

REPORT TO INFRASTRUCTURE SERVICES COMMITTEE – 22 AUGUST 2019

FLOOD PROTECTION STUDIES – PROGRESS UPDATE

1 Recommendations

The Committee is recommended to:

- 1.1 **Review and comment on the progress of the ongoing flood protection studies at Ellon, Inverurie & Port Elphinstone, Insch, Stonehaven Bay Coastal and Ballater; and**
- 1.2 **Instruct Officers to report back to Infrastructure Services Committee on 28 November 2019 with the preferred options for submission for national prioritisation in early 2020.**

2 Background / Discussion

- 2.1 Under the Flood Risk Management (Scotland) Act 2009, there is a strategic framework for considering appropriate mechanisms to manage flood risk. Flood Risk Management Strategies set out the short to long term ambition for flood risk management in Scotland. The strategies state the objectives for tackling floods in high-risk areas. Actions that will then deliver these objectives are described and prioritised in six-year planning cycles.
- 2.2 Aberdeenshire Council published the Local Flood Risk Management Plan 2016 – 2022 for the North East Region, which was approved by Infrastructure Services Committee at the meeting of 12 May 2016 (Item 11). The Local Flood Risk Management Plan presents a summary of the objectives and actions contained within SEPA's Flood Risk Management Strategy. The Plan also contains an element of how the measures will be implemented, as well as timescales for delivery, funding arrangements and details of partnership working to deliver these measures.
- 2.3 SEPA's North East Local Flood Risk Management Strategy published in December 2015 identified twelve locations in Aberdeenshire for Flood Protection Studies. This strategic appraisal indicated that a potential action or group of potential actions would be likely to address flooding problems (and that initial assessments of technical, economic and environmental feasibility indicated it is worth progressing to a detailed study).
- 2.4 Actions such as flood studies have been prioritised nationally. This prioritisation is primarily based on an economic indicator (benefit/cost ratio), as well as consideration of other factors such as community aspects or environmental considerations. The prioritisation of actions was agreed by the National Prioritisation Working Group, which included Officers from the Scottish Government, SEPA, COSLA, Scottish Water and Local Authorities.
- 2.5 Infrastructure Services Committee agreed at the meeting of 12 May 2016 that the five highest ranking Aberdeenshire studies in the national prioritisation

should be taken forward in the 2016 – 2022 flood risk management planning cycle, namely:

1. Ellon
2. Inverurie and Port Elphinstone
3. Inch
4. Stonehaven Bay Coastal
5. Ballater

2.6 Subject to approval by Infrastructure Services Committee on 28 November 2019, the preferred options from these studies will be put forward for national prioritisation in early 2020. This process will identify the Scottish Government's priorities for potential flood protection schemes in the next cycle(s) of the flood risk management planning process.

2.7 The studies aim to better assess current flood risks in the community by:

- undertaking a review of past flood events;
- generating updated and detailed flood maps;
- determining the likely risk to different properties;
- and to propose a set of mitigation measures to reduce the flood risk to an acceptable level.

2.8 The hydraulic models developed during the studies form a basis for assessing future flood levels, flood mitigation options, detailed design of schemes and the costs to deliver them. The process for selecting flood mitigation options involves assessing a wide range of possible measures and narrowing those down to a short list. This process considers whether the options are technically, environmentally and socially acceptable.

2.9 Appraisal is the process of defining objectives, examining options and weighing up the costs, benefits, risks and uncertainties. For each study a list of potential options have been assessed against a number of critical success factors, such as:

- Options whether in isolation or combination must reduce flood risk providing an appropriate level of protection to people, property, business, community assets and natural environment.
- Option must be technically appropriate and feasible.
- Option should help to deliver sustainable flood risk management (e.g. help contribute to amenity and urban regeneration, improve the environment and biodiversity and improve or reduce existing maintenance regimes).
- Options should not have insurmountable or legal constraints (e.g. land ownership, health and safety or environmental protection constraints).
- Options should represent best value for money and minimise the maintenance burden and costs as much as possible.
- Desirable Benefit Cost Ratio (BCR) when measured in parallel with other success criteria such as standard of protection, environmental implications, residual risks and wider benefits.
- Should incorporate National, Regional and Local agendas/objectives.

