Tollcross SWMP

December 2020

1. Introduction

Welcome!

Thank you for your interest in the Tollcross Surface Water Management Plan (SWMP).

This document aims to inform you of the main steps currently being undertaken as part of this SWMP, and to gather your opinions regarding the proposed action plan currently being developed by Glasgow City Council.

We hope you find the document informative and we are keen to gain as much feedback as possible. Your views are crucial for the success of this SWMP, and will ensure that flood risk is appropriately managed.

Rain ready in Tollcross area

Your area as been identified as having the potential to flood as the weather changes due to climate change. So, it is time for a new plan about how surface water is managed.

The aim of the SWMP is to evaluate the causes of flood risk within the Tollcross area and identify opportunities to reduce the occurrence and impact of flooding on the local community. In particular, we are focusing on integrating Sustainable Drainage Systems (SuDS) into the local area. These consist of a new generation of flood management measures which not only reduce flood risk but also help to create a more resilient, sustainable and healthy city. Additional benefits of SuDS include:

- Improvements in water quality;
- Enhancement to local wildlife;
- Improvements to the quality of life for people by enhancing public space;
- Provide actions that can be simply and effectively maintained and adapted.

We need your suggestions and feedback!

Glasgow City Council is working with engineering consultants Amey to create a Surface Water Management Plan and we would love you to be involved…

We need your suggestions and feedback to help us to:

- Manage flooding in your area
- Be ready for climate change
- Protect against pollution
- Improve habitats and urban biodiversity
- Create new environments for outdoor learning or play for both the local community and schools
- To make the most of recreational opportunities for our parks and waterways
- Make environmental improvements to help attract investment and support regeneration

1. Introduction

Why does flooding occur?

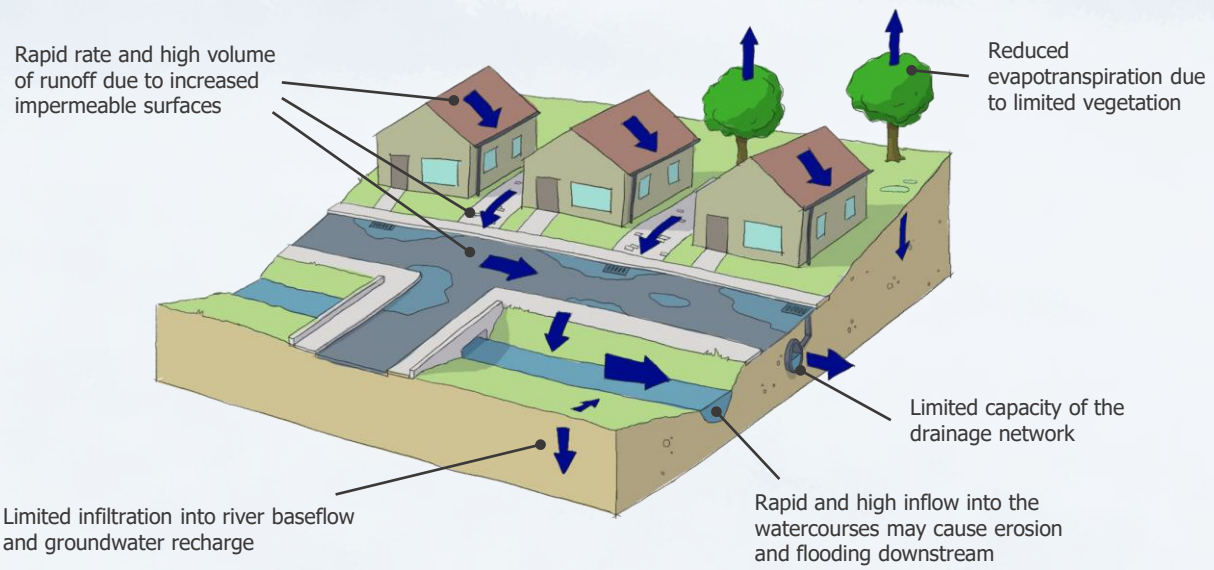
For the last decades Glasgow has grown spectacularly and has become a vibrant, inclusive and modern city; however, growth has its downsides. Cities represent a remarkable transformation of the landscape from natural to human made. We change almost everything: cut down trees, level the ground and divide the land into plots. But one of the most significant changes to the landscape that comes with urbanisation is impervious cover. This is anything that prevents rain from soaking into the subsurface: buildings, roads and car parks.

