



REPORT TO: MORAY COUNCIL ON 28 SEPTEMBER 2022

SUBJECT: RIVER SPEY FLOOD MITIGATION PROPOSALS

BY: DEPUTE CHIEF EXECUTIVE (ECONOMY, ENVIRONMENT AND FINANCE)

1. REASON FOR REPORT

1.1 To inform the Council of the findings of a more detailed investigation into potential options to reduce the frequency of flooding at Garmouth from the River Spey, as requested at the meeting of Moray Council on 30 November 2021.

1.2 The report is submitted to Council in terms of the Council's Scheme of Administration Section II (19) relating to a new policy matter which does not fall within the terms of reference of any Committee.

2. RECOMMENDATION

2.1 It is recommended that the Council:

- (i) note current Council Policy on Flood Risk Management;**
- (ii) note the findings of the investigation into the two solutions to reduce the frequency of flooding at Garmouth;**
- (iii) agree on how the matter should be progressed by either maintaining the current policy position (officer recommendation) or pursuing one of the options detailed in section 3 of the report and summarised in paragraph 3.14; and**
- (iv) note the funding and financial implications of pursuing a solution, and should one of the two solutions outlined be agreed, agree the source of funding from:**
 - a. council resources**
 - b. community sourced external funding; or**
 - c. hybrid - the council to fund only any balance of costs outstanding after an agreed period in which external funding should be sought by the community should an option be progressed.**

3. **BACKGROUND**

3.1 The Council Policy is to deliver schemes that are approved in the Flood Risk Management Plans, and not to respond to other needs identified in local communities. At this time the Flood Risk Management Plans do not include any flood protection schemes at Garmouth. Under the Flood Risk Management Act Moray Council has a duty to deliver the measures that are outlined within the plan and any other measure that are undertaken will impact on the ability to deliver measures within the plan. The council policy ensures compliance with this. A flood protection scheme for Garmouth is not included in the Flood Risk Management Plan as, based on:

- the number of properties likely to be impacted by flooding
- the cost of constructing a flood protection scheme
- the cost of damage caused by flooding

3.2 A scheme, whilst technically feasible, would not be economically feasible with the cost of the scheme outweighing the costs of damage. Economic feasibility assessed in this way is an inherent part of managing resources, demand and statutory duties.

3.3 At the meeting of Moray Council on 15 September 2021, it was agreed that Officers would bring a report to the next meeting of Moray Council providing details of the potential solutions identified by Officers to reduce the flood frequency at Garmouth. Officers were also asked to undertake a high level review of the proposals put forward by the community, based on the report drafted by Hamish Moir of cbec ecoengineering UK Ltd (cbec) (para 5 of the minute refers).

3.4 At the meeting of Moray Council on 30 November 2021, following consideration of a range of options, it was agreed that Officers would further investigate the buildability and cost of two of the potential solutions identified by Officers and report the findings to a future meeting of the Council (para 7 of the minute refers). At this meeting Council discussed in detail the effectiveness of a Low Level Bund (option 2) and Natural Flood Management (option 6) along with how the initial costs were derived and how they would work, as well as a request to review the use of the Tetrapod system. It was proposed that further work was undertaken on these options.

Low Level Bunds at Railway Embankment

3.5 This solution would involve constructing a low level rock armour bund within the existing openings on the railway embankment. The cost of undertaking this solution would be £269,184.87 with the inclusion of 10% inflation due to the materials being used and 30% for optimism bias.

3.6 At the meeting on 30 November, Members instructed Officers to review the possible use of the Tetrapod system to construct the low level bunds. The review found that tetrapod (a tetrahedral shaped concrete form) could provide some form of protection, however, due to the sizes of the voids in this system it would not provide adequate flow reduction. It also found the pods are of a size that construction of the weir would not be practical in the space available or provide an appropriate barrier to the flood water.

