

Introduction

Introduction

Welcome to the Feus Road community drop-in session which has been jointly arranged by Scottish Water and Perth & Kinross Council. The aim of this drop-in session is to provide you with more information on the joint investigation work carried out to date into the flooding at Feus Road, including:

- the potential options considered;
- to discuss the operational response to flooding and property flood resilience.
- The decision-making process and next steps.

Officers from Perth & Kinross Council, Scottish Water, Consulting Engineers (ARC), and the Scottish Flood Forum, are available today. Please feel free to ask questions about any aspect of the project.

Your views

Please feel free to ask questions. Comment forms are available to allow you to record your views. Your views are important to us.

Flood History

Feus Road in Perth is in an area of high surface water flood risk. A number of significant surface water flooding events have occurred over the last 12 years, with the most notable events occurring in July 2010, July 2011 and August 2020. More recently, flooding has also occurred on 15 August 2022 and 8 September 2022, although the impacts were less severe.

Scottish Water's 'At Risk Register' includes:

- Flooding of 2 properties – due to water backing up through internal drainage connections;
- Flooding of 3 properties and the road carriageway - from external drainage and overland flow.

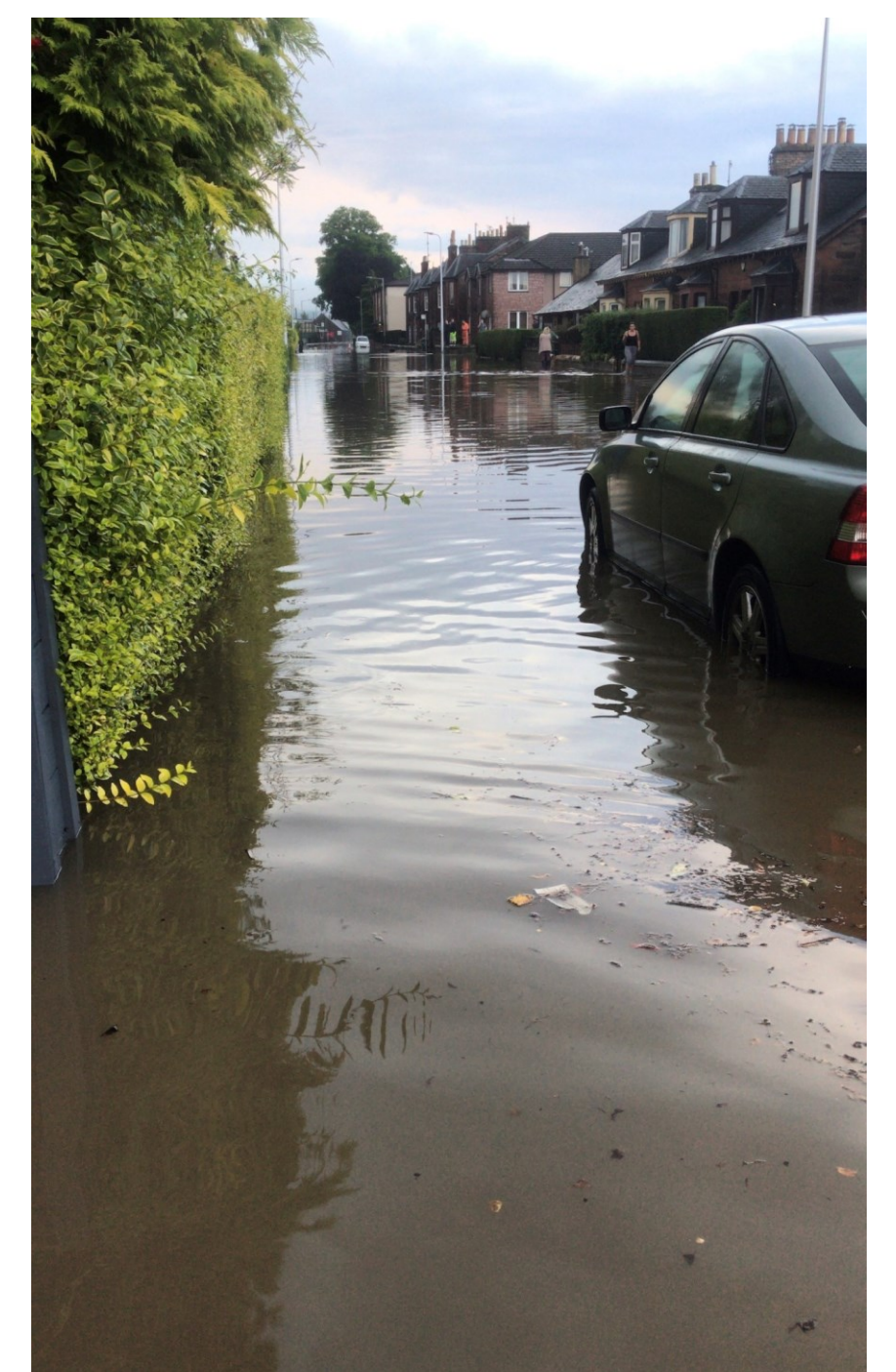
The flooding mechanisms in the Feus Road area are complex and are the result of interactions between the combined sewer system and overland surface water flows.



