

1 MacKays to Peka Peka Expressway

Stormwater

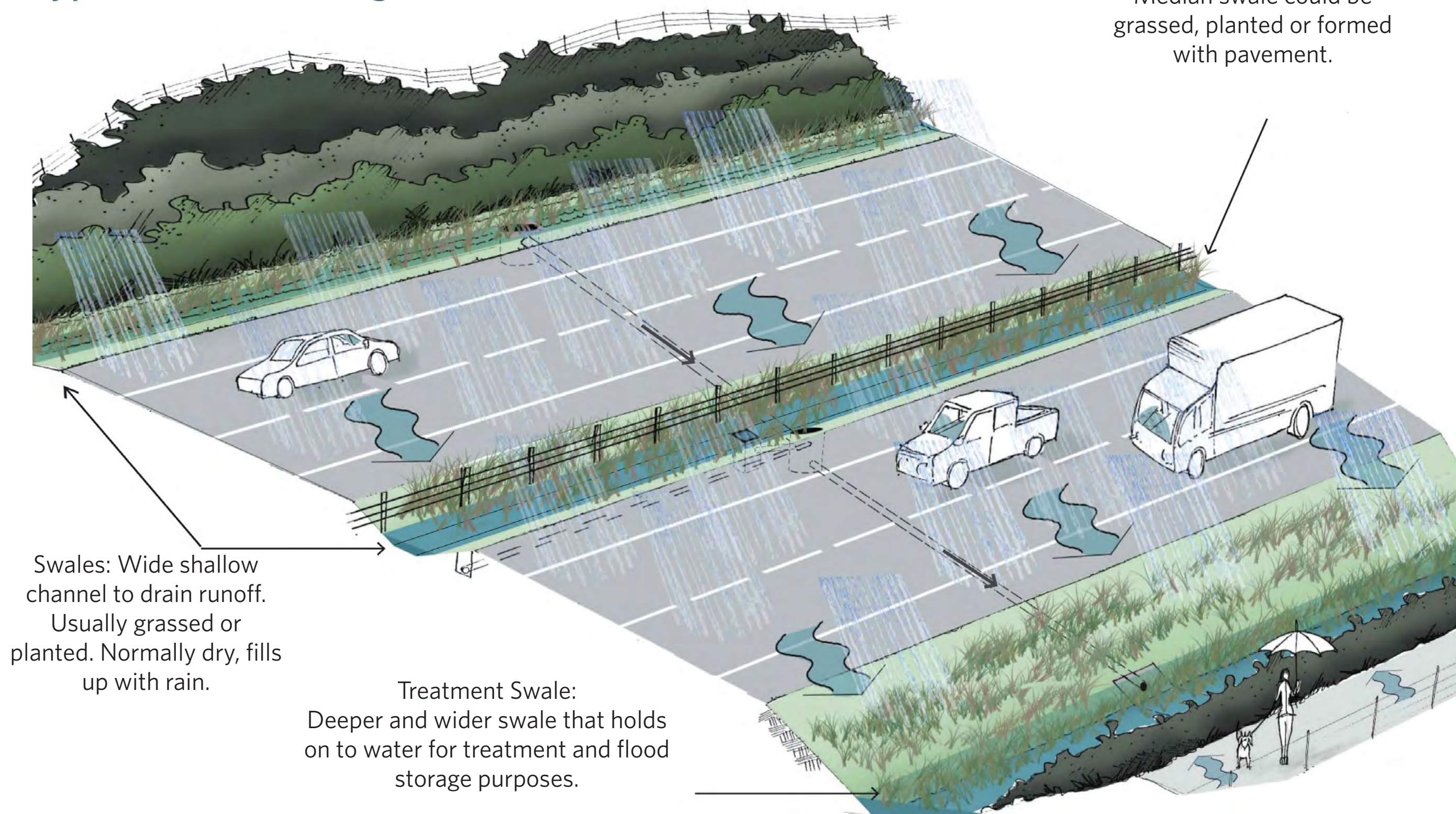
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Runoff from rainfall on the expressway (stormwater) needs to be managed carefully, both for the expressway and to protect the environment.

