

Campbeltown Flood Protection Scheme

Scheme Description

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Quality information

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1 Introduction

In exercise of the powers conferred upon it by Section 60 of the Flood Risk Management (Scotland) Act 2009 (hereinafter “the Act”), Argyll and Bute Council (hereinafter “the Council”) hereby notifies the following Flood Protection Scheme (hereinafter “the Scheme”). The purpose of the Scheme is to reduce the risk of flooding from the Millknowe and Balgreggan Burns and localised surface water in Campbeltown.

2 Local Flood Risk Management Plan Context

The Scheme is included in the measures in the Highland and Argyll Local Flood Risk Management Plan (2016 - 2022) and contributes to the aims set out therein by reducing the risk of flooding.

3 Flood Protection Scheme Location

The Scheme works are located at the northern end of the town of Campbeltown with locations at Millknowe Road at Dalaruan Street with additional surface water management works proposed for the Meadows and Burnside areas of town. These locations are shown on drawing 60541587-SHT-20-PHZ4-C-2000; Campbeltown Flood Protection Scheme – Key Plan.

4 Drawings

Details of the Flood Protection Scheme Operations (hereinafter “the Operations”) and ancillary works are shown on the drawings marked as listed below (hereinafter “the Drawings”).

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2000	Campbeltown Flood Protection Scheme - Key Plan
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2101	Millknowe Flood Storage Reservoir – Embankment and Wall Arrangement
60541587-SHT-20-PHZ4-C-2102	Millknowe Flood Storage Reservoir – Embankment and Spillway Arrangement
60541587-SHT-20-PHZ4-C-2103	Millknowe Flood Storage Reservoir – Embankment Section
60541587-SHT-20-PHZ4-C-2140	Dalaruan Culvert – Site Layout
60541587-SHT-20-PHZ4-C-2141	Dalaruan Culvert – Longsection
60541587-SHT-20-PHZ4-C-2142	Dalaruan Culvert – Intake Structure Elevation, Plan and Section
60541587-SHT-20-PHZ4-C-2160	Surface Water Management Proposals (Sheet 1 of 2)
60541587-SHT-20-PHZ4-C-2161	Surface Water Management Proposals (Sheet 2 of 2)
60541587-SHT-20-PHZ4-C-2162	Surface Water Management Proposals – Typical details
60541587-SHT-20-PHZ4-C-2170	Property Level Flood Protection Zone

5 Description of the Operations

5.1 Millknowe Flood Storage Reservoir

The Millknowe Flood Storage Reservoir will provide an area for temporary flood water storage within the river channel and its floodplain during storm events.

This will be achieved by construction of an impounding structure across the river and floodplain, behind which the water is stored, a flow control culvert to control the outflow from the storage area and a spillway – to pass floods that are more extreme than those that the reservoir is designed to attenuate.

Direct defences (flood wall and embankment) will also form part of the storage area to ensure flood water does not encroach on the industrial estate. The operations detailed below form the Millknowe flood storage reservoir.

Operation C01

Earth embankment dam located across the Millknowe Burn east of Hillside Road. The dam will be 2.6 metres high at its highest point, 20 metres wide and 150 metres long or thereby. The dam will be made of earth with a grass finish and will include a reinforced grass spillway. A new access tracks will be constructed for inspection and maintenance from Hillside Park. New fencing will be constructed along the new access tracks and around the perimeter of the dam. The embankment will have a grass finish and will be landscaped into surrounding ground levels.

The reservoir will be a “controlled reservoir” as defined in the Reservoirs (Scotland) Act 2011 and will be designed in accordance with the requirements set out therein.

This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2101	Millknowe Flood Storage Reservoir – Embankment and Wall Arrangement
60541587-SHT-20-PHZ4-C-2102	Millknowe Flood Storage Reservoir – Embankment and Spillway Arrangement
60541587-SHT-20-PHZ4-C-2103	Millknowe Flood Storage Reservoir – Embankment Section

Operation C02

Concrete culvert passing through the dam which will throttle flows to a controlled discharge rate. The culvert will be of 450mm in diameter or thereby and cover the 20m width of the dam or thereby. The culvert will be located within the existing Burn at the current Millknowe intake location. Fencing will be installed around the intake for safety. This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2102	Millknowe Flood Storage Reservoir – Embankment and Spillway Arrangement

Operation C03

The control structure and culvert will be designed to ensure adequate debris capture through a double tier trash screen with catwalk for safe access for clearance. The trash screen has been sized appropriately for the flow area based on Environment Agency Trash and Security Screen Guide 2009.

