

Surface Water Management Strategies For Legacy Combined Sewer Systems

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PROJECT SUMMARY

The excess flow of stormwater into combined sewer systems can have severe consequences, such as internal and external flooding events and a contribution to the pollution of watercourses through overflows. These have associated financial, reputational and compliance impacts for water companies. In addition, combined systems demand high financial and carbon investment, through both the construction and operation (pumping and treatment) phases of their lifecycle.

A combination of population growth, urban development and climate change will act to increase the volume and rate of foul and stormwater flow into existing systems, and so exacerbate existing and trigger new problems. As such, the continued use of and investment in conventional wastewater infrastructure has been identified as being unsustainable.

An alternative approach is the removal of impermeable area from contributing flow to the combined sewer and the subsequent management and routing of stormwater flow within an urban area. This is known as *stormwater disconnection*. This project will facilitate the objective use of sustainable stormwater management by generating tools and techniques to enable the use of stormwater disconnection in urban areas.

Stage One – Tool Development

In order to holistically assess stormwater disconnection strategies it was necessary to aggregate and develop a comprehensive suite of tools. These have been sourced from industrial, academic and technical sources.

Stage Two – Develop Solution Strategies

For two case study catchments, a number of long term solutions will be created. These will resolve known flooding incidents, and provide protection against a range of future pressures.

Solutions will follow scenario guidelines:

- A fully conventional, traditional hard engineering scenario
- A fully SuDS-orientated approach enacted unilaterally by the water authority
- The use of conventional systems to bring the catchment up to standard, phased stormwater disconnection to maintain
- A “mainstreaming adaption” approach.

Solutions involving a retrofit SuDS component will be designed in accordance with CIRIA C713 Retrofit Guidance.

Stage Three – Employ Assessment Tool

The tools will then be used to assess each strategy across each criterion.

This will give four strategies, each having been holistically assessed.

Stage Four – Decision Selection Process

A number of statistical mechanisms will be used to decide between the strategies, to both test which strategy is optimum and to identify which selection methods are most robust.

Stage Five – Identify Barriers and Make Recommendations

Continued interaction throughout the project with staff internal to the water companies, and external parties such as regulators and local authorities will seek to identify what barriers there are to following the identified optimum strategy.

Recommendations will then be made to remove these barriers, using legislative, political, organisational, or economic “levers” to do so.