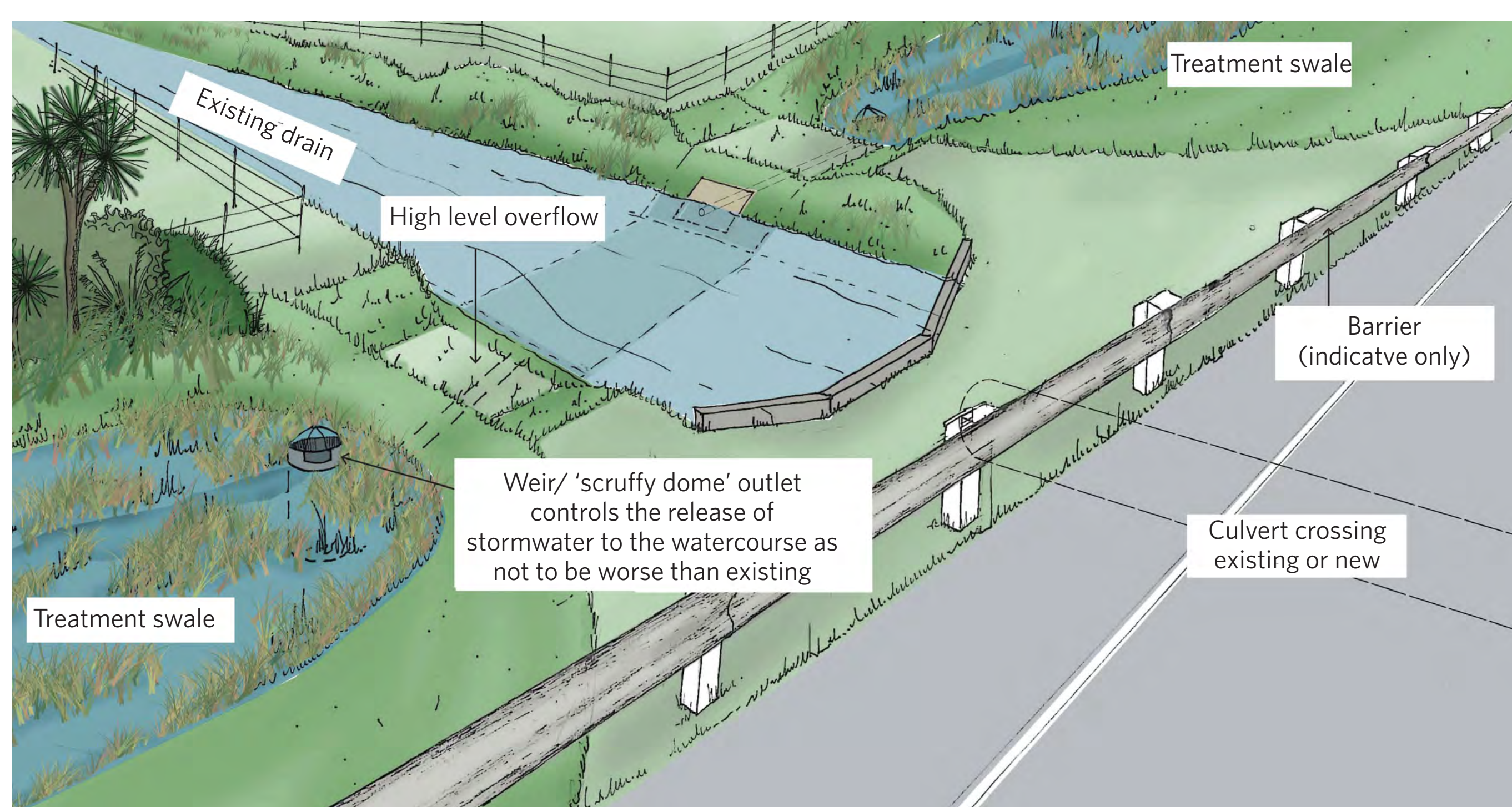
Stormwater management involves:

- Quantity of water, which can generate flooding, scouring and erosion.
- Quality of water, which can contain contaminants (including sediment).
- Wider floodplain issues as a result of the expressway obstructing flood flowpaths.
- Drainage of the expressway surface and how this is managed by sumps, pipes, swales (channels) and wetlands.
- Crossings of existing watercourses and wetlands with associated design of bridges and culverts.

