

WEST DUNBARTONSHIRE COUNCIL**Report by Chief Officer – Roads & Neighbourhood (Shared Service)****Infrastructure, Regeneration and Economic Growth: 15 September 2021**

Subject: Gruggies Burn Flood Prevention Scheme Update**1. Purpose**

- 1.1 The purpose of this report is to update Committee on the outcome of the options appraisal carried out for the Gruggies Burn Flood Prevention Scheme, set out the recommended option and request approval to progress to detailed design stage.

2. Recommendations

2.1 It is recommended that Committee:

- a) Agree that Option 4 - Hard Defences and Flood Relief Culvert Route 1 as set out in sections 4.8 of this report is the recommended option;
- b) Approve progressing to detailed design of Option 4 including consultation with all stakeholders;
- c) Note that detailed design will cost in the region of £1,000,000 and that the design detail and construction cost will be presented in a further report to Committee; and
- d) Note that the Scottish Government are reviewing the delivery of Cycle 1 flooding schemes and will provide a review update to Local Authorities in Autumn 21.

3. Background

- 3.1 The Gruggies Burn is one of the principal watercourses which runs through the town of Dumbarton. It flows in a southerly direction from its source in the Kilpatrick Hills, through the steep surrounding catchment, towards to the Clyde Estuary. Despite the rural nature of this catchment, its steepness dictates that rainfall is often directed rapidly towards the burn. This results in a limited potential for water to infiltrate into the soil, resulting in fluvial flood events which are flash flood in nature.
- 3.2 At the downstream extent of the burn, the potential flooding is made worse by the highly urbanised character of the surrounding area. In addition to the amount of water from land sources, flooding due to coastal mechanisms, such

as high tides, storm surges and wave-overtopping, also occurs along the downstream extent of the Gruggies Burn. Here, coastal high tides contribute towards the flooding of properties and infrastructure as far from the Clyde Estuary as Glasgow Road. Whilst the impact of flooding from each of these sources can be severe, the combination of fluvial and coastal sources provides for a highly significant degree of flood risk within the town of Dumbarton.

- 3.3** In order to mitigate the risk of coastal and fluvial flooding to the area surrounding the Gruggies Burn, West Dunbartonshire Council is developing the Gruggies Burn Flood Alleviation Scheme in preparation for submission to Scottish Ministers.
- 3.4** The project has been identified as a Cycle 1 project within the West of Scotland Clyde and Loch Lomond (CaLL) Flooding Group.
- 3.5** The Scottish Government have advised that funding which had been provisionally allocated for this project has been at least temporarily halted due to over subscription of the flooding budget.
- 3.6** An assessment of all Cycle 1 projects is underway and it is anticipated that the Scottish Government will provide an update on funding during Autumn 21. If funding is no longer made available or reduced for the Gruggies Burn project this will have implications on the ability to deliver and the project may require to be delivered in a phased approach.

4. Main Issues

- 4.1** Gruggies Burn is subject to both fluvial & pluvial flooding events which can significantly impact local residents and businesses. Significant damage to residential properties and business premises has occurred previously during these events
- 4.2** West Dunbartonshire Council has engaged with the local community and businesses to provide advice and provision of flood prevention items such as flood sacks & gates.
- 4.3** The design & implementation of a flood prevention scheme will benefit the local community, however due to it's nature the delivery of the project will cause some localised temporary disruption to residents, businesses and users of the area. It will be designed in a manner where this is minimised where possible and that the stakeholders are kept informed and engaged throughout the project.
- 4.4** An Options Report has been carried out by RPS consultancy. The report is attached within appendix 1.

Several options were explored for feasibility and deliverability, the table below briefly summarises these with a more detailed explanation below. Plans showing the proposed route of each option are detailed in appendix 1.

	Option	Advantages	Disadvantages
1	Do Minimum	Little capital expenditure required	Aims of scheme not met, no reduction in flood risk
2	Hard Defences	Meets aim of scheme, limits underground services interaction whilst trenching. Simple design	Multiple interactions with private properties & dwellings. Work in or above watercourse for length of scheme
3	Flood Storage	Meets aims of scheme	Cost prohibitive, license issue re storage reservoir
4	Hard Defences & flood relief culvert route 1	Few interactions with properties. Good site access	Local road closures. Sections of wall in private ownership. Gas main requires to be addressed
5	Hard Defences & flood relief culvert route 2 (under A82)	Few interactions with properties. Direct diversion route	Closure of A82 required. Additional expense of tunnelling under A82 hard to quantify & potential risk

4.5 Option 1 - Do Minimum

This option involves maintaining the existing maintenance regime on the Gruggies Burn, with no changes to existing infrastructure. As this option did not meet the objectives of the study, it was not progressed to the short-list of options

