

Response to comments, concerns and questions raised at the 2020 Community Consultation on river restoration at RSPB Insh Marshes.

In November 2020, RSPB Insh Marshes and Cairngorms Connect began a conversation with communities surrounding RSPB Insh Marshes to look at possible options for the future of the floodplain.

The majority of those who answered were in support of the options, apart from option 2b (Naturalising river dynamics – removing the bank protection on the River Tromie) which was only supported by 48% of respondents. None of the options showed a majority of those responding saying that they didn't support the option, however the engagement events generated important conversations around the long-term sustainable management of RSPB Insh Marshes. This document aims to respond to all comments, concerns and questions raised throughout this process.

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General comments, concerns and questions

“The project isn't going far enough or being ambitious enough”

It would be fantastic to deliver a large-scale ambitious river restoration project. However, we feel a staged approach is more appropriate for several reasons:

- Firstly, we have listened to the local community's concerns and would like to demonstrate that the proposed works won't negatively impact properties, businesses, and local infrastructure.
- Secondly, as the works can impact the site designations, and several important species and habitats, we consider a cautious approach more appropriate.

We will implement an initial stage of work followed by a programme of monitoring to assess the effectiveness of the restoration and inform further phases.

“The objectives are unclear, e.g., what ‘natural’ means.”

The term 'natural' relates to the hydrological and morphological process on the river and floodplain, and it is these processes that were modified by human intervention. The options presented at the engagement aim to restore a process similar to those before modification.

The project aims to restore and reconnect the river and floodplain where the historical modifications are having a negative impact on site morphology, hydrology, and ecology.

Additional benefits of the works will be to:

- improve the designated and non-designated wetland habitats which will then improve conditions for the wildlife at RSPB Insh Marshes
- ensure the reserve is resilient to the future impacts of climate change
- reduce the need for ongoing mechanical intensive management of wetland habitats
- slowing the flow of water through the reserve during flood events
- using natural flood management techniques to reduce flood risk to surrounding communities and land surrounding the reserve
- protecting the underlying peat by improving the condition of the fen habitats, thereby securing the carbon store and enhancing the rate of carbon sequestration

Community Engagement

“Can you please confirm our comments will be taken into account and that we will be further consulted in line with RSPB's steps to 'engage with communities? This includes the residents of Lynchat.”

RSPB have committed to speaking with the local community through all stages of the project. We have engaged the local community in our work from an early stage to hear local opinions on the projects we are considering. We have taken all the engagement feedback and evaluated the projects in light of the information received. We are following [best practice protocols](#) on how landowners, land managers and communities can work together to make better – and fairer – decisions about land use.

We have committed to a number of actions following on from the community engagement carried out in December 2020. The RSPB will undertake further engagement work at crucial points during the project. Engagement will include additional drop-in sessions with local communities, social media updates, [email updates](#) and information via the [Cairngorms Connect website](#).

“The RSPB aren't listening to local people who live in the area”

RSPB have committed to speaking with the local community through all stages of the project. We have engaged the local community in our work from an early stage to hear local opinions on the projects we are considering. We have taken all the engagement feedback and evaluated the projects in light of the information received. We are following [best practice protocols](#) on how landowners, land managers and communities can work together to make better – and fairer – decisions about land use.

We have committed to a number of actions following on from the community engagement carried out in December 2020.

“Why are the RSPB asking the opinion of the local community as they weren't the experts?”

We were keen to engage the local community at an early stage of the work so we could share our concerns with issues we were facing on the reserve with the decaying historical infrastructure, our management, and climate change.

We were also keen to share the science the consultants have been working on over the last five years to help inform our decision making. We have found that through early engagement with the local community, we have gained a lot of helpful information and opinions. We feel it is important that when deciding how RSPB manages its land, local community opinions are considered as part of our decision-making.

“There were many statements about a lack of understanding of the topic or its complexity”

We understand that the topic is complex and have tried to present materials in a range of accessible formats. We have taken this feedback on board and will try to make future information more comprehensible. For a video, explaining the process so far and next steps [click here](#).

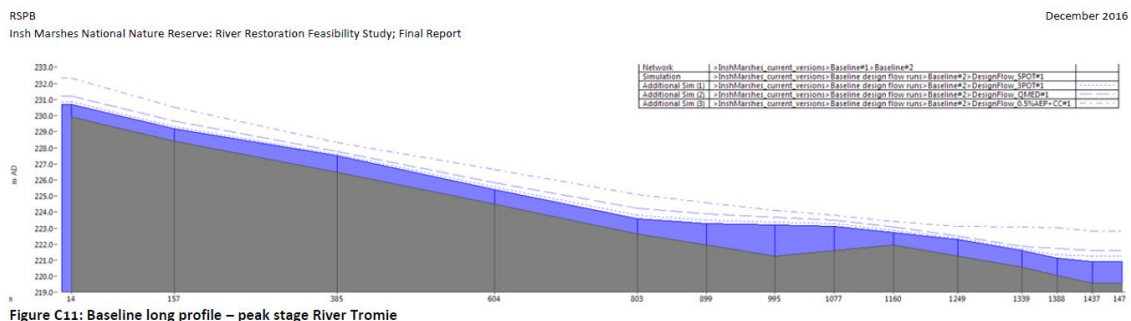
Upstream impacts

“What would be the potential upstream impacts of the options on tributaries such as the Gynack and the Tromie”

The upstream impacts on the River Gynack would be negligible as the proposed works are downstream of the A9 bridge. The modelling work has shown that the A9 embankment and bridge restrict the river's capacity. These structures have the most substantial influence on flooding in this area, more so than any of the options presented at the Community Engagement.

On the Tromie, the lower areas of the Spey Floodplain are already influenced by the River Spey during flood events, which results in sediment being deposited within the Tromie when levels in the River Spey area are high (see long section through the river below). Therefore, any slight lowering of water levels in the River Spey will allow this sediment to travel further downstream. However, this change is small in relation to the natural processes within the Tromie itself.

When considering the lower Tromie, we do not anticipate any impact approximately 300m downstream of the Speyside Distillery at Tromie Mills. The design work for any options on the Spey/Tromie floodplain will consider the constraints of the properties and associated infrastructure adjacent to the floodplain at Invertromie.



