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Christchurch Southern Motorway Stage 2 and Main South Road Four-Laning

Stormwater

Runoff from rainfall on CSM2 and MSRFL (stormwater) needs to be managed carefully, to protect both the environment and the highway.

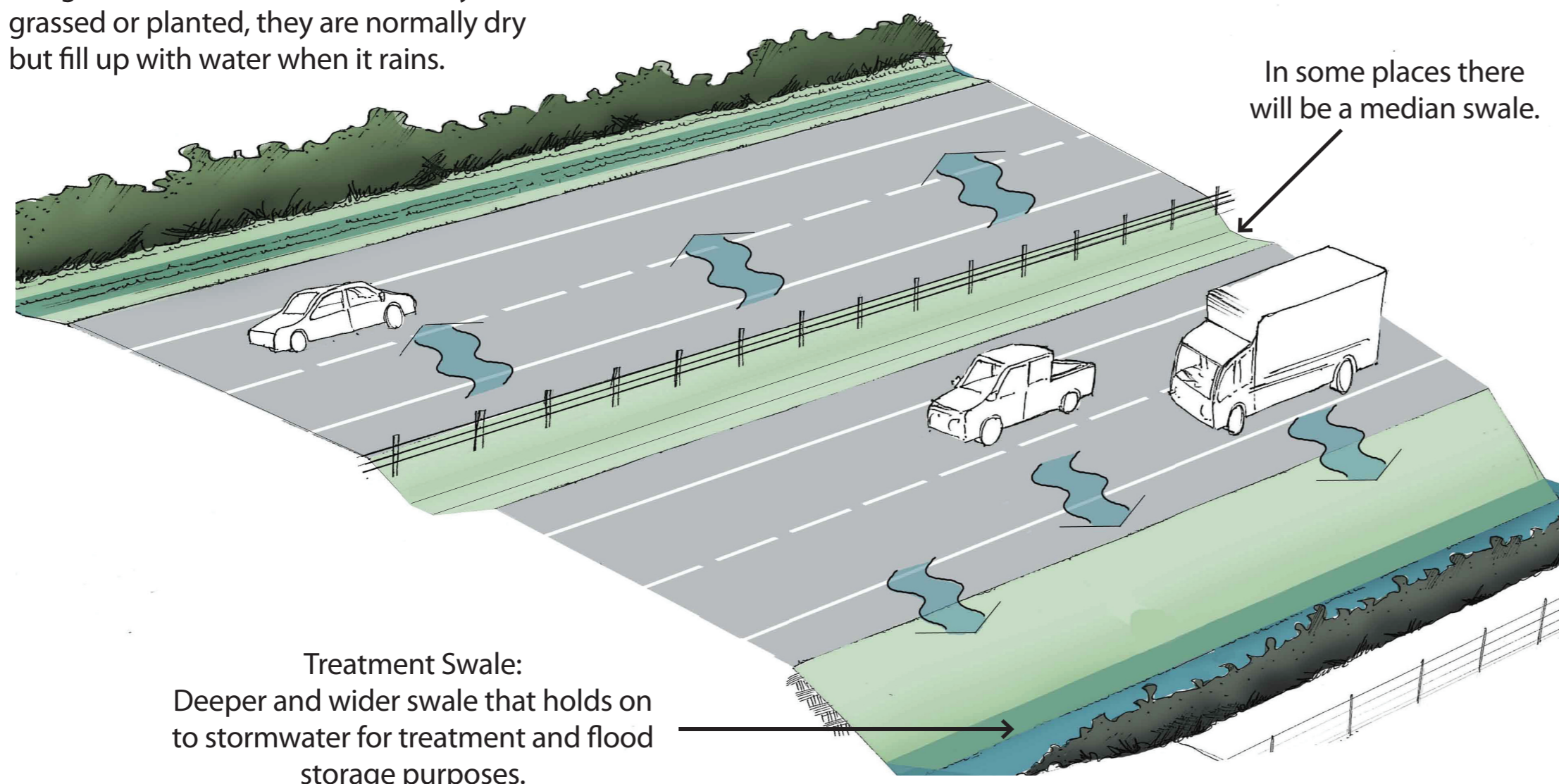
Stormwater management involves:

- Ensuring drainage and disposal of the rain that falls on the highway with sumps, pipes, swales (wide grassed channels) and soakage.
- Managing the quantity of water which can result in flooding.
- Managing wider floodplain issues i.e. the potential of the highway to obstruct existing flood flowpaths.
- Managing the quality of water by removing sediment and contaminants.
- Minimising the effects on and from groundwater.

Typical swale arrangement

What is a swale?

Swales are wide shallow channels designed to drain rain runoff. Usually grassed or planted, they are normally dry but fill up with water when it rains.



Example of stormwater swale and basin



Example of stormwater treatment basin

Stormwater Collection and Treatment on CSM2 and MSRFL

The stormwater system for CSM2 and MSRFL is designed to drain a 100 year rainfall event away from the road.

We have used best practice design techniques to meet CCC, SDC, ECan and NZTA standards and have taken climate change into account.

Rainfall will typically run off the road onto grassed road edges and collect in roadside swales (wide grassed channels) where much of the water will soak into the ground.

If rain is heavy or prolonged, the swales fill and drain into treatment and disposal areas. These areas store stormwater and release it slowly to avoid flooding of the highway and surrounding land.

We try to minimise the use of pipes to increase the potential for soakage into the ground where appropriate. However, kerbs and channels will be used in some areas such as intersections and underpasses.

The majority of the runoff will be disposed of via soakage into the ground and will be treated through natural processes. The stormwater storage areas allow sediment and contaminants to settle out of the water and collect floating debris. Underground drains will increase the amount of water that can be disposed of by increasing the area of soakage.

Overland flows

Pipes with man-holes and trash racks will be installed in low lying areas along the highway to allow potential flood water to pass beneath the road. Typically these locations are old river beds where water naturally collects and flows.

Stockwater races

Where CSM2 and MSRFL crosses existing stockwater races we intend to pipe the stockwater races beneath the motorway. Closure of some minor races may be considered which would happen in consultation with affected landowners and SDC.