Flooding at Feus Road (July 2010)



Flooding at Feus Road (July 2011)



Flooding at Feus Road (Aug 2020)

Background

The Council and Scottish Water have undertaken various studies to improve our understanding of the flooding mechanisms:

- **CH2M Hill Study Work** - no potential measures identified; recommended wider study to understand the flooding issues in the context of the wider drainage network.
- **Perth Integrated Catchment Study:**
 - Considered the complex interactions between rivers, surface water drainage and combined sewer systems;
 - Delivered in December 2019 by Scottish Water, with input from the Council;
 - Identified 32 'hotspots' of flood risk in the Perth Sewer catchment.
- **Perth IFOS (Internal Flooding from Overloaded Sewers) Project:**
 - On-going detailed investigation of 5 areas of highest flood risk in Perth – Feus Road is one of those;
 - Consideration of potential measures to manage, and where achievable reduce, the identified flood risk;

This display provides an update on this work and the next steps.

Perth IFOS (Internal Flooding from Overloaded Sewers) Project

- ## Perth Integrated Catchment Study - Flood Risk maps

Flood Risk for Return Period (RP)

- 1 year
- 2 years
- 5 years
- 10 years
- 25 years
- 50 years
- 100 years
- 200 years
- 500 years
- Unflooded

Predicted Flood Depth for RP

- < 100mm
- 100 - 500mm
- 500 - 1000mm
- 1000 - 1500mm
- 1500 - 2000mm
- > 2000mm

Flood Risk Category Comparison

- No Risk
- Reduced Risk
- No Change in Risk
- Increased Risk
- New Risk
- No Data

Model Area Network

- Combined or Road Pipes
- Storm Pipes
- Pumped Main
- River Mainline
- Combined or Road Mainline
- Storm Mainline
- Sewage Treatment Mainline
- Wastewater Pumping Station

Other Features

- Rail
- Road
- Cultural Heritage
- Environment
- Community Facilities
- Libraries
- Residential Properties
- Non-Residential Properties
- Recreational Properties
- Agricultural Land
- Airport
- Community
- CRS MasterMap
- Buildings
- Land
- Rail
- Roads
- Structures
- Water

SEPA

Flood Risk for Return Period (RP)

- 1 year
- 2 years
- 5 years
- 10 years
- 20 years
- 50 years
- 100 years
- 200 years
- > 200 years
- unclassified

Property with Seawater

- Property with Seawater

Predicted Flood Depth for RP

- < 100mm
- 100 - 300mm
- 300 - 600mm
- 600 - 900mm
- 900 - 1200mm
- 1200 - 1500mm
- 1500 - 2000mm
- > 2000mm

Flood Risk Category Comparison

- No Risk
- Reduced Risk
- No Change in Risk
- Increased Risk
- New Risk
- No Data

Other Features

- Rail
- Road
- Cultural Heritage
- Environment
- Community Facilities
- Utilities
- Residential Properties
- Non-Residential Properties
- Recreative Planning
- Agricultural Land
- Airport
- Community
- OSB Overlay
- Buildings
- Land
- Rail
- Roads
- Structures
- Water

Sewer Network

- Combined or Four Pipes
- Storm Pipes
- Pumped Main
- River Inlets
- Combined or Four Nodes
- Storm Nodes
- Sewer Treatment Works
- Sewer Pumping Station