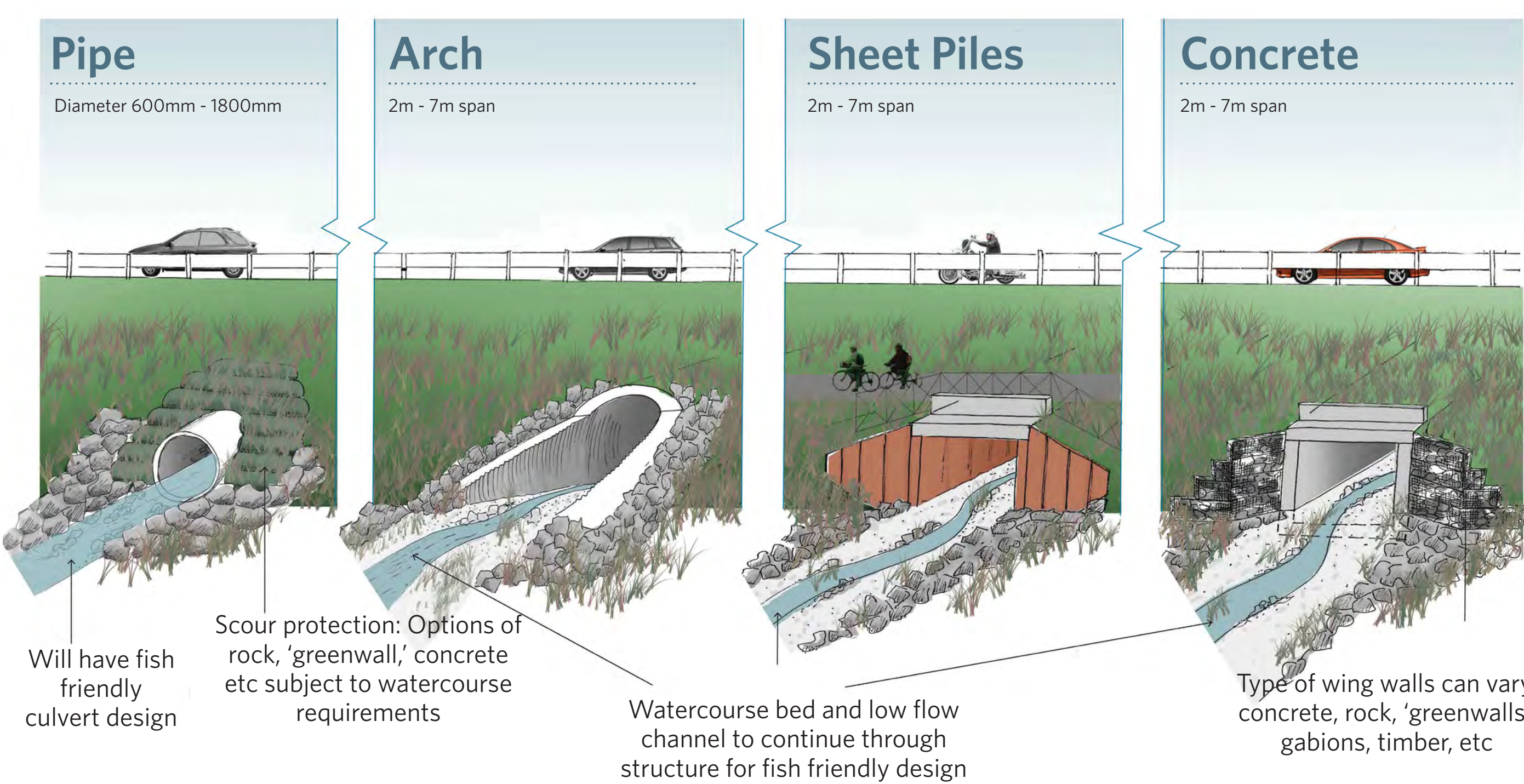
Typical swale arrangement



Typical swale outlet



Culvert design options being considered



Example of wetland in good condition after several years growth

Our approach to stormwater management

- Recognises the significance of the watercourses and wetlands.
- Uses best practice design approaches to meet KCDC, GWRC and NZTA standards which include, for example, requirements for climate change, flooding, treatment and fish passage.
- Recognises the opportunities for combined stormwater and ecological enhancements and benefits to both.
- Uses storage to hold back stormwater and slowly release it to avoid flooding (ie attenuation) - typically with swales and wetlands.
- Minimises the use of pipes to increase the potential for soakage into the ground where appropriate.
- Addresses stormwater contaminants through a combination of swales and treatment wetlands that improves the water quality prior to its discharge.
- Bases the watercourse crossings on KCDC's & GWRC's models in order to test and refine the designs and proposed mitigation measures.
- Incorporates habitat value in watercourse crossing design including the use of bridges, fish friendly design and continuing streambeds through larger culverts.
- Maintains floodpaths and allows for storage areas eg Waikanae River and along the Wharemauku Stream.
- Recognises wetlands require long term involvement and maintenance.

Wetlands and groundwater

The expressway crosses a mix of rural and urban catchments over both sand and peat with many drains, streams, creeks and the Waikanae River. There are also a number of wetlands in the lower lying areas. The expressway will interact with all of these features, many of which are environmentally and culturally significant.

Groundwater connectivity across the expressway, particularly important between wetlands, will be investigated, modelled, and measures included in the design so that the current groundwater connections are maintained.

Wetland function

