Trees for Life

A Proposal to Relocate Beavers to Glen Affric and Strathglass

Community Consultation Report

Executive Summary

This report details the progress and outcomes of a community consultation about a proposal to translocate beavers to Glen Affric and Strathglass. The proposal was made by five different landowners in the area and the consultation was delivered on their behalf by Trees for Life, the authors of this report.

The report covers the methods used to make people aware of the proposal, explain its likely implications and seek their views. These methods received some criticism in the first weeks of the proposal. The report goes into these, the adjustments made to respond to the feedback and to drill more deeply into the concerns people shared during the consultation.

The response to the consultation was a mix of different views ranging from strong support to strong opposition to the proposal. The responses in total were more supportive than opposed, however the balance of responses from people living closest to the proposed release area was reversed. This, combined with the challenges of establishing positive dialogue about an issue that was unfamiliar to many, where precise outcomes cannot be guaranteed and during an unexpected delay to the publication of the National Beaver Strategy, has shaped the recommendations made to the landowners.

Trees for Life recommends that beavers are not released in Strathglass at this time. This would lead to worry and stress for land managers and create potential for issues to embed themselves around beavers for the long term. However, it should be possible to reconsider this proposal through further discussions at some point in the future when experiences here and elsewhere lead to a more widely shared understanding of what coexisting with beavers means in practice.

The report notes that the concerns raised about beaver impacts do not apply above the Beinn a' Mheadhoin dam in Glen Affric, where most of the area is owned by parties making the proposal and where much of the land use is heavily focused on supporting the natural environment. Specialist advice, enclosed at Annex F, indicates that the dam is likely to be a significant barrier to beavers dispersing downstream into Strathglass, although we note that the possibility of such dispersal will be a concern for some. Trees for Life recommends that an application is made to NatureScot for a licence to release beavers here with monitoring and management measures in place to detect and respond to any beavers that may pass the dam to mitigate any potential negative impacts.

The importance of establishing trust has been a key issue throughout the consultation process and our recommendations stress the importance of engaging with the community to develop the monitoring and management measures needed. Delivering these measures with sufficient resources and in partnership with the community will be key to maintaining transparency and, crucially, building trust over the long term.

It is worth noting that, while views on either side of this proposal are strongly held, many of the discussions we had during the consultation period were marked by a heartening willingness to consider the issues from different perspectives. For instance, many understand and sympathise with the worries of the farmers in the area, who in turn often expressed a strong interest in nature and its restoration. For all that this proposal was met with differing views, and aspects of the consultation could have been handled differently, there is clear scope for constructive discussion in the future. There is a significant amount of material in the Annexes to the report. Annex A considers the concerns raised during the consultation, outlining what current research tells us about each issue. Annexes B to G are held in a separate document:

- Annex B is a map of the release area for the proposal.
- Annexes C and D contain the verbatim and anonymised written responses we received by email and through online surveys during the consultation.
- Annex E provides the results of the Beaver Habitat Index and Beaver Dam Capacity modelling used for the consultation.
- Annex F is the specialist advice received on how the Beinn a' Mheadhoin dam will affect beaver dispersal.
- Annex G is the specialist advice received on the habitat suitability of Lochs Beinn a' Mheadhoin and Affric for a released beaver population.

Introduction

In 2021, the government announced that beavers should be actively expanded to suitable habitat across Scotland, allowing their benefits to be felt more widely while putting robust arrangements in place for managing impacts where they arise. This was to be guided by a National Beaver Strategy to be developed with a wide range of stakeholders during the first half of 2022.

As this Strategy was being developed, a group of five landowners decided to explore the possibility of relocating beavers from lower-lying parts of Tayside, where they will otherwise be culled, to Glen Affric and to the area of Strathglass above the Aigas dam. The five landowners involved are Nigel Fraser from Guisachan, Alex Grigg from Hilton, North Affric Estate, Sir John Lister Kaye at Aigas and Forestry and Land Scotland. It should be noted that Nigel Fraser from Guisachan Estate is Chair of Trees for Life.

They invited Trees for Life to carry out a consultation on their behalf with the local community. Trees for Life had led a previous public engagement exercise about the existing beaver population in Strathglass in 2017.

The five landowners share three motivations for making this proposal. While each landowner may place a different emphasis on each aspiration they are, in no particular order:

- Putting Strathglass on the map as a place where something hopeful and aspirational is happening.
- Taking a socially responsible step for people and for the natural environment that leaves a positive legacy for the future.
- To contribute to the recovery of biodiversity and promote living alongside beavers in line with the Scottish Government's aims.

In line with clear signals from the Scottish Government, the intention from the outset was to see if it would be possible to obtain a licence in time for a potential beaver release in the autumn of 2022. The motivation for this was to provide an alternative to lethal control for at least some beavers when beaver culling was due to resume on Tayside.

Part of the background to this proposal is the existing presence of beavers on the Rivers Glass and Beauly. Beavers have been present in small numbers on the Glass for at least ten years and have also been on the Beauly below the Kilmorack Dam for a number of years. Fresh beaver signs continue to be found on the river. There have been incidents of beavers affecting people's interests over this period, including some flooding behind a beaver dam on low lying land downstream of Beauly and a recent period of quite intense tree felling much further upstream, but otherwise the beavers appear to have caused only occasional and minor concern at the population levels they have reached to date.

All those involved in making the proposal worked on the assumption that the National Beaver Strategy was on the verge of being published by the government. The Strategy is designed to guide the implementation of the new approach to beavers in Scotland and had been developed by NatureScot along with eighty organisations through the spring of 2022.
Those involved in the process included the National Farmers Union Scotland, Scottish Land & Estates, Fisheries Management Scotland and Trees for Life. The Strategy would have provided the proposal with a strong government policy context and clarity on how the practicalities of beaver releases and post-release management would be supported and delivered, particularly through the Beaver

Management Framework operated by NatureScot. As it turned out, the National Beaver Strategy, which had been due to be published at the start of July, did not emerge until 21 September, some eight weeks after the consultation had opened.

