

EAST AYRSHIRE COUNCIL

CABINET – 29 SEPTEMBER 2010

ADDITIONAL FLOOD MITIGATION MEASURES FOR NEWMILNS

Report by the Depute Chief Executive/Executive Director of Neighbourhood Services

1. PURPOSE OF REPORT

- 1.1** The purpose of the report is to advise Cabinet of additional cost achievable flood mitigation measures that could be considered for Newmilns, to seek approval to proceed with implementation of the measures outlined in paragraph 3 and 4 and to seek approval to reallocate £500k from Flood Prevention to Carriageway Structural Maintenance.

2. BACKGROUND

- 2.1** Newmilns Flood Study was carried out to investigate possible options for alleviating flooding from the Caffle and Back Burns in Newmilns, following flooding which occurred in July 2007 and August 2008. The report to Cabinet on 23 June 2010 concluded that although there were various options that could be carried out to alleviate the impact of flooding by various amounts, all the options provided a benefit-cost ratio less than 1 to financial parity thereby indicating that costs were greater than any potential benefit resulting from their implementation.
- 2.2** The report noted that mitigation measures were carried out in Newmilns following the flooding in July 2007 and August 2008. As well as physical works, an inspection and cleaning regime of trash screens was instigated along with monthly inspections of the Caffle and Back Burns.
- 2.3** Following consideration of the Newmilns Flood Study Report on 23 June 2010, Cabinet requested the Depute Chief Executive/Executive Director of Neighbourhood Services to give consideration to what other additional minimal and cost achievable flood mitigation works could be carried out to support the current maintenance measures detailed in the aforementioned report.

3. ADDITIONAL FLOOD MITIGATION MEASURES PROPOSED

- 3.1** Additional cost achievable flood mitigation measures have been identified and assessed. Further details are provided in the Supplementary Information available on the Members Information Portal. The additional measures proposed are listed below.

3.2 Caffle Burn

- (i) reinstatement of the stone in channel walls adjacent to garage site at Kilnholm Road. £7,000
- (ii) construction of a wall adjacent to the garage in Kilnholm Street to prevent flood water entering rear gardens of flats. £1,000

3.3 Back Burn

- (i) Amendment to slab and grill upstream of Dry Ski Slope access road and fit screen to prevent future blockage with debris. £10,000

4. COMMUNITY FLOOD MITIGATION WORKS

- 4.1 Property owners have carried out works to mitigate the effect of flooding to their properties including the construction of a wall, installation of bespoke door/gap shutters and non return valves on foul systems to prevent sewers backing up.
- 4.2 Further additional property protection works could be carried out to a number of properties in Kilnholm Street and Main Street which would further help mitigate the threat from flooding. These works would include air vent protection and door barriers at an estimated cost of £7,000.

5. COMMUNITY SELF HELP

- 5.1 It should be noted that some of the blockages that occurred during the flooding of 2007 and 2008 were caused by loose and waste material being washed to culvert inlets and blocking screens. Residents should be aware of the implications and ensure that any loose material is secured and waste material is disposed of in the appropriate way.

6. LEGAL IMPLICATIONS

- 6.1 Any flood mitigation measures installed on private property would require the property owners, permission. The Council would require indemnifying against any damage caused to the property as a result of any installations and as result of any failure of the installations to function as intended.

7. PERSONNEL IMPLICATIONS

- 7.1 None.

8. FINANCIAL IMPLICATIONS

- 8.1** The total estimated cost of the proposed additional mitigation measures is £25,000 which will be met from the Roads and Transportation capital allocation for Flood Scheme Development and Mitigation.
- 8.2** A further £500k was identified in the Capital Investment Programme as approved by Cabinet at its meeting on 11 February 2009 for Flood Prevention. No schemes have been identified within the Newmilns Flood Study which could be justified in terms of cost/benefit analysis. There are however a number of high priority road maintenance projects which would benefit from additional funding. It is therefore proposed to reallocate this sum to carriageway structural maintenance to assist in improving the condition of the road network. There is an allocation within the Roads and Transportation Capital Investment Programme of £50k a year for flood scheme development and flood mitigation to fund minor mitigation works that are identified year on year from flooding events, which would be sufficient to cover any emerging works.