SEPA

- An initial long-list of options was considered and refined to a short-list for further, more detailed assessment.
- The short-list was further reviewed to identify actions for further appraisal. These included:
 - Surface Water Management – separating surface water out of the combined sewer/retrofitting SUDS (sustainable urban drainage systems);
 - Upsizing sewer network/building new sewers;
 - Flood Storage;
 - Fitting non-return valves to properties (to reduce risk of backflow from sewer during flood events);
 - Improving property flood resilience (fitting flood products, e.g. flood gates for doors, air brick covers, etc)
 - The application of development planning policy.
- The impact and benefits of some of the options were assessed using the flood model.

The findings of this work are detailed on the following board, along with the economic appraisal.



IFOS Project Findings

Options Appraisal

During the study work, it became apparent that managing the flood risk at Feus Road would require a number of the potential options to be combined. The project initially identified that the greatest potential reduction in flood risk could be delivered with the following 3 phases of works:

- **Phase 1** – Sewer (Grey) Solution - new sewer with flood storage tank;
- **Phase 2** – Surface Water Management – removal of large roof / paved areas from sewer network;
- **Phase 3** – Surface Water Management – Removal of residential roof water from the sewer network.

Phase 1 - New Sewer with Storage

- › 12.5m diameter shaft storage with pump return (1550m³)
- › 66m sewer upsizing on Albany Terrace (300mm)
- › 126m sewer reinforcement on Church Street (400-500mm)
- › 330m sewer reinforcement on Feus Road/Crieff Road (500-600mm)
- › Church Place CSO abandoned
- › 280m linear drainage (beany blocks) between The Stables/Church Street road junction, connecting to surface water sewer
- › Gullies at north end of Feus Road, connecting to sewer reinforcement

Cost Estimate - £4.1m

Phase 2 – Surface Water Management

- › Removal of large roof/hardstanding areas (nearby retail/industrial areas) from combined sewer

