6: Recommended Outline Design (2 of 2)

Proposed Outline Design – Clash Burn Culvert Upgrades (Flood Cell 2)

The proposed outline design for the Clash Burn includes the replacement and realignment of the existing culverts with larger diameter pipes ranging in size from 600-1050mm (see Figure 11). These works will be permanently below ground so there will be no visible change to the area after the works are complete, and the soft landscaping is re-established.

The proposals include diverting the existing culvert from its current route via Montgomery Way, Smith Street and Sandport due to restricted access in private properties and to minimise any disruption to the public.

New culvert headwalls (Figure 12) will be required at transition points to allow efficient transfer of flow between the open channel and culverted sections of the Clash Burn. Trash screens will trap debris at the culvert inlet to reduce the risk of internal blockage and will provide safe access for clearance.

This work is likely to require the diversion of existing utilities to make space below ground for the larger culverts that are proposed. As seen in Figure 13, the arrangement of existing utilities in urban areas can often be complex and congested, with numerous crossings. Ground Investigation work has recently been completed to increase our knowledge of such utility locations and this will inform future work to divert these utilities in advance of the main works.

Figure 12 Typical Headwall and trash screen

Figure 13 Typical utility clashes

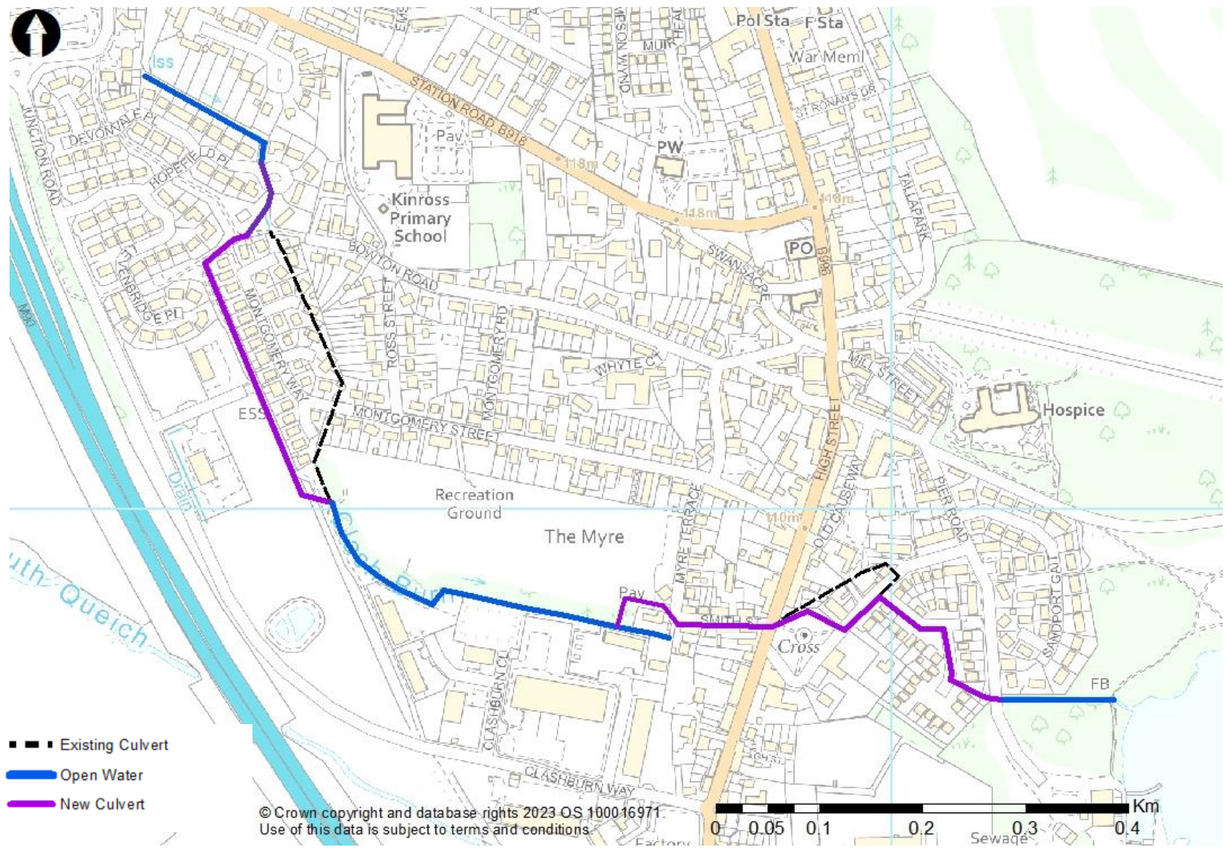

Figure 11 Proposed Culvert Improvements on the Clash Burn

Proposed Outline Design – M90 Kinross Services Area (Flood Cell 3)

