

Guidelines for controlled activities

In-stream works

This guideline relates to the design and construction of works within a watercourse and/or riparian corridor. Such works may include enhancements of the watercourse, rehabilitation, channel modifications, bed controls, pipe and cable trenching and laying, etc.

Controlled activities carried out in, on or under waterfront land are now regulated by the *Water Management Act 2000* (WMA). The Department of Water and Energy is required to assess the impact of a controlled activity to ensure that minimal harm will be done to any waterfront land, ie the bed and a distance inland of 40 metres from a river, lake or estuary.

This means that a controlled activity approval must be obtained from the Department prior to carrying out a controlled activity.

The design and construction of works and activities within a watercourse and/or the adjoining riparian corridor should aim to be as 'natural' as possible. A watercourse 'rehabilitation' design philosophy rather than a 'construction' philosophy should be applied.

Consultation with relevant government agencies at the concept stage (of development) and during the design phase is recommended so that good outcomes can be identified, planned for and achieved.

The design and construction footprint, and the extent of disturbances within the riparian corridor, should be minimised while achieving the desired function and outcome. All ancillary infrastructure such as asset protection zones (APZ), utility easements, detention basins and water quality control structures, roads, paths/cycle ways, etc. should be located outside of any riparian corridor. Runoff should be of appropriate water quality and quantity before discharging into a riparian corridor or watercourse. Appropriate rehabilitation of disturbed areas following the works should restore the integrity of the watercourse and riparian corridor.

In order to minimise the impacts of in-stream works on the hydrologic, hydraulic and geomorphic functions on a watercourse, all works and activities should be designed and constructed to maintain the integrity of the existing channel, as well as being sympathetic with the ecological values of the watercourse and its riparian corridor.

The design and construction of in-stream works should consider, but not be limited to, the following design principles:

- Identify the appropriate width of the riparian corridor in accordance with the Department's *Guidelines for controlled activities – Riparian corridors*.
- The design and construction of in-stream works should consider the full width of the riparian corridor and riparian functions, including accommodating fully structured native vegetation.
- Identify options for works and show rationale for the selection of preferred options.
- The design and construction footprint and the proposed extent of disturbances to soil and vegetation within the riparian corridor should be minimised.
- Maintain or mimic existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse. Demonstrate that the in-stream works will not have a detrimental effect on these functions.



- Maintain natural geomorphic processes; that is:
 - accommodate natural watercourse functions
 - establish natural bed and bank profiles, eg. meanders, chains of ponds, surface water pools and riffles, bed controls, etc.
 - allow for the movement of sediment and woody debris
 - do not increase scour and erosion of the watercourse bed or banks in any storm events
 - avoid locating works or structures on bends in the channel unless they are structures to restore stability
 - where existing bed degradation occurs, address bed degradation to protect structure and restore channel bed stability.
- Maintain natural hydrological regimes; that is:
 - accommodate site hydrological conditions, eg. maintain low flows
 - do not alter natural bank full or floodplain flows. Modifications to watercourses should be based on roughness coefficients that represent the 'natural' state including fully structured mature riparian vegetation.
 - do not change the gradient of the bed (except to address existing bed and bank degradation).
 - do not increase velocities by constricting flows.
- Protect against scour by designing and providing any necessary scour protection, eg. rock rip-rap and vegetation.
- Stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance in order to adequately restore the integrity of the riparian corridor.
- Monitor and maintain all in-stream works until suitably stabilised.

When seeking approval to construct in-stream works, information detailing the above is required for the Department to assess the works and authorise the activity if acceptable. Details of all in-stream works/activities should be designed by suitably qualified persons.

Additional information will generally also be required and may include but not be limited to:

- Detailed design drawings of proposed works. Engineering certification may be required.
- Detailed design drawings which include a surveyed plan, cross sections (across the watercourse) and a long section of the watercourse, showing the proposed works relative to existing and proposed bed and bank profiles and water levels. The cross section is to extend to the landward limit of the identified riparian corridor.
- Report detailing pre and post construction hydraulic conditions. The report should address, bank full discharge, velocity, tractive force or sheer stress, afflux (Modified RTA method is acceptable), Froude and Manning 'n', relative to the proposed structure.
- Plans showing extent and designs of permanent bed and bank stabilisation works necessary for scour protection.
- Photographs of the site should be supplied and photo points should be identified for future monitoring and reporting purposes. The photo points should be identified by GPS coordinates or by survey particularly for large scale earthworks or extractive industries.
- A Vegetation Management Plan prepared in accordance with the Department's *Guidelines for controlled activities – Vegetation Management Plans*.
- A Site Management plan incorporating the schedule, sequence and duration of works, erosion and sediment controls, monitoring and reporting, etc.
- Costing of all works (ie materials, labour) and stages of works (eg. channel stabilisation, rehabilitation)
- Provide for a maintenance period of a minimum of two years after practical completion of each stage, depending on the extent and risk of the works or until suitably stable. Maintenance should include sediment and erosion control, replacement of any works/areas damaged or destroyed by flows and flooding or vandalism, and any other requirements necessary to ensure a naturalised stable watercourse system is functioning by the end of the maintenance period.
- Other relevant approvals eg development consent.

Further information

If you require more information about controlled activity approvals please contact your local DWE office or visit our website www.dwe.nsw.gov.au

Important notes

DWE has prepared these guidelines in good faith. In the case of any inconsistency between the guidelines and the controlled activity approval or legislation, the controlled activity approval or legislation will prevail to the extent of that inconsistency.

Nothing in these guidelines is taken to authorise a controlled activity. These guidelines are designed to provide information to assist in the design of any development or work that constitutes a controlled activity and the preparation of an application for a controlled activity approval. Users are advised to seek professional advice and to refer to the legislation and any relevant approvals, as necessary, before taking action in relation to any matters covered by the guidelines.

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