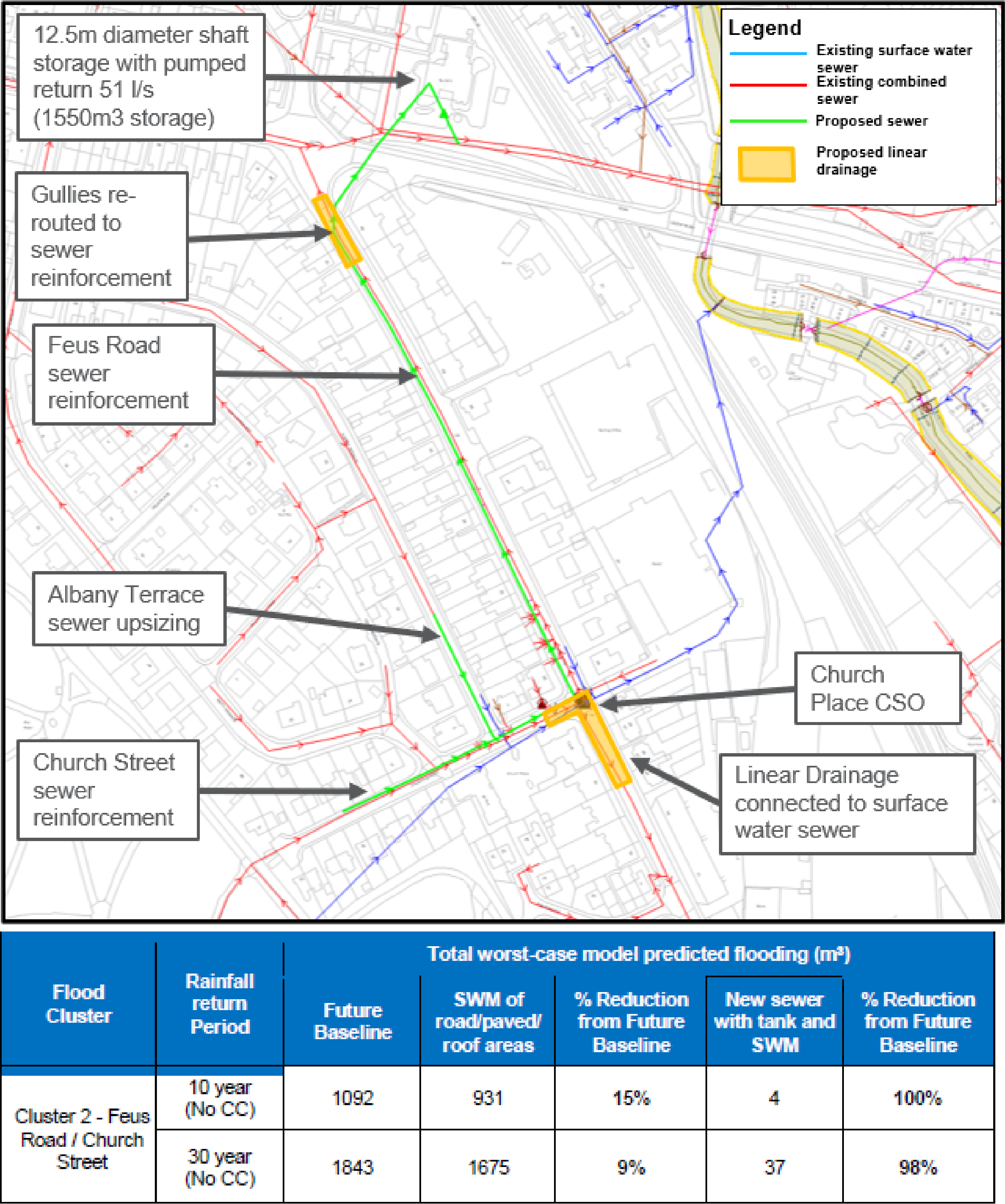
Phase 3 – Surface Water Management

- › Removal of residential roof drainage from Combined sewer

Cost Estimate - £ 6.6m (Phases 2 & 3)

Optioneering Capital Cost estimate for Phases 1, 2 & 3 = £ 10.7m

Combined Benefit Cost ratio (BCR) = 0.54



Advantages

- Works would protect properties from flooding up to the 1 in 30 year rainfall event – minor residual flooding would still occur (on the road carriageway);
- Former Crieff Road nursery site could be re-used to provide below ground storage;
- Removal of surface water from combined sewer system has wider benefits – reduced water treatment energy use/CSO spills;
- Phased approach – could be delivered over multiple investment periods.

Disadvantages

- There will still be a risk of flooding to properties during rainfall events that exceed the design standard (the 1 in 30 year flood), although the works would reduce the frequency and total volume of flooding;
- No allowance for increase in future flood risk due to the effects of climate change
- High Capital cost (£10.7M)
- Benefit cost ratio (0.54) is below 1 .0 – the estimated cost of the works therefore exceeds the potential benefits over time. The works are therefore not economically viable.

Emergency Response

Introduction

All public agencies seek to work together to assist residents in emergencies – and both Scottish Water and Perth & Kinross Council are very aware of the flood risk at Feus Road and Crieff Road.

No two flood events are the same. The accurate forecasting of flood impacts is difficult, but preparations are made when relevant flood alerts are issued by SEPA.

The speed of response is influenced by the scale of flooding both locally and across the country, as well as by potential disruption to the road network.



Scottish Water Hotspot Response Plan

Feus Road has the highest priority Scottish Water response plan in place.

- Internal protocols are in place to ensure internal customer service system flags the risk and priority when a call is received by the Scottish Water customer contact centre.
- A tanker response is automatically triggered when flooding occurs, although in short-duration floods it cannot be guaranteed this will reach the site before floodwater recedes.
- The drain alarm warning system has been optimised to ensure the logger signals a flood risk to the Scottish Water central control centre as early as possible.
- The Scottish Water control centre has been asked to initiate a “hot spot” response plan when an early warning is received.
- Scottish Water will provide clean-up assistance to customers if they are affected by sewer flooding within their homes or gardens as soon as possible after flooding has occurred. Please call 0800 077 8778 if your home is affected.

Perth & Kinross Council Emergency Response

The responsibility for protecting individual properties lies with the property owner. The Council has no statutory duty to prevent properties from flooding, but we will help residents and communities as much as we can.

As sandbags are in limited supply, we can only provide them to properties that are in imminent danger of being flooded. In extreme flooding situations it may not be possible to provide you with sandbags due to the level of demand placed on resources.