When it rains, that water has to go somewhere, and the impervious cover is a big issue. If rainwater can't soak into the ground or evaporate, it washes off into burns and rivers. That means increasing rapidly the magnitude of floods and the amount of pollution in the watercourses. It also means less water goes into groundwater resources. When surfaces are paved, a pretty significant disruption is caused to some important natural processes in a catchment.

Pretty much since humanity started building things, we also started building ways to keep those things dry and try to keep water away. In the past, traditional engineering had one goal in mind, get stormwater away from the streets and properties and put it into a burn or river as quickly as possible. The problem with this strategy is that every new road or building means a higher volume of runoff in the watercourses during a storm event. As cities grew this effect became more noticeable: flooding problems became more severe and frequent, water streams were eroded and receiving water were more polluted.

Over time, cities have adopted new approaches to try to tackle these problems, focusing primarily in flooding.

The strategy that we follow now is to minimise the impact on the natural landscape by imitating the natural drainage processes using Sustainable Drainage Systems (SuDS). SuDS have innovative designs and they can take many forms to collect, store and treat overland flows, before releasing it slowly back into the environment.



The work so far has indicated that flooding is caused by intense or long duration storms which overwhelm the local drainage network. This leads to manhole flooding at vulnerable locations such as where multiple pipes converge, at blockages or where manholes are shallow. Flooding can also occur from the watercourses across the area due to high inflows from the local area.

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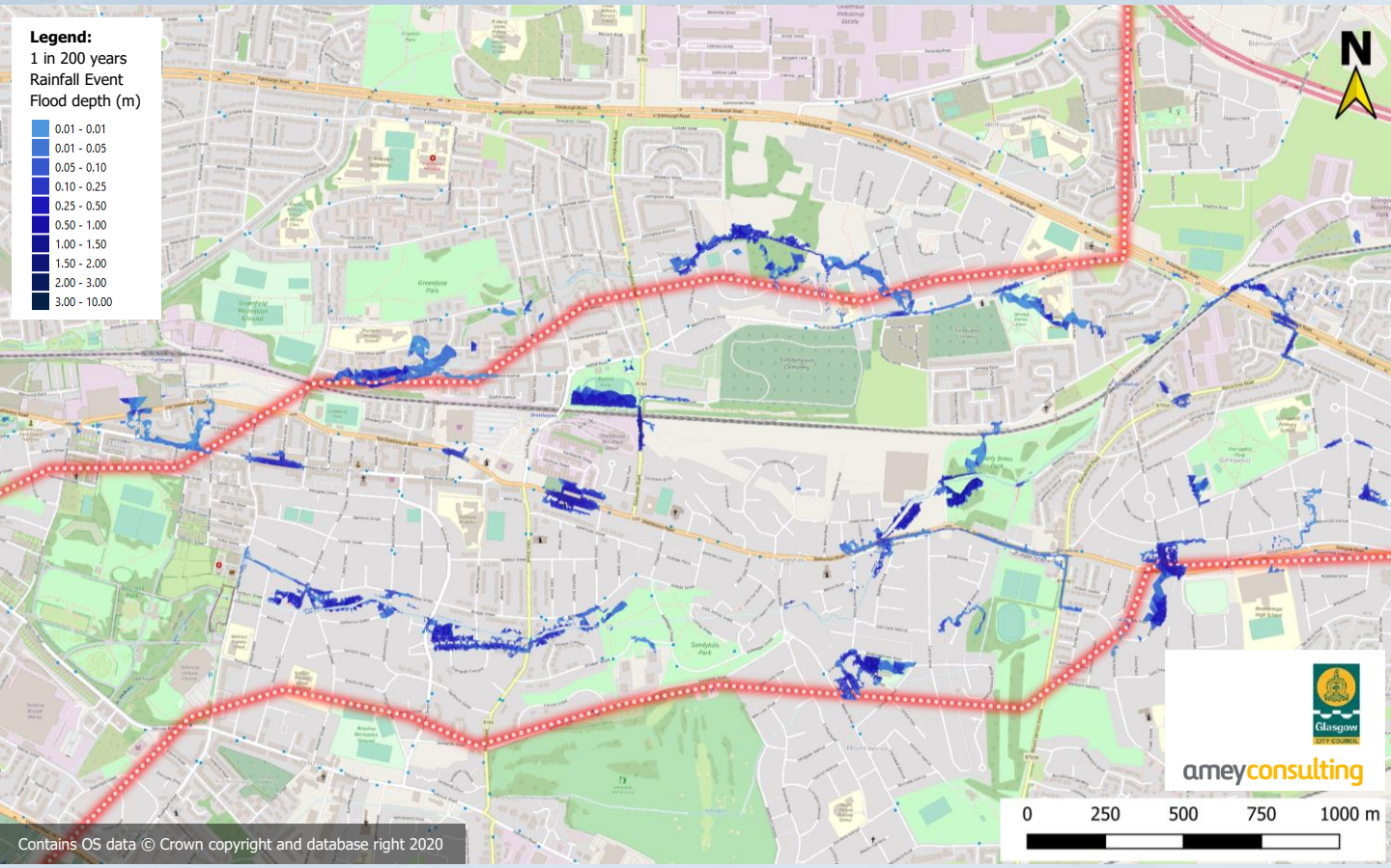
2. Extent of flooding within the study area

