Perth and Kinross Council

– Environment & Infrastructure

Alyth Natural Flood Management Study

Community Drop-in Sessions: Summary of Questions and Answers

Introduction

Perth & Kinross Council (PKC) commissioned AECOM (engineering consultants) to carry out a Natural Flood Management (NFM) Study for the town of Alyth. On 28th and 30th May 2024, the Council engaged with the local community regarding:

- the risk of flooding in Alyth;
- the findings from the NFM study; and
- other actions to raise awareness and improve community resilience.

An invitation to attend the community consultation for the study was distributed to the local community on 10th May 2024 and was made available on the Council's consultation hub alongside copies of the display boards (at https://consult.pkc.gov.uk/communities/alythnfmstudy/) from 24 May to 14 June 2024. This allowed residents to view the display boards ahead of the community event.

Two community drop-in sessions (see Figure 1) were held at Alyth Town Hall on Tuesday 28th and Thursday 30th May.

Figure 1. Community consultation event

The drop in community events offered residents the opportunity to speak directly with Council Officers, representatives from AECOM, and the Scottish Flood Forum. Residents were encouraged to complete a feedback form, either online or in person to record their comments.

The Council would like to thank those that took the time to provide comments and attend a drop-in session.

This report collates the comments received and provides the Council's response.

Community Response

The events were well-attended by the community, with approximately 50 people attending over the course of the two events. A total of three people submitted comment forms either in person or online during the consultation period. Additionally verbal feedback was taken during the events and has been captured within this document.

Appendix A (below) provides a summary of the main questions received along with the Council's response. Those submitting forms have not been named for confidentiality reasons. This report will be published on the Council's Consultation Hub (at https://consult.pkc.gov.uk/communities/alythnfmstudy) and distributed to local Councillors, the Community Council and members of the community that registered attendance at a drop-in session or provided a consultation response.

Next Steps

The Council will now update and finalise the Alyth NFM study and report the conclusions to the next available Climate Change and Sustainability Committee. Thereafter, the Council will implement the recommendations of the reports (subject to funding being made available and following the necessary statutory approvals). The Council will carry out further consultation with the community as proposals are further developed.

If you require any further information on the Alyth NFM Study, please contact:

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Appendix A: Questions and Answers

The following questions were derived from online and in person feedback forms filled in by local residents, as well as from verbal feedback discussed during the consultation events.

1. Why were engineered options considered in a natural flood management (NFM) study?

The Council carried out a previous Flood Study on the Alyth Burn in 2002 which unfortunately did not identify any viable options to reduce flood risk. Given the time since the 2002 study and in light of the recent significant flooding that has affected Alyth, Perth & Kinross Council asked AECOM to include traditional engineered flood defence options alongside natural flood management measures as part of the NFM study. This allowed the traditional options to be reconsidered against the updated hydrology, topographic data and more detailed model used in the NFM Study. It was therefore beneficial to reconsider flood defence measures alongside the assessment of NFM measures.

2. Given the uncertainty around quantifying NFM surely it is inevitable that using a cost-benefit analysis would score engineered options as better, especially measured against high magnitude events?

Whilst there is greater uncertainty of the benefits of NFM measures when compared to more traditional flood defence measures (flood walls/embankments and flood storage reservoirs), there is a growing body of evidence on their level of effectiveness. This allowed the options to be tested using the hydraulic model developed for the study and the impact of different measures to be confidently assessed.

The economic assessment (cost-benefit assessment) takes into account the frequency of flooding. Potential flood damages are calculated by running a range of flood events (ranging from 50% to 0.1% annual exceedance probability events) across a 100 year appraisal period. The options are tested to quantify their benefits and allow comparison to find the most effective. Therefore, more frequent (low magnitude) events contribute the greatest proportion of damages, and also contribute to a larger proportion of the economic benefits of an option.

The steep and constrained nature of the Alyth Burn catchment was also considered to limit the effectiveness of natural flood management measures in reducing flood risk.

Therefore, the cost-benefit analysis is an appropriate analysis to determine the economic feasibility of NFM options. The benefit of the NFM measures on downstream flood peaks and extents was found to be minimal, and this was reflected in the outcome of the options appraisal.

3. The additional non-economic value of NFM appears to have been outweighed or not included in the cost benefit analysis, is this correct?

A multi-criteria approach is used to assess the flood risk management options. Additional benefits of NFM such as enhancing biodiversity, sequestering carbon through riparian tree planting, peatland enhancement and creating habitat have been considered in the study through an environmental and social appraisal.

Large areas of existing woodland and peatland in the catchment, the opportunity for significant increases in environmental benefits was limited. Due to the time and cost of implementing NFM measures, it was concluded that the environmental benefit of NFM measures alone did not warrant them being implemented if they did not also provide significant improvements to flood risk.

The study found that the impact of NFM options on reducing flooding to Alyth was limited and were not considered viable measures. As noted in Q2, the economic appraisal takes into account a range of flood magnitudes occurring across an appraisal period (100 years). This allows the economic flood damages to be estimated.

The calculation of flood damages considers a range of contributary factors including damage/replacement of damaged items, damage to building and damage to vehicles, as well as the cost to emergency services, including emergency response and impacts on the road network. Intangible impacts on residents and communities are also considered as well, in line with industry-standard guidance. It must be stressed that the value of the damages are not based on what individual residents have suffered. It is based on economic

damages that provide a standardised way of assessing the cost of flooding, which isn't skewed by individual circumstances. Damages are also capped, so they cannot exceed the (approximate) value of the property.

Whilst there are multiple benefits associated with natural flood management, there still requires to be a feasible business case in order to secure suitable funding and take forward such measures.

