

Transport and Environment Committee

10.00am, Tuesday, 25 August 2015

Flood Risk Management – Consultation and Prioritisation

Item number	7.5
Report number	
Executive/routine	
Wards	All

Executive summary

The Flood Risk Management (Scotland) Act 2009, seeks to promote a proactive approach to Flood Risk Management.

The City of Edinburgh Council has been appointed as Lead Local Authority for the Forth Estuary Catchment Area. A Local Flood Risk Management Plan (the Plan) is required for the Forth Estuary Catchment, which will identify areas vulnerable to flooding from all sources and potential mitigation actions. A public engagement and consultation exercise ran between 22 December 2014 and 2 June 2015 and this report presents the findings. A prioritisation list of potential actions has been developed and approval is sought, prior to submission to the Scottish Government for consideration. This prioritisation list will help inform decisions relating to future funding.

Links

Coalition pledges	P28
Council outcomes	CO19
Single Outcome Agreement	SO1

Flood Risk Management – Engagement and Consultation

Recommendations

- 1.1 It is recommended that Committee:
 - 1.1.1 notes the content of the report;
 - 1.1.2 approves the prioritisation which will be considered by the Scottish Government in relation to the distribution of funds; and
 - 1.1.3 approves the revised scope for future phases of the Water of Leith Flood Prevention Scheme.

Background

- 2.1 Scotland's approach to how flood risk is managed is changing due to the Flood Risk Management (Scotland) Act 2009 (FRM Act). The FRM Act aims to reduce the adverse impact of flooding on communities, the environment, transport, cultural heritage and economic activity.
- 2.2 In the past, when flooding has occurred, public bodies often constructed flood defences, but now more thought is required to be given to alternative means of reducing flood risk. This includes avoiding the likelihood of flooding through effective land use planning, maintenance of watercourses and associated infrastructure and the better control and management of surface water run-off. There may be occasions when the flood risk is tolerated and is best managed through protection of buildings and improved forecasting and flood warnings. However, there may also be instances where the construction of conventional flood defences is the most appropriate solution.
- 2.3 New guidance has been published on carrying out cost benefit analysis by the Flood Hazard Research Centre and this has been adopted by the Scottish Government and SEPA. An updated cost benefit analysis of the remaining phases of the Water of Leith Flood Prevention Scheme has been carried out using the new guidance.

Consultation

- 3.1 Scotland has been divided into 14 areas, based on the catchments of major rivers. Edinburgh is located in the Forth Estuary and the Council acts as the Lead Local Authority for this area. The Council works in collaboration with the 12 neighbouring local authorities, Scottish Water and the SEPA in developing the Plan.
- 3.2 The Plan, when finalised, will detail potential flooding from all sources, set broad objectives to mitigate flooding and recommend possible actions to reduce the risk of flooding.
- 3.3 A major engagement and consultation exercise began on 22 December 2014 and concluded on 2 June 2015. The information was made available on line at <https://frm-scotland.org.uk> and at SEPA's offices. The information was also made available at the Neighbourhood Offices and 17 libraries across the city.
- 3.4 The consultation concentrated on identifying areas at risk of flooding and also provided information on potential actions to mitigate the effects of flooding. These actions were divided into:
- Ongoing and Confirmed Actions – those actions that are underway or where funding has been confirmed eg maintenance of existing flood prevention schemes; and
- Potential Actions – actions that are being consulted on to identify which are preferred (implementation of preferred actions are dependent on lead in times and availability of funding).
- 3.5 The consultation was viewed on line 3,737 times and there were 23 respondents for the Forth Estuary Area and no comments were made in relation to the Edinburgh Area.

Prioritisation

- 3.7 The Council has been working with SEPA and other local authorities in ranking all actions and there are five actions in Edinburgh which are:
- future phases of the Water of Leith Flood Prevention Scheme;
 - Water of Leith Basin Siltation Study;
 - Niddrie Burn Study;
 - the Gogar Burn Study; and
 - surface water management plans.