Feasibility Study

Dr Roisin Campbell Palmer and Dr Rob Needham were commissioned to study and report on the feasibility of relocating beavers to Glen Affric and Strathglass. Dr Campbell Palmer is the most experienced person working with beaver populations and their management in the UK. Together with Dr Needham, she has a long history of involvement in the problems between beavers and land use in lower Tayside, undertaking population surveys and delivering practical management such as dam removal or trapping beavers to prevent impacts on farmland.

They have assessed the feasibility of relocating lower Tayside beavers to several catchments in England and delivered them in practice where they were viable. They also have previous experience of trapping some of the existing population of beavers on the Glass in 2017 when the government required their removal. No one is better qualified to assess the ecological suitability of a Scottish location for beavers than them. Their brief was to assess whether Glen Affric and Strathglass could provide suitable habitat for a beaver population and identify the potential for beaver impacts on land use.

The Feasibility Study included catchment-specific assessments using Beaver Habitat Index and Beaver Dam Capacity computer modelling. Prepared by Dr Alan Puttock from Exeter University, these models use existing publicly available data for terrain and vegetation cover to provide initial indications of the most suitable parts of the catchment for beaver activity and how prevalent beaver dams mWeway be on a given stretch of river. While these models are indicative, they provide a useful means of identifying areas where beaver impacts are most likely and thus where issues with land use interests might arise. Copies of the maps these models produced are enclosed at Annex E, along with more detailed explanations of how they use the available data to make their predictions.

1. Methods used for the Consultation

Objectives

The consultation had four objectives:

1. To make all key stakeholders in the possible release area aware of the consultation, how to engage with it and to make it as accessible as possible.
2. To provide a full, objective and accessible source of information about the proposal and about the pros and cons of beavers and their management.
3. To provide a responsive channel for people to ask questions and have more in-depth discussions with us.
4. To receive people's views on the proposal, understand the thinking for these as far as possible and to report them accurately.

Methods used

Having taken on the request to carry out the consultation, an engagement process was designed in line with the principles that were being developed in workshops for the draft National Beaver Strategy that Trees for Life attended.

One of the first steps was to begin building a webpage that could provide a clear and common reference point for information on the proposal and how people could respond to it. This included:

- a summary of the proposal
- a link to the Feasibility Study
- a detailed set of Frequently Asked Questions
- a reference list with a variety of research and policy papers and ● an online questionnaire for people to submit their views.

The online survey was designed in questionnaire format to allow people to structure their responses, but a larger proportion of respondents emailed their views and feedback directly to this bespoke email address – beaverproposal@treesforlife.org.uk

The consultation approach involved a mixture of directly contacting stakeholders and publicising the proposal through social media. It was not possible to identify everyone with a direct stake in Glen Affric and Strathglass but as many as people as possible were contacted by email and by post. Additional efforts to reach as many potentially affected people included:

- Contacting representative organisations (including Scottish Land & Estates who shared the consultation with all their members in the area)
- using location-targeted advertising on facebook
- posting on community facebook pages and a press release.

This range of contacts led to a number of follow-up discussions, either in person or via phone and video calls. These discussions provided more detail about people's views than email correspondence and survey responses and it helped Trees for Life to gain a greater understanding of different views and how they were arrived at.

Additionally, four drop-in events were held across a six-week period in Kilmorack and Cannich Halls. These were designed to share information about the proposal and provide an opportunity for people to talk with Trees for Life staff. These ran from 2-8pm to try to span the working day and allow more people to attend. The drop-in days ran in pairs on the 8th and 10th August, followed by 1st and 5th September. These provided very useful opportunities to meet people and have two-way discussions with them which helped to provide detail and clarity about why they supported, opposed or were undecided about the proposal.

The September meetings provided an opportunity to drill deeper into the responses that had been received up to that point. Focus was given to the potential benefits and possible impacts that had been identified and people were asked to rank them in terms of importance. Using a 'scorecard' (shown in section 2 below), people were asked about the likelihood and severity they associated with each benefit or impact, as well as inviting longer written comments or to note any additional perceived benefits or concerns.

Having made this scorecard approach available at the drop-in days, it was then moved to the website so that others could submit their scores and comments through this channel for the rest of the consultation (see Annex D). Local people's views on these questions were especially important and so it was decided to limit access to the online survey with a password which was only circulated to stakeholders from the immediate area.

The drop-in days were also chances to look in more detail at the Beaver Habitat Index and Beaver Dam Capacity computer modelling of how beavers might behave in the catchment. The maps produced by each model were used to focus down on specific locations that people were interested in, discuss the likelihood of impacts arising from beaver activity and the level of need for responsive management to mitigate impacts.

University of the Highlands Islands (UHI) work on People and Beavers

Alongside the consultation process, UHI had also embarked on a study of two aspects of beaver population, namely the contribution the species makes to biodiversity and the cultural perceptions of beavers. Part-funded by NatureScot, this study is entirely separate from the consultation. The biodiversity element of the work will establish a baseline against which the impact of any future beaver population can be monitored. The cultural perceptions element of the study allowed UHI to observe this consultation process from an independent perspective. While UHI speaking actively to people about beavers while the consultation was taking place did cause some confusion, it was helpful to receive a third party's view to help check for unconscious bias and objectivity by the consultation team. The UHI study is due to be published in 2023.

Feedback on the Consultation Process

The way the above process was delivered attracted criticism from a number of respondents in the first weeks of the proposal and adjustments were made in response. We recognised this during the consultation period and made adjustments accordingly. It is worth discussing these separately from the issues raised about the proposal itself.

Who was contacted at the start of the consultation process

A number of people who live close to the river and feel that they might be directly affected by the proposal were not contacted directly when the consultation period opened, learning about it by word of mouth or in other ways. As a result, these stakeholders felt as though this had been sprung on them. It was always the intention to run an inclusive and open consultation and various steps were taken to publicise it and let people know how they could find out more and contribute their views. While it is often difficult to identify everyone that should be contacted across an area, Trees for Life accepts the criticism that it over-relied on advertising and should have done more to work out who to contact directly when the consultation first opened.