9. COMMUNITY PLAN / POLICY IMPLICATIONS

- 9.1** Flood mitigation measures implemented will contribute towards the protection of property from flooding thus contributing to the Community Planning themes Delivering Community Regeneration and Improving Community Safety

10. RISK MANAGEMENT IMPLICATIONS

- 10.1** The measures proposed will reduce the risk of flooding to properties; however they will not mitigate against the more serious flood events as explained in the report to Cabinet of 23 June 2010. Some of the measures will require activation by property owners.

11. RECOMMENDATIONS

- 10.1** It is recommended that Cabinet;
- (i) agrees to the additional flood mitigation measures for Newmilns outlined in paragraphs 3 and 4 which will support the current maintenance measures,
 - (ii) agrees to reallocate £500k from Flood Prevention to Carriageway Structural Maintenance, within the Capital Investment Programme as approved by Cabinet on 11 February 2009
 - (iii) otherwise notes the contents of the report.

Elizabeth Morton
Depute Chief Executive/Executive Director of Neighbourhood Services
JB/JMcR
22 September 2010

LIST OF BACKGROUND PAPERS

Newmilns Flood Study - Report to Cabinet Newmilns Flood Study 23 June 2010.

For further information please contact John McRobert on 01563 576310

Implementation Officer: John McRobert

EAST AYRHIRE COUNCIL

ROADS AND TRANSPORTATION SERVICE

SUPPLEMENTARY INFORMATION ON ADDITIONAL FLOOD MITIGATION MEASURES TO BE CONSIDERED IN NEWMILNS

Report by the Depute Chief Executive/Director of Neighbourhood Services

1.0 ADDITIONAL MEASURES CONSIDERED

1.1 Cabinet on 23 June 2010 requested Roads and Transportation Service to consider additional cost achievable flood mitigation measures for Newmilns to support the current maintenance measures.

2.0 Caffle Burn:

2.1 The upper reaches of the Caffle above 8 – 10 Hillside is a very steep sided area with very mobile sediments that are continually being recharged by ongoing erosion of the banks. The trees in the area are acting as an aide to slowing the passage of these sediments while alive and even after they have been uprooted by the erosion, as there is evidence that they then act as dams holding back the sediments and are eventually buried, it is suspected that to remove the trees (that have fallen over) would actually cause the sediments to migrate more freely.

It is not considered advisable to remove fallen trees.

2.2 The culverted sections of the burn are undersized for the flood waters possible here but can carry up to the 1:50 year event. It has already been discounted to upsize the culvert capacity; refer Cabinet Report 23 June 2010.

2.3 The next open section of the Caffle burn is at the garage site at Kilnholm Street. Upon close inspection, there appears to be some evidence of 'Plucking' of the stones that make up the walls of the channel at the normal water level, and this requires to be arrested and the 'Plucked' stones replaced.

Additional mitigation measures: reinstate 'plucked' stones to channel walls, estimated cost £7,000.