- 3.8 Phase 2 of the Water of Leith Flood Prevention Scheme is not included as funding has already been identified for this work by the Council.
- 3.9 Actions have been ranked and various criteria were used to do this. The main factor is the benefits to cost ratio but other non–monetised environmental and social factors were used. The environmental factors are; sustainable flood risk management outcomes; mitigation; good practice; potential climate change impact; and multiple benefits, such as removing barriers to fish or helping to control erosion. The social factors are; social flood vulnerability; community facilities; utilities; designated environmental/cultural heritage site; community impact; and frequency of flooding.
- 3.10 The confirmed and potential actions can be found in Appendix A and an extract from the prioritisation for the Forth Estuary, which details the Edinburgh Area, can be found in Appendix B.
- 3.11 The prioritisation lists from each of the 14 areas will be combined by the Scottish Government and SEPA and will be referenced in the distribution of Flood Prevention funding.

Water of Leith Flood Prevention Scheme

- 3.12 The Water of Leith Flood Prevention Scheme was developed and approved by Council on 20 February 2003. This included the provision of flood defences at Longstone, Chesser (Gorgie), Fords Road (Gorgie), Balgreen, Murrayfield, Roseburn, Coltbridge, Belford Road, Dean Village (Damside), Stockbridge, Canonmills, Warriston, Powderhall and Bonnington with additional storage created at the reservoirs in the headwaters. This was modified in the Murrayfield area following the outcome of a Public Local Inquiry. It was elected to progress the scheme in phases and approval was given by the Transport and Environment Committee on 24 November 2011.
- 3.13 The storage has been created at the reservoirs and Phase 1 comprised defences at Stockbridge, Canonmills, Warriston, Powderhall and Bonnington.
- 3.14 The procurement of the main contract for Phase 2 of the Water of Leith Flood Prevention Scheme at Murrayfield and Roseburn is in its final stages and it is anticipated work will commence with the diversion of a major gas main in August 2015.

- 3.15 All areas at risk of flooding on the Water of Leith have benefited from the creation of additional storage at the reservoirs in the headwaters of the river. This has reduced peak flows in the river at times of flooding. In addition new development in the Longstone Area has been constructed in a sustainable manner with floor levels being above the predicted flood level. The actions listed in the consultation included completion of all of the remaining areas of the Water of Leith Flood Prevention Scheme. However, due to these improvements and in the light of new guidance on the evaluation of cost benefits for Flood Prevention Schemes it is no longer recommended to construct all that previously promoted. The revised analysis demonstrates that there are a number of the areas within the Scheme where the construction of flood defences would now no longer present a favourable cost benefit. Although there is no favourable cost benefit in providing defences at Gorgie Road this is to be taken forward, on social factors, as it includes two vulnerable properties which are Fords Road Nursing Home and the Stenhouse Child and Family Centre. The results of the analysis can be found in Appendix C. Consequently it is proposed to change the scope of the remainder of the Scheme to include Murrayfield/Roseburn (Phase2), Coltbridge, Gorgie Road and Saughton.
- 3.16 Consideration will be given to providing Property Level Protection (PLP) to properties in areas where it is no longer intended to construct permanent defences. PLP comprises of various techniques to improve resilience to individual properties such as guards to doors and air vents.

Surface Water Flooding

- 3.17 The Council has been working in partnership with Scottish Water, East Lothian and Midlothian Councils to ascertain the risk of flooding when surface water, watercourses and sewers interact and to develop a strategy to reduce the risk resulting from the interaction between sewers and other sources of flooding. An Integrated Catchment Study (ICS) is being undertaken and the results are expected in November 2015.
- 3.18 Separate surface water management plans for areas to the west of the city not covered by the study detailed above are yet to be developed.

Measures of success

- 4.1 Sources of flooding and the areas at risk and level of risk is better understood.
- 4.2 Resources for flood prevention are effectively prioritised and targeted.

