

Water of Leith Flood Prevention Scheme – Recent Flooding Events and Future Funding

Transport, Infrastructure and Environment Committee

13 September 2012

1 Purpose of report

- 1.1 The purpose of the report is to highlight the Lessons Learned from the flooding events of 4, 7 and 18 July 2012; update Committee on programme implications; and report on future funding required to complete the Water of Leith Flood Prevention Scheme and to highlight the ongoing discussions with the Scottish Government and COSLA to attract further funding for this scheme.

2 Summary

- 2.1 Severe flooding in April 2000 highlighted the need for investment in flood prevention infrastructure across the city. This resulted in plans for the Braid Burn and Water of Leith Flood Prevention Schemes being developed. The estimated cost of both these schemes is £144.4m, with £102.4m funding having been secured.
- 2.2 The Water of Leith Flood Prevention Scheme is a key project to help protect areas of the city from flooding. The project runs from Bonnington through Murrayfield and on to Longstone and the Murray Burn. £14.5m has been spent on preparatory and advanced works. Due to uncertainty over funding in 2009, it was decided that the works be carried out in three separate phases.
- 2.3 Phase 1 (Bonnington to Stockbridge) is currently under construction and is due for completion by March 2013. The estimated costs of completing Phase 1 is £21.0m.
- 2.4 Phase 2 (Murrayfield/Roseburn to Edinburgh Sports Club at Belford) has an estimated cost of £35.6m for completion.
- 2.5 Phase 3 (Balgreen to Longstone) has an estimated cost of £30.3m
- 2.6 A full review of the Water of Leith flood prevention project is underway in order to determine the likely out-turn costs of committed works. This will determine how much funding remains for Phase 2 and 3. At this stage it appears that there will be insufficient funds to address Phase 2 to the extent required and no funding at all for Phase 3.

- 2.7 This report recommends that the Council continues discussions with the Scottish Government and COSLA while also looking to identify additional Council funds to complete the scheme.
- 2.8 The flooding in Stockbridge Colonies and Warriston on 7 July 2012 was widely reported by the media. Edinburgh was one of the worst affected areas in Scotland and these events highlighted the importance for the provision of flood defences across the city. Although the events of 4 and 18 July caused some disruption they did not cause any flooding on the Water of Leith. The major flooding event which affected the Water of Leith was on 7 July.

3 Main report

Flooding of 4, 7 and 18 July 2012

- 3.1 The Flooding Events and Lessons Learned are highlighted below and there is more detail regarding the response and actions to the events in Appendix 1.
- 3.2 The flooding of 4 and 18 July did not cause any flooding on the Water of Leith. Problems were restricted to smaller watercourses and surface water flooding.
- 3.3 There was flooding throughout the city on 7 July 2012 which was widely reported. The most severely affected areas were Stockbridge Colonies and Warriston, areas where the permanent flood defences are still under construction. It is noted that there was no flooding at Bonnington where the defences are complete.
- 3.4 No flooding was reported at Murrayfield/Roseburn but the river was close to breaching its banks.
- 3.5 The flow on the river peaked at almost 44 cubic metres per second. Normal flow on the river is of the order of 2 cubic metres per second. For reference, 44 cubic metres per second equates to a flooding event with a return period of 1-in-7 year (14% chance of flooding in any one year). As a comparison, the flood event in April 2000 was approximately a 1-in-100 year event (1% chance of flooding in any one year).
- 3.6 The river is predicted to break its banks at Murrayfield/Roseburn at a flow of approximately 53 cubic metres per second.
- 3.7 On 4 July there was no river flooding reported, although 5 properties in the Currie area were affected by some surface water flooding. Known vulnerable culverts were checked and cleared during this period of heavy rainfall.
- 3.8 On 18 July, 5 houses were inundated at Springfield Road, South Queensferry due to surface water which overflowed from the road on 18 July 2012. The prime cause of this flooding was due to temporary drainage channels and catch pits being constructed as a consequent of the Forth Replacement Crossing.