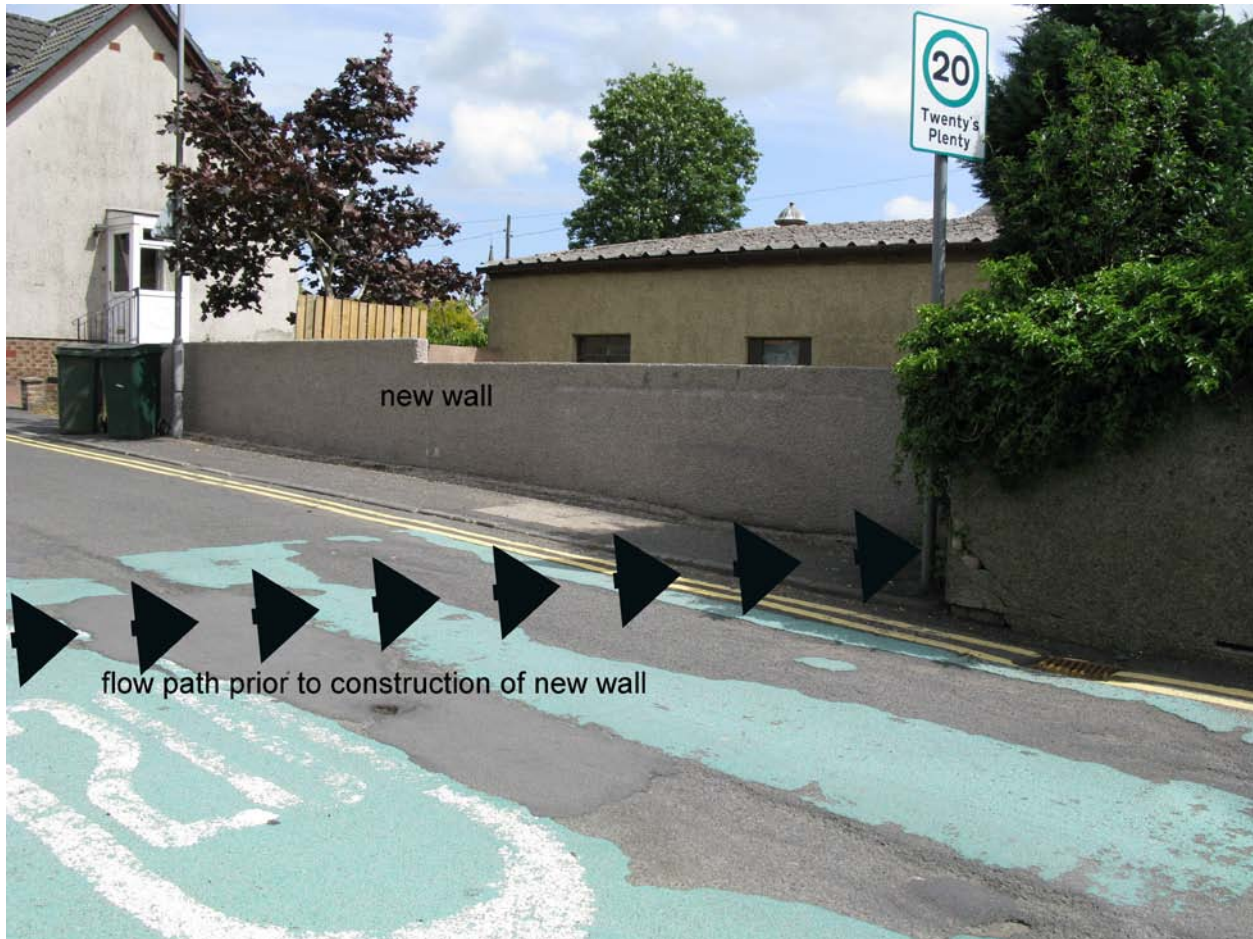


- 2.4** At the downstream culvert entrance, rear of garage, Kilnhelm Street, was the source of the worst of the flood waters and sediments transferred onto the road, and in 2007 the flood waters flowed to the rear of the garages and into the rear gardens of the flats by passing the wall here causing flooding, refer photograph.

Additional mitigation measures: construct a short 'wall' from the existing to the new garage construction to cut of flood flow path; Garage owner's permission required. Estimated cost £1,000.

- 2.5** Flood waters also flowed down Kilnhelm Street and across to the rear garden of No. 1-3 Main Street flooding through the property, carrying on onto the A71. In 2008 the waters did not reach the rear gardens of the flats but again flowed down Kilnhelm Street flooding the property at 1 -3 Main Street and the A71.

Further to these events the householder at 1 – 3 Main Street has carried out works to construct an extended rear garden wall which now cuts off the route of the flood waters into this property effectively protecting the property from the known flood routes, from the Caffle Burn. (See photo below)



2.6 As good as these measures are, there are still some weaknesses in the defences of this property namely airbricks (which can be covered). The owner has also created a small gap in the original wall [requires a flap valve] (owner intimated that this was to allow trapped waters to escape from the rear garden). This small gap could still allow some waters into the property if a re-occurrence of the flooding happened. Note the property has since been fitted with non – return valves on its foul systems, which should protect it from the sewers backing up as it has in the past.

The carrying out of these small additional matters were advised to the householder during a site visit to discuss the protection of her property on 13th May 2010, when she was provided with a copy of SEPA's Web page giving their approved list of suppliers and products for the protection of the home from flood waters.



- 2.7** The householder was also given a printed copy of the document ‘Protection Products’ which details many and varied products for protecting air vents, doors and varied gaps etc.’ and the contact details of suppliers. Below are examples of air brick covers, refer photo below.



Additional mitigation measures: provide air vent protection and flap valve to small gap, of 1-3 Main Street.