Financial impact

- 5.1 The cost for all of the works detailed have not yet been fully developed, however the cost of actions will be scrutinised further should it be elected to progress with the work.
- 5.2 The cost of the ICS is £1,563,682 and the Council's contribution to this is £390,000. To date £265,000 has been paid and the remaining £125,000 contribution to the ICS will be met from the 2015/16 Flood Prevention Revenue Budget.
- 5.3 The cost of developing Surface Water Management Plans for the western area of the city is estimated at £20,000. This cost will be met from the 2015/16 Flood Prevention Revenue Budget and it may be necessary to engage consultants to undertake this work.
- 5.4 The Scottish Government is currently reviewing financial settlement arrangements in relation to flooding and the prioritisation will inform this process. However it should be noted that the value of the projects identified to date greatly exceeds the £252m national budget that is anticipated to be available over the next six year spending cycle.
- 5.5 The Council has incurred costs of approximately £90,000 in producing the Local Flood Risk Management Plan to date (30 June 2015). However, it should be noted that this modest cost reflects the fact that the Council has been seeking to manage flooding in a proactive manner for a number of years and much of the information required was already available from other sources. It is estimated that a further cost of £20,000 will be incurred this financial year.
- 5.6 The total estimated cost of reviewing and updating the Local Flood Risk Management Plan over the six years post-2015 is approximately £20,000.
- 5.7 These costs have been contained in the Flood Revenue Budget.

Risk, policy, compliance and governance impact

- 6.1 This approach to managing flood risk has identified possible solutions and should any major construction projects, such as future phases of the Water of Leith Flood Prevention Scheme be progressed, these will be reported separately and be subjected to Assurance Reviews by the Corporate Programme Office.
- 6.2 The Plans are a statutory requirement of the Flood Risk Management (Scotland) Act 2009. The inclusion of potential risk mitigation measures in the Plan does not commit the Council to delivering them.

Equalities impact

- 7.1 The engagement and consultation exercise is web based. SEPA has undertaken an Equality and Human Rights Impact Assessment on the consultation arrangements. The purpose of this assessment was to identify whether the approach to consultation would have a disproportionate impact on any individual or group of people in particular, those with a protected characteristic as determined by the Equality Act 2010.
- 7.2 The key issues identified were:
- Access to hard copy and other languages; and
 - Collation of hard copy responses with online responses.
- 7.3 SEPA made hard copies available at its offices and the Council has also make hard copies available at all of the Neighbourhood Offices, City Chambers, Waverley Court and at a number of libraries.
- 7.4 The hard copies were in plain English, with translation in whole or in part into other languages or Braille were available on request.
- 7.5 SEPA undertook an Equality and Human Rights Impact Assessment on the consultation arrangements for the Citizen Space consultation tool. The purpose of this assessment was to identify whether the approach to consultation would have a disproportionate impact on any individual or group of people in particular, those with a protected characteristic as determined by the Equality Act 2010. The Council undertook a more detailed Equality and Human Rights Impact Assessment in advance of further material being added to the Consultation on 2 March 2015.
- 7.6 Separate and more detailed assessments will be undertaken for any actions taken forward.
- 7.7 As there are vulnerable people affected at Gorgie Road it is proposed to construct defences in this area.

Sustainability impact

- 8.1 The ethos of the FRM Act is to manage flood risk sustainably which requires a long term approach to be taken. It is necessary to improve the understanding of flood risk and its impacts before actions can be planned to manage flooding in a way that improves the environment, provides opportunities to restore rivers and coastlines and creates green spaces for everyone to enjoy. To take a sustainable approach to managing flood risk it is necessary to look at whole river or surface water catchments. A catchment approach ensures that flooding is tackled effectively and not moved to another part of the river or wider catchment area.

Engagement and Consultation

- 9.1 A major public engagement and consultation exercise began on 22 December 2014 and finished on 2 June 2015.
- 9.2 This consultation was web based and can be accessed at <https://frm-scotland.org.uk>.
- 9.3 Hard copies of the information to be presented were available at all of the Neighbourhood Offices, City Chambers, Waverley Court and at a number of libraries.

Background reading/external references

Transport and Environment Committee 17 March 2015 - Flood Risk Management - Consultation

Transport and Environment Business Bulletin – Thursday, 13 January 2015

Flood Risk Management (Scotland) Act 2009

Town and Country Planning (Development Planning) (Scotland) Regulations

Transport and Environment Committee 28 October 2014 – Water of Leith Phase 2 Project Update

Transport and Environment Committee 28 October 2014 – Water of Leith Basin

Transport and Environment Committee 24 November 2011 – Water of Leith Flood Prevention Scheme – Progress Report.