State-of-the-art computer models have been built to predict which areas are most likely to flood during heavy rainfall events.

The map shows the predicted flood extent for an extreme rainfall event. With future climate change and urban development it is predicted that these events will occur more regularly and have a greater impact.



Areas predicted to be affected include:

Cockenzie Street, Shettleston Road, Ardgay Street, Amulree Street, Grampian Street, Sandyhills Park, Old Shettleston Road, Gartocher Road, Budhill Park, Baillieston Road, Bowling Green Road, Barrachnie Road, Pendeen Place, Glasgow Road, Edinburgh Road, Swinton Crescent, Hethersage Drive, Rhindmuir Road

Questions

- Do you agree with the predicted flood extent?
- Have you previously been affected by flooding?
- Are you aware of any other flood hotspots in the area?

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3. Solving the problem

Until now, almost all rainwater in the city goes into the drainage system.

SuDS are designed to mimic how rainwater would be managed by natural systems, as if the city was not there. SuDS collect, store, and treat rainfall, releasing it slowly back into the environment. Some of the SuDS features we are considering are shown below.

a. SuDS ponds and basins

Shallow manmade depressions which collect, store and treat rainwater. Provide important, aesthetic, amenity and wildlife benefits.

b. Swales

Shallow channels, often with plants which collect and transfer rainwater. Sift out pollutants and attract wildlife.

c. Pervious paving

Pervious surfaces allow storm water to infiltrate into the underlying layers, thus providing temporary storage. Can provide good water quality treatment.

d. Tree pits

Tree pits and other measures in verges and central reserves. These are able to capture and transfer road runoff, thus reducing inflows to the combined sewer.

e. Rain gardens

Small scale ponds with vegetation which absorb rainwater and provide aesthetic benefits.

d. Water butts and planters

Storage devides designed to capture and store roof runoff. Can be used for personal use, including gardening.

4. Identified strategic opportunities

A number of strategies have been developed which target flooding at specific locations within the area.

A selection of the key strategies are presented below.

a. Budhill Park

New surface water drainage system to collect runoff from roofs and roads around Budhill Park.

Runoff is directed into pond / swales within Budhill Park.

Attenuated discharge into Camlachie Burn to the west or into the existing combined sewer network.

b. Strowan Street and Sandyhills Park

New surface water drainage system to collect runoff from roofs and roads around Sandyhills Park, Strowan Street and Comrie Street.

Runoff is directed into a series of ponds located in different green areas including Sandyhills Park.

Discharge into Tollcross Burn to the north.