FIGURE 1. – ILLUSTRATIVE EXAMPLE OF THE USE OF RETROFIT SuDS WITHIN AN URBAN AREA

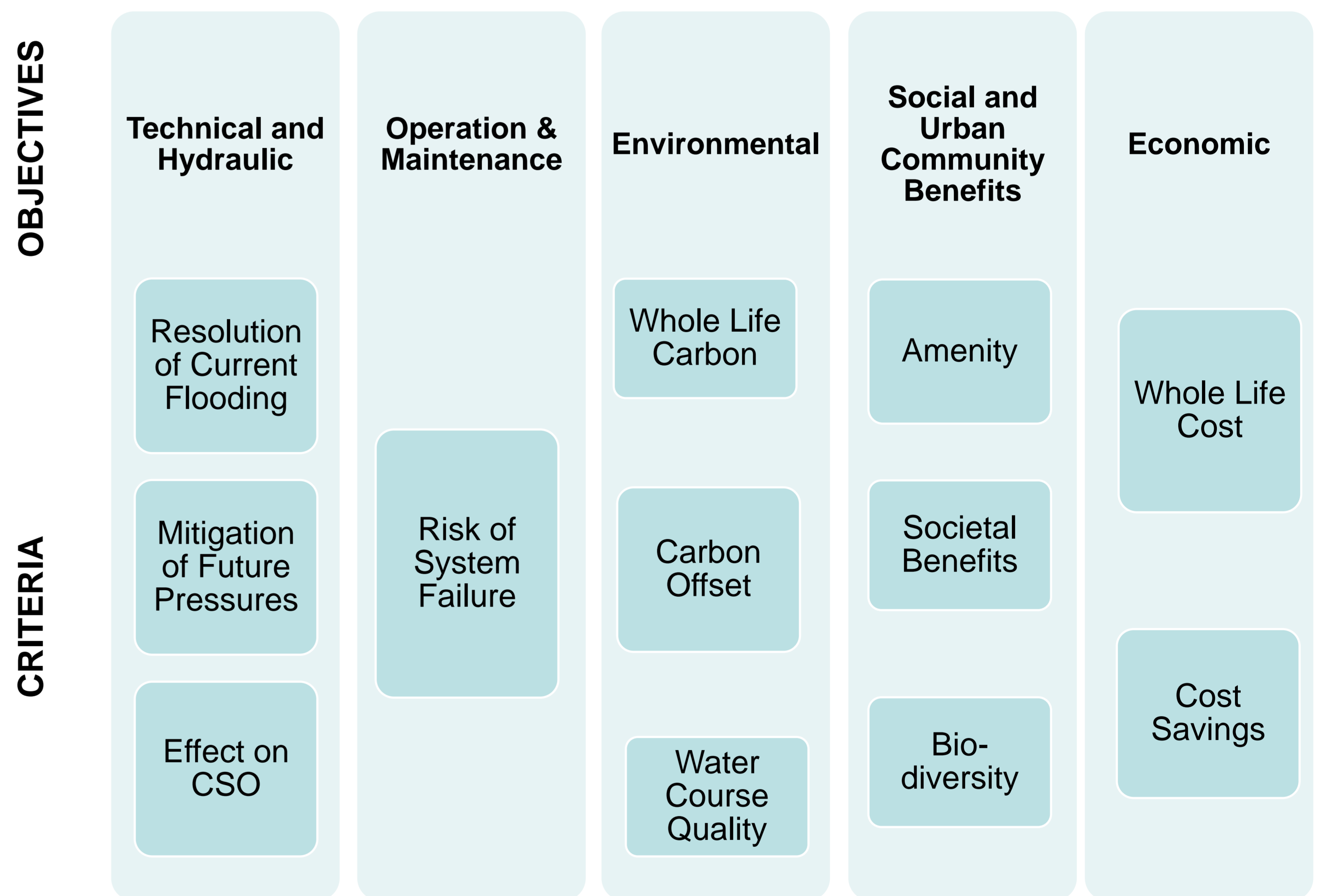


FIGURE 2. – CONCEPTUAL DIAGRAM OF THE HOLISTIC ASSESSMENT TOOL

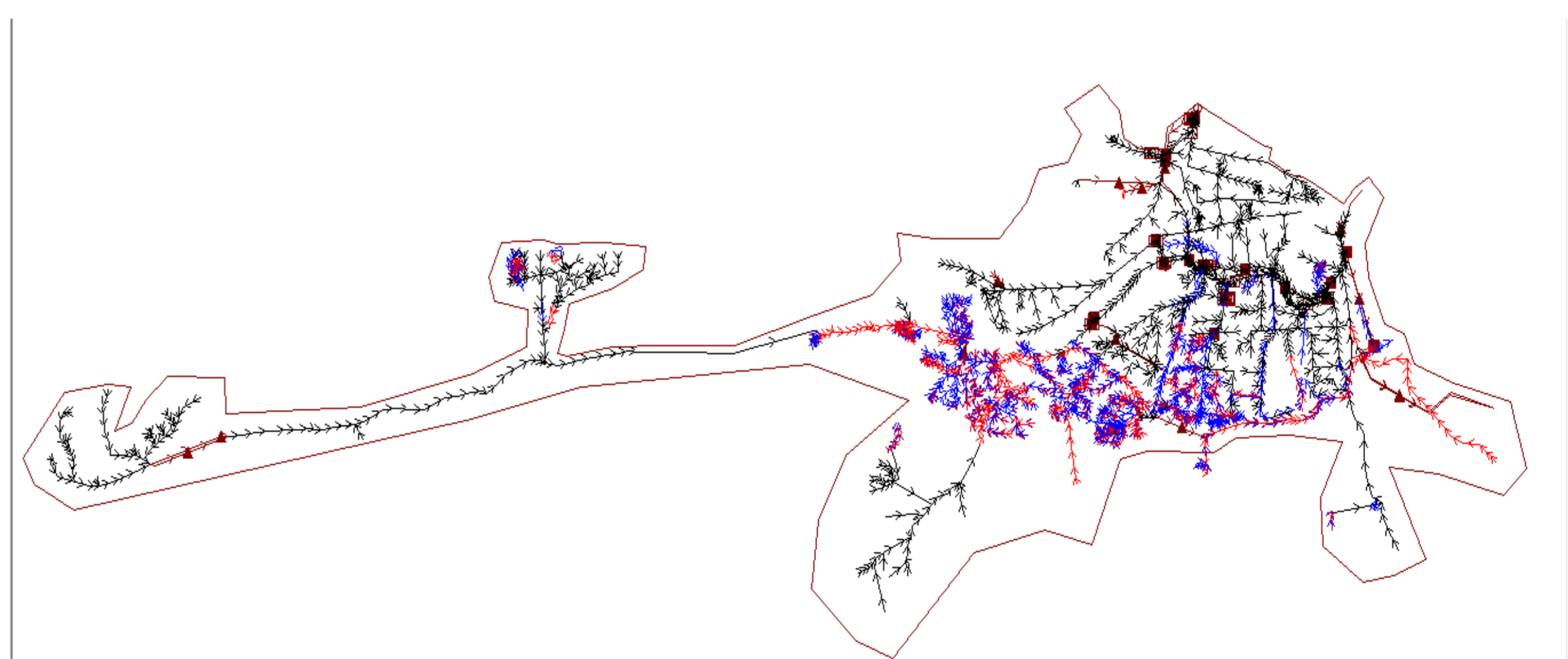


FIGURE 3. – SEWER NETWORK MODEL REPRESENTATION OF A CASE STUDY CATCHMENT



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