The initial consultation timescale was too short

The initial timescale for the consultation was set at six weeks. It is now government policy to relocate beavers from situations where they cause problems on Tayside to areas less sensitive to beaver impacts before resorting to lethal control. This proposal was motivated in part by a desire to provide an alternative to lethal control of beavers on Tayside in 2022 if possible, which meant that the consultation period needed to be completed by early September.

It had been intended to launch the consultation earlier, in line with the scheduled publication of the National Beaver Strategy. However the strategy was significantly delayed which led us to launch the consultation at the last possible date to fit with a timescale of autumn releases.

The original consultation timeframe left some people in the community feeling rushed and so it was extended by four weeks until 3rd October.

Press release and perception

The press release issued at the start of the process helped to raise awareness of the proposal, and thus increase engagement, but it also led some to doubt the intent behind the consultation process. The press release was issued on the same day as the majority of the emails and letters informing people about the consultation. This created an impression that the press had been informed about the consultation before local stakeholders. In retrospect, this could have easily been avoided by delaying the press release by a few days.

Conclusions

This is the first proposal made since the new policy to actively move beavers beyond their current range in Scotland was announced. It has been challenging to balance the aims of the policy and wildlife aspirations with the need for an inclusive consultation process. This proved especially difficult in the absence of the National Beaver Strategy, which had been scheduled for government publication at the start of July. Had it been published when scheduled, the Strategy would have provided a Scottish context for this local proposal and how it relates to the national picture. Without the Strategy formally in place, the proposal lacked background and this clearly affected the way in which it was received by those who have concerns about beavers coming into this landscape.

While we accept that we did not get everything right, we have taken steps to make people aware of the process and offered accessible ways to engage with it that are in line with the guidance now published by NatureScot for beaver consultation. We also did our best to adjust our timescale and processes in response to the feedback we received to provide more options for people to submit their views. As a result, we consider that first three objectives of the consultation have been met, while the objective to fully understand the thinking behind stakeholders' views has only been partially met.

2. Response to the Consultation

The responses to the consultation were mixed and can be viewed at Annexes C and D. In total, 111 individuals or organisations responded, expressing views ranging from strong support to deep concern. In terms of overall numbers, sixty-one positive and forty-four negative responses were received. However, a simple count of numbers would be too simplistic to reflect the response and further detail needs to be drawn out to gain an accurate assessment of the issues that matter most to stakeholders.

The table below indicates where the respondents are resident.

Location category	Number of responses	Positive	Negative	Unsure
Local	62	21	38	3
Nearby	15	11	2	2
Distant or unclear	34	29	4	1
		61	44	6

Local responses were characterised as those which came from residents within the Affric and Strathglass area. 'Nearby' responses are those from people who live nearby, most likely to be familiar with the area and the community. Drumnadrochit was the most distant place included here. The 'Distant or unclear' category are responses that came from people who live further away. It was not possible to ascertain where a few of the responses came from, so these were included in the Distant category. While all the views received are equally valid, the thoughts of those who would be co-existing with beavers most directly are of particular importance.

The stake that respondents have in the landscape is also an important dimension to consider. A significant number of local responses came from people who farm the land as a source of income and are concerned that beavers present a risk to their livelihood. Economic interests are not the sole issue here and people on both sides of this debate clearly care about nature, but considerations of livelihood and way of life are important issues which may not be fully reflected by a simple number count.

An overview of the responses

As outlined above under Methods, responses were received through various means, including face to face conversations, written submissions by email, online surveys and comments posted at the drop-in days. A more detailed discussion of the substance of the issues of concern, along with Trees for Life's feedback, is discussed in Annex A. What follows is a summary of the themes that emerged from the responses.

The positive responses tended to endorse the arguments presented by the proposal itself, often in a very straightforward way. People are excited by the prospect of bringing a charismatic and keystone species back into the landscape. For many, beavers are an attractive species in their own right and represent a lost part of nature. Some mentioned that we have a moral duty to restore species previously lost to human exploitation. There is also strong support for the enabling effect of beavers on other wildlife. Their abilities to filter river flows to improve water quality, enhance habitat opportunities for other wildlife and increase food availability from the bottom of the food chain upwards are all associated with this positive biodiversity effect.

Like the landowners behind the proposal, supportive respondents see it as a positive wildlife story for the area, with people seeing beavers and the wildlife they support as an addition to what they enjoy about living in this landscape. These people also tend to see beavers as something which can add to the visitor appeal of the area in a way that could help local tourism businesses and a number said that they would like to be involved in monitoring beavers if they come back.

There is also interest in the research that shows how beaver dams tend to reduce local flooding downstream from where they are present. The scope for beaver dams to 'flatten the curve' of flood events by slowing the rate at which water flows through the catchment after rain is therefore seen by some as having the potential to reduce the tendency of Strathglass to flood after snowmelt and storm events.

As might be expected, those submitting negative views about the proposal went into more detail on their rationales for opposing the proposal. An indication of the level of concern in each issue can be seen in the table below which provides a count of the number of responses which referenced each subject. As with the table above, there is a danger of reading too much into a simple count of numbers, but it is included here to give some sense of the concerns that came through in the responses.