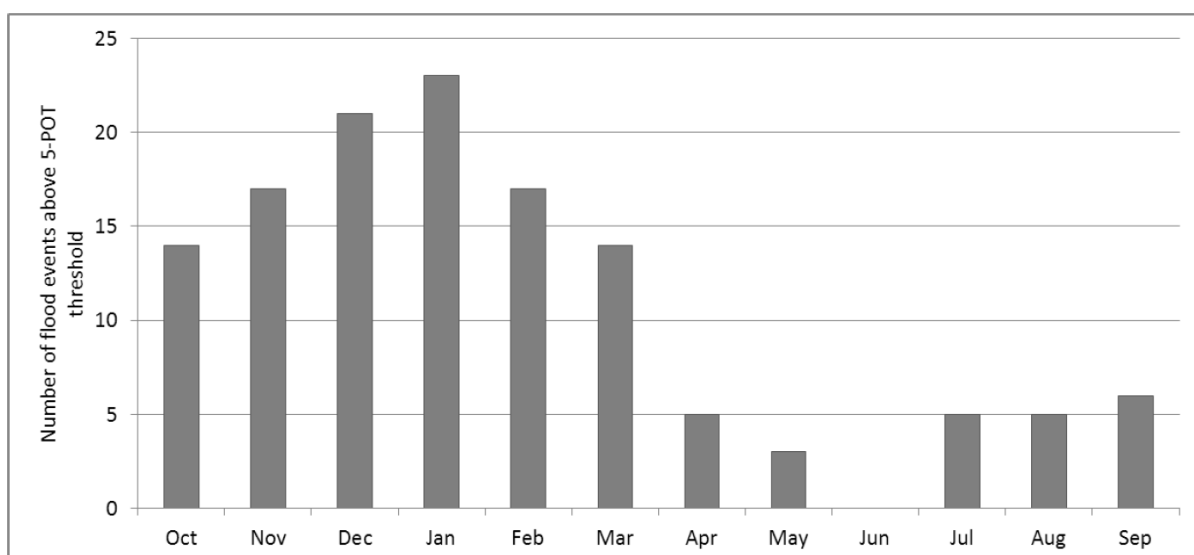
Wildlife

Concerns that “any changes would impact the animals and birdlife on the marshes, specifically whether the project will make the birch flies and midges worse, and the impact of the project on nesting birds. “

The project's key objective is to restore and reconnect the river and floodplain by removing historical modifications. The primary outcome and main driver for RSPB are that the work will improve the habitat for the range of wetland and riparian species found on the reserve. Removing embankments will increase the connectivity between the river and the floodplain allowing the wetland to inundate more frequently during smaller flood events creating more dynamic hydrology across these habitats. The result will be an increase in fen, marsh and swamp, creating more habitat for species such as waders, rails and ducks as new areas of more frequent flooding, small pools and boggy areas are formed. In addition, meandering the tributaries and adding structures within the river, such as woody material, will provide new floodplain water bodies, frequent flood zones, bare ground and increase the diversity of sediments and flow within the river. Such changes will improve conditions for aquatic species, including Atlantic Salmon, Freshwater Pearl Mussels and invertebrates such as the rare Northern Silver-Stilettofly and Five Spot Ladybird.

Many wildfowl and waders that breed on the marshes build their nests on or near ground level and can be susceptible to flooding. Therefore, by implementing the options, we anticipate a minor increase in spring flooding in some years. However, most ground-nesting waders and wildfowl can lay several clutches of eggs to allow for the replacement of lost nests, be that to flooding, cold weather or predation. Their young are also highly mobile, enabling them to move to higher ground if flooding occurs. Spring floods tend to be smaller inundations, leaving drier refuge areas for adults to move chicks. EnviroCentre has analysed the occurrence of spring flood events; the data shows that in the last 25 years, there have been three 5 POT (Peaks Over Threshold) floods during May and no 5 POT floods in June.

In addition, the removal of embankments will introduce a more natural flood inundation profile. A gradual advance of floodwaters across the floodplain will be more beneficial in terms of birds being able to respond rather than the relatively quick onset of higher velocity flows associated with flows through embankment breaches or overtopping.



Note: 5-POT refers to the magnitude of flood that will be exceeded typically 5 times per year on average

Figure 1: Monthly distribution of high flow events on the River Spey recorded at Invertruim

Restoration work will improve wildfowl and wader habitat and food availability for many nesting species, enabling the birds to raise more young, offsetting the potential impacts of increased flooding during the breeding season. By removing embankments, we aim to increase and improve habitat suitability by:

- creating a more suitable habitat mosaic for nesting and feeding waders and wildfowl in the area of the current embankments
- improving vegetation structure for camouflaging nests and hiding chicks from predation
- Reducing vantage points for predators to view nests and chicks
- Creating wetter areas that will deter predators from accessing the wetland.

There are concerns that the proposed work could increase the number of biting insects. Overall, the options are unlikely to cause a noticeable increase in midge or birch fly numbers. However, projects that aim to improve habitat conditions in the tributaries of the River Spey could create some minor habitat improvements for birch flies, although we do not anticipate that the scale of works is significant enough to cause an issue for the community.

Questions about “ongoing monitoring of wildlife and how that will be impacted, for example, butterfly transects.”

Science underpins our work both in RSPB and Cairngorms Connect. Therefore, monitoring the impacts of the work will be a key output of any restoration. Monitoring will include undertaking baseline, and post-work surveys to allow us to examine the long-term changes resulting from our restoration work. The project proposes monitoring a wide range of parameters, including changes to hydrology, river morphology, and impacts on species and habitats.

An essential part of the work will be to continue with the existing reserve monitoring programme to understand any effects the project may have across the reserve. When planning the projects, the impact on existing long term monitoring programmes, such as butterfly transects, will be considered; this will include discussion with relevant stakeholders.

Agriculture

“I’m concerned about wiping out part of agricultural heritage so the RSPB can save money by just flooding the area to stop plant succession of reeds and willow.”

Natural processes occurring on the river and floodplain, when combined with the impact of climate change, have led to increased flood risk in some areas of the reserve. For example, bed levels are rising due to sediment deposition, reducing bank heights, increasing out of bank flows and the risk of the river breaching out of the channel into the lower-lying floodplain in locations around the River Tromie, Ruthven and Raitts Burn. Continuing to manage the land the same way we have for the last 30+ years is no longer sustainable, and we need to consider future options.