Lessons Learned

- 3.9 Two areas of concern have been brought to the attention of the Flood Team about the impact of the flood prevention schemes at Greenbank Road and

Stockbridge Colonies/Warriston. Meetings have been held with the residents at Greenbank Road to establish suitable mitigation measures until a permanent solution can be developed.

- 3.10 Lagan Construction Ltd (Main Contractor on Phase 1) are constructing the defences at Stockbridge Colonies/Warriston. They have reviewed their procedures and robustness of temporary flood defences. This includes ensuring that vulnerable points where water could escape from the river in flood conditions are adequately closed by temporary defences, and that an inspection/monitoring regime is in place. Pumps have been made available for deployment in the advent of water being trapped behind the walls currently under construction. The original design allows for this as back-of-the-wall drainage will be provided in the completed scheme.
- 3.11 The process for calling out senior management staff is currently being reviewed, and as a consequence the Flood Emergency Plan will be amended to allow for a rapid escalation of a flooding emergency.
- 3.12 Another issue that was identified is that the Flooding Emergency Plan does not function well in events where the Flood Group cannot be mobilised in time. Communications with the Police will be addressed in the Flooding Emergency Plan.
- 3.13 Another weakness identified was surrounding communication with Scottish Water. Procedures will be developed to ensure better co-ordination with Scottish Water.
- 3.14 There were issues accessing the telemetry used to monitor water levels in the reservoirs and on the Water of Leith as a result of password control. A protocol for password change has been set up.
- 3.15 Reference material was not available at Barnton Depot, as Bankhead Depot is the usual incident room. This has been rectified and material will now be stored at all depots.
- 3.16 It was obvious from the 7 July event that the Flooding Incident Room was not opened until late in the event. This has been addressed with instructions being passed to the lead co-ordinators to ensure that the Flooding Incident Room is opened should significant flooding be predicted.
- 3.17 One of the issues emanating from the 7 July flooding event was the lack of staff on stand-by. This has financial implications and was one of the items addressed in the Workshop. Subsequent to this it was referred to the Service Review currently underway in Roads and Transport.
- 3.18 One of the items brought to the attention of the Flood Team was the speed of the response. The Flood Team are proactive and do not wait for flooding to occur. No major issues were identified with regard to the speed of response, however, the team will aim to continuously improve the speed of response as was evidenced by the procedures adopted for the 18 July flooding event.
- 3.19 Procedures will be developed in relation to the opening of rest centres if required and addressing any clean-up operations.

Programme

- 3.20 Construction work for Phase 1 (Bonnington to Veitch's Square) is ongoing and is expected to be complete in March 2013. This has been delayed as a result of access arrangements to St Mark's Park, unforeseen ground conditions, flooding events and poor contractor performance.
- 3.21 Construction work for Phase 2 (Murrayfield/Roseburn to Belford) is yet to commence as a significant shortfall has been identified in funding.
- 3.22 A programme for Phase 3 (Balgreen to Longstone) is yet to be developed.
- 3.23 If the funding is not available to complete Phase 2, as originally intended following the Committee approval in November 2009, then a reduced scheme may need to be considered within the constraint of available funds. Such a scheme would provide a much reduced level of protection and it may be necessary to omit some areas of the permanent defences at this stage. This would necessitate the continued use of temporary flood defences during predicted flood events. Committee approval will be needed to deviate from the decision taken in 2009. This will be the subject of a future report once the current review is complete.

Funding

- 3.24 There are sufficient funds in place to complete Phase 1. However, there are insufficient funds in place to progress Phase 2. There are no funds in place to progress Phase 3.
- 3.25 This report recommends that the Council continues discussions with the Scottish Government and COSLA while also looking to identify additional Council funds to complete the scheme.

