

Peak runoff control for farm contaminant retention in the Waituna Catchment

Most contaminants (including sediment, phosphorus, and E. coli) are mobilised in or enter the drainage and stream networks during large rainfall events that result in overland flow (surficial runoff). This research project is funded by Living Water (DOC/Fonterra Partnership) and being undertaken by Land and Water Science with the primary aim of determining the most effective areas in the catchment where mitigations could reduce this issue. This is being achieved through connecting the physiographic science approach at the catchment scale, and a hydrological assessment at the paddock scale. This information will be combined to inform the best locations for controlling contaminant losses through the construction of peak runoff control structures, as shown in Figure 1 and 2.

Outputs of this project include identifying where the structures could be placed, what the structures should look like and different monitoring options to quantify their effectiveness. The primary aim of the structures are to hold back the runoff and allow the contaminants to settle out before the water is slowly released out. A secondary benefit is reduced stream power downstream, which reduces the potential of stream bank erosion adding more contaminants as well as the mobilisation of contaminants already settled on the streambed (in the substrate/mud).

Following the project, Living Water will use this information to choose an appropriate subcatchment for testing the model. Farmers will then be approached to see if they would like Living Water to build and test these structures. And after their construction, the effectiveness of each structure will be assessed to understand whether they are both individually and collectively making a difference.

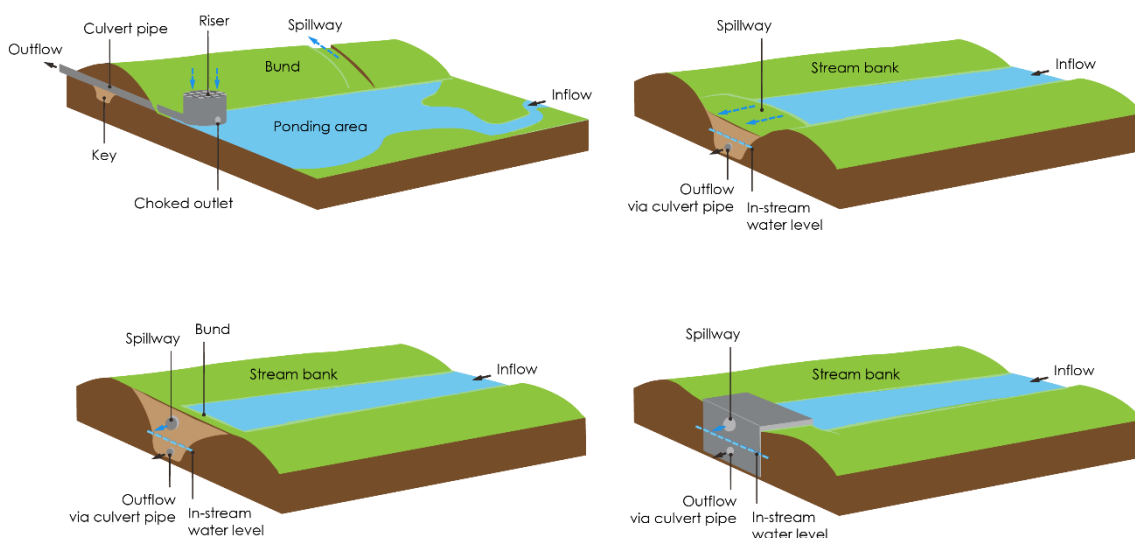


Figure 1: Potential peak runoff control structure design.

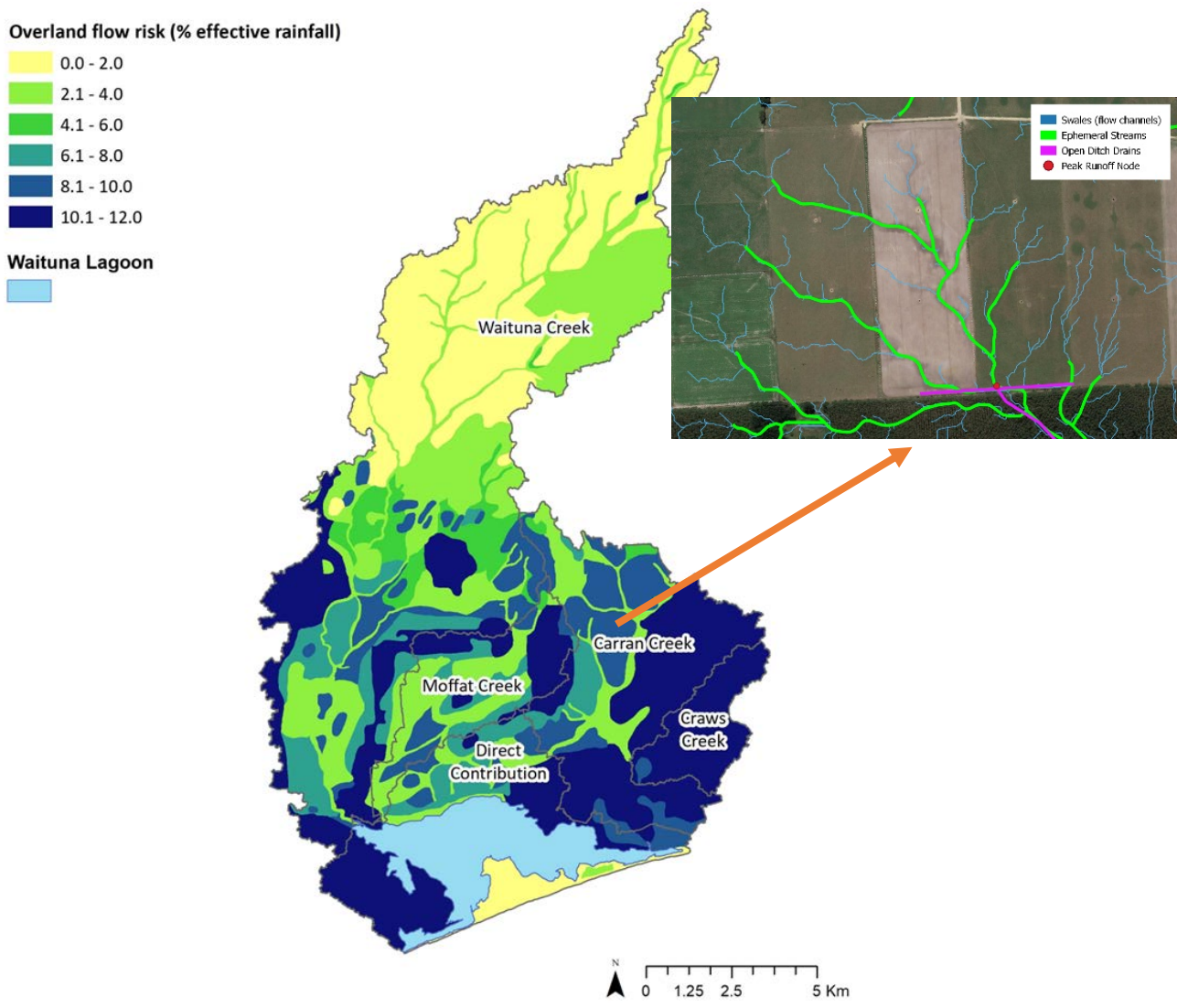


Figure 2: Catchment Scale Overland Flow risk – higher percentages = where rainfall/irrigation could potentially pond and flow across the surface. Inset: Paddock Scale Hydrological Assessment – showing the ephemeral streams (tile drains) and the open drainage network = how the water will flow across the land.