We would strongly advise residents in flood risk areas to maintain their own supply of sandbags, or other flood protection products, in advance of flooding.

Road Closures During Flood Events

We are aware that traffic moving through flood water can create bow waves, and that this can make flooding of adjacent properties worse. However only the Police have the legal power to close a road. Perth & Kinross Council can authorise a road closure – and this will be requested and put in place by Scottish Water's or the Council's site personnel.

Contacting Scottish Water and Perth & Kinross Council

Both Scottish Water and the Council can be contacted for assistance in flood emergencies. The Council's customer service centre can be contacted for assistance during office hours (8am to 6pm) on **01738 475000** and the out of hours emergency number is **01738 476476**. Please contact Scottish Water via the Scottish Water 24 hour customer helpline on **0800 077 8778**.



Conclusions



Surface Water Flooding

In managing flood risk, Perth & Kinross Council is required to have regard to the economic impact of its actions. The cost of building a flood scheme must not exceed the benefits, i.e. the benefit/cost ratio must be greater than 1.0.

Unfortunately, the IFOS Project has not identified an economically viable option to reduce the risk of surface water flooding at Feus Road. Even the most beneficial option considered would only provide limited degree of flood protection, and flooding would still occur in times of greater rainfall (above the 1 in 30-year event). The Council therefore cannot promote this option as a flood scheme.

Next Steps

The Council will review any comments raised today and a response will be provided to the community in due course. The Council will then report the outcome to the next available meeting of the Climate Change and Sustainability Committee.

Scottish Water

Following the identification of the proposed phased interventions for Feus Road and the significant costs involved, some further refinement is continuing to support the next stage in Scottish Water's decision-making process.

A Project Investment Appraisal will be carried out before a final decision is taken by Scottish Water's senior management team. This process is expected to take place before Summer 2023. If work was approved to proceed, a delivery partner would be engaged to finalise design details and ultimately deliver a project.

Where customers whose homes are at risk of internal flooding have had protection measures installed by Scottish Water, these will be maintained for as long as they are needed – and we will continue to review what we can do to assist customers with reducing the impact of flooding on homes and garden areas.

Tay Local Flood Risk Management Plan

The investigations into flooding at Feus Road have led to an improved understanding of flooding in the area and have informed other on-going actions to manage flood risk. The Feus Road area is covered by the Tay Flood Risk Management (FRM) Plan, which was recently updated and published by SEPA. The Council is also in the process of updating the Tay Local FRM Plan which is due for publication by the end of December 2022.

Both the Tay FRM Plan and Local FRM Plan include actions for the public bodies and land and property owners to manage flood risk including awareness raising, the provision of data to support climate resilience, links with emergency planning, flood forecasting and warning, developing guidance, flood mapping, land use planning, maintenance (of drainage networks, and watercourse clearance and repair works) and self-help (including individual property flood measures).

Work also continues on the Perth Surface Water Management Plan (SWMP), which will build on existing knowledge of surface water flood risk in Perth. The SWMP will identify and prioritise the main areas of surface water flood risk and consider a range of potential measures to manage that risk. We currently anticipate the completion of the SWMP in autumn 2023.

Property Flood Resilience

Beyond Scottish Water and the Council's efforts, you can also play an important role in making your property more resilient and helping to reduce the impact of flooding. Consider flood protection products (including sandbags) for your property and ensure your insurance provides adequate cover for flood damage. The Council and Scottish Water can offer advice regarding this, which can be found on our websites.

The Scottish Flood Forum are also in attendance today to offer advice on property flood resilience.

Thank You

We would like to thank you for your attendance and comments today. Community involvement is a key part of flood risk management, and your views are appreciated.

Any Comments or Questions?

Please speak with a representative from Scottish Water, Perth & Kinross Council or ARC. Please also take this opportunity to record your views by completing a comment form.

Contact Details

For further information on the proposals please contact:

- Scottish Water: Gavin Steel, Corporate Affairs Manager (North) 0800 077 8778 / gavin.steel@scottishwater.co.uk
- Perth & Kinross Council: Gavin Bissett, Engineer, Flooding Team - 01738 475000 / GABissett@pkc.gov.uk