4 Financial Implications

- 4.1 Through funding from the Scottish Government and the Council's Capital Investment Programme, a total of £102.4m has been secured for flood prevention. This will be insufficient to complete Phase 2 or 3.
- 4.2 It should be noted that the Council is currently in discussion with Lagan Construction Ltd who are currently constructing Phase 1 over the level of additional costs for the work carried out. Any increase in estimated cost for Phase 1 would result in the shortfall for Phase 2 increasing. Cost certainty cannot be guaranteed at this moment in time and it is likely that it will be at least January 2013 before an accurate figure can be reported.
- 4.3 The Council made an unsuccessful bid to the Scottish Government for additional funds to complete Phase 2 in December 2011. Schemes such as the Water of Leith that had previously attracted funding were not considered and instead the Scottish Government and COSLA elected to fund new schemes.
- 4.4 Following the decision, further discussions were held between the Council and Scottish Government and COSLA. The Scottish Government directed COSLA

to give consideration to making any surplus funds that may become available in November 2012 for the Water of Leith Flood Prevention Scheme. It is noted that there may be competition for any such funding from other Local Authorities elsewhere in Scotland.

- 4.5 A further report will be submitted following the announcement by COSLA in November 2012 on the success or otherwise of additional funding availability. If funding is not forthcoming from the Scottish Government/COSLA then the Council will need to consider alternative sources of funding or reconsider the extent of the flood defences that can be constructed at this stage.

5 Equalities Impact

- 5.1 Residents along the Water of Leith who are not afforded protection will continue to be at risk of flooding from the river.
- 5.2 The Association of British Insurers (ABI) issued a 'Statement of Principles on the provision of flood insurance' in July 2008 which included the commitment to continue to offer flood insurance for domestic properties and small businesses as a standard feature of policies until 30 June 2013 subject to plans being in place to reduce the risk below 'significant', ie below a 1.3% (equivalent to a 1-in-75 year) chance of occurring in any year. The Water of Leith will remain above 'significant' at several locations if the scheme is not completed.

6 Environmental Impact

- 6.1 Construction of the FPS is carried out under licence approved by SEPA to minimise the impact on the environment.

7 Conclusions

- 7.1 A workshop was held and facilitated by the Emergency Planning Co-ordinator and Lessons Learned will be incorporated into the Flooding Emergency Plan.
- 7.2 Additional funding is required if the scheme is to be completed in full. This is dependent on the outturn cost of Phase 1.
- 7.3 Properties will remain at risk of flooding until the scheme is complete as demonstrated by the recent flooding.
- 7.4 Residents and businesses may have difficulties obtaining flood insurance once the commitment to provide flood insurance provided by the Association of British Insurers expires on 30 June 2013.

8 Recommendations

8.1 It is recommended that the Committee:

- a) note that Emergency Flooding Procedures will be amended following the events of July 2012 and the subsequent Flooding Workshop;
- b) agree that the Convener meets with Stewart Stevenson MSP with a view to securing additional funds; and
- c) note that a further report will be submitted to Committee advising if further funding has been secured from COSLA and suggesting a way forward. This report will also include estimates for completion of Phase 1 and implications for future phases.

Mark Turley
Director of Services for Communities

Appendices 1 Flooding Events – July 2012

Contact/tel/Email Tom Dougall – 0131 469 3753 – tom.dougall@edinburgh.gov.uk

Wards affected 5 - Inverleith
 6 - Corstorphine/Murrayfield
 7 - Sighthill/Gorgie
 9 - Fountainbridge/Craiglockhart

Single Outcome Agreement 4 Edinburgh's communities are safer and have improved physical and social fabric.

Background Papers None

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APPENDIX 1

FLOODING EVENTS – JULY 2012

SUMMARY

- Additional resources deployed in response to severe weather warning on all occasions
- On Wednesday 4 July short duration heavy showers from 1700 to 2100 in west of city
- On Saturday 7 July 2012 – more general heavy rainfall from 0300 to 0900 over all of City, 5 properties severely flooded and approximately 40 slightly damaged by flooding
- On 7 July 2012 – flow in the Water of Leith was 43 cumecs (1-in-7 year flood event)
- On Wednesday 18 July 2012 – heavy rain for 24 hours over all of Lothian. Approximately 5 properties flooded
- On 18 July 2012 - flow in the Water of Leith was 18 cumecs (less than 1-in-1 year flood event)

RESOURCES DEPLOYED BY ROADS SERVICES FOLLOWING SEVERE WEATHER WARNINGS

1000 filled sand bags were deployed to most critical and other sites on request over weekend 7/8 July.