- 3.7 The Council has taken advice from an All Panel Reservoir (APR) Engineer to determine if the low level bund proposed would come under the Reservoir (Scotland) Act 2011 (the Act). The APR Engineer's opinion is that the proposed bund will not come under the Act, as it will not hold water above the natural bank in that area. A letter has been sent to SEPA's Reservoir Regulation Unit asking for confirmation that the proposed bund will not come under the Act. At the time of drafting this report the confirmation had not been received.
- 3.8 This solution would reduce the current frequency of flooding and provide Garmouth with a level of protection similar to that of 2007 (5.800m Above Ordnance Datum (AOD)). However, it would not prevent the following:
- Flooding from the Spey flooding downstream of the Spey Viaduct
 - Flooding due to coastal influences
 - Flooding through the existing openings in the embankment when the upstream water level at the weir is greater than 5.800m AOD.
- 3.9 It should be noted that this solution will not prevent or reduce the risk of erosions of the flood plain between the River Spey and the railway embankment. At some stage in the future works may be necessary to protect the railway embankment from erosion.
- 3.10 A drawing of this solution is provided in **Appendix 1** and the costed risk register is provided in **Appendix 2**.

Natural Flood Management

- 3.11 This solution involves planting a mixture of native species such as wild gorse in grouped areas to create a natural structure to impede the flow of water as well as allowing local sediment deposits to build up. In addition to planting native species approximately forty four upturned trees, with the root ball above ground level, would be installed around 5m back from the edge of the river edge to a depth of approximately 2m. These trees would allow debris to build up, which would slow down the flow, creating a better opportunity for sediment to build up, increasing the level of the bank within the woody areas.
- 3.12 Officers met landowners on 13 September 2022 to discuss the proposed solutions that could be constructed on their land, to reduce the frequency of flooding at Garmouth. Landowners agreed in principle to the proposals being constructed on their land, subject to compensation being agreed. Work to produce the data required to inform the compensation agreements will be progressed if officers are instructed to implement the proposed works, and indicative costs are included in the overall cost of the solution.
- 3.13 The cost of undertaking this solution is £228,958.77.
- 3.14 This solution would not immediately provide a reduction in the frequency of flooding at Garmouth, as it relies on nature to allow the build-up of sediment to increase the bank levels. This method works with nature, therefore, it is not possible to predict the level of protection that will be achieved and how long it will take to be achieved. However, this solution may reduce the rate of erosion

in the long term and as sediment builds up the frequency of flooding will reduce. A drawing of this option can be found in **Appendix 1** along with the costed risk register in **Appendix 3**.

- 3.15 The proposed solutions detailed in para 3.4 and 3.9 above will address the increase in flood frequency at Garmouth, which has been caused by erosion of the left hand bank of the River Spey at Queenshaugh. These proposals will not stabilise the river in its current position but as erosion occurs the planted trees will have an impact on reducing the rate of erosion. To progress any of the solutions identified in Section 3.4 and 3.9 of this report would be in breach of current Council Policy with regard to Flood Risk Management. Should Members choose to take a course of action outwith this Policy it may create a precedent with regard to undertaking flood mitigation works that are not economically feasible (as highlighted in para 3.1 above, and set out in further detail in the report submitted to Council on 30 November 2021).
- 3.16 Funding sources for any intervention would need to be identified. Any intervention would not be eligible for Scottish Government grant funding. This is because the level of protection that each of the proposed solutions will provide cannot be quantified beyond reducing the flood frequency to 2007 levels. Funding would need to be either i) Council revenue funding, ii) community sourced funding or iii) a hybrid approach – so for example the community could seek external funding for an agreed period reverting to the council to seek funding only for any remaining balance .
- 3.17 The advantages and disadvantages of the two options as assessed by officers are summarised below:

	Low Level Bund	Natural Flood Management
Cost	£269,184.87	£228,958.77 inc Compensation estimate
Advantage	<ul style="list-style-type: none"> • Low cost solution • Easy to construct • Limited susceptibility to erosion, as rock will move and settle • No loss of existing flood plain • Reduce frequency of flooding but not extent • Minimal ecological risk • Medium term design life 	<ul style="list-style-type: none"> • Low cost solution • Positive environmental impact • Easy to construct • Medium term design life • No loss of flood plain • Increased public access
Disadvantages	<ul style="list-style-type: none"> • Possible issue with regard to compliance with the Reservoirs Act • Only returns risk level to around 2007 • Does not protect Garmouth from flooding , but would reduce to the risk from lower return 	<ul style="list-style-type: none"> • No defined level of protection for Garmouth • Requires land owner agreement • Susceptible to erosion • Loss of farming land • Does not protect Garmouth from flooding ,

	<p>events between 1: 2 and 1:10</p> <ul style="list-style-type: none"> • Loss of access through bridges for vehicular traffic • Increase frequency of flooding to upstream land directly above bund 	<p>but would reduce to the risk from lower return events between 1: 2 and 1:10</p>
Effect on Flood Risk/Frequency	<p>Scheme will reduce the frequency of flooding with immediate effect and to levels similar to that of 2007</p>	<p>Will over time help reduce the flood risk to Garmouth but will take time for vegetation and sediment to deposit. This could take a number of years</p>

4 SUMMARY OF IMPLICATIONS

(a) Corporate Plan and 10 Year Plan (Local Outcomes Improvement Plan (LOIP))

This report relates to the Corporate Plan areas concerning the environment.