The top of the structure shall be 2 metres or thereby above ground level and the structure shall be equipped with galvanised steel band screens. The sections will be fixed into a concrete foundation which will be located below the river bed. Access for maintenance will be via the access tracks as mentioned in Operation C01. This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2102	Millknowe Flood Storage Reservoir – Embankment and Spillway Arrangement
60541587-SHT-20-PHZ4-C-2142	Dalaruan Culvert – Intake Structure Elevation, Plan and Section

Operation C04

Construction of 120 metres or thereby of flood wall from the Millknowe intake along the western edge of Snipefield Industrial Estate. The wall will be 1.7 metres high or thereby above the level of construction yard. The wall finish will be in keeping with the industrial setting of the land and be confirmed prior to construction.

The wall will tie into a proposed flood embankment (Operation C05) and the proposed dam structure (Operation C01). Details of the joint and construction methods will be confirmed during detailed design. Existing drainage routes to the burn will be maintained through a piped outfall fitted with a non-return device (e.g. flap valve) to prevent back-flow.

Existing services such as sewers, power cables and BT lines passing through the flood wall alignment will be ducted through the flood wall. Details will be confirmed with the respective utility undertakers during detailed design. This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2101	Millknowe Flood Storage Reservoir – Embankment and Wall Arrangement

Operation C05

Construction of 95 metres or thereby of earth flood embankment on the left bank of the Millknowe Burn along Snipefield Industrial Estate. The embankment will be 1.8metres high and 14 metres wide or thereby. The embankment will have a grass finish and will be landscaped into surrounding ground levels. The defence will tie into proposed flood walls on either side (Operations C04 and C06, respectively). Details of the joint and construction methods will be confirmed during detailed design.

Existing surface water drainage routes to the Burn will be redirected and discharged through the new flood wall via a piped outfall fitted with a non-return device (e.g. flap valve) to prevent back-flow. Embankment toe drainage will also be required to provide some attenuation of flows.

This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2101	Millknowe Flood Storage Reservoir – Embankment and Wall Arrangement

Operation C06

Construction of 108 metres or thereby of flood wall along the western edge of Snipefield Industrial Estate between the third access road to the industrial estate and the north boundary of the estate. The wall will be 1.8 metres high or thereby above the level of the industrial area. The wall finish will be in keeping with the industrial setting of the land and be confirmed during detailed design.

The wall will tie into a proposed flood embankment (Operation C05). Details of the joint and construction methods will be confirmed during detailed design. Existing drainage routes to the burn will be maintained through a piped outfall fitted with a non-return device (e.g. flap valve) to prevent back-flow. Back of wall drainage will also be required to provide some attenuation of flows.

Existing services such as sewers, power cables and BT lines passing through the flood wall alignment will be ducted through the flood wall. Details will be confirmed with the respective utility undertakers prior to construction.

This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2101	Millknowe Flood Storage Reservoir – Embankment and Wall Arrangement

Operation C07

Realignment of existing surface water pipe taking field drainage towards Dalaruan Street culvert. This flow will be redirected to the Millknowe Burn.. Exceedance in extreme events will be held by the flood storage reservoir.

This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout

Benefits

The benefits of the said operations at the Millknowe Storage Reservoir are as follows:

- To enhance the natural capacity of the flood plain to store flood water, reducing the flow rates to the Dalaruan culvert.
- To reduce the risk of flooding to commercial and residential properties and infrastructure from the Millknowe Burn in Campbeltown
- To reduce the risk of flooding at the police and fire stations.
- To reduce the risk of flooding to key roads within Campbeltown.
- To reduce the risk of flooding at community assets including the Kinloch Park
- To reduce the risk of water backing up drainage outfalls connected to the Millknowe Burn.
- To improve local residents' health and wellbeing by reducing stress associated with flooding from the Millknowe Burn
- To formalise existing bunding at industrial estate as formal flood defences, reducing the risk of flooding to commercial and residential properties and infrastructure from the Millknowe Burn
- The above will have economic, social and environmental benefits.

5.2 Dalaruan Culvert upgrade

The Dalaruan culvert currently carries storm water drainage as well as the Millknowe and Balegreggan Burns. This part of the scheme will create increased capacity to store and convey flood flows downstream more efficiently during flood events.