Issue	Responses
Burrowing by beavers to create lodges might exacerbate the long-standing problem of riverbank erosion and damage floodbanks protecting locally important farmland	29
Localised flooding risks to property or areas of farmland immediately upstream of beaver dams	29
Doubts about how management of beaver impacts will work in practice and the resourcing for this	22
Beavers carry a risk of disease	21
Concern about the potential scale of impact of beavers on trees and woodland	10
Strathglass could end up like parts of lower Tayside	6*
Beavers will affect other wildlife like otters and kingfishers	5
Beaver dams could reduce salmon migration to their spawning grounds	4*
A feeling that a beaver population will grow and grow until they need to be culled	2
Loch Beinn a Mheadhoin and Loch Affric are unsuitable as release sites	1

*includes responses from the Beauly Fishery Board and/or the River Glass Fishing Syndicate, so this is a more widely shared concern in the fishing community than the number of responses alone suggests

The grids below illustrate the results of the scorecard exercise that asked people to rate their views on the likelihood and severity of impacts they associate with the key concerns identified in the first period of the consultation. The third grid relates to how reassured people feel by the mitigation options that were described for each impact. The scores were on a scale of 1 to 5, with 1 representing low likelihood/severity and reassurance and 5 at the high end of the scale.

Each dot on the grids represents an individual's response. The red bars mark the average

(mean) score given for each issue. While the number of responses received to this survey was fairly modest, the results reflect the split pattern of views seen across the response as a whole, with scores 1 and 5 being the commonest.

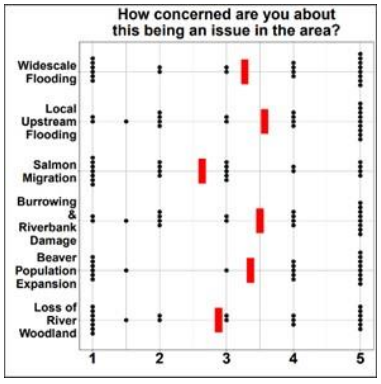
Beaver Proposal Feedback — Trees for Life

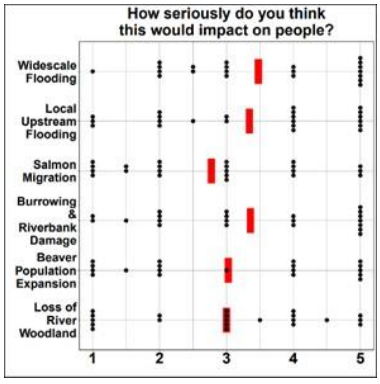
Scorecard

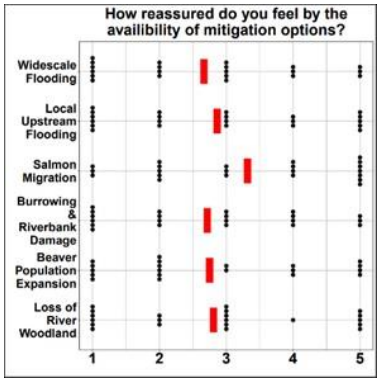
Please circle your preferred response to each question relating to the highlighted concerns. Please also use the comments section at the bottom of each concern to add anything further.

Questions	Concern 1 Widescale flooding	Concern 2 Local upstream flooding	Concern 3 Salmon migration
How concerned are you about this being an issue in the area?	1 2 3 4 5 Not concerned — Very Concerned	1 2 3 4 5 Not concerned — Very Concerned	1 2 3 4 5 Not concerned — Very Concerned
How seriously do you think this would impact on people?	1 2 3 4 5 Not serious — Very serious	1 2 3 4 5 Not serious — Very serious	1 2 3 4 5 Not serious — Very serious
How reassured do you feel by the availability of mitigation options?	1 2 3 4 5 Not reassured — Very reassured	1 2 3 4 5 Not reassured — Very reassured	1 2 3 4 5 Not reassured — Very reassured
Comments:			

Please turn over







The Key Concerns Outstanding

The split in these results, and the response more widely, indicate that further dialogue would be needed to develop more widely shared views of the likelihood and severity of all these potential impacts. All these potential impacts concern a significant proportion of respondents and two are especially significant:

1. There are high levels of concern about burrowing and riverbank damage, combined with low reassurance about mitigation for this.
2. There is real concern about localised flooding behind beaver dams, and although more people feel that this can be mitigated by steps such as dam removal, there is a focus from some that the stakes may be high, with the possibility of increased flood risks to property or locally significant farmland. For these respondents, the concern is greater and the faith in the mitigation seems weaker.

With some of these issues, the evidence from scientific studies provides good reason to conclude that beaver impacts will not be as significant as some fear they could be. This is perhaps clearest in relation to the concerns about beavers and widescale flooding, where several studies show that flooding at catchment level (as opposed to localised flooding that can occur immediately behind a dam) is likely to be reduced in frequency and severity by beavers. In a similar vein, the sizeable body of research into beavers and disease has demonstrated that there is no significant health risk to people or animals from beaver-borne diseases. It is conceivable that the research available on each of the concerns raised would reassure more people if it were considered with more time for discussion and without a 'live' proposal in play.

3. Challenges to positive dialogue

While the substance of these issues and the debate about their rights and wrongs is a very important part of any beaver proposal, another significant consideration in the current situation is the nature of the debate itself. As became apparent during the consultation, a number of factors affected the way this proposal was discussed.

Timing

At this early stage of the journey to living alongside beavers in more parts of the country, it is perhaps natural for discussions to feature clashes between hopes for what beavers can do for nature and fears of how they might impact on people's interests.

The way the consultation first opened, with a six-week timescale and without the context of the national Beaver Strategy affected how some reacted to the proposal, leading to a sense of suddenness and perhaps a suspicion that it was being deliberately rushed through.

Uncertainty

Beaver behaviour and the susceptibility of an area to being affected by beaver behaviour, vary hugely from area to area. This means that predicting the extent to which beavers will affect any given area, whether positively or negatively, will always come with a degree of uncertainty.

While the characteristics of an area that are, and are not, likely to be susceptible to beaver impact can be identified, there are situations where there simply cannot be a complete guarantee that beavers will not impact on people's interests. This is understandably worrying for those who see ways in which beaver activity, particularly dam building or burrowing, might affect their property and/or land use activity. Providing robust answers to 'what if…?' questions about these concerns is therefore a key issue for beaver proposals.