The Council is happy to engage with landowners and land managers who may be considering exploring re-wilding/NFM measures to share information from this study. We would ask that you contact the Council's Flooding Team using the details at the top of this report.

4. How was NFM modelled and can the outputs for each individual approach be listed rather than grouped as one output?

NFM measures were modelled using 2D flow constrictions and roughness zones under one combined scenario to determine the effectiveness of a catchment wide scheme as opposed to the potential benefit that could be achieved from an individual measure.

NFM measures are typically not implemented individually and instead are carried out as part of a wider scheme to slow the flow across an entire catchment with the aim of reducing the flood peak downstream. The cumulative modelled benefit of implementing catchment wide NFM was a 6.7% reduction in peak flows during the 50% AEP event, decreasing down to a 3.4% reduction during the 0.5% AEP event. Breaking this down to the benefit provided by an individual measure would provide negligible benefit to the reduction of flooding in Alyth and was therefore not carried out within the study.

This small (<7%) reduction in peak flows did not visibly reduce flood extents or depths in Alyth and therefore no map of this was produced within the study. The list of options proposed were provided on the consultation boards.

5. Was there a lack of input to the study from Scottish Water regarding the Waste Water Treatment Works (WWTW)? If this infrastructure is overwhelmed with flood water from the Alyth Burn then residents are concerned that sewage could backup into residential properties.

During the study, the Council engaged with Scottish Water, as well as the other Responsible Authorities designated under the Flood Risk Management (Scotland) Act 2009 (SEPA, Nature Scot and Forestry Scotland).

The model outputs do show that the Alyth Waste Water Treatment Works (WWTW) is within an area identified to be at flood risk. The Council has shared the data from the Alyth NFM study with Scottish Water for their information on the flood risk. This will allow Scottish Water to consider any impacts on the sewer network, in line with their wider priorities.

6. Why were the community consultation events not advertised in the "Alyth Voice" (a free magazine distributed monthly to the community)?

The Council advertised the community events directly with residents in and around areas affected by flooding, with a total of 300 letters being sent to these properties. The Council also issued posts on its social media accounts to announce the upcoming events. Local elected members, the Community Council and local community groups were also contacted to highlight the events and to allow them to be advertised across the wider community.

The Community drop-in events were also supplemented by the display materials being made available on the Council's consultation hub (at https://consult.pkc.gov.uk/communities/alythnfmstudy/). The consultation hub remained open for comments between 24 May to 14 June 2024.

We note the Alyth Voice as another potential means to advertise any future events associated with further development of the study recommendations.

7. Historically the Alyth Burn was regularly dredged, why can't this be done now?

During a large flood event, the peak river flow is usually many times the channel capacity and large volumes of water will spill out onto the floodplain. For example, the flow during the July 2015 flood event was estimated to be over 2.5 times the capacity of the channel at Commercial Street/Market Square. It is therefore not practical/realistic to dredge the river to the extent that it would confine such large flood flows within the channel only and to exclude flow from the wider floodplain.

This is not to say that managing sediment on rivers should never be considered or is never useful. Indeed, this can provide benefits if targeted at specific locations where the river flows and behaviour are properly understood. However, if not properly studied and understood then dredging can have serious consequences that could lead to environmental damage, erosion problems and an increase in flood risk downstream.

Dredging and straightening rivers and burns increases flood risk downstream as it increases the speed and flow of flood water from the upper catchment. Dredging can also lead to erosion due to increases in the energy of the river. In addition, placing dredged material on the banks of a river can also increase the destructive forces of floodwater by preventing water from spilling onto floodplains where it would slow down and dissipate its energy. The effects of dredging can also affect areas further upstream and downstream as the river seeks to return to its more natural alignment and gradient.

There is uncertainty around how deep the foundations of the existing walls of the channel through Alyth town centre are, and if the channel is deepened significantly to increase capacity, there is risk that these walls could be undermined.

Nevertheless, the flood study considered dredging as an option for managing flood risk and found that this was not a viable or sustainable approach and so was not recommended.

However, under the Flood Risk Management (Scotland) Act, the Council is required to assess bodies of water in order to determine if they are in a condition that gives rise to a risk of flooding. Where this is found to be the case, and where clearance works would substantially reduce that risk, then the Council must include those works on a schedule and carry them out. Any such works are carried out in order of priority and are subject to available funding.

As part of the Council's clearance and repair duties under the Flood Risk management (Scotland) Act 2009, sediment management work has been carried out along the Alyth Burn. Most recently a significant volume of material was removed from the channel following flooding in August 2020. This extended from the Den of Alyth downstream to Springbank Road, with particular focus along the stretch at Commercial Street/Market Square.

The Council continues to inspect the Alyth Burn on a quarterly basis, and the Doctor's and Johnshill Burns on a six-monthly basis and will carry out clearance works as required. The inspection interval is set on the basis of flood risk and the staff resources that we have available. We will also respond to issues reported to us; this can be done by contacting the Council's customer service centre on 01738 475000 (or 01738 476476 out of office hours) or Flooding Team on flood@pkc.gov.uk.

8. A lot of surface water appears to be coming from the new development adjacent to St Ninian's Road. Is the surface water drainage system operating?

The Council noted a number of concerns raised regarding the ongoing management of surface water from the new development behind properties on St Ninian's Road.

The Council's planning enforcement team were made aware of these concerns and visited the site to assess the situation. It was confirmed that the SUDS system was found to be operational, but the developer has been reminded that the runoff during the construction phase must be managed on site. This includes monitoring and maintaining the construction phase surface water drainage system and deploying additional measures during extreme events to mitigate flood risk to adjacent land/property. The Council's planning enforcement team will undertake further inspections as required following wet weather events.