Farming will continue to play an essential role in managing the reserve as we plan for the future. The reserve has for many years and continues to do so today, provided 580 ha of seasonal grazing. An additional 90ha of ground is leased under a full agricultural tenancy. The five options presented at the Community Engagement event will not impact the land leased under a long-term agreement with our farm tenant. There will, however, be some changes to the seasonally grazed land but the current low-intensity spring, summer and autumn grazing will still be required to help manage the wetland habitats.

In addition, the proposed options to remove the embankments and block ditches will see some areas becoming wetter and transition from rushy pasture to fen; grazing will still be required to help manage these habitats. This work is not aimed at creating large areas of open water as this isn’t suitable habitat for many of the species found on the reserve, including many breeding birds. Allowing the river to flow more readily onto the floodplain will also enable the water to recede quicker and return to the river from the floodplain.

Work on the tributaries could significantly impact some of the improved grassland fields and other wetland habitats. However, given the naturally occurring changes within the tributaries, such as sediment deposition raising bed levels and the associated increase in flooding within these areas, when combined with the predicted increase in flow rates due to climate change. Farming is unlikely to be feasible over the longer term.

The historical modifications to the floodplain were undertaken when labour was plentiful and cheap. It was also at a time when governments were incentivising agricultural improvements. As the river is constantly eroding and depositing sediments, and the ditch system and marsh vegetation communities move through successional stages, the reserve and floodplain require ongoing maintenance and management. Repairing infrastructure, clearing drains and ongoing habitat management is expensive. Therefore, we are looking at a longer-term, more sustainable way to manage RSPB Insh Marshes. While saving cost is not the key driver for this project, it is a consideration as RSPB is a charity reliant on membership to fund our activities.

“What are the impacts on local farmers? Soon there is going to be not much farmland, and the local area is going to be mostly underwater. The project is destroying farmland for no good reason”

Natural processes occurring on the river and floodplain, when combined with the impact of climate change, have led to increased flood risk in some areas of the reserve. For example, Bed levels are rising due to sediment deposition, reducing bank heights and increasing out of bank flows and the risk of the river breaching out of the channel into the lower-lying floodplain in locations around the River Tromie, Ruthven and Raitts Burn.

Continuing to manage the land the same way we have for the last 30+ years is no longer sustainable, and we need to consider future options. Farming will continue to play an essential role in managing the reserve as we plan for the future. The reserve has for many years and continues to do so today, provided 580 ha of seasonal grazing. An additional 90ha of ground is leased under a full agricultural tenancy. The five options presented at the Community Engagement event will not impact the land leased under a long-term agreement with our farm tenant. There will, however, be some changes to the seasonally grazed land but the current low-intensity spring, summer and autumn grazing will still be required to help manage the wetland habitats.

Work on the tributaries could significantly impact some of the improved grassland fields and other wetland habitats. However, given the naturally occurring changes within the tributaries, such as sediment deposition raising bed levels and the associated increase in flooding within these areas when combined with the predicted increase in flow rates due to climate change, farming these areas in the same way is unlikely to be feasible over the longer term.

In addition, the proposed options to remove the embankments and block ditches will see some areas becoming wetter and transition from rushy pasture to fen; grazing will still be required to help manage these habitats. This work is not aimed at creating large areas of open water as this isn't suitable habitat for many of the species found on the reserve, including many breeding birds. Allowing the river to flow more readily onto the floodplain will also enable the water to recede quicker and return to the river from the floodplain improving the current condition when flood water can be retained for several weeks.

“The important habitats that existed when these designations were made were a direct result of the historical modifications that were made to the floodplain to enable agricultural to occur. Agricultural practices on the floodplain of the River Spey around Kingussie are credited with creating habitats important for a range of species of conservation concern – as in RSPB Insh Marshes.”

“Return to the land management methods used when RSPB Insh Marshes was designated as an SSSI and SAC. The only change that has occurred since then has been that the RSPB has bought over the land and imposed their own management methods.”

Farming is essential to the floodplain of the River Spey, helping to create and maintain a mosaic of habitats that support a rich diversity of species, including those found on the wetland at RSPB Insh Marshes. The low-lying floodplain has been seasonally grazed or cut as marsh hay for hundreds of years. Today, grazing continues to play a part in maintaining the wetland habitats and holding back the successional processes, such as scrub development.

Many species and habitats on the designated nature reserve rely on the disturbance caused by grazing animals and the mosaic of sward structures they create. Grazing has and will continue to play an essential role in the future management of floodplain habitats at RSPB Insh Marshes.

Whilst the historical modifications have improved the agricultural productivity of the local area. Today, we believe that the historical modifications aimed at drying out the land are constraining the wetland habitats and restricting the populations of some of the wetland species. The shortlist of options presented at the engagement event will restore the hydrology, ensuring the habitats and species can respond and thrive.

RSPB first acquired land at RSPB Insh Marshes in 1973, the same decade the site was designated. Our management aims to maintain the habitats and conditions for a suite of species listed as part of the site designations. In addition, we have an agreed conservation management plan that has been consented by Nature Scot.

Under RSPB management, many of the wetland species have expanded in range. For example, string sedge, a plant reliant on a high-water table and dynamic flooding. We have been monitoring the plants' response to our management for 25 years. The table below clearly shows the expansion in range during that period.

Year	Patches	Total area (m ²)	Average area (m ²)	Circumference (m)
1995	39	5255	135	1655
2020	36	11713	325	3506

Table 1: Distribution of String Sedge of Insh and Coull fen 1995 to 2020.

“Only 2% of Badenoch is suitable for growing crops to feed livestock and humans. The haugh lands along the River Spey was modified to provide the most fertile land in Badenoch to sustain the population. to reduce global climate emissions, we need to return to be more self-sufficient in the goods and services we consume.”