- 2.8** Records also show that Numbers 5 and 7 Main Street were also inundated in 2007. It should be noted that the route from the Caffle Burn to the rear of these properties has now effectively been removed by the extension to the rear wall of 1-3 Main Street. Nevertheless, additional airbrick covers to these properties to protect against access from the front should be considered.
- 2.9** Other properties that were threatened were located at Nos. 11 – 15 Main Street. These property had thresholds close to the existing levels of the adjacent road and footway and was reported as being flooded from the front of the premises, due to a combination of flood water and surcharging sewer. These properties are

protected by a bespoke door/gap shutter, refer photo below, and these were installed post 2008 flood event by the owner with the assistance of Scottish Water.



2.10 Fronting numbers 9 to 15 Kilnhelm Street, the existing footway levels does not give any scope for raising the footway to prevent the threat of flooding through the low door thresholds. As noted in 2.9 above, bespoke door shutters, air vent protection measures, could be installed to help mitigate the threat from flooding.





Additional mitigation measures: provide bespoke door shutters and air vent protection measures to 9 to 15 Kilnholm Street.

Total estimated cost for providing additional protection works to a number of properties in Kilnholm Street and Main Street is £7,000.

3.0 Back Burn:

3.1 The upper reaches of the Back Burn runs generally North to South with the West bank being generally open ground and the East bank being bounded by large rear gardens of the properties here and both banks slope upwards at relatively steep angle away from the Burn, and as such any flooding here is unlikely and of low impact to the land users.

3.2 The main problem with the Back burn is the substantial length of 450mm diameter pipeline which is significantly undersized to cope with the flood waters that can be generated. As with the Caffle Burn various options were explored, primarily to upsize the culvert capacity. This has already been discounted; refer Cabinet Report 23 June 2010.

3.3 Consideration was given to removing the concrete slab and grill immediately upstream of the Dry Ski Slope access road, refer photo below, and install a screen to facilitate easier entry of flood waters to the culvert below. It should be noted that:



- a) the amount of flood water would still move downstream immediately beyond the Dry Ski Slope access road to the existing 450mm diameter culvert downstream. The flood water would then spill out, as evidenced to a lesser extent in 2008, from the downstream opening which in turn would threaten properties at 25 High Street, the Smithy Yard and around. Refer photos below.
- b) this would not generate great benefit as the area where the garages currently sit would still be subject to flooding as a result of the culvert capacity problem. However the installation of a trash screen would help reduce the incidences of blockage by debris to the inlet thereby lessening the impact of flooding to the garages.

Additional mitigation measures: install a new trash screen immediately upstream of the Dry Ski Slope access road, estimated cost £10,000.



4.0 Residents self help measures

- 4.1** Residents should consider securing 'waste bins' from the impact of flooding, especially those containing waste paper, cardboard, plastic bags etc. Toppling of these 'waste bins' during a flood situation, can cause floating debris that can block the online inlet at the Ski Slope Road, refer photo below of entrance.

This drainage facility is connected to the arch under the Ski Slope Entrance (which is below ground at this point) and discharges to the 450mm diameter pipe section of the culvert and as such is already carrying near capacity flows in times of flood. However if this is blocked by floating debris then it is unable to operate as designed.

4.2 In addition to the securing of the 'waste bins', the residents should take cognisance that the dumping of any material in this vicinity, could cause blockages to the surface water drainage as this again can be swept to the drainage inlets, hampering their effectiveness. Below are a series of photographs taken over the course of one week in August 2010 showing progressive dumping of waste material.



5.0 CONCLUSIONS

The following additional flood mitigation measures have been identified for consideration for Newmilns:

5.1 Caffle Burn

- (i) reinstatement of the stone in channel walls adjacent to garage site at Kilnholm Road.

£7,000

- (ii) construction of a wall adjacent to the garage in Kilnholm Street to prevent flood water entering rear gardens of flats. £1,000

5.2 Back Burn

- (i) Amendment to slab and grill upstream of Dry Ski Slope access road and fit screen to prevent future blockage with debris. £10,000

5.3 Community Flood Mitigation Works

Further additional property protection works could be carried out to a number of properties in Kilnholm Street and Main Street which would further help mitigate the threat from flooding. These works would include air vent protection and door barriers at an estimated cost of £7,000.

5.4 Community Self Help

It should be noted that some of the blockages that occurred during the flooding of 2007 and 2008 were caused by loose and waste material being washed to culvert inlets and blocking screens. Residents should be aware of the implications and ensure that any loose material is secured and waste material is disposed of in the appropriate way.

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