Operation C08

Upsizing of 270m length of an existing storm water culvert from the Millknowe intake to downstream of Dalaruan Street intake. Existing pipe diameters will be increased to between 675 – 1200mm. This option will pass flow further down the culvert where there is more storage capacity for flows from the Balegreggan Burn which joins the Dalaruan culvert.

The pipe sizing has been limited in order to ensure flow beyond culvert capacity downstream is not passed on. Sizes have also taken into account suitable depth to crown for the long term protection of the pipe assuming a concrete surround is used.

Excavation of up to 2.5m depth will be required along the Dalaruan Street carriageway. Existing manholes will be retained where possible but may have to be replaced, with new, if the structural integrity of the existing manhole cannot be maintained. The carriageway will then be reinstated upon completion.

This operation is shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2140	Dalaruan Culvert – Site Layout
60541587-SHT-20-PHZ4-C-2141	Dalaruan Culvert – Longsection
60541587-SHT-20-PHZ4-C-2142	Dalaruan Culvert – Intake Structure Elevation, Plan and Section

Benefits

The benefits of the said operations at the Dalaruan Culvert are as follows:

- To enhance the existing capacity and hydraulic efficiency of the existing Dalaruan culvert
- To reduce the risk of flooding to commercial and residential properties and infrastructure from the Balegreggan Burn in Campbeltown
- To reduce the risk of flooding at the police and fire stations.
- To reduce the risk of flooding to key roads within Campbeltown.
- To reduce the risk of flooding at community assets including the Kinloch Park
- To improve local residents' health and wellbeing by reducing stress associated with flooding from the Millknowe Burn
- The above will have economic, social and environmental benefits.

5.3 Ancillary Works

The works in this section are not required for the proper functioning of the Scheme, but are required to enable the works to be carried out or to avoid the Scheme impacting on flood risk elsewhere.

- New surface water drainage will be installed at the Hillside Road flats to ensure that there is no negative impact to the properties drainage once the storage area embankment has been constructed.
- Local surface water drainage will be captured local to the embankment toe and conveyed to the Dalaruan culvert.
- An access track will be formed on the upstream side of the storage area embankment to facilitate ease of access to the inlet structure for maintenance purposes

5.4 Services

The works in this section are not required for the proper functioning of the Scheme, but are required to enable the works to be carried out or to avoid the Scheme impacting on flood risk elsewhere.

All service locations will be identified at the detailed design stage. Services will be protected or diverted as appropriate; specifications and working methods will be agreed with the relevant undertakers prior to construction.

5.5 Surface Water Elements

With the fluvial elements of the Millknowe Storage Area and Dalaruan Culvert upsizing, in place, flood risk in Campbeltown would still remain from surface water flooding, particularly during more frequent storm events. Surface water management measures are proposed within this notification to further reduce this flood risk.

Surface water measures focus on the retrofit of Sustainable Urban Drainage Systems to reduce load on the combined drainage network during storm events. This involves providing new drainage lines for existing road drains to disconnect them from the combined network. Temporary flood storage during storm events is then provided above ground in the Meadows and below ground at Burnside car park for this new drainage system.

Operation C09

Involves installing a new surface water pipe to take flow from existing road gullies on Meadowburn Place. This will then discharge to a filter drain along the footpath to provide suitable treatment before discharge to the Witch Burn, via an outlet structure.

A similar arrangement will be adopted on lower end of Tomaig Road and Witchburn Road with road gullies connected to a new surface pipe before discharge to a filter drain and outflow to Witch Burn culvert, via an outlet structure.

Operation C10

Involves the addition of a new surface water pipe to transfer flow from road gullies on Upper Tomaig Road to a proposed small landscaped depression at the west corner of the Meadows. This would provide storage up to a 1 in 200 year event with suitable attenuation. This would be dry outwith storm events. This flow would then be transferred to the Witch Burn culvert through a filter drain in order to provide conveyance and also a second level of treatment to ensure water quality is maintained in the Witch Burn.

Operation C11

Involves the creating a detention basin feature to take flow from Castleacres and Smith Drive. New pipework will be installed and existing road gullies will be transferred to this pipe which will transfer flow to the storage area. This will provide a storage volume up to a 1 in 200 year event with suitable attenuation. A filter drain will be installed to discharge an attenuated flow to the Witchburn culvert to provide additional water quality treatment.