4.6 Option 2 – Gruggies Burn Hard Defences

This option is designed to provide a 0.5% Annual Exceedance Probability (AEP) Standard of Protection (SoP) and involves the construction of flood walls along the Gruggies Burn, as shown in Figure 2-1 within appendix 1, from Stirling Road to the Firth of Clyde. Where the burn crosses Alclutha Avenue, Glasgow Road and Castlegreen Street, bypass culverts would be installed at each location to prevent overspill onto the road network. The option also includes the construction of a coastal embankment south of the gas and sewage works at the Firth of Clyde. This option was considered to potentially provide a technically and economically viable scheme and was progressed to the short-list of options

4.7 Option 3 – Flood Storage

This option incorporates areas in the upper catchment which would store flood water, and allow a controlled release of flow into the burn to achieve a 0.5% AEP SoP. The areas identified for storage are located in the area near Overtoun House. Option 3 was screened out due to multiple reasons including the cost of constructing the large scale structures required to provide the storage, and the licensing requirements needed to be sought under the Reservoirs Act.

4.8 Option 4 – Hard Defences and Flood Relief Culvert (Route 1)

This option incorporates hard defences in the same locations as Option 2, from Glasgow Road to the Firth of Clyde. In contrast to Option 2, there are no hard defences upstream of Glasgow Road as these are replaced with a flood relief culvert

The culvert diversion route crosses Stirling Road to Greenhead Road continuing on Greenhead Road to the path south of Geils Avenue. The culvert follows this path east then south along Oaktree Gardens across Glasgow Road and then into the Clyde. This option is designed to provide a 0.5% AEP SoP. This option was considered to potentially provide a technically and economically viable scheme and was progressed to the short-list of options

4.9 Option 5 - Hard Defences and Flood Relief Culvert (Route 2)

This option incorporates hard defences in the same locations as Option 2, from Glasgow Road to the Firth of Clyde. In contrast to Option 2, there are no hard defences upstream of Glasgow Road as these are replaced with a flood relief culvert, following a different route to that chosen for Option 4. The flood relief culvert route commences from Gruggies Burn following Glenpath then under Stirling Road A82 to Third Avenue. The culvert then crosses Glasgow Road before discharging to the Clyde. This option is designed to provide a 0.5% AEP SoP. This option was considered to potentially provide a technically and economically viable scheme and was progressed to the short-list of options

- 4.10** Further to review option 1 was discounted as being unsuitable and did not meet projects aims. Option 3 was discounted as being unaffordable with added complications of a license required for flood storage reservoir.

Options 2, 4 and 5 were taken forward for detailed appraisal and to be assessed in more detail.

Option 4 is recommended as the preferred option due to it's suitability in delivering the projects aims whilst minimising unforeseen risk and interaction with private property.

- 4.11** Working with both our consultant engineers and the potential delivery partner the projected outturn for the overall project using Option 4 would be circa £20,000,000. This allows for the construction of scheme & any associated utility interactions and engagement.
- 4.12** The detailed design is expected to be in the region of £1,000,000. This will include site and ground investigations, full design specification, preparation of tender documents, consultation and the development of the construction cost.
- 4.13** The designer will provide a potential phased approach to the delivery of the project to allow the Council to determine the funding implications following the review update from the Scottish Government.

5.0 People Implications

5.1 There are no direct people implications associated with this report.

6.0 Financial and Procurement Implications

6.1 The anticipated financial cost of the detailed design required for Option 4 will be £1,000,000. This will be funded from the Gruggies Burn Capital Project budget and the Roads Capital Flood Risk Management budget.

6.2 Design works will be procured and delivered through the SCAPE framework.

7.0 Risk Analysis

7.1 There is the risk that if no flood prevention scheme is fully developed and delivered residents and businesses in the Dumbarton East and surrounding catchment area will continue to be at risk and experience flooding events associated with Gruggies Burn.

7.2 This risk can be mitigated and reduced by the detailed design and implementation of a flood prevention scheme.

8.0 Equalities Impact Assessment (EIA)

8.1 No equalities impact is identified in this report. An equalities impact assessment will be carried out during the detailed design stage.

9.0 Environmental Sustainability

9.1 Environmental Sustainability will form a key part of any design solution developed and taken forward

10.0 Consultation

10.1 Consultation on the report content has been carried out with the Chief Officers for Finance and Legal.

10.2 Consultations with local residents, businesses and other stakeholders will be carried out and used to shape the proposed design solution.

10.3 Consultations with SEPA, Marine Scotland and other statutory bodies will be undertaken as required.

11.0 Strategic Assessment

11.1 This report supports the following Council Strategic objectives:

- A Strong local economy and improved employment opportunities.
- Meaningful community engagement with active empowered and informed citizens who feel safe and engaged.
- Efficient and effective frontline services that improve the everyday lives of residents.

11.2 The proposed actions support these commitments.

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Date: 2nd September 2021

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Appendices: Gruggies Burn Flood Alleviation Scheme Options Report

Background Papers

Wards Affected: Dumbarton