project plan to determine how agencies can best support the South Esk catchment and Angus Glens project. This focus will contribute to growing the projects' long-term legacy.

Challenges and Mitigation

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

Timing

A significant challenge throughout the delivery phase has been around timing. Timings in the application submitted were estimates and although the project team has met the end of project deadline there were some changes to outputs, including being unable to deliver the large wood structure element in financial year 2024/25. An inability to move funding between years was restrictive.

Wetland Creation – winter weather limitations

The planning application timeline for the wetland creation meant that construction works could not commence on site until October 2025. This was outside of the optimal late summer – early autumn wetland creation period, when ground conditions are dry after the summer. As a result of high levels of precipitation and frequent flooding from a raised water table from November onwards (Angus experienced the second wettest start of the year on record), delays were incurred in completing Adielinn. This meant that when work commenced at Laird's Haugh in January 2026, the ground conditions were already exceptionally challenging (see figure 18) and work had to pause whilst the project team, 35 percent and JML modified the plan.

Figure 18: Ground conditions at Laird's Haugh, Rottal Estate in January 2026 were unsuitable for construction and figure 18 shows heavy plant being unable to move across waterlogged areas of the site.

The new plan outlined in Project Outcomes limited the initial scope of works by avoiding the wettest, unworkable sections at Laird's Haugh, ensuring work could continue and be completed by the project deadline of March 31st, 2026.

Although revised in scope the wetland creation element achieves significant gains for biodiversity and natural flood management. The project team are exploring ways in which to complete the work with additional funding in the future.

Adaptive Management

Due to a dedicated Project Officer role being an element that could not be funded by the Nature Restoration Fund at the time of application in 2024, the project team managed dedicated elements of the project. This was always the intention of the team; hence the large in-kind element of project support included in the application. However, at various stages of the project, demands on the team, all fulfilling roles within their own organisations proved a challenge. Variances in budget and outputs throughout the project meant that additional support was sought from the landowner Project Management element of the project provides by Sylvestris.

Limited contractor availability at times, challenges within agencies e.g. staff shortages and long local authority procurement and committee cycles also added challenges at points of delivery. The project team worked extremely well together and regular project meetings and ongoing communication mitigated challenges.

Stakeholder Engagement

Throughout the life of the project the delivery team has engaged with the following organisations and communities:

- Angus Council – Flood Risk and Structures Team, Environment and Climate Change Team, Planning and Sustainable Growth Service and Legal & Democratic Services
- Scottish Land & Estates Scottish Environmental Protection Agency – various local and national staff
- 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 change was carried out with local and interested parties as part of the planning process

Plans for the 10-year compliance period

Landowner agreements were signed at the beginning of the delivery phase in 2024. A monitoring framework has been developed as part of the project, and the ongoing ecological changes onsite will be communicated via partner channels.

Project Legacy and Additional Project Benefits

Working in partnership with River South Esk Catchment Partnership (RSECP) partners, agencies and landowners has been a positive experience for RSECP. Partners have welcomed the opportunity to deliver the project as a consortium, and it is clear at the end of the delivery phase that the project could not have gone ahead without a strong team-based approach. Developing relationships with Angus rural landowners and businesses has been extremely valuable and the project is repeatable, albeit with changes that will make delivery achievable on a site-specific basis.

The delivery of the project demonstrates visible on the ground change, habitat restoration across several sites, incorporating a multi- habitat approach. The

improved biodiversity value of some sites is immediately apparent; in others, change will take several years.

Monitoring of impact will also shape new plans such as the RSECP's second catchment management plan and will inform climate change adaptation planning across the catchment. The South Esk catchment and Angus Glens was confirmed as a Scottish Biodiversity Delivery Plan 2024 to 2030 exemplar. The project area will be in the national spotlight, and the project's legacy is linked to this achievement. The initial multi-habitat project proposal was noted as having potential to deliver 23 % of actions in the Tayside Local Biodiversity Action Plan 2016-26 (TLBAP). They will be assessed, and the project will be included in the final 10-year review of the TLBAP in late 2026.

All project team members, many of us delivering a project of this scale for the first time, have acquired experience and skills that will be of benefit to RSECP and our respective organisations when delivering future projects. This development of staff, alongside achieving our intended outputs, a strengthened RSECP and a more biodiverse and climate resilient upper catchment are legacies of the project we are all extremely proud of.

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, at public consultation events and in presentations given to a range of audiences.

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

RSPB Scotland, on behalf of the project team, will be releasing a short film highlighting the different stages of wetland creation. The film includes short interviews with various members of the project team and acknowledges the NRF grant.

This project is supported by the NatureScot Nature Restoration Fund

Photo credits. River South Esk Catchment Partnership, Forestry and Land Scotland, 35 Percent, JML Construction Ltd.

Appendix

Appendix one shows construction during the Restoring the River South Esk: A Nature Rich & Climate Resilient Catchment project delivery at the the March Burn and Wetland Creation Sites.

Figure 1: Construction phase began on site at March Burn in September 2025. Figure one shows a digger onsite prior to excavation of the original channel.

Figure 2: Creating the new channel began in September 2025. Figure two shows a digger onsite excavating the new March Burn channel with the original, straightened channel in the foreground.

Figure 3: A section of the newly re-profiled riverbank and March Burn in the southern area of the site is shown in figure three.

Figure 4: The new March Burn channel is shown in figure four at the newly created confluence with the River South Esk.

Wetlands

Figure 5: Construction at Adielinn commenced in October 2025. Figure five shows the Adielinn high-stage offtake under construction looking south-east.

Figure 6: A digger on-site at Adielinn excavating the southern end of the offtake channel, where it meets the scrape cluster is shown in figure six.

Figure 7: A drone image of the completed Adielinn wetland looking south-east is shown in figure seven. The vehicle access bridge, offtake channel are visible in the foreground. The cluster of scrapes and newly wetted areas behind bunds are visible in the background.

Figure 8: The completed Laird's Haugh wetland high-stage offtake and vehicle access bridge is shown in figure eight.

Figure 9: Looking north at Laird's Haugh, figure nine shows a re-profiled ditch which had been excavated by a digger.

Figure 10: Looking east at Laird's Haugh, figure 10 shows a completed pool at Laird's Haugh. It highlights the purposefully constructed shallow edge, designed to support breeding wading birds.

Figure 11: Construction at Laird's Haugh commenced in January 2026. Figure 11 shows a digger constructing the Laird's Haugh high-stage offtake in February 2026.

Figure 12: Construction commenced at Wheen in February 2026. The newly completed Wheen pool, with new bund separating it from the existing pool in the background is shown in figure 12.

Figure 13: Looking north at Wheen. Figure 13 shows a newly constructed bund in the centre, with a newly wetted area behind.

Figure 14: The existing pool at Wheen is shown in the foreground in figure 14. Newly created pool and wetted areas behind new bunds can be seen in the background.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