

Works Within a Watercourse

Streamworks Methodology

Why do streamworks need controls?

Because streams are so highly vulnerable to any damage, any works undertaken in streams need to be avoided or have controls that follow guidelines to minimise or eliminate sediment input and ecological effects. A streamworks methodology should take into account planning, design, construction and monitoring tasks. This will enable any work taking place in a watercourse to be stable and minimise the risk of damage to the stream and ensure that after the works have been completed that the new controls in the stream work effectively and that the appropriate mitigation has been implemented.

Note: this factsheet does not constitute ARC approval; other consents and mitigative strategies may be required. The proponent is advised to contact all other appropriate regulatory agencies.

Planning

- Any works to be undertaken in a watercourse should be well planned and designed long before they are needed.
- It is important to keep the stream habitat as complete and unchanged as possible to keep a stable stream environment for any aquatic biota. Include research as to what fish species are present in the stream and what conditions they require. Auckland Regional Council Technical Publication No. 131 *Fish Passage Guidelines for The Auckland Region* is a useful guide for this purpose.

Design

- Ensure that the streamworks comply with any technical requirements of various agencies involved and those specific requirements of the Auckland Regional Council¹.
- Design and construct any works to suitable sizes and to allow for any unexpected heavy rain events such as a 100 year flood event during and after construction.
- Design works to suit aquatic biota present in stream including fish passage, vegetation, flow velocity and natural streambed simulators.

Construction

- Works in a watercourse should be constructed at a location where potential effects are eliminated or minimised.
- Undertake works within a watercourse only during dry weather.
- Stabilise area of construction immediately.

¹Refer to the Auckland Regional Plan: Sediment Control and the Auckland Regional Plan: Air, Land and Water, available on the ARC website at www.arc.govt.nz.

Monitoring

- After construction has been completed check that stream and works within it are functioning as designed and that there is no damage to the stream.
- Check that no erosion has occurred and that no sediment has entered the stream.

Key factors of design for streamworks

There are a number of key factors that should be taken into account when designing streamworks so that when implemented the works do not cause any damage to the watercourse. It is useful to check that your works are in compliance with any requirements set out by various agencies and the Auckland Regional Council. Below are a few key design factors for the most common works in a watercourse:

Culverts

- Ensure a safe stream diversion is created while installing a culvert.
- Use a large enough culvert to account for times of increased flow (check the district council requirements also).
- Keep the floor of the culvert below the level of the streambed to enable fish passage.
- Construct spoilers or baffles to keep flow velocities low and create resting pools.

Stream Diversions

- Follow appropriate methods to ensure no sediment enters watercourse.
- Line and stabilise diversion bed and banks.
- Create areas for fish and organisms to use as hiding/nesting grounds.
- Ensure diversion is sized to cope with high flow events.

Bridges and Fords

- Check to see that bridge/ford is an appropriate and safe place over stream.
- Construct Bridge/ford to cope with predicted usage.
- Check crossings after all major storm events and repair damage immediately.
- Ensure bridges can cope with a 100 year flood event still allowing suitable clearance between water level and base of bridge.

Planting in stream

- Use native species appropriate to organisms present in stream.
- Plant streambanks to enable stabilisation, stop further erosion and create shade.
- Create habitats with rocks and plants in stream.
- Disturb as little sediment as possible while planting.
- Clear away any unwanted or foreign weeds from the watercourse and replace with native flora.

A clear and concise plan and method of works should be implemented to ensure that the stream does not receive any sediment or runoff and to ensure that the ecological integrity of the stream is maintained or enhanced. Early planning can also help to check that all works in a watercourse comply with permitted activity or consent standards and ensures the stream is kept as natural as possible. Long term monitoring may also be required – check your consent conditions.

Further Information and References

The Auckland Regional Council has a number of technical publications relating to works within a watercourse including fish passage, sizing and design suggestions and appropriate models of stream diversions available for viewing at the Internet link: <http://www.arc.govt.nz/arc/about-arc/publications/> Or for further information contact Enviroline or the Sediment Management Team on (09) 366 2000.