Differing Perceptions of the Scale of Impacts

Self-evidently, those who support this proposal consider that any impacts beavers have in Affric and Strathglass will fall within the scope of the resources available to manage them. The evidence they point to includes the findings of the experienced team who wrote the Feasibility Study for the proposal and the limited nature of impacts of the beaver population that has been present in Strathglass for at least ten years. The Scottish Government's position and the now published National Beaver Strategy are both seen as clear evidence that beaver management will be adequately resourced for the long term.

However, concerned stakeholders in Strathglass do not find this reassuring and feel that the potential problems and negative impacts they have raised are more likely to be realised and be more significant. Some have referenced the history of beaver impacts on farmland in parts of lower Tayside as a guide to what could happen in Strathglass.

Trust

Trust is a key aspect of any public engagement and we set out to be open about what the benefits and possible negative impacts of a beaver release could be. There were various signs during the consultation that a proportion of the people who responded had low trust in Trees for Life's impartiality, including a letter signed by 23 different individuals involved in farming and land management and the formation of a group called Strathglass Action Against Beavers. We accept that we might be perceived as biased, but we consider that we can represent the issues in an even-handed way.

To ensure this, the services of high calibre specialists were commissioned for the Feasibility Study and factual summaries of key research into beaver impacts were produced to enable trusted discussions. The UHI study also provides a useful outside perspective on the proposal.

This evidence was provided, in the form of the Feasibility Study and a body of information made available online, to allow people to form their own impressions and questions and allow the discussion to be led by them. We agree that more resources could have been devoted to being proactive in explaining the benefits, impacts and impact management of beavers through a wider range of media. Building trust in the community will be essential to any action on beavers going forward.

Clarity on Resources for Beaver Management

There was scepticism about the arrangements in place for managing beaver impacts. The National Beaver Strategy is clear that we will live alongside beavers, but that effective management and mitigation will be in place to deal with any negative impacts that arise, with beaver mitigation resourced and delivered to meet demand. The Strategy sets a vision for 2045 and commits to a ten year review in 2032 – indicating long term commitments from Government.

NatureScot, who are charged with leading on the Beaver Management Framework to deliver mitigation, has not yet been able to fully reassure stakeholders here that beaver management will be fully resourced. Trees for Life had expected that a clear message on beaver management would come from NatureScot, but they were reluctant to engage directly with stakeholders in Strathglass to explain how the Beaver Management Framework will work in practice. While this stemmed from an unwillingness to influence a consultation on a proposal that they might later have to assess, it left people unclear about the level of resources that will be available for beaver management and how it will operate. It is easy to understand the effect this has had on those concerned about potential beaver impacts and how it has contributed to a concern held by some that beaver impacts could exceed the ability to manage them.

As the consultation progressed, the lack of clarity on the Beaver Management Framework began to run counter to the reassurances Trees for Life had been giving on the issue. Management responses to beaver impacts need to be flexible enough to apply to specific circumstances and the Framework cannot always be completely definitive. However, given the central importance of the Framework in the National Beaver Strategy, this is an urgent area for NatureScot to address and clarify.

Factors in combination

These factors combined to produce a difficult dialogue process. Moving to a future where we live alongside beavers will involve uncertainty about exactly what advantages and problems beavers will bring to different locations. Uncertainty makes some people uneasy, it increases the importance of effective dialogue built on trust and means that clarity about how problems can be dealt with is a fundamental requirement. The way these factors have combined here has a significant bearing on the recommended option for proceeding at the current time.

4. Options and Recommendations

Taking account of the response to the consultation and the nature of the dialogue process described above, a number of different options are appraised below with one recommended as the way forward.

1. Continue as first proposed

   This option is for the landowners behind the proposal to submit a licence application to NatureScot to release beavers in Glen Affric and Strathglass.

   For this option to proceed, it would be important to satisfactorily investigate and address the perceived possibility of an increased flood risk to property in Tomich before an application is made. The rationale and approach for this issue is set out in Annex A.

   While the socio-economic assessment would continue to be very contentious, there is good reason to believe that the proposal is sufficiently in line with the National Beaver Strategy for an application to be successful, if the concerns about flood risk can be resolved.

   However it is not recommended that this option is taken forward at this time. The consultation has received a split response, with differing perceptions of the impacts beavers might have and concern about the ability to manage any impacts that may occur. There are strong reasons, described in Annex A, to consider that the potential impacts are likely to be much lower than some concerned parties fear and that the Beaver Management Framework will enable any impacts to be effectively dealt with. However, a significant number of local people, including several with a direct stake in the natural river environment, are not reassured and have real anxieties that the outcomes will be much more negative.

   To disregard this without further dialogue to develop a more widely shared understanding of the issues would, most likely, be counter-productive.

2. Proceed with Glen Affric only

   The concerns about beaver impacts expressed during the consultation do not apply in Loch Beinn a Mheadhoin and Loch Affric where the sensitivities of property and land use are different from Strathglass.

   The Loch Beinn a Mheadhoin hydro dam is a significant barrier to beavers moving downstream. Given the availability of good quality habitat above the dam and the difficult terrain around this dam, it is unlikely that beavers will attempt to move past the dam for some years. When, and if this happens, it is only likely to be in low numbers and, with high quality habitat immediately downstream, beavers are likely to remain in this immediate area, with onward dispersal likely to be limited.

   Nevertheless, there will be concern from some stakeholders that, sooner or later, beavers will move below the dam and begin to live in Strathglass. Having acknowledged the concerns about potential beaver impacts on Strathglass raised during the consultation, we

recommend that reassurance is put in place to allow for this possibility. This needs to involve:

- Putting an effective monitoring programme in place to maintain accurate information on the beaver population in the Loch and detect dispersal below the Beinn a' Mheadhoin dam should this occur. Exploring the potential to involve the community in this would help to build and maintain confidence in the monitoring, communication of results, and gradually reduce uncertainty, giving people more opportunities to observe beavers in the wild.
- Asking NatureScot to provide confirmation of how the Beaver Management Framework will work and how resources will be made available to mitigate risk or deal with any impacts.