2.10 One of the key considerations for any option is the benefit cost ratio (BCR). This BCR is a measure of the overall value for money of an action or project. It is expressed as the ratio of benefits to costs (both expressed as present value monetary values).

2.10.1 Damages (Benefits)

2.10.1.1 Flood damages are categorised as direct or indirect i.e. as a result of the flood water itself, or subsequent knock on effects. Damage to buildings and contents caused by flood water are an example of direct damages, whilst loss of industrial production, travel disruption or stress and anxiety are indirect. Some damages can be quantified in monetary terms, and others can only be described.

2.10.1.2 The potential damages avoided by implementation of a flood risk management action are commonly referred to as the benefits of that action. When comparing the effectiveness of different actions, it is useful to consider estimated damages and damages avoided across the lifespan of the action. Within the FRM Strategies, a 100-year appraisal period has been used as standard. This allows costs, damages and benefits across this time frame to be compared in present value terms.

2.10.2 Costs

2.10.2.1 Whole life costs are typically compiled from the following four key cost categories:

- a) **Enabling costs.** These costs relate to the next stage of appraisal, design, site investigation, consultation, planning and procurement of contractors.
- b) **Capital costs.** These costs relate to the construction of the flood mitigation measures and include all relevant costs such as project management, construction and materials, licences, administration, supervision and land purchase costs (if relevant).
- c) **Operation and maintenance costs.** Maintenance of assets is essential to ensure that the assets remain fit for purpose and to limit asset deterioration. Costs may include inspections, maintenance and intermittent asset repairs/replacement.
- d) **End of life replacement or decommissioning costs.** These costs are only required when the design life of assets is less than the appraisal period. Most assets are likely to have a design life in excess of the 100 year financial period, but Property Level Protection (PLP) is expected to have a 25 year design life and this is reflected in the cost estimates for

2.11 A ratio of greater than 1:1 indicates that the economic benefits associated with an action are greater than the economic costs of implementation; therefore, this is taken as the threshold of economic viability.

2.12 Projects are only economically viable if the benefits exceed the costs (i.e. the ratio of benefits to costs is greater than 1.0). Where benefits marginally exceed costs, there is often high uncertainty as to whether an option is justified, because only a small change or error in either the benefits or costs would tilt the balance the other way. So, when comparing a 'do something'

option to the baseline option, confidence is needed that a 'do something' option is clearly preferable.

2.13 The following table outlines the current progress with the flood studies currently being carried out.

Flood Study	Option Description	Indicative Cost	BCR	Comments
Ballater	Traditional Hard Defences plus Glass Walls providing 1 in 100 plus climate change level of protection.	£30 million	1.06	<ul style="list-style-type: none"> - Marginal benefit cost ratio - Visual impact of direct defences and negative impact on the Golf Course - May not generate community support
Ellon	Mixture of direct defences, storage areas, pumping stations and smaller scale property level protection (PLP).	£5.36 million	1.00	<ul style="list-style-type: none"> - Marginal benefit cost ratio - Although Option 6 (PLP only) offer a better BCR (2.00) there are a number of established issues why a local authority would not wish to promote a property level protection only scheme in Ellon.
Inverurie & Port Elphinstone	Direct defences (flood embankments and flood walls) flood gate, removal of canal footbridge downstream of rail bridge	*£6.55 million	*1.08	<ul style="list-style-type: none"> - *Still awaiting final report - *Marginal benefit cost ratio - Current preferred option depends on not defending the existing WWTW which is being decommissioned and used to increase river floodplain.
Insch	Mixture of direct defences, two-stage channel, channel reprofiling, culvert upgrades and open channel restoration.	*£3.9 million	*1.28	<ul style="list-style-type: none"> - *Still awaiting final report - *Marginal benefit cost ratio - Although Option 4 (PLP only) offer a better BCR (2.69) there are a number of established issues why a local authority would not wish to promote a property level protection only scheme in Insch
Stonehaven Coastal	North – Improve the existing defences immediately and adapt to a new option when the residual life is exceeded; Central – Implement an	£6.26 million	BCRs >1.00	<ul style="list-style-type: none"> - Potential costs range from £6.26 million to £23 million as we move from

	<p>adaptive beach recharge scheme immediately (increase seawall) and replace Cowie defences in year 30; Harbour – Manage the medium-term risk through PLP and construct new defences when the residual life of the current defences is exceeded (year 30).</p>			<p>medium to long-term 'adaptive' approaches. – Still some uncertainty about when the Central seawall should be increased in height (to be considered medium to long-term option)</p>
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2.14 Once the preferred options have been identified it is planned to hold further public engagement exercises. This will provide valuable feedback and will provide an opportunity for communities to have their say on any proposals. Feedback from these exercises will be used to refine any preferred options.