Council Report – 20 February 2003 – Water of Leith Flood Prevention Scheme Progress Report

Water of Leith Flood Alleviation Scheme – Phase 3 Updated Economic Appraisal – June 2015

Public Consultation for the Forth Estuary Local Plan District 10

John Bury

Acting Director of Services for Communities

Contact: Tom Dougall, Maintenance Manager

E-mail: tom.dougall@edinburgh.gov.uk | Tel: 0131 469 3753

Links

Coalition pledges	P28 – Further strengthen our links with the business community by developing and implementing strategies to promote and protect the economic well being of the city
Council outcomes	CO19 – Attractive Places and Well Maintained – Edinburgh remains an attractive city through the development of high quality buildings and places and the delivery of high standards
Single Outcome Agreement	SO1 - Edinburgh's economy delivers increased investment, jobs and opportunities
Appendices	A - Confirmed and Potential Actions B - Prioritisation C - Future Phases of the Water of Leith Flood Prevention Scheme

APPENDIX A

CONFIRMED AND POTENTIAL ACTIONS

The ongoing and confirmed actions identified by the Council are:

- construction of Phase 2 of the Water of Leith Flood Prevention Scheme;
- to undertake a study of sediment deposits at the Water of Leith Basin;
- to undertake an integrated catchment study;
- to develop a surface water management plan;
- general maintenance of watercourses;
- provision of an emergency response;
- application of planning policies; and
- the maintenance existing flood prevention schemes, coastal defences and reservoirs.

The potential actions identified are:

- construction of future phases of the Water of Leith Flood Prevention Scheme at Coltbridge, Gorgie Road and Saughton;
- relocation of properties/infrastructure away from flood risk areas;
- modelling to improve knowledge of flood risk;
- construction of online and offline storage;
- modification of existing culverts and bridges;
- runoff control;
- construction of online and offline storage;
- construction of flood defences; and
- sediment management.

It should be noted that the potential actions are being consulted upon to support the process of identifying preferred actions.

APPENDIX B

Flood Risk Management (Scotland) Act

FRM Strategies – Prioritisation of Actions (Cycle 1 2016 -2022)



Flood Protection Works and Non-Ranked Schemes

Location	Objective	Scheme Description	PV Scheme costs - (* indicates capital / undefined)	Economic Benefits	BCR	Non-Monetised Score	Ranking (evidence based)			Ranking (local preference) Reason	Proposed delivery Cycle	Scheme Status	LA Funding identified (if Yes, which years)	Supporting Text
							Nat	LPD	LA					
City of Edinburgh Council Water of Leith	Reduce risk to community facilities and economic damages to residential and non-residential properties in Edinburgh at Murrayfield / Roseburn (phase 2) and Coltbridge, Gorgie and Saughton. Consideration will be given to provision of PLP in other areas on the water of Leith.	Areas yet to be addressed have been reviewed and it is intended to progress future phase defences at Coltbridge, Gorgie and Saughton (Cycle to be fixed) Phase 2 (Murrayfield / Roseburn) currently at Tender.	£12.8m -	PV Damages Avoided £22.9m BCR Coltbridge area 2.53 BCR Gorgie area 0.98 BCR Saughton 2.45 Risk to life has been economically evaluated and comprises around 30% of damages avoided in the Gorgie cell	1.79	9	21 of 41	4 Of 7	1 Of 1	-	C1 C1 (Phase 2)	1961 Act Scheme Flood study completed 2002. Progressed under 1961 Act and Scheme confirmed following Public Local Inquiry Notice Served April 2003 Planning Consent given to the scheme as modified by Scottish Ministers 2008 08/00606/FUL Dates yet to be set for commencement and forecast completion	No However capital costs have been incurred in developing the Scheme in previous years	The Scottish Government was undertaking a spending review when the tenders for the Water of Leith Flood Prevention Scheme were returned in 2011. It was apparent that there were insufficient funds to award the tender, accordingly the City of Edinburgh Council elected to progress the Scheme in Phases. The Scottish Government made funds available but not all future phases. Phase 1 is now complete. Tenders have been returned for Phase 2 (Roseburn / Murrayfield) and these are currently being assessed. Areas yet to be addressed have been reviewed and it is intended to progress future phases at Coltbridge, Gorgie and Saughton and this is subject to funds being made available. Funding is yet to be identified for a third phase.