We recommend that this option is adopted by the landowners involved in this proposal who own property above the Loch Beinn a Mheadhoin dam. This would provide a translocation site for beavers that would otherwise be lethally controlled on Tayside and broaden the experience of co-existing with beavers. In the event that beavers get past the Beinn a Mheadhoin dam, this option ensures that a robust and resourced set of arrangements is in place, involving the local community, to deal with any potential impacts, as set out above.

3. Assess the potential for action in Strathglass in future years

As noted above, some of the reasons why this has been a challenging consultation for many of those who participated are related to the nature of the current debate around beavers in Scotland. The wider dialogue around beavers will develop over the next two to three years as other release proposals are taken forward and beavers start to become a more normal part of our wildlife across more of the country. This 'normalisation' of beavers will also see the Beaver Management Framework shaped by wider experience. Research into beaver behaviour and impacts in Scotland is developing all the time, including the current Strathglass-focused UHI study on the cultural perceptions of beavers.

All of this will see more evidence become available on beavers in Scotland, their impacts and their management. Whether this increasing evidence comes to resolve the uncertainties about beaver impacts remains to be seen, but the uncertainty about them can be expected to reduce over time. This in turn will make it easier for people to agree on where beavers will cause problems, how severe those problems might be and whether it is realistic to manage those.

This option is therefore to see whether the wider debate evolves over time to the point that a fresh beaver proposal for Strathglass could be considered with a more widely shared understanding of beaver impacts and their management amongst stakeholders. Greater consensus on the key issues of the frequency and extent of localised flooding caused by beaver dams and the extent to which burrowing might affect floodbanks or increase bank erosion are central to this.

Annex A, Review of Beaver Concerns and Evidence

Burrowing by beavers to create lodges might exacerbate the long-standing problem of riverbank erosion and damage floodbanks protecting locally important farmland

Where depth and flow are suitable beavers will tend to burrow into riverbanks rather than build dams across a river. Given that bank erosion has been a historic problem in the Glass-Beauly catchment, burrowing has been raised as being of significant concern.

Beaver burrowing can and does result in bank collapse and erosion to varying degrees depending on water flow e.g., fast/slow, substrate e.g., sandy/stony, and presence of riverside vegetation, and is one of the commonest areas of conflict in human landscapes. Predicting where beavers will burrow into riverbanks is difficult and little certainty can be provided about areas that will be impacted the most, however beavers prefer wooded banks for burrowing which are more resistant to being undermined. Until beaver populations begin to grow, more marginal habitat is unlikely to be significantly used and burrowing impacts will likely be minimal in the short term.

Documented conflicts in relation to burrows and bank erosion in lower Tayside, Devon, Bavaria, and the Netherlands typically arise in areas of land with high agricultural productivity. Here the land is often used right up to the river edge for either animal grazing or arable crops and as a result is often poorly vegetated, precipitating negative impacts of beaver burrowing. Impacts of burrowing on this type of land include the undermining of flood banks resulting in flooding and loss of crops, livestock and farming equipment collapsing and falling into unstable burrows, and loss of productive land.

Mitigation measures to prevent or offset the impact of beaver burrowing are varied. Burrowing itself can be effectively discouraged by fixing chain link fencing to bank surfaces, placing metal sheets or wire mesh through the centre of flood bank structures or placing large rocks along vulnerable riverbanks to the bottom of the watercourse.

In Bavaria, more than 90% of beaver conflicts occur within 10 metres of the river edge and greater than 95% within 20 metres of the river edge. Additionally, burrows are typically 10 metres in length or less. Therefore, the creation of buffer strips of 10-20m beside rivers could provide an effective solution. This could involve the planting of trees along riverbanks, helping to stabilise banks and minimise erosion from burrowing, as well as providing benefits from mitigating agricultural run-off to providing fish and other aquatic animals with nutrients, shading, and refuges. Flood banks could also be moved outwith this buffer zone, preventing their being undermined in the future. However, both sets of mitigation measures could prove to be costly, and their implementation may well require funding support.

Localised flooding risks to property or areas of farmland immediately upstream of beaver dams
This is one of the most significant concerns that came out of the consultation. Beaver dams are porous but are designed to hold back and create deeper water immediately upstream of the dam, often creating a pond. While this can help reduce flooding at the catchment scale, it clearly has the potential to flood an area of land directly behind the dam.

The Beaver Dam Capacity maps that form part of the Feasibility Study for this proposal can help to focus on where damming is of particular concern, but it is worth mentioning a very particular

situation in Tomich where drainage built over one hundred years ago to carry water from the higher ground above the village, pass particularly close to property in one location. This area of flood plain is currently prone to water levels that overtop bank levels and come close to flooding these properties. The drain's width and gradient are such that it could conceivably be dammed by a beaver.

We therefore recommend that the extent to which beaver damming could pose an additional flood risk to property is investigated before a beaver release goes ahead in Strathglass. Such an investigation would need to be carried out through a transparent process so that the method and findings can be understood by all affected parties.

Concern about the potential scale of impact of beavers on trees and woodland

Some concern was voiced about the potential for beaver activity in the Strathglass area to result in significant losses of riverside woodland.

Beavers use trees in riverside woodland for food and for construction purposes, using mostly native broadleaves with preferences for aspen and willow. Beavers will typically use stems of 0.1m in diameter or less, however beavers will fell and use larger trees on occasion. All native broadleaves produce regrowth or sucker from felled stumps, therefore beaver felling activity often results in changing tree structure rather than complete loss. However, more vigorous regrowth is apparent in younger trees, and because younger trees have smaller diameter stems, they will be selectively used by beavers, leading to a younger aged woodland over time.

Most beaver felling activity is within 10m of the water's edge and trees beyond this range are less likely to be impacted. Moreover, beavers are central place foragers, meaning that their activity does not spread out from their lodges uniformly but rather they will move both upstream and downstream looking for the size and species of tree that best matches their requirements. The result of this is a patchwork of tree felling activity along the watercourse that creates increased diversity in river woodland in terms of age profile, species composition and canopy cover. Affected areas will then often remain unvisited by beavers for some time afterwards allowing robust shoot regrowth from felled stumps.