The project's key objective is to restore and reconnect the river and floodplain by removing historical modifications, the primary outcome for this work will be to improve the habitat for the range of wetland and riparian species found at RSPB Insh Marshes. The project will also have the following additional benefits:

- slowing the flow of water through the reserve during flood events
- reducing flood risk to communities and land surrounding the reserve
- ensure the reserve is resilient to the future impacts of climate change
- protecting the underlying peat by improving the condition of the fen habitats, thereby securing the carbon store and enhancing the rate of carbon sequestration
- reducing our carbon footprint by reducing our mechanical operations.

During the project's planning and development, we have considered the impact on the reserve farming operations and how we can continue working with our tenants to graze and farm the reserve whilst undertaking restoration.

Further improving RSPB Insh Marshes for agricultural productivity would involve drainage of the wetland. This process would cause a drying out of the underlying peat and a release of CO₂. Therefore, we consider the current balance of farming and conservation to be the best outcome for nature, people and the climate.

Woody material in the River Spey

“Will woody material in the River Spey be a hazard to river users?”

Inputs of woody material into the River Spey and its tributaries, including the River Tromie, is a natural process. Volumes of material usually increase following large flood events or storms with high winds, both of which tend to result in more woody material entering the rivers. In the longer term with the increase in tree planting across the Spey catchment, there will be an increase in overall woody material input to the river, so this is to replicate a natural process likely to only increase in the future.

Any plans to install woody material would be contained to the tributaries and not in the main stem of the River Spey. All woody material will be anchored into place to ensure it stays in situ during flood events.

“If you are putting woody material in the river won’t it just float off in the next flood? How will you ensure it doesn’t cause flooding or block the channel downstream, such as under bridges?”

Inputs of woody material into the River Spey and its tributaries, including the River Tromie, is a natural process. Volumes of material usually increase following significant flood events or storms with high winds, both of which tend to result in more woody material entering the rivers. At RSPB Insh Marshes, a large proportion of the woody material is captured and stored on the floodplain; removing flood embankments will further help the floodplain catch and hold this material.

The installation of woody material will be carefully assessed and designed by a consultancy that has experience in this type of work. The timber will consist of locally felled trees, including root plates. These will be anchored into the riverbank and bed using boulders or timbers to prevent them from dislodging during river spates.

The work will be similar to that undertaken by the Spey Catchment Initiative on the River Calder. More information about the project can be [found here](#).

Access to RSPB Insh Marshes

“I enjoy taking access on the marshes. Won’t the work impact my enjoyment and ability to see wildlife?”

The proposed options will impact only a small area of the reserve. Works will be phased and carefully planned to minimise disturbance to visitors taking access and the wildlife breeding and wintering on the nature reserve.

During the construction period, there will likely be some impact, such as temporary working areas that restrict access to protect visitors from moving machinery. However, we will work with our contractor to ensure that we try to minimise disruption.

We will ensure that any works occur outwith the key wintering and breeding season to reduce the impact on wildlife. Careful planning will minimise effects on a range of sensitive flora and fauna. Once completed, the overall benefits will offset any minor temporary disturbance.

“Will removing the embankment mean I can no longer walk along the river and would it be possible to in fill some of the ditches to make access easier?”

Walking along the river will still be possible if the option for embankment removal is taken forward. A design for reprofiled embankments would include reinstating the ground level to natural levee height. A levee is a natural rise in the riverbank created every time a river spills over its banks and deposits silts and alluvium on the floodplain. The most significant deposition is closest to the river, building a naturally higher rise or river levee.

An option to fill the ditches would be difficult. It would be unlikely to improve access as the surrounding ground would still be saturated. One of the options presented at the consultation would be to block the drainage with dams at specific locations to reduce drainage impacts. Whilst planning this work, we will consider whether there is an opportunity to improve access.

“Will we still be able to canoe through the marshes under the RSPB preferred options and will it impact our ability to see wildlife whilst we are canoeing?”

The options won't impact the River Spey core path, and access along the river for recreation will still be possible. The current height of the embankments obscure views of the floodplain when canoeing down the River Spey. Lowering the height of the embankments will improve views across the landscape and enhance the experience of canoeing down the river.

Flooding and flood risk

“Can RSPB help flooding on Gynack Burn as part of this project?”

The feasibility study and options appraisal were undertaken to consider options for reconnecting the river and floodplain at RSPB Insh Marshes. The primary aim of the work is to improve the habitat on the reserve for wildlife. Therefore, investigating flood alleviation options for the Gynack is outside the project's scope. However, we are aware that the Spey Catchment Initiative is in discussion with landowners along the Gynack Burn to explore options to help slow the flow of water into the Burn and to stabilise sediments.

“Flood events in December 2015 on both the Rivers Dee and Spey have highlighted the need to manage and maintain these rivers and their adjacent flood plains. Predictions of more frequent and extreme flood events make it more important that we do not continue with the present inertia that is preventing responsible management of these riparian systems.”

At RSPB Insh Marshes, and across our Cairngorms Connect Partnership, we are keen to implement responsible management by following best practice. For our rivers and floodplains, we are looking to adopt natural flood management techniques and use the natural river processes to ensure long-term sustainability faced with predictions of increased flood events. These aims were crucial outputs of the feasibility study and options appraisal. Adapting to these changing conditions and working with natural river processes are essential to successful future management.

There are also several reasons why adopting a traditional approach to management is not an option at RSPB Insh Marshes.

Dredging: The main stem of the Spey through RSPB Insh Marshes is shown in Figure C9 below from the 2016 Feasibility Study. The main hydraulic control through RSPB Insh Marshes is the outflow from Loch Insh to the Feshie confluence, therefore, dredging on the main stem through RSPB Insh Marshes would be ineffective. The tributaries (Tromie, Raitts, Ruthven) are all perched in their lower reaches. Dredging here would make a

difference in reducing flood risk; however, it would be an intensive management regime and contrary to present-day best practice policy, would need regular maintenance and involve continually removing habitat.

Embankments: River flows are contained in the river channel which increases the ability of the river to erode sediment and transport it further than natural conditions would allow. This sediment then tends to be deposited in the lower-lying reaches, such as the tributaries, as they flow towards and across the Spey floodplain (Tromie, Raitts, Ruthven). The deposited sediment raises the bed of the tributaries and increases the risk of embankments being overtopped unless the sediment is dredged or embankments raised. Each of the named tributaries now has reaches where the river bed has risen so that it is now higher than the surrounding ground. In these situations, the risk of embankment breaching increases, resulting in a more dramatic change in the alignment of the watercourse. Removing the embankments will allow the river to deposit sediment across the broader floodplain where it is stored and provides new habitats without the need for costly maintenance.