2.15 Preferred options as outputs from the flood studies will be put forward in December 2019 for national prioritisation. SEPA is required to prioritise actions under the FRM Act and indicate when the actions will be implemented. Prioritisation will highlight the areas where actions are most beneficial and promote actions that deliver sustainable flood risk management. This will be underpinned by an appraisal of the economic, social and environmental aspects of proposed actions.

2.16 Prioritisation undertaken by SEPA will be a technical assessment based on a range of sustainability criteria. It is the responsibility of the Scottish Government to determine the level of funding for implementing actions identified through prioritisation. However, currently there is no guarantee that there will be further Scottish Government funding made available to progress these prioritised actions.

2.17 The Head of Finance and Monitoring Officer within Business Services have been consulted in the preparation of this report and had no comments to make and are satisfied that the report complies with the Scheme of Governance and relevant legislation.

3 Scheme of Governance

3.1 The Committee is able to consider and take a decision on this item in terms of Section F.1.1.d. of the List of Committee Powers in Part 2A of the Scheme of Governance as it relates to policy issues and resource matters (within agreed budgets) relating to those functions which have not been reserved to the Full Council or specifically delegated to any other Committee of the Council for Roads, Landscape and Waste Services.

4 Implications and Risk

4.1 An equality impact assessment is not required because there are no proposals within this report that have a differential impact on any of the protected characteristics.

4.2 There are no staffing implications.

- 4.3 In August 2015, CoSLA Leaders agreed that the funding for flooding should be based on a more sustainable funding agreement and reflect the legislative framework that was introduced in the Flood Risk Management (Scotland) Act 2009. In doing so, it was agreed that from 2016/17 onwards flooding capital grant should be allocated on the basis of a hybrid model whereby a 20% of the grant is allocated to all 32 councils to contribute to other elements contained in their Flood Risk Management plans; and 80% be allocated to large scale projects and distributed according to the SEPA prioritisation of flooding schemes and works set out in the Flood Risk Management Strategies.
- 4.4 In 2016 SEPA produced a prioritised list of Flood Protection Schemes. In order to fund all the schemes in 2016 Council Leaders and Scottish Government Ministers committed £420m of funding over the next 10 years to Flood Protection Schemes from the General Capital Grant. It should be noted that this financing commitment will overlap multiple spending review periods, parliamentary terms and flood risk management planning cycles. The availability of additional or continued funding from the Scottish Government for future Flood Protection Schemes is currently not known.
- 4.5 The majority of flood studies presented for prioritisation in December 2019 will have little or no site investigation such as ground conditions to address specific design requirements or the practicality of implementing projects, particularly in urban situations. Site investigation work for detailed design is expensive and generally will not be undertaken until further funding is confirmed.
- 4.6 Risks associated with uncertainty in the detailed design/deliverability will be inherent in the proposals submitted for prioritisation. An optimum bias (usually 60%) is included to account for this however the variation between cost estimates based on preferred options and the final design/tender cost can be significant.
- 4.7 Delayed delivery of viable potential flood schemes may lead to issues such as potential property blight associated with the need for schemes being highlighted but delayed in delivery. It may also lead to issues with community expectations that have been raised during the ongoing studies.
- 4.8 A Town Centre First Impact Assessment was not required as this report does not have a differential impact on Town Centres.

4.9 The following Risks have been identified as relevant to this matter on a Corporate Level:

- ACORP006 Reputation Management: The initial strategic appraisal of flood risk indicated that a potential action or group of potential actions would be likely to address flooding problems. However, after carrying out a flood study it may be concluded that there are no feasible options to take forward or there may be no budget to fund these.

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Report prepared by Gavin Penman, Projects Manager
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