

**APPENDIX 1****FLOOD RISK MANAGEMENT****Minor Flood Prevention Schemes****1. INTRODUCTION**

With priority being given to the development of the major flood alleviation projects, work on the development of minor flood prevention schemes has not been progressed. These schemes can be developed by in-house staff with assistance from consultants as and when required.

**2. LATEST SITUATION**

Flooding occurred in Moray on 3, 4 & 5 September 2009 and again on 1 & 2 November 2009. The areas that were worst affected included Elgin, Garmouth, Fochabers, Keith, Drybridge & Rothes.

The latest flooding illustrated the need for minor flood risk management schemes.

**3. MINOR SCHEMES PROPOSED**

The following details each of the minor flood schemes identified to date.

**3.1. Fife Keith Flood Alleviation Scheme** – Houses at Regent's Court have suffered from regular flooding. Water pours off the adjacent golf course in times of heavy rain.

A brief was issued to Royal Haskoning in October 2007 to produce drawings of the catchment; provide rainfall data, recommendations on method of attenuation; methods used to arrive at recommendations; and, any other supporting information.

Royal Haskoning reported in January 2008 and the design of a Sustainable Urban Drainage Scheme (SUDS) with an attenuation storage area in the golf club upstream of Regent's Court was developed in-house. The water would be discharged at a fixed rate after heavy rain. The design was completed and ready to go other than an unresolved issue with the golf club. As yet agreement has not been reached with the golf club.

**Estimate for Fife Keith Flood Alleviation Scheme – remaining work**

<b>Item</b>	<b>Description</b>	<b>Estimate</b>
1	Construction works (based on the contractor's estimate)	31,000
2	Risk allowance (10% as the works are well defined)	3,100
3	Staff costs	5,900
<b>Total</b>		<b>£ 40,000</b>

Residential property is at high risk of flooding. The scheme proposals are well advanced so high confidence can be placed in the value of the estimate.

**3.2. Newmill Land Drainage Flood Alleviation Scheme** – Newmill has suffered from a number of flooding events, most recently in September and November 2009. Meetings with the community are ongoing to establish more information on the nature of the water flowing during flooding. The responsibilities of the upland landowner have also to be investigated as the flooding emanates from the lack of capacity in agricultural drainage ditches rather than recognised watercourses. The latest event caused damage to properties and a landslip on the western approach road, estimated to cost £75,000 to repair.

Residential property is at high risk of flooding. The scheme proposals are at a very early stage so the value of a possible flood alleviation scheme, may be in the order of £1m - £1.5m. There is merit in allocating an initial sum of £50,000 towards upgrading existing drainage infrastructure in advance of the development of the business case for a full flood alleviation scheme.

**3.3. Drybridge Flood Alleviation Scheme** – Drybridge has suffered from a number of flooding events. There have been problems in September and November 2009. Works are needed in the area of Linnburn Cottage.

Residential property is at high risk of flooding. The scheme proposals are at an early stage so the value of the estimate, £50,000 should be considered as an initial estimate.

3.4. **Keith, Isla Bank Mills Flood Alleviation Scheme** – Royal Haskoning were given a brief to carry out an Option appraisal in March 2008. While the Consultants report of June 2008 recommended further studies, Council officers considered that three of the options, namely Option 2 (set-back embankments), Option 3, (remove weirs) and Option 6, (close Mill Lade) should be developed and compared. This further work has not been prioritised nor carried out.

There has been further flooding in September and November 2009, attracting a lot of attention from MSP's and local Members, tenants and users.

Commercial property on this site owned by the Council is at high risk of flooding. The scheme proposals are at an early stage so the value of the estimate, £300,000 should be considered as an initial estimate.

3.5. **Portessie, Moray View Court** – Flooding was caused recently by the under capacity and blockage of a culvert under the adjoining road. The flooding caused the collapse of a resident's garden wall. It is recommended that the pipe is replaced by a box culvert that increases the flow capacity and allows for potential partial blockage.

Residential property is at risk of flooding. The scheme proposals are at an early stage so the value of the estimate, £30,000 should be considered as an initial estimate.

3.6. **Arradoul Flood Alleviation Scheme** – Arradoul has suffered from a number of flooding events. Water comes from the road and surrounding fields and causes flooding of homes. It should be possible to mitigate the impact with localised works digging ditches in the fields near the homes, but would need the permission of the landowners. There have been no reports of major problems in the recent floods.

Residential property is at risk of flooding. The scheme proposals are at an early stage so the value of the estimate, £50,000 should be considered as an initial estimate.

3.7. **Garmouth Flood Alleviation Scheme** – A business case was previously considered that showed there was no economic case for this scheme based on Grant funding rules. A small number of houses in Garmouth can suffer badly at least once per year. There is evidence that the situation has been exacerbated following the flooding of September 2009.

Residential property is at risk of flooding. The scheme proposals are at an early stage so the value of the estimate should be considered as indicative. It is proposed to review the business case and, if positive, develop a scheme and reliable estimate for construction in following years. It is hoped to develop an estimate for inclusion of this project in the next submission to the Scottish Government for Block Grant.

3.8. **Buckie Flood Alleviation Scheme** – Provision of flood alleviation measures in the harbour area of Buckie resulting from under capacity in the existing river and culvert have not been designed. Works were considered after flooding in 1997, but not progressed. Further construction work within Buckie Shipyard now makes the original design scope impossible to deliver. It is believed that there is an economic case to take a scheme forward. There have been no problems reported at this location for some time.

Residential property is at risk of flooding. The scheme proposals are at an early stage so the value of the estimate should be considered as indicative. It is proposed to review the business case and, if positive, develop a scheme and reliable estimate for construction in following years. It is hoped to develop an estimate for inclusion of this project in the next submission to the Scottish Government for Block Grant.

#### 4. SUMMARY OF PROPOSALS

As a result of the flooding problems regularly experienced, it is proposed that these minor schemes be split into two classifications; early delivery schemes and those requiring further examination.

#### 4.1 Schemes that could be delivered in financial year 2010/ 2011

The following schemes could be designed and constructed following budget approval using in-house engineering capacity.

Description	Current Estimate
Fife Keith Flood Alleviation Scheme	40,000
Newmill – upgrade to drainage infrastructure	50,000
Drybridge Flood Alleviation Scheme	50,000
Portessie Moray View Court	30,000
Arradoul Flood Alleviation Scheme	50,000
<b>TOTAL</b>	<b>£ 220,000</b>

#### 4.2 Schemes requiring further investigation

The remaining schemes will require further investigation to establish the Councils responsibility in relation to funding option appraisal, benefits, design and funding required.

Description	Current Estimate
Keith, Isla Bank Mills Flood Alleviation Scheme	300,000
Garmouth Flood Alleviation Scheme	600,000
Buckie Flood Alleviation Scheme	400,000
Newmill Land Drainage Flood Alleviation Scheme	£1,500,000
<b>TOTAL</b>	<b>£ 2,800,000</b>

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