All Studies

Location	Objective	Next Step	Estimated Study Cost	Economic Benefits	PVD Damages	Mon-Monetised Score	Ranking (evidence based)			Ranking (local preference)	Reason	Proposed delivery cycle
							National	LPD	LA			
City of Edinburgh Edinburgh: Niddrie Burn PVA (10/20)	Reduce economic damages to residential and non-residential properties and risk to people in Edinburgh/ Burdiehouse caused by flooding from the Niddrie Burn. Objective ID: 10071.	A Flood Protection Study should assess Flood Storage, Modification of Conveyance, Installation / modification of fluvial control structures, Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. This study should aim to improve gauging on the Niddrie/Burdiehouse Burn catchment. Local Authority and SEPA to determine the best way forward.	£30k to £100k	178 residential properties and 19 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £6.8M. 1 community facility (hospital) currently at risk of flooding.	£6,800,000	7	57 of 168	8 of 27	1 of 3	2	-	C1
City of Edinburgh Edinburgh: Water of Leith PVA (10/17)	Reduce economic damages to residential and non-residential properties in Port of Leith / Granton area caused by coastal flooding. Objective ID: 10095.	To undertake a study of the siltation in the Water of Leith basin in conjunction with the operation of the docks.	45000	12 residential properties and 6 non-residential properties at risk in a 200 year event with a PVD (damages avoided) of £2.8M	£2,758,102	5	104 of 168	18 of 27	2 of 3	1	-	C1
City of Edinburgh Edinburgh: Gogar Burn PVA (10/27)	Reduce risk to community facilities caused by river flooding. Objective ID: 10090.	A Flood Protection Study should assess Direct flood Defences and Sediment Management. The assessment should also consider these actions in combination and the impacts on flood risk upstream and downstream of each action. This study should also aim to improve the accuracy of the flood mapping in the Gyle/ Gogar Burn area.	£30k to £100k	1 community facility (airport fire station) at risk in a 200 year event.	£160,782	1	166 of 168	27 of 27	3 of 3	3	Shifted to C2 following review after NPWG2	C2

APPENDIX C

FUTURE PHASES OF THE WATER OF LEITH FLOOD PREVENTION SCHEME

The Water of Leith Flood Prevention Scheme was confirmed by the Scottish Government in 2007. The confirmed scheme was to provide a standard of protection equivalent to a 1 in 200 year return period, with an allowance for climate change. The scheme comprised the creation of storage in the reservoirs at the headwaters of the river and the construction of linear defences. The creation of the storage upstream greatly reduced the likelihood of flooding for all areas downstream.

The Council was asked to update the Benefit to Cost Ratio for future phases of the Water of Leith Flood Prevention Scheme using updated guidance. In addition SEPA has asked that the analysis be undertaken to reflect the remaining areas to be constructed only. Accordingly cognisance can no longer be taken of the benefits arising from the creation of flood storage at the reservoirs in calculating benefit to cost ratios.

It is the updated guidance produced by the Flood Hazard Research Centre on assessing the benefits of flood management that has been utilised in calculating the benefit to cost ratios. This guidance is referenced in prioritisation of schemes by the Scottish Government and SEPA.

The results of the Benefits to Cost Ratio Analysis for the areas of the scheme yet to be constructed have been recalculated and are as follows:

- Damside 0.27
- Coltbridge 2.53
- Balgreen 0.01
- Gorgie Road 0.98
- Saughton 2.45
- Longstone 0.00
- Murrayburn 0.07

It should also be noted that the risk of flooding was recognised in the Longstone area and cognisance of this was taken in agreeing proposals with developers in this area. Accordingly the number of properties at risk of flooding in this area has been greatly reduced.

Although the ratio for the Gorgie Road area is below one it is recognised that there are vulnerable people affected here and it is proposed to construct defences in this area