



CODE OF PRACTICE

Minor work in NSW waterways

October 2014

RMS 14.441

CODE OF PRACTICE FOR MINOR WORK IN NSW WATERWAYS

Purpose of the Code

This *Code of Practice* (the Code) simplifies the consultation process between Roads and Maritime Services (hereafter referred to as Roads and Maritime) and the NSW Department of Primary Industries (Fisheries) (Fisheries NSW).

The Code defines minor work that will not need to be referred to Fisheries NSW because it is considered low risk to native fish and key fish habitats and use the standard safeguards outlined in the Code.

Roads and Maritime's environmental assessment procedures are not changed by this Code. Project managers must follow the *Environmental Assessment Procedure for Routine and Minor Works* (RTA 2011).

Background

Under Part 7, Division 3, Section 199 of the *Fisheries Management Act 1994* (FM Act) Roads and Maritime must consult with Fisheries NSW before carrying out or authorising dredging or reclamation work. Roads and Maritime often carries out minor work that meets the definition of dredging and reclamation (see Definitions section), but presents a low risk to native fish and their habitats. Consultation each time this work is carried out creates a regulatory burden for both agencies.

In drafting this Code, regard was had to the objectives of Part 7, Division 3 of the FM Act to conserve the biodiversity of fish and aquatic vegetation and to protect fish habitat by providing for the management of dredging and reclamation work, consistent with the objectives of ecologically sustainable development.

Roads and Maritime submitted this Code and the Roads and Maritime *Environmental Assessment Procedure for Routine and Minor Works* (2011) to Fisheries NSW to meet notification and consultation requirements under Section 199 of the FM Act. After Fisheries NSW assessed the Code and procedure, they issued a letter of endorsement to the Roads and Maritime (see Appendix 1).

Objectives

Roads and Maritime and Fisheries NSW agree that:

- The Code applies to Roads and Maritime minor work across NSW which employ appropriate safeguards as described below
- The minor work, when carried out with the appropriate safeguards, presents a low risk to fish stocks and key fish habitats
- Both agencies will work together to develop and deliver training to relevant staff and contractors about the Code during the first 18 months of its use
- Both agencies will work together to annually audit minor work, to which the Code applies, with regard to compliance with this Code. The results of these audits will be used to review the Code
- The Code is intended to apply for five years from 1 July 2014 to 1 July 2019
- Both agencies propose to review the Code before 1 July 2019
- The Code can be modified during the five year period if agreed to by both agencies.

Minor work covered by the Code

The following minor work is covered by the Code:

- Routine culvert maintenance work within waterways (including scraping out, water blasting or debris removal) to clear the culverts of flood debris and sediment deposited during flow or flood events
- Geotechnical work within the "disturbed zone" of the existing road alignment (eg safety checks on existing bridges) (see Definitions section)

- Maintenance of existing access tracks to road infrastructure (eg grading or repairing existing access tracks within the existing footprint of the road to original design specifications)
- Maintenance of existing fishways/fish bypasses located on or near road infrastructure to ensure they are working to their design specifications
- Maintenance of existing scour protection work, gabion baskets and aprons on culverts, including maintenance work to wingwalls and headwalls where the invert level of the culvert cells is not altered
- Snag management to remove snags affecting the structural integrity and function of bridges, culverts and other road infrastructure (see Safeguards section relating to snag management)
- Maintenance of bridge superstructure (minor repairs such as cleaning, repainting, minor repairs to existing bridge piers)
- Bridge abutment repair (eg concrete patch repairs or bearing repairs) that do not require in-stream dewatering or other activities not covered by the Code (see below).

Minor work that is not covered by the Code

Roads and Maritime must consult with Fisheries NSW for work that will involve all work other than those listed above that fall within the definition of dredging or reclamation work, including:

- In-stream dewatering activities
- Construction of temporary waterway crossings
- Construction of new access tracks to access new or existing Roads and Maritime infrastructure or the widening of existing access tracks
- Geotechnical work for new road alignments or re-alignments
- Scour protection work for existing culverts which extend beyond the existing protection work or which alter the original invert level of the culvert
- Culvert extensions, replacements, realignments or alterations to existing invert levels of culverts
- Alteration to the cross sectional area/hydraulic capacity of a culvert
- Bridge abutment extension work
- Harm to marine vegetation* (eg saltmarsh, mangroves or seagrasses and includes their seedlings) or in-stream native aquatic vegetation
- Temporary or permanent blockage of fish passage
- Moorings, installation of new piers and barges or similar
- The use of explosives or electrical devices in waterways
- Creek diversions
- Works where a Project REF is required for work within a waterway.

*Authorisation (permit) is required for activities that result in harm to marine vegetation

Safeguards that must be used for minor work

Roads and Maritime must consult with Fisheries NSW if the safeguards applicable to the work, as described below will not, or cannot, be used.

This Code covers minor work that:

- Uses the applicable safeguards listed in Roads and Maritime's *Environmental Assessment Procedure for Routine and Minor Works* (2011) (see Appendix 2); and
- Is be consistent with Chapter 10 of the Roads and Maritime *Biodiversity Guidelines: Managing and protecting biodiversity on RTA projects* (2011) (See Appendix 3); and
- Does not place erosion and sediment controls across a waterway; and
- Uses the following safeguards when managing snags:
 - Realign and/or relocate snags downstream of structures, in zones of low velocity and at an angle