(b) Policy and Legal

To undertake flood mitigation works at Garmouth would contravene Council Policy with regard to Flood Risk Management. Council Policy is “To deliver schemes that are approved in the Flood Risk Management Plans”. Where flooding schemes are not progressed through the Flood Risk Management Plans Moray Council provide support in the following ways:-

- Supply of at cost Property Level Protection Equipment
- Support to local groups with regards to flood response
- Planning Policy to protect from flooding

(c) Financial implications

When the Council approved the budget for 2022/23 on 22 February 2022 (para 3 of the minute refers) it balanced only by using reserves and one off financial flexibilities. The indicative 3 year budget showed a likely requirement to continue to make savings in the order of £20 million in the next two years. All financial decisions must be made in this context and only essential additional expenditure should be agreed in the course of the year. In making this determination the committee should consider whether the financial risk to the Council of incurring additional expenditure outweighs the risk to the Council of not incurring that expenditure, as set out in the risk section below and whether a decision on funding could reasonably be deferred until the budget for future years is approved.

Should Members agree to fund flood mitigation and/or bank stabilisation works at Garmouth, this funding would need to come from the Council’s revenue budget, or community raised funding, as it would not be eligible

for grant funding from The Scottish Government. It is also not eligible for capital funding as an asset is not created.

Should members agree to fund the mitigation measures the final costs are subject to variation, as whilst an allowance is included for compensation to landowners, this has yet to be agreed.

(d) Risk Implications

To progress any of the solutions identified in Section 3.4 and /or 3.9 of this report would breach current Council Policy with regard to Flood Risk Management. Should Members choose to breach this Policy it may create a precedent with regard to undertaking flood mitigation works that are not economically feasible but which are viewed as crucial by other communities.

The proposed natural flood management works may be vulnerable to a large flood event, similar to works undertaken by Moray Council in 2012 which were washed away due to the size of the flood event.

(e) Staffing Implications

There are currently no staff resources within the Consultancy Section available to undertake the work identified in this report. If any of the solutions identified in 3.4 or 3.9 are progressed the design and site supervision work would need to be outsourced at a cost of approximately £18,000.

(f) Property

Low lying properties in Garmouth will continue to flood with increased frequency if no mitigation works are undertaken. There will be a requirement to either enter in to a long term lease or purchase land to progress the option detailed in para 3.9. If the option outlined at para 3.4 is pursued then landowners will be entitled to compensation as described in the report, and there may be compensation payable in relation to the option outlined at para 3.0.

(g) Equalities/Socio Economic Impact

There are no equalities / socio economic implications associated with the recommendations in this report.

(h) Climate Change and Biodiversity Impacts

If members are minded to undertake any of the options the implication on the climate will be minimal. The scheme will not mitigate the risk of climate change.

The natural flood management option will increase the bio diversity due to the use of natural materials to create the flood protection

(i) Consultations

Depute Chief Executive (Economy Environment and Finance), Head of Environmental and Commercial Services, Chief Financial Officer, Legal Services Manager and Tracey Sutherland, Committee Services Officer have been consulted and their comments incorporated into the report.

5. CONCLUSION

- 5.1 Officers have undertaken further investigation as requested at a meeting of Moray Council on 30 November 2021.**
- 5.2 Following the review it has highlighted that the cost of undertaking the Low Level bund would be £269,184.87 and the natural flood Management of £ £228,958.77(including compensation).**
- 5.3 The solution set out in paragraphs 3.4 would reduce the frequency of flooding to levels similar to those experienced in 2007, The solution set out in 3.9 will, over time, reduce the frequency of flooding to levels similar to those experienced in 2007 but the time frame for this cannot be determined as it uses natural processes.**

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Background Papers: Appendix 1 - Garmouth Proposed Scheme Drawings
Appendix 2 - Low Level Bund Risk Register
Appendix 3 - Natural Flood Management Risk Register

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