Operation C12

Involves 1340m of new pipework to disconnect road gullies from Witchburn Road, Castlehill, Glebe Street and Dell Road. The surface water collected will then be discharged to an underground storm water tank at Burnside Street carpark. An attenuated flow will discharge back to the Scottish Water network. This option could be enhanced with tree pits to provide amenity and also provide storage at lower return periods.

These operations are shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2160	Surface Water Management Proposals (Sheet 1 of 2)
60541587-SHT-20-PHZ4-C-2161	Surface Water Management Proposals (Sheet 2 of 2)
60541587-SHT-20-PHZ4-C-2162	Surface Water Management Proposals – Typical details

Benefits

The benefits of the said operations associated with surface water management works are as follows:

- To remove surface water from the existing combined sewer system
- To reduce the risk of flooding to commercial and residential properties and infrastructure from the surface water flooding in Campbeltown
- To reduce the risk of flooding to key roads within Campbeltown.
- To reduce the risk of flooding in the Longrow and Burnbank areas.
- To improve local resident's health and wellbeing by reducing stress associated with local surface water flooding.
- The above will have economic, social and environmental benefits.

5.6 Property Level Flood Protection

Property-level protection (PFP) can be used to enhance the standard of protection at properties in the study area along with the fluvial elements of the scheme. This is proposed to some properties at John Street and Saddell Street. Property surveys will be carried out to determine appropriate flood mitigation measures. The purpose of this is to provide additional protection beyond the exceedance of the fluvial scheme design standard and due to residual risk from surface water flooding. This option is proposed as an engineered solution to manage residual risk was not proven to be economically viable. The PFP element of the scheme will also be funded through the

flood protection scheme and the Council will facilitate this through a grant arrangement to which individual home owners can apply. This will cover the installation and purchase cost of required measures.

Benefits

The benefits of this measure are as follows:

- To further reduce the risk of internal flooding to commercial and residential properties from residual and the surface water flooding in Saddell Street, John Street and Lochend Street.

These operations are shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2170	PFZ zone

5.7 Land

The land which the Council considers may be affected by the Operations or which the Council will require to enter for the purposes of carrying out the Operations is as shown on the drawings marked as follows:

Drawing Number	Drawing Title
60541587-SHT-20-PHZ4-C-2100	Millknowe Flood Storage Reservoir - Site Layout
60541587-SHT-20-PHZ4-C-2140	Dalaruan Culvert – Site Layout
60541587-SHT-20-PHZ4-C-2160	Surface Water Management Proposals (Sheet 1 of 2)

5.8 Environmental Impact

Environmental Impact Assessment Screening Opinion Reports were prepared on behalf of the Council following consultation with relevant statutory stakeholders¹. A Habitats Regulations Appraisal Test of Likely Significant Effects² was also carried out and determined no likely significant impacts on the scheme which was agreed by The Council and Scottish Natural Heritage.

Both of these documents are available to view as part of the Scheme Notification. Based on the findings in the report, the Council adopted the opinion that the anticipated effects of the proposal on the environment would not be significant enough for Environmental Impact Assessment to be required.

The necessary registrations(s) licence(s) and permit(s) will be acquired prior to construction of the Scheme. The following works will also be carried out prior to construction:

- Ecological studies, including Protected Species Surveys, Fish Habitat Surveys and Phase 1 Extended Habitat Surveys
- Site investigation works
- Baseline noise surveys
- Where necessary, structural surveys of properties in the vicinity of the works to assess their pre-construction condition
- Development of a construction environmental management plan, to include:
 - Construction works methodology statement
 - Construction management plan for noise and dust control
 - Nuisance management and mitigation plan from noise and dust, and traffic
 - Surface water management and control, with pollution prevention and control measures

¹Campbeltown Flood Protection Study and Surface Water Management Plan. Environmental Impact Assessment (EIA) Screening - Summary Report, AECOM, March 2019

² Campbeltown Flood Protection Scheme and Surface Water Management Plan, Habitats Regulations Appraisal Test of Likely Significant Effect, February 2019

- Site waste management procedures and controls
- Site environmental management and controls, with site rules
- Traffic management and control measures
- Duties of an ecological clerk of works (ECoW), where the requirement for an appropriate European Protected Species licence is identified, such as the occurrence of otter for example, from the ecological surveys

5.9 Estimated Cost of the Flood Protection Scheme

The estimated cost of the Scheme is eight million five hundred thousand pounds (**£8,500,000**).