It should be noted however that where herbivore impacts from deer and livestock are high, coppice regrowth and tree regeneration can be suppressed, which could lead to a loss of structural diversity and woodland cover over time. Therefore, careful management of grazing pressure in river woodlands will be necessary to maximise the positive impacts of beavers. Planting of new river woodlands would also help to offset any potential negative impacts of beaver activity on trees as well as increasing quality beaver habitat and mitigating against riverbank erosion. Where there are riverside trees of particular importance, for example old trees, ornamental trees, or trees which host a rich species diversity such as lichens, then these can be protected against beaver felling through the use of tree guards or a deterrent paint mix of sand and glue.

Regardless of whether the existing beaver population there is supplemented with proactive releases, Strathglass has considerable potential to add to its existing riverside woodlands. This would deliver a range of benefits for bank stability, natural flood management, fishing interests and biodiversity. While this may be seen by some as counter to a proposal to release tree-eating beavers to the area, experience from elsewhere indicates that beavers and increased woodland cover can be complementary. The benefits of riverbank woodlands to a wide range of wildlife, including salmon,

trout and other fish species, are widely recognised. Once new woods are established on riverbanks, they successfully sustain beaver browsing, benefiting from the coppicing effects triggered by the animals. At the same time, the beavers benefit from improved habitat conditions and the stronger riverbanks that become more tightly bound by the trees' root systems. The relationship between beavers and riverbank woodlands might also create an opportunity to bring additional resources into creating new woods in the catchment. Riverside woods can be costly to establish, but their positive inter-relationships with beaver populations can act as an incentive for the growing number of funders who want to enable positive environmental outcomes on the ground.

Beaver dams could reduce salmon migration to their spawning grounds

There is concern amongst anglers and fisheries interests that the reintroduction of beavers to the Affric/Strathglass area will negatively impact the movement and migration of Atlantic salmon and sea trout to spawning grounds in the catchment. This is of particular concern given the current fragile state of these fish populations in UK rivers.

Several studies investigating the impact of beaver dams on migratory salmonids and other fish movement have clearly shown that adult and juvenile migratory fish can pass beaver dams. This is because of the 'leaky' nature of beaver dams. This 'leakiness' is due to water flow through and under the dam, side channel formation around the dam, and partial or full breaches of the dam during high river flow, providing fish with opportunities to bypass dams.

What is unclear is if beaver dams reduce movement or make it more difficult, and by how much. Research has shown in some contexts beaver dams make almost no difference to migratory salmonid movement. In other contexts, however, beaver dams appear to reduce the amount of movement. This is particularly likely during low flow events, such as during periods of drought. However, beaver damming activity can actually mitigate low flow events and help maintain and stabilise local water levels, potentially benefiting migration. Another potential benefit is the creation of beaver ponds as a result of damming, which has been shown to provide good rearing habitat and improve productivity in salmonids in a variety of contexts from North America to Scotland.

Additionally, whilst in some areas there may be a small risk associated with beaver dams and a reduction of migratory fish movement, evidence has shown that there is often minimal overlap between key spawning habitat and areas suitable for beaver damming. For example, in a Norwegian study, beaver dams potentially affected only 3% of salmon spawning habitat within the study area, and in Scotland, modelling published in 2018 found 92% of Special Areas of Conservation for Atlantic salmon were unlikely to be dammed by beavers.

Going forward, where there is potential for site specific conflict between beaver dams and migratory fish habitat and migration, appropriate monitoring of fish populations should be put in place. If beaver dams are found to negatively impact fish migration at specific sites a number of mitigation measures can be implemented. These include the insertion of flow devices and dam notching to increase flow, thereby providing additional pathways for fish to migrate, and ultimately escalating to beaver dam removal.

A feeling that a beaver population will grow and grow until they need to be culled

At low population densities beavers can often integrate into the landscape with minimal observed disturbance, occupying high quality beaver habitat. As population densities grow however, beavers are forced to occupy more and more marginal habitat that can then conflict with human modified

landscapes. Concerns have been raised that the beaver population in Glen Affric/Strathglass will grow uncontrollably, necessitating ongoing human intervention to cull their numbers.
Beaver population growth is largely self-regulating as adult beavers have no significant natural predators, although beaver kits are occasionally predated by red foxes, domestic dogs, pine marten and birds of prey. Initially, following a reintroduction, beaver population growth is slow as young adults disperse and find suitable habitat to establish, form pair bonds, and produce offspring of their own that can go on to occupy new habitat.
Where habitat and topography allow, dispersing offspring will then often travel tens of kilometres from parent territories creating a patchwork of beavers in the landscape with relatively large territories.

As the population expands it can then enter a rapid growth phase where the number of territories increases, and territory size becomes smaller, creating increased competition between non-related beavers for habitat. This competition accounts for the majority of beaver mortality, either through injuries sustained from fighting, or indirectly through stress related factors from having to continuously defend small, contested territories. The effects of this can then be observed at the population level by a decrease in reproduction rates, dispersal rates, and even individual beaver weights. Once beavers occupy all of the available territory in their environment, populations will self-regulate with no demonstrable growth unless there is some external disturbance.

Therefore, in management terms, culling is not required to prevent uncontrollable population growth but rather used as a tool of last resort to mitigate human-wildlife conflicts where they occur and when other non-lethal measures have been exhausted.