As a result of the amber warning 6 x 2 man Road Services squads prepared for potential flooding issues, by checking known critical sites for adequacy of sand bagging and ensuring the 20 culvert and bridge grille sites are free of debris and blockage build-up. The normal summer-on-call Road Services team, 6 staff plus 1 Supervisor, were released early from work on 10 July so that they can return to work rested. Their primary responsibility, in 3 x 2 man squads, was to constantly check the 20 culvert and bridge debris grille sites (as above).

The nightshift Supervisor monitors workload throughout the night and is empowered to call out as many of the additional 25 on-call Road Services staff with Supervisors as are required to deal with any flooding issues before the morning traffic peak hours.

From 0730, or earlier for the 25 additional on-call staff, the normal daily Road Services staffing complement of 50 frontline staff can be available to react to any flooding issues that have occurred overnight.

RESOURCES DEPLOYED BY TRANSPORT (MAINTENANCE) STAFF

On 4 July Transport Maintenance standby staff (2 No) went out on knowledge of heavy rainfall, assisted by 2 other Maintenance staff. Staff from the Area Office also attended in response to calls from Clarence.

On 7 July an additional 5 staff were put on standby from 6 July Friday night. Standby staff (2 No) were called out from 0300, the other 3 from 0630. Another 2 staff were contacted by phone and called out from 1400.

Area office staff were also deployed, particularly on 8 July.

On 18 July an additional 3 staff were put on standby from 17 July night. Regular standby staff (2 No) were deployed from 0700 as well as Senior Professional Officer (Flood Prevention). The other 3 were deployed from 1200.

SUMMARY OF FLOOD EVENTS

4 July: Minor flooding to approx 5 properties in the Currie area due to surface water flooding, involving road and sewer drainage. Known vulnerable culverts were checked and cleared.

7 July: Approx. 5 houses were severely flooded and approx. 40 suffered minor flooding from the Water of Leith at Stockbridge. The temporary defences installed by the contractor for the FPS failed allowing the river to flood at Bell Place and Avondale Place. The failure appears to have occurred due to underestimation by the contractor of the water loading on vulnerable parts of the defences, combined with lack of inspection in the early stages of the event.

Additional sandbags were deployed to Stockbridge, and pumps were deployed later on 7 July to pump water from solums of houses after the fire service left.

There were a large number of requests for sandbags from all parts of the city, mostly due to surface water flooding. Staff attempted to deploy sandbags to all locations requested. It was not possible to inspect all these locations, but there were no other reports of severe flooding.

Houses were flooded at Westburn due to a surcharging culvert which has been a recurring problem.

Balcarres Street flooded but water was kept out of houses by sandbags (previously distributed but added to).

Sandbags were deployed to Greenbank Road to protect houses from sewer and surface water flooding. These houses have recently been protected from the Braid Burn by a flood prevention scheme.

The Water of Leith came to within 0.4m of overflowing at Riversdale, Murrayfield, Sandbags were deployed at Pansy Walk. Staff were monitoring the river which peaked at 0900.

18 July: Staff were deployed all day by Maintenance, Roads Services and Area Offices to clear culverts and respond to calls. There was considerable uncertainty over the level of rainfall, intensity and its location making planning difficult. Hourly updates on the river flows in the various watercourses and surface ponding was reported to the Transport Convener and Corporate Communications.

Throughout the day no flooding from watercourses was reported and there was only surface water spray reported on the road network resulting in slower journey times. In the evening the heaviest rainfall was in the South Queensferry area where approx. 5 houses were flooded at Springfield Road due to surface water which overflowed from Bo'ness Road. The Forth Replacement Crossing temporary drainage work had a devastating effect on the surface roads in South Queensferry.

Between these events, there were many requests for sandbags. Approximately 4000 sandbags were deployed over a period of 3 weeks.