Green areas at Strowan Street


Green area at Comrie Street


Sandyhills Park

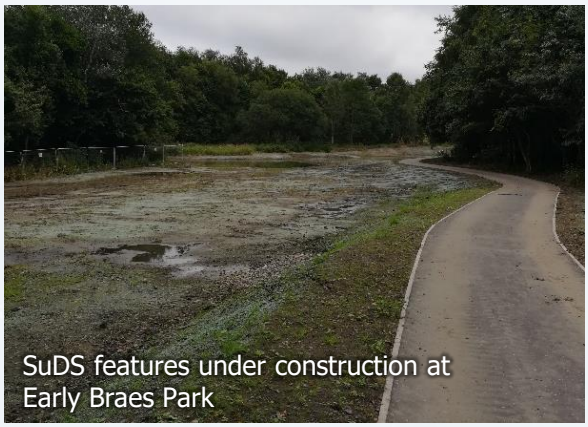
c. Early Braes Park

Currently, SuDS features are being implemented in Early Braes Park to disconnect combined areas around Pendeen Rd and Crescent.

The sediment removal from the culvert beneath Baillieston Road to improve the watercourse hydraulic capacity at this point.

What is a culvert? In many occasions when we build a road or railway we may block natural water streams. To allow water flow from one side to the other under the road or railway we use a culvert. Culverts are used when a building a bridge won't be necessary due to the small size of the water stream. We may think about culverts as large pipes crossing under roads or railways and constructed enclosed by soil or ground.


Tollcross Burn culvert inlet at Baillieston Road


SuDS features under construction at Early Braes Park

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High-intensity short-duration storms

Affected areas for the short-duration events are usually located at the head of the drainage system. These upper drainage network areas have been reviewed for the potential to implement source control features, providing interception storage.

Source control components would likely be located within private properties or highway areas, and their purpose is to manage rainfall close to where it falls.

The main source controls include rainwater harvesting and green roofs.

The following potential areas and flood zones have been identified:

- Ardgay Street with Killin Street
- Ardgay Street with Eckford Street
- Gartocher Terrace with Budhill Park
- Swinton Crescent
- Dyke Street
- Gargrave Ave with Mount Vernon Ave


Pervious paving and rain gardens (bioretention system)


Green roof

Image © Sky Garden Green Solutions


Tree pits


Rain garden (bioretention system)


Drain down water butts

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4. SuDS wider benefits

SuDS are great assets which promote better sustainability and enhance urban landscapes. They are capable of delivering multiple social, economical and environmental benefits, in addition to reducing flood risk.

Improved water quality

Features such as swales, basins, ponds and wetlands help remove sediments and pollutants from surface waters.

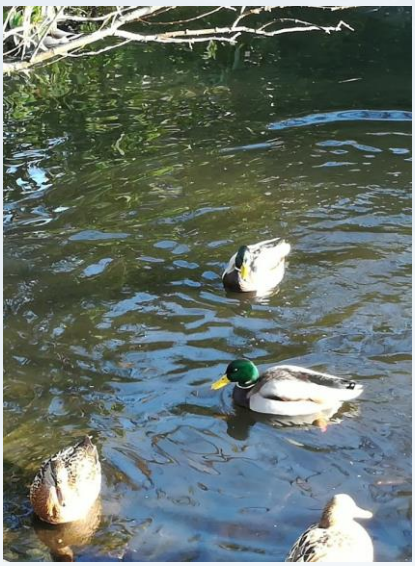
Reduce discharge of polluted water into watercourses.

Enhanced biodiversity

Plants and habitat creation are a fundamental element of SuDS.

Trees and vegetation are ideal habitats for birds and insects.

Basins, ponds and swales support multiple aquatic plants and animals.



Improved public spaces

Reduce air pollution.

Greater visual impact through basins, ponds and tree planting.

Opportunities for local schools to get involved and for children to learn about the natural environment.

What happens next?

We will review all the feedback from this exhibition and develop a final schematic design for the Tollcross Surface Water Management Plan. As part of this we will carry out furher analysis to understand the collective benefit of the surface water management proposals.

Further consultation will be carried out at later stages, notably during the outline and detailed design phase of the project, starting at the end of this year.

Please, remember to record your views by completing a feedback form and posting it back to us using the prepaid envelope.

Comments can also be posted back emailed to:

gccrainready@amey.co.uk

Thank you for your time and feedback!

Glasgow CITY COUNCIL

ameyconsulting