

Scheme Extents

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Project name:	Grangemouth Flood Protection Scheme	95 Bothwell Street
Project no:	B2386100	Glasgow, Scotland G2 7HX
Attention:	Alistair Dawson	United Kingdom
Company:	Falkirk Council	T +44 (0)141 243 8000
Prepared by:	Alan McGowan	F +44 (0)141 226 3109
Reviewed by:	Richard Meeson	www.jacobs.com

Why do we have the extent of defences that we do?

The Grangemouth Flood Protection Scheme ('the Scheme'/GFPS) has been developed generally in line with the principles outlined in:

- The Forth Estuary Flood Risk Management Strategy published by the Scottish Environmental Protection Agency (SEPA) in December 2015 and approved by Scottish Ministers.
- The Forth Estuary Local Flood Risk Management Plan, coordinated by the City of Edinburgh Council as the Lead Local Authority for the Forth Estuary Local Plan District in 2015.

Taken together, these documents describe the commitment of public bodies to address flooding. The geographic area protected by the scheme falls with PVA 10/11 and PVA 10/12. In particular the scheme generally is contained within Objective Target Areas (OTA): 10035, 10036, 10040 and 10041 (Ref. Forth Estuary Flood Risk Management Strategy, SEPA, 2015). The Objective associated with the above OTA, is to reduce economic damages by the implementation of a Flood Protection Scheme (FPS) / Works.

Further modelling has been undertaken as part of the development of the GFPS, which included extending the original model upstream on the River Carron and also the Grange Burn, to better understand flood risk. This additional modelling has been used to refine the areas where there is a significant risk of flooding that needs to be addressed by the proposed FPS. This exercise resulted in three main additional areas (out with the OTAs) being identified, where there was a significant risk as noted below:

- 1) Stirling Road (A9) – several commercial properties at risk of flooding including McGills Bus Depot as well as Stirling Road. The A9 at this location is listed as a main distributor road on adopted roads hierarchy, it is one of the busiest strategic routes into Falkirk as well as being the main ambulance route from the south to the Accident and Emergency Unit at the Forth Valley Royal Hospital. Stirling Road crosses the River Carron and is one of only six vehicular crossing points between the Port of Grangemouth and the M876. Two of the other crossings lie below the predicted 1 in 200 year flood level with two further crossings being motorway crossings. Therefore the Stirling Road and New Carron Road crossings provide key linkages across the River Carron and in particular access to the Forth Valley Royal Hospital to the north and Falkirk Community Hospital to the south. The Forth Estuary FRM strategy (Fig. 3 PVA 10/11 Datasheet) identifies the risk to residential and non-residential properties as well as impact to Stirling Road.
- 2) Beancross – several commercial properties including hotels (x3), restaurant (x2) and a garden centre is at risk of flooding. This area has been affected by flooding several times in the last few years most recently in 2019 and 2020. Receptors at risk are just outside OTA 10040. The Forth Estuary FRM strategy (Fig. 3 PVA 10/11 Datasheet) identifies the risk to residential and non-residential properties as well as impact to utilities in the Beancross area.

- 3) Millhall – mainly residential properties at risk but also includes several commercial properties (stables, playing fields, café, vehicle storage). This area has been affected by flooding in the last few years most recently in 2020. Receptors at risk are just outside OTA 10040.

Whilst the above areas are not specifically covered by the OTA specific objective of reducing economic damages, they fall within an overall Objective (ID: 10099) that applies across the Forth Estuary Local Plan District to reduce overall flood risk. Therefore the inclusion of these additional areas with the geographic extents of the proposed scheme is deemed appropriate and in accordance with the objectives and actions as set out in the Forth Estuary Flood Risk Management Strategy.

The current flood defences are being designed to protect against a 1 in 200 year fluvial and tidal event although not in combination i.e. the scheme is not designed to protect against a 1 in 200 year fluvial event occurring at the same time as a 1 in 200 year tidal event. The extent of defences is also related to the provisions for Climate Change (Ref. Technical Note – Climate Change, Jacobs, 2020) and Residual Uncertainty (Ref. Technical Note – Residual Uncertainty Allowance, Jacobs, 2020) incorporated into the scheme.