The proposed outline design for the area to the north west of the M90 Kinross Services includes a flood embankment to create floodwater storage (see Figure 14 & 15). The embankment will temporarily contain and store floodwater from an overland flood route within agricultural land rather than allowing water to flow along the M90 to the Kinross Services Area and into the town itself.

This would involve constructing an embankment across the field boundary with a new culvert and control structure underneath it (see Figure 16). The embankment will temporarily store floodwater, releasing it at a controlled rate to the Ury Burn via a control structures with a 450mm diameter concrete pipe.

The maximum height of the flood embankment would be around 1.1m above surrounding ground levels. The embankment will be constructed using earth and be finished in grass so as to blend into surrounding area. The storage area will be dry out with storm events.

The control structure would be designed such that day-to-day flows in the Ury Burn will be unaffected and the structure itself would require or moving parts.

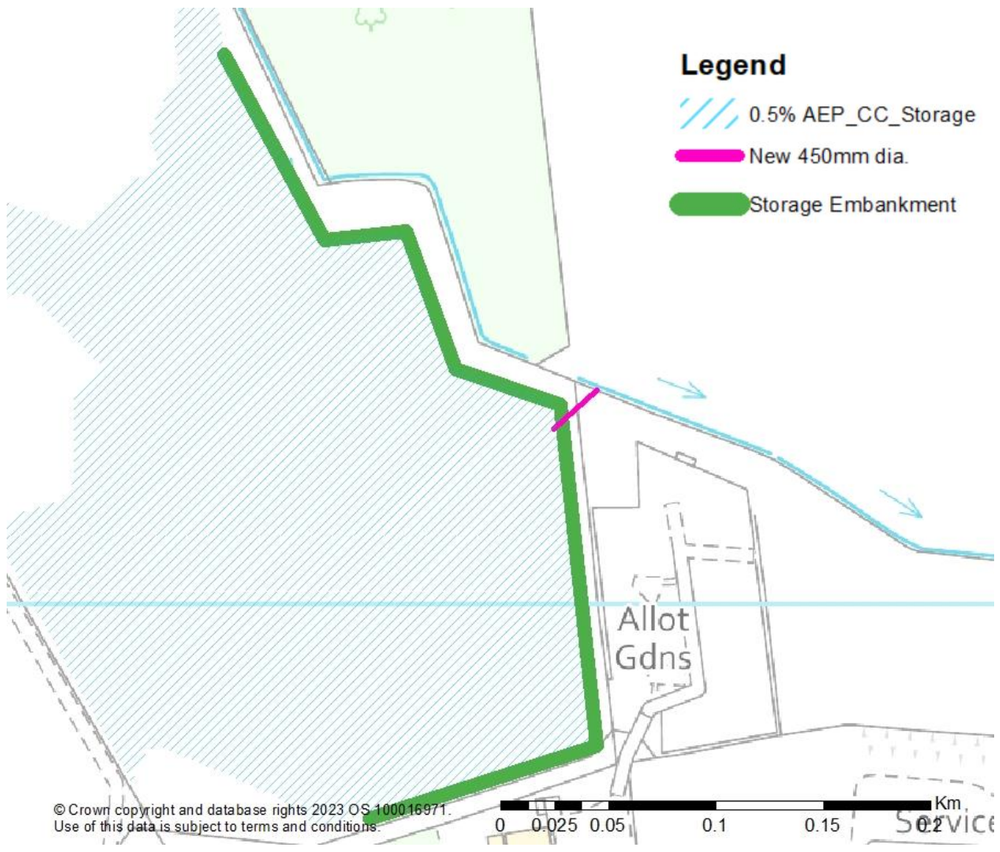

Figure 14: Proposed Flood Storage Embankment Northwest of the M90 Kinross Services Area

Figure 15: Example of a Flood Storage Area

Figure 16: Example of a Control Structure