In the case of RSPB Insh Marshes, the activities at direct flood risk are agricultural, in the form of livestock and grazing/hay/silage crops. The risks to these activities have been managed in the past through embankments, ditching and dredging of tributaries through the floodplain. The undertaking of these works, even for repair are now subject to authorisation by SEPA, and not necessarily guaranteed for larger-scale works.

The Chartered Institution of Water and Environmental Management offers more information on the topic: <https://www.ciwem.org/news/floods-and-dredging-reality>
<https://www.ciwem.org/policy-reports/floods-and-dredging-a-reality-check>

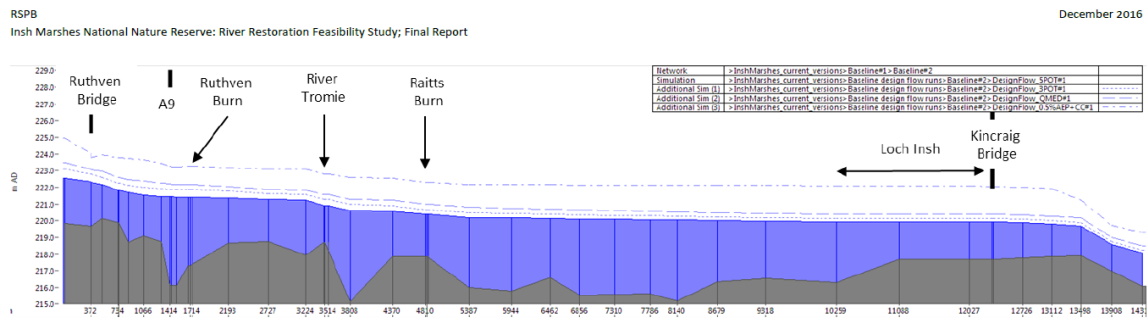


Figure C9: Baseline long profile – peak stage River Spey
 Note that a bathymetric survey of Loch Insh was not undertaken and the long profile level at Loch Insh is not representative of actual loch bed levels.

“The floodplain gives some limited protection from floods”

The floodplain at RSPB Insh Marshes plays a vital role in protecting communities adjacent to and downstream of the reserve. The size of the floodplain at RSPB Insh Marshes is significant in terms of the River Spey (see screenshots from SEPA flood map below) and is one of the most important floodplain areas in the whole river system.

Floodplains act as a natural flooding outlet for rivers. During flood events, floodplains increase the ability of a river to move or convey floodwaters. Initially, during a flood, as more water enters the river or stream, the height of the water rises, however, once the volume of water exceeds what the river channel can carry, it spills out onto the floodplain. The rate at which the waters rise increases much more slowly because any additional volume of water spreads out into the much larger capacity provided by the floodplain. As a result, floodwaters move much more slowly on floodplains, so very extensive floodplains can act like a reservoir that temporarily stores water, slowly releasing it back to the river as the flood recedes.

Additionally, by slowing the speed of floodwaters, floodplains can reduce the impact of erosion downstream and act as sediment stores reducing the need for costly dredging.

During a significant flood event, the floodplain at RSPB Insh Marshes can flood up to 3 meters deep and hold up to 30 million m³ of water. The peak of the flood takes around 36 hours to pass through the floodplain. Storing and holding water on the floodplain at RSPB Insh Marshes allows the downstream peak to pass and protects communities such as Aviemore from more significant flooding.

The embankments prevent the full extent of this floodplain from being used during the onset of floods. Other than through local breaches, the embankments prevent the river from flowing onto the floodplain except in significant flood events. A properly functioning floodplain would be much more effective in tackling the impacts of the predicted increased frequency of flood events, both locally and further downstream in the Spey.

The restoration measures proposed on RSPB Insh Marshes are not designed as a flood alleviation scheme. However, the proposed options will provide natural flood management measures by slowing the flow of water and helping to reduce the flooding peak as it passes through the floodplain, potentially reducing flood risk on land and in communities surrounding RSPB Insh Marshes.

