BACKGROUND

The following services commonly cross rivers and streams:
- Telecommunication cables.
- Water mains and sewers (including irrigation pipes).
- Gas mains.
- Power cables (overhead or underground).
- Private services.

The methods of construction include:
- Directional boring.
- Open cut excavated conduits.
- Above ground conduits.
- Overhead cables.

POTENTIAL WATERWAY IMPACTS

The potential impacts can include:
- Disturbance to bed and banks leading to erosion and sedimentation.
- Pipeline leakage discharging into the stream.
- The loss of vegetation as part of service corridors.

ASSESSMENT CRITERIA

BORED CONDUITS

Underground pipes and conduits are usually preferable, particularly if they can be bored under the stream. The advantages of boring include:
- No disruption to the bed and batters of a stream and therefore negligible risk of erosion at the site. The borehole should terminate as far as practicable from the stream banks to avoid disturbance to the riparian zone.
- No effect on the hydraulic capacity of a stream.
- Provision of functionality without affecting visual amenity.

Open Cut Excavation

Open cut excavated conduits across streams can cause environmental impacts during construction and therefore should be avoided wherever possible. Where unavoidable, the key issue for these works is managing the environmental impacts during construction, particularly in relation to methods of excavation and backfilling. Construction should preferably be undertaken when flows are low, to minimise local and downstream impacts. Provision should be made for continuous flows past the works site.

Aerial Cables

Aerial cables over waterways generally have minimal impact on the waterway. The key criteria are the location of poles or towers in relation to the banks and existing trees.

Cover and Clearance Requirements

The minimum clearance between the lowest point of the bed and the pipeline or conduit should be in accordance with the relevant authorities requirements. Generally, a minimum 1 meter cover over underground conduits should be adopted under the bed and banks, which will allow for future deepening of the bed and avoid inadvertent excavation of the conduit. The cover should be increased where site investigations show the downstream bed to be unstable or at risk of deepening. These investigations may include a longitudinal survey of the bed by the proponent. Alternatively, bed stabilisation works could be undertaken to minimise this risk. Such works must form part of the application.

Poles or towers, and support guys, should be located at least 5 meters from the top of the bank. This will minimise the impact to the waterway values of the stream. The width may need to be increased where there is a risk of bank retreat or an avulsion. Where waterways are navigable, additional vertical clearance may be required.

Pipe Types

The type of pipe laid under streams should take into consideration the potential for bed movement, especially in sandy streambeds during floods. For this reason continuous pipes with welded joints are recommended in sandy streambeds to mitigate failure of the service.

Environmental Impacts

The environmental impact is minimised where there is the least disturbance to the site. Tree clearing and lopping should be minimised to reduce the loss of habitat for birds and animals. Disturbed areas are to be reinstated with suitable native vegetation. Areas below the overhead cables should be re-planted with low growing plant species.

Marker Posts and Signs

The location of the underground service is to be clearly identified with suitable marker posts for future reference with depth to service and contact details of the owner. Overhead cables are also to be clearly marked.