



LOCAL FLOOD RISK MANAGEMENT STRATEGY 2022 – 2028

Appendix 5 Drainage asset register



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Overview

Hull is reliant on flood risk management and drainage assets, such as pumping stations, to move water through the city. The most common types of assets found in Hull can be summarised as:

- aboveground structures,
- underground structures,
- sewers and pumping stations,
- sustainable solutions, and
- innovation.

Types of flood assets

Aboveground structures

Ordinary watercourses – these are watercourses designated as ‘ordinary’ by the Environment Agency.

Main rivers – these are watercourses designated as ‘main river’ by the Environment Agency. Main rivers have a higher chance of flooding communities than ordinary watercourses.

Flood walls – these are often concrete structures built alongside watercourses / rivers or along sea fronts to reduce the risk of flood waters overtopping and flooding land.

Embankments – these are usually found next to watercourses / rivers and are typically built using soil.

Hull tidal surge barrier – a flood barrier at the mouth of the River Hull. The barrier is lowered when tides are expected to be high in the Humber Estuary to prevent water flowing upstream in the River Hull and causing a flood risk to the areas on either side of the River Hull.

Flood doors – these are commonly found where a watercourse flows into another watercourse that is tidally influenced. The purpose of flood doors is to prevent water flowing upstream during high tide but to allow water to flow freely during low tide and drain naturally through gravity.

Trash screens and security screens – a trash or debris screen is usually a metal structure placed in front of areas in a watercourse where flow becomes restricted, such as in a culvert. A trash screen prevents debris, such as rubbish or weeds, from entering the culvert and causing a blockage. A security screen is a fenced area to protect the trash screen and prevent tampering or damage to the screen.

Underground structures

Culvert – this is an underground pipe that water flows through instead of flowing in an open watercourse. Culverts are often used to allow water to flow under infrastructure, such as roads.

Highway gullies - these are most commonly found along the edges of roads and are designed to drain surface water away from the roads and into the sewer system.

Sewers and pumping stations

Sewers – these are a series of underground pipes that carry sewage and surface water in combined sewers. Sewers drain water away to water treatment works to be treated and discharged.

Pumping stations – these move water from one location to another. Pumping stations are often found in lowland areas where gravity flow is not possible. Pumping stations need to be operated by people and are resource and energy intensive.

Sustainable solutions

Nature-based solutions – there are many different types of nature-based solutions that use sustainable measures to manage environment stresses, such as flooding. Nature based solutions often deliver multiple benefits, including human and environmental, and so can be more desirable than engineered structures in some places. Measures used for flood risk management include swales, bunds, floodplain reconnection and wetlands.

Sustainable drainage solutions (SuDS) – are most commonly used in urban areas to help store and/ or drain water away. SuDS are engineered measures that work with natural processes to allow water to flow into the sewers or another drainage system. Examples of SuDS include green roofs, tree pits, rain gardens and detention basins. Similarly to nature based solutions, SuDS also have the potential to deliver multiple benefits.

Property flood resilience (PFR) – include resistance and adaptation measures. Resistance measures aims to prevent flood water from entering a property by using flood doors, gates, non-return valves and pumps. Adaptation measures aim to reduce the effects if flood water does enter a property, such as waterproof plaster, concrete floors, lifting plug sockets and moving valuables to a higher place. Adaptation measures also aim to reduce the time, effort, and cost of recovering from a flood.

Innovation

Research projects – for example, feasibility studies or modelling can help us understand how local flooding processes work. Modelling can also help to suggest locations for new flood risk management schemes and the potential benefits they could achieve.

Surveys – these help us to understand how communities feel about specific topics, for example flooding and climate change. The results from surveys can help identify areas of achievement and areas that may need improvement.

Drainage asset map