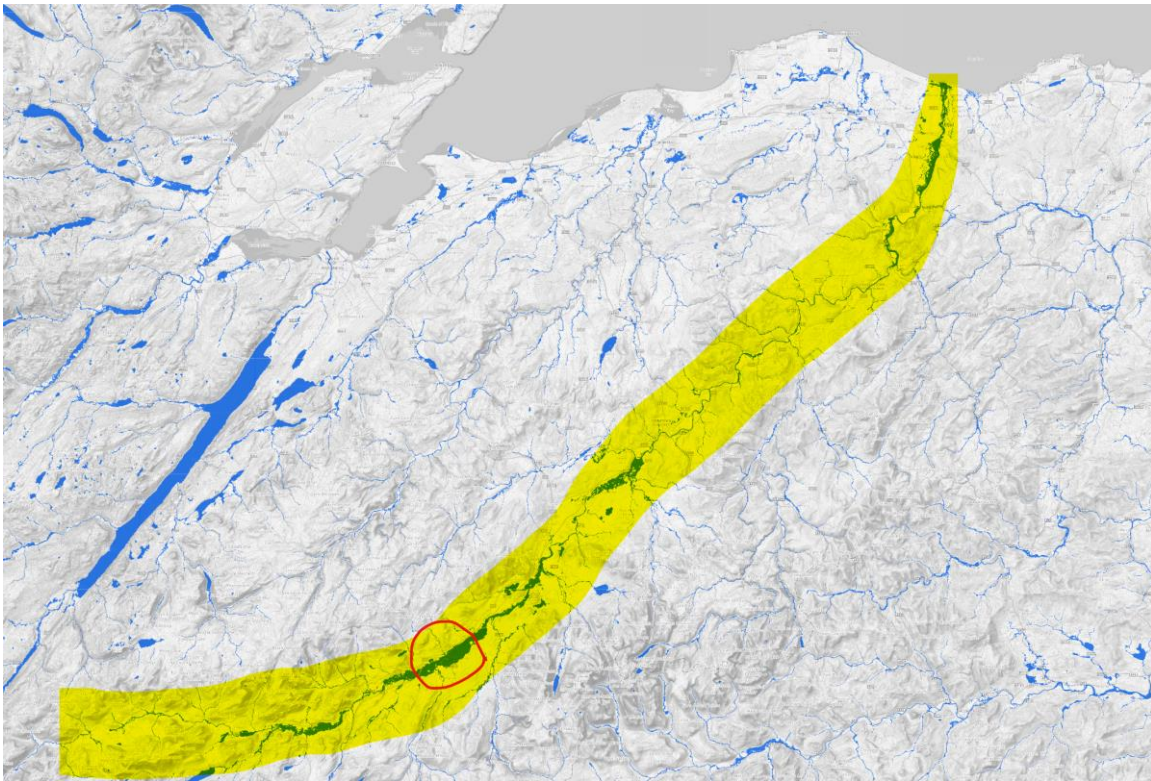


Image (above): The size of the floodplain at RSPB Insh Marshes (marked with a red circle) is significant in terms of the River Spey, highlighted in yellow, and is one of the most important floodplain areas in the whole river system.

“The options do not increase flood protection for Loch Insh, Kincaig, and downstream”

The primary objective of the feasibility study and options appraisal was to identify and assess the options to restore and reconnect the river and floodplain where the historical modifications negatively impact the site morphology, hydrology and ecology. Designing a flood alleviation scheme was not a driver for the study. However, the options present opportunities for natural flood management by slowing the flow of floodwater as it passes through the floodplain and providing more space for water upstream that will benefit some areas

downstream of the options. Our intention has not been to mislead communities as our plans do not offer a flood protection scheme for the Loch Insh Area.

The ecological restoration work undertaken by our Cairngorms Connect Partnership will further help mitigate flood risk. Restoring peatland, planting montane scrub and expanding the Caledonia Pinewoods within the River Feshie and River Tromie Catchments will help capture and slow the water flow, further reducing flooding downstream through natural flood management techniques.

“SEPA need to explain to flood risk to residents and businesses”

RSPB doesn't have a flood risk remit. We feel the Community Council is better place to make such a request to SEPA.

“This consultation is premature being before we know the likely effects of the options. It is also misleading, because many people gain an impression from the leaflet and other material that RSPB plans to improve flood protection for Loch Insh and downstream.”

The RSPB have committed to engaging the local community through all stages of the project. We have engaged the local community in our work from an early stage to hear local opinions on the projects we are considering. We will be taking all the information gained from the engagement and evaluating the projects in light of information gained. Engaging Communities in this way is following best practice guidance from Scottish Land Commission on how land managers and communities can work together to make better decisions about land use.

The primary objective of the feasibility study and options appraisal was to identify and assess the options to restore and reconnect the river and floodplain where the historical modifications negatively impact the site morphology, hydrology and ecology. Designing a flood alleviation scheme was not a driver for the study. However, the options present opportunities for natural flood management by slowing the flow of floodwater as it passes through the floodplain and providing more space for water upstream that will benefit some areas downstream of the options. Our intention has not been to mislead communities as our plans do not offer a flood protection scheme for the Loch Insh area.

Concerns around “the Feshie and its confluence and how it impacts flooding around Loch Insh and the settlement of Kincaig, including businesses, roads, the shinty pitch and bridge.”

Concern that “the impact of the River Feshie is not being considered when looking at any changes or modelling upstream on the River Spey. Details of flooding of the Kincaig area have been given from specific flood events when the area was impacted by the River Feshie flooding which then combined with water coming downstream in the River Spey to raise levels further.”

Flows from the Feshie have been included in the flood model, although the flood mapping extents presented in the 2016 Feasibility report stop at Loch Insh. The scope of the feasibility study was to look at current conditions and to model possible options on RSPB owned land at RSPB Insh Marshes; therefore, modelling future changes on the River Feshie was beyond the project's scope.

It is also not possible for modelling work to account for morphological instability or represent complex local behaviours that may change the river's path or angle of confluence with the River Spey in response to flooding.

Concerns that “the model has not considered worse case scenarios as the recent 1993 and 2015 floods exceeded the 1 in 200-year levels predicted in the feasibility study.”

EnviroCentre has carried out additional modelling analysis to assess the ability of the model to replicate observed flooding from two historical flood events. This validation exercise confirmed that the model could replicate observation of flooding at Kinraig Bridge, Invereshie and Loch Insh reasonably well, such that modifications or calibration of the model is not required. For more information, and to receive a copy of the report, please email insh@rspb.org.uk

Concerns that “water paths in Badenoch are dynamic, changing with deposits of gravel and boulders. The feasibility study is based on a single case, to which to compare options. Future changes, such as at river confluences and unexpected meandering, make this base case just one of many ‘do nothing’ states.” Effects of the options are perhaps more uncertain than the summary of options makes out.

Modelling work can't account for morphological instability or represent complex local behaviours that may result in the changes mentioned above. The model only represents the river at the time of surveying. However, using the experience of consultancies that have designed and implemented similar projects, we minimise the risk of unforeseen consequences arising from the projects and that any changes in morphology have been thoroughly considered. Doing nothing or continuing with existing management practices we will still see future changes within the river, particularly around the tributaries where bed levels are rising due to sediment deposition and increasing the risk of the river breaching out of the channel in an uncontrolled manner. We feel that by managing the risk through active restoration, a better outcome can be achieved for nature and people.

“Meaningful modelling and consultation would consider a 50% increase in the 1 in 200-year floods, resulting from climate change and including simultaneous flooding from the Spey and Feshie.”

In 2016, when the feasibility study was undertaken, the most up to date information was used; rainfall and climate change predictions have changed since that time. The latest projections from UK Climate Projections (UKCP18) advised by SEPA (2019) from the North-East Scotland River Basin Region are for a 34% increase in river flows due to climate change to 2100. However, this has recently been downgraded for the river Spey from the 50% discussed at the consultation.

EnviroCentre developed the model based on a worst-case scenario, a simultaneous peak on the River Spey and River Feshie was used to assess the impact of the proposed options.

“We are concerned that all options apart from possibly options 3, full repair of embankments and to a lesser extent Options 2 maintain to obligations, seem likely with climate change to increase flood risk to neighbouring area such as Lynchat and to properties and infrastructure downstream from RSPB Insh Marshes.”