Strathglass will end up like parts of lower Tayside

A comment made by several of those who expressed concerns about the proposal was that the beaver population on Tayside is having large negative impacts across a wide area and that the same outcome would happen in Strathglass.
In fact, beaver presence is felt very differently in different areas. So beaver impacts in Strathisla on lower Tayside are different from those in upstream parts of the Tay catchment, which in turn is different from Strathfillan, on the Forth or in Knapdale. This is brought into sharper focus still by looking at the areas for which NatureScot has issued licenses for beaver management since licensing began in 2019. From data NatureScot have made available, 39 licences were issued to manage beaver impacts in Scotland in 2019, primarily through lethal control and dam modification or removal. Of these, 33 were issued in the Isla and Earn sub-catchments of the Tay system and the remaining 6 were issued in a confined stretch of the main stem of the Tay itself. From the information available, we can see that 23 of these licences were left unused. Moreover, in 2019, licensed management was recorded at only 13% of the 114 beaver territories identified in a survey carried out for NatureScot in 2017-18.

Beaver management licences issued 2019 (link here)

Catchment	Licences Issued	Licences Used	Licences Unused	Beavers Killed	Beavers Livetrapped	Territories potentially affected
Isla	21	9	12	49	8	9/37 (24%)
Earn	12	4	8	16	4	3/25 (12%)
Tay	6	3	3	22	3	3/41 (7%)
Forth/other	0	0	0	0	0	0/11
Total	39	16	23	87	15	15/114 (13%)

In 2020, the data shows that NatureScot had returns on 52 licences (NatureScot weblink here). 27 of these were in the Isla and the Earn sub-catchments, 7 were on the mainstem of the Tay and one was issued in Argyll. 17 of the licence returns recorded that no action had been taken. The data for 2020 does not have the same detail of the breakdown on licences used per territory, but the overall results show that licenced removal, by translocation or lethal control, affected 12-14% of territories.

Impact of licenced removal on beaver territories in 2020

Catchment	No. territories affected by licenced control	No. territories affected by licenced trapping	No. territories affected by licenced removal
Isla	18-20	8	23-25
Earn	5	2	5
Tay	3-4	0	3-4
Total	26-29 (10-12%)	10 (4%)	31-34 (12-14%)

n.b. both trapping and control took place in a number of territories

Actions carried out under licence in 2020 (link here)

Licencces used in 2020 (of 52 returns)	**Number dams (removed or modified)**	**Number beavers killed**
19	21	80
8	14	13
7	20	22
0	0	0
1	1	0
35 (17 returned no action)	56	115

2021 saw a similar pattern of licences being issued for the same specific areas of the country, with a total of 61 licences valid in the year. Only 21 of these reported having taken any action under the licence issued (NatureScot weblink here).

2021 Annual return information, actions carried out under licence

Returns received	59
Number of licences used - lethal control or dam removal	21
Total number of animals killed	87
Number of animals trapped and removed	33
Total number of animals removed	120
Number of animals translocated to licenced projects (within Scotland)	31 (5)
Number of dams removed or modified	47
Other (burrow destroyed)	1

While we might expect to see the geographical spread of areas involved change over time as beaver populations disperse and the factors influencing beaver management can vary year to year, this does illustrate that not all areas are affected equally. Different catchments and sub-catchments have required less, or no, management and it is important to assess the characteristics of a river catchment in order to gauge the type and scale of the potential impacts. The Tay is the largest river catchment in Scotland and parts of its lower reaches are highly susceptible to beaver impacts because of the intensity of drainage channels created there over flat ground. However, even within these areas, there are strong indications that many beaver territories have not required licensed management and that not all licences are acted upon in any given year.

Doubts about how management of beaver impacts will work in practice and resourcing for this
This is discussed in section 3 in the main body of the report under 'Clarity on Resources for Beaver Management'. Further reassurance on the funding for the Beaver Management Framework and how it will operate is needed.

Beavers carry a risk of disease

As might be imagined, the potential for a health risk to people and animals was a key issue for public agencies to focus on in the early 2000s when beaver reintroduction was first being considered by Scottish Natural Heritage (now NatureScot) and the government. The same consideration has applied in England and Wales as beaver reintroduction has continued to develop. Three independent studies commissioned by the statutory nature conservation bodies for each country have all examined the

potential for disease transmission to people and livestock from reintroduced beaver populations. All have concluded that there is no significant risk if basic health screening is undertaken in quarantine when beavers are brought into the UK from Europe. Such health screening has been mandatory when beavers have been brought into the UK and all beavers trapped and moved within the UK are also subject to health screening before they are relocated.

Beavers will affect other wildlife like otters and kingfishers

A few responses have expressed concern that beavers could compete with other native species associated with riverine environments. As herbivores, beavers are not a predation threat to any species and have a prolonged history of co-existence with other fauna over several millennia. A literature review conducted by NatureScot as part of a Strategic Environmental Assessment of beaver reintroduction concluded that beavers have a net positive effect on mammals and birds, including otters and freshwater-associated birds such as kingfishers and dippers. Although localised negative effects are possible for black-throated divers or mammals such as water voles, a 2022 Addendum to the 2017 study found that these possibilities could be mitigated through monitoring and management if they arise. The biodiversity-positive effects of beavers are primarily a result of the way they affect freshwater areas to add more diverse habitat niches and increase the range and abundance of invertebrates and amphibians which then provide a wider, richer source of food for other wildlife.

Loch Beinn a' Mheadhoin and Loch Affric are unsuitable as release sites

Loch Beinn a' Mheadhoin is subject to considerable fluctuation in water level because the management of the interlinked hydro dams in the area requires water to be released from the Beinn a' Mheadhoin dam at varying intervals. This leads to drops in water level that could leave beaver lodges separated from the water by a rocky bank. The effect this might have on the suitability of these lochs for beavers was one of the issues we asked to be investigated in the Feasibility Study for the proposal. Beavers have shown in other Scottish locations that they can cope with regular and large fluctuations in water level, including rivers that are affected by tidal levels throughout a given day. While the Study notes that water level fluctuation could be a concern, the authors also describe a number of small lochans and water bodies outside of the main lochs that can provide suitable habitat. Further specific advice on this matter was sought from four highly-regarded beaver ecologists, including two of the authors of the Feasibility Study and this is included as Annex G to this report.

All photos in the report are by Scotland: The Big Picture.