Scheme Standard of Protection

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Why do we have the standard of protection that we do?

The requirement to provide a specific standard of protection is not defined by any legislation or statutory body. However, the 1 in 200 year event (0.5% annual probability) was seen by the majority of professionals working in the flood risk management sector as being the minimum target standard of protection with the 1 in 200 year event plus climate change seen as the 'golden' standard. Many schemes that have been promoted over the last 10 years have achieved this standard and those schemes that have adopted a lower standard have often done so, to achieve a standard that was deemed to be acceptable on the basis of visual impacts e.g. Hawick FPS adopted a 1 in 75 year standard of protection due to the significant increase in height of defence to achieve 1 in 200 year standard.

The Forth Estuary Flood Risk Management Strategy identifies Action ID 10040006 for PVA 10/11. This Action was to implement a FPS for the Grangemouth and surrounding area. The specific description of the Action is:

"A flood protection scheme has been proposed for the Grangemouth area. It would include the River Carron, Grange Burn, River Avon and the Forth Estuary shoreline. The scheme would consist of flood defences, sediment management, tidal barriers/ gates and natural flood management and would provide a 1 in 200 year standard of protection.".

Therefore, adopting a 1 in 200 year standard of protection is in accordance with the published flood risk management strategy. It is noted that the Scottish Government is responsible for approving the Objectives and Actions set out in the flood management strategies[1]. Therefore adopting a 1 in 200 year standard of protection complies with the Scottish Governments approved Action.

At the time when the GFPS was initially identified (c. 2012) Scottish Planning Policy suggested that any areas that were in a Low to Medium Risk Area (annual probability of flooding in the range 0.1% to 0.5%) were suitable for most development and within built-up areas these would be suitable for residential, institutional, commercial and industrial development provided flood prevention measures to the appropriate standard already exist, are under construction or planned as part of a long term development strategy. Whilst the primary purpose of the GFPS is to reduce the risk to existing development, it was also seen as a prerequisite to the significant future development proposals around the Grangemouth area. In 2013 Falkirk Council launched their Tax Incremental Financing (TIF) scheme that sought to supply and improve infrastructure to help promote development in specific locations. The TIF scheme included for investment in the GFPS. The Falkirk Growth deal will deliver significant new assets for the area and help Grangemouth's petrochemical complex, which currently produces 10% of Scotland's carbon emissions, transition to net zero. The GFPS is a vital element and will provide resilience to these development frameworks and the areas journey to net zero. Non delivery of the GFPS would significantly undermine these aspirations.

The key linkage between the proposed flood protection scheme and future development was first identified within the Scheme objectives published in 2016. Two specific objectives were:

[1] https://www.gov.scot/policies/water/managing-flood-risk/ Viewed 21.29 on 18/10/2022

- The Scheme aims to increase development activity in the Falkirk / Grangemouth corridor such as Falkirk TIF initiative (3.5)
- The Scheme provides a platform for the regeneration of Grangemouth (3.6)

Similarly to SPP, SEPA's Land Use Vulnerability Guidance first published in July 2012 provided a framework to assist in the assessment of the vulnerability of different types of land to the impact of flooding. Whilst this guidance is not specifically related to the standard of protection offered by FPS's it provides useful guidance as FPS's are often located in built-up areas and due to their design life often being in excess of 100 years it will be fairly common for new development, mainly brownfield, to occur in areas behind these Schemes at some point after they have been constructed.

SEPA's Planning Information Note 4: SEPA Position on development protected by a FPS (either existing or planned) published in 2018 provides specific guidance on the minimum standard of protection for different land use vulnerability classifications for development protected by a FPS. Specifically it identifies that where the standard of protection provided by the FPS has an annual probability of 0.5% (excluding climate change), then development that falls into the following classifications may be acceptable: water compatible uses; essential infrastructure; least vulnerable uses. These classifications would permit shops, offices, restaurants, general industry and storage/ distribution together with several other types of development to take place if they were protected by the FPS. If the Standard of Protection offered by the scheme was less than a 0.5% annual probability the potential vulnerable classifications of development that would be acceptable would be limited to water compatible uses and essential infrastructure which excludes shops, offices, restaurants, general industry and storage/ distribution together with several other types of development.

Given the very flat topography around Grangemouth and the widespread extent of flooding predicted, combined with the future development framework of Falkirk Council, Scottish Enterprise, Scottish Government and many other organisations it would be prudent to provide a standard of protection at least to the 1 in 200 year standard as otherwise this would severely constrain future development by limiting the types of development to water compatible uses and essential infrastructure only. An extract from SEPA Flood Risk and Land Use Vulnerability Guidance is noted below, illustrating the types of development that would be suitable if development was to occur on land protected by a FPS, to at least a 1 in 200 year (0.5% annual probability) standard of protection:

Least Vulnerable Uses	Essential Infrastructure	Water Compatible Uses
Comprise: • shops • financial, professional, and other services • restaurants and cafés • hot-food takeaways • drinking establishments • nightclubs • offices • general industry • storage and distribution • non-residential institutions not included in Most Vulnerable or Highly Vulnerable Uses • assembly and leisure • land and buildings used for agriculture and forestry that are subject to planning control • waste treatment (except landfill and hazardous waste facilities) • minerals working and processing (except for sand and gravel)	Comprises: • essential transport infrastructure (including mass evacuation routes) that has to cross the area at risk • essential utility infrastructure that has to be located in a flood risk area for operational reasons (this includes electricity generating power stations and grid and primary sub-stations, sewage treatment plants and water treatment works, wind turbines and other energy generating technologies) • installations requiring hazardous substance consent only where there is demonstrable need to locate such installations for the bulk storage of materials with port or other similar facilities, or with energy infrastructure that requires a coastal, water-side, or other high flood risk area location.	Comprise: • flood control infrastructure • environmental monitoring stations • water transmission infrastructure and pumping stations • sewage transmission infrastructure and pumping stations • sand and gravel workings • docks, marinas and wharves • navigation facilities • MOD defence installations • ship building, repairing, and dismantling • dockside fish processing and refrigeration and compatible activities requiring a waterside location • water-based recreation (excluding sleeping accommodation) • lifeguard and coastguard stations • amenity open space • nature conservation and biodiversity • outdoor sports and recreation and essential facilities such as changing rooms • essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific operational warning and evacuation plan.

Extract from Table 1: SEPA Land Use Vulnerability Classification