The predicted effects of future climate change will result in larger flood events. These will pose increasing risks to the communities regardless of any works undertaken.

“Do the plans involve altering the connection on the Main Drain that could cause a raise in the levels of Loch Insh”

No, the works do not involve altering the connection on the main Drain, nor do they include work that will cause a rise in the levels of Loch Insh.

EnviroCentre modelled an option to reduce the connectivity between the Main Drain and Loch Insh as part of the Feasibility Study. The outcome of the modelling work resulted in a decrease of 0.01m in a QMED flood event (a flood with a return period of every two years) and an increase of 0.04m in the 1 in 200-year flood event at Kincaig bridge. However, due to the complexity of this connection and the constraint of the wastewater discharge by Scottish Water at Insh Sewage Treatment works, RSPB decided not to take this option forward, and it was therefore not presented at the Community Engagement Event.

“What is really needed is a catchment management plan as what happens above and below the marshes greatly influences what occurs in the marsh itself. This includes concerns over management of the Feshie, the effect the removal of actively growing trees will have on the water entering the catchment and the impact of climate change and felling coming together to magnify the risks”

We agree that a catchment scale approach is required to assess flood risk, and a holistic approach to catchment management is necessary if we are going to reduce climate change impacts. Several partnerships within the area are working at a catchment scale to slow water flow. For example, the Cairngorms Connect Partnership has an ambitious 200-year vision to create 13,000ha of new forest and an additional 5300ha of high-altitude montane woodland.

To date, the partnership has undertaken collaborative deer management across the partnership area to allow forest expansion onto the open ground and aims to restore ‘missing’ tree species by sowing or planting across an area of 600ha. More tree cover will increase catchment friction, slowing water movement, whilst the establishment of trees will increase water uptake from the soil. In addition, the partnership has restored 586ha of blanket bog, with a plan for several thousand more hectares over the coming decade; expanding the capacity of our peatlands to hold water before slowly releasing it back into the catchment will further help to reduce peak river flows.

The work on RSPB Insh Marshes to restore the river and floodplain are also important. As the largest natural floodplain zones of the River, Spey is a prime area for restoring natural river processes and floodplain connectivity.

More information on the work of Cairngorms Connect can be [found here](#). Another such partnership is the [Spey Catchment Initiative](#); the project and its partners have developed a catchment management plan that sets out the regulatory framework, the key issues and opportunities for the catchment. The Catchment Management Plan covers water environment, flood management, communities, economic development, fisheries management, farming, forestry and woodland, and habitats and species.

Other

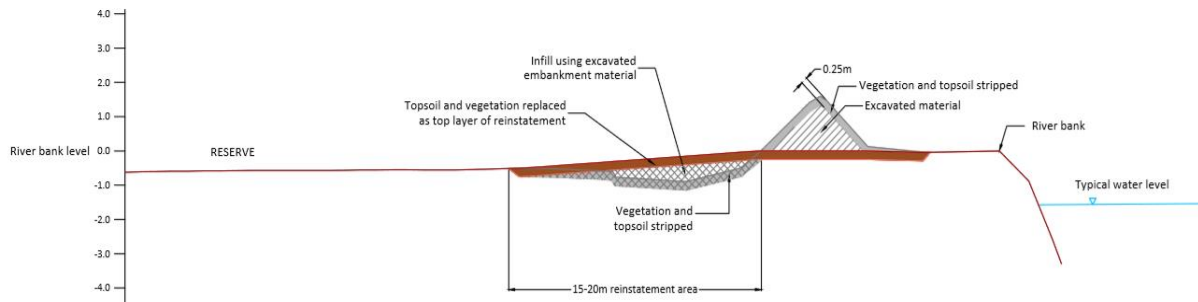
“If removing the man-made levees does not have the desired outcome will RSPB pay for their reinstatement?”

The proposed option for embankment removal is a pilot scheme on a small compartment (50ha), allowing RSPB to trial the option and monitor the restoration results. From research undertaken at similar projects across the UK and Europe, consultation with stakeholders, and extensive and thorough modelling work with our consultants, we are confident that the project outcomes will be realised. Therefore, we are satisfied that reinstatement will not be necessary in the future.

“What would be the height of the new levees?”

The aim of embankment reprofiling will be to reform a river levee; this will involve lowering the raised bank to the current ground level between the riverbank and the riverside edge of the embankment. This will ensure that the integrity of the riverbank is not directly disturbed by the works. See diagram below.

The original embankments were built by borrowing material from the wetland side of the bank and working the material into the raised mound. The reverse of the process will be used for lowering the embankments. We are working closely with Nature Scot to ensure that the important wetland habitats are protected.



“The RSPB, as with any landowner, have a legal and moral responsibility to ensure that their policies and actions do not impact negatively on neighbouring property; in this case Lynchat.”

One of the key reasons for RSPB undertaking the feasibility study and options appraisal was to understand how the floodplain stores water during flood conditions and its role in protecting properties, businesses, and infrastructure.

We wanted to build our knowledge around the positive and negative impacts of the failing modifications on flooding and the likely changes that could happen in the future. The original reasons for the construction of the embankments were to protect the floodplain from spring and summer flooding to allow expansion of agricultural productivity in the early 1800s. Consequently, the walls are overtopped in the worst of the winter flooding and are indeed not constructed for longevity nor to stand the increased pressure from climate change.

We, therefore, need to plan for the future, and this will include discounting options that have a negative impact on property. Still, we do feel it is our responsibility to review and plan to ensure that the floodplain is as resilient as possible and continues to help protect against flooding in the future.

“I am concerned that the dualling of the A9 should not damage the marshes.”

RSPB Scotland have been working very closely with Transport Scotland to minimise the impact of the A9 dualling on Insh Marshes National Nature Reserve. More information can be found here

<https://www.rspb.org.uk/our-work/casework/cases/a9-dualling/>

“Register with Carbon credits and add financial as well as ecological value”

We thank you for this helpful suggestion; unfortunately, it is currently not possible to register fen peatlands for carbon Credits. We hope a policy change later this year will allow us to progress this suggestion.

Alternative options suggested during the engagement

“Tree planting and riparian woodland”

As part of our partnership in Cairngorms Connect, one key objective is expansion of woodland, including establishing trees in riparian corridors. Creating riparian woodland would be a great addition to the floodplain restoration options at RSPPB Insh Marshes, both in creating a long-term supply of deadwood but also shading the river to help reduce the impact of climate change. We will be looking for opportunities to develop additional riparian woodland as part of the project, either by riparian planting or excluding livestock to allow natural regeneration. We will update the Community as plans develop.

“Build the riverbanks back up as it was put there for agricultural purposes”

The reconstruction and ongoing repair and maintenance of the embankments is not a sustainable approach in the long term and does not fit with the aims of the feasibility study and options appraisal.

Government land-use policy promotes natural flood management techniques and the restoration of natural river processes to provide resilience to future climate change impacts.

This option was modelled as part of the original consultation, option 3 full repair; whilst the modelling of a large scale 1 in 200year flood event did show a decrease in downstream flood risk, it was also noted that this option increased the flood risk at many receptors surrounding the reserve including within Lynchat Village. Given the increased flood risk noted at some of the key receptors and the multiple benefits that some of the other options deliver, we won't be taking this option forward.

“Yes, the long overdue reintroduction of beavers”

RSPB Scotland was delighted at the recent Scottish Government announcement of new measures to expand beaver numbers and restore biodiversity. This action represents the next stage in returning beavers to the waterways of Scotland.

Beavers are a crucial addition to our wetland introducing complexity to our rivers and streams, slowing the flow and improving water storage. RSPB Scotland has some of the best wetland sites in Scotland and we in collaboration with our partners look forward to discussing future translocations. In preparation for this, we have completed assessments at some of our sites, including Insh Marshes, and, with appropriate local consultation, we are keen to progress plans for bringing beavers back to these areas.

“Improve, restore/or maintain pedestrian access along the various embankments”

With feedback during this engagement, RSPB would like to work more with the local community to enable responsible access to the marshes. We will be looking for input from the community to take this forward where appropriate and feasible.

“Install (flap?) valves in the Spey embankments at Insh Marshes that allow the Marshes to flood rapidly, but retard return of floodwater to the Spey.”

We have had further discussion with our Consultants in relation to this option. We consider that this option could be used; however, it would primarily focus on reducing downstream flood risk, and the work would need to be targeted at particular events or to protect designated areas downstream. Such systems are in place elsewhere, and the floodplain storage and release are designed to provide improved flood protection up to a design threshold.

Therefore, we have been advised this approach is more suited to a design flood alleviation scheme and does not deliver the restoration objectives set out in the feasibility study and options appraisal.

RSPB are looking at nature-based solutions and feel, that this option would add more infrastructure to the floodplain and increase ongoing maintenance costs. After further consideration it has been decided that we won't be taking this option forward.

“Do nothing is an option to consider – At present we know and understand the issues of flooding in Insh marshes and the current measures in place go a long way to controlling the water that flow into inhabited areas.”

The 'do nothing' option will not keep conditions the same as they are now or for a long time into the future. It would be an option similar to a slow, uncontrolled embankment removal. The embankments are already breached, and these breaches continue to evolve, so it is not a static system. Larger breaches, or new breaches can lead to bank stability issues, erosion, unpredictable flood risk and release of large volumes of often fine sediment into the river system. The Spey remains an active river system, and climate change predictions indicate an increased frequency of events that will put further pressure on the already failing system of modifications and embankment. We feel it is more appropriate to take positive action to manage the risk and give more predictable modelled results. We, therefore, consider that doing nothing is not an option.

“Or that by doing nothing, changes will still happen but suggestions this might be easier as the embankments would break down with river processes through time and tributaries would re-naturalise themselves.”

This is a valid option; future changes will occur to varying extents across the site at different timescales in an uncontrolled manner. Some of these may lead to consequences that, although acceptable when natural occurrences, could be planned to minimise the direct effect during a programme of active restoration. For example, the large scour hole at Lynchat will continue to increase and release fine sediment to the river which will ultimately be deposited elsewhere, or the Raitts Burn could avulse (break out of its channel) and flow into the Lynchat wetland potentially leading to an increase in flood risk in the village. We feel it is more appropriate to take an approach that helps natural river and floodplain processes to re-establish but in a way that we understand the impacts and manage any associated risk. We, therefore, consider that doing nothing is not an option.

“More embankments in the marshes might be breached or removed so that floodwater flows more freely onto the marshes to help reduce the effects of flooding downriver to Kincaig, Aviemore and beyond but in a way that does not threaten the B9152 and railway.”

The B9152 and railway are already at risk from flood events; proposed embankment removal will not increase flood risk to this crucial infrastructure. It would be fantastic to remove more embankments. However, we feel a staged approach is more appropriate for several reasons:

- Firstly, we have listened to the local community's concerns and would like to demonstrate that the proposed works won't negatively impact properties, businesses, and local infrastructure.
- Secondly, as the works can impact the site designations, and several important species and habitats, we consider a cautious approach more appropriate.

We will implement an initial programme of work followed by a monitoring to assess the restoration's effectiveness before considering further phases.

“Insh Marshes ditches and the main drain might be maintained so that more land dries out between floods, thus increasing the capacity of the ground to hold floodwater. Return of that floodwater might be retarded by valves or by managing ditch connections with the Spey.”

Similar to the earlier suggestion, this option is possible but tends to focus on operating as a flood alleviation scheme to help reduce flood risk to a designed threshold. As the embankments were built to protect the floodplain against spring and summer flooding, extensive design and engineering work would be required to raise the and reinforce the walls if they were to fully protect against the bigger and more damaging floods. Such an engineered option does not deliver the multiple benefits that can be achieved through natural flood management and process driven restoration which is current Government policy.

Improving the drainage on Insh Marshes and allowing the land to drain between flood events would negatively impact the important wetland species and habitats but also damage the underlying peat that could, over the long-term impact the ability of the ground to absorb and store water.

As this option has the potential to negatively impact the national and international site designations, RSPB will not be considering this option further.

“Does the canal that changed the water level of Loch Insh still exist and have an effect. If so, perhaps this needs to be considered too.”

It is not entirely clear to what this comment refers, we would be happy to consider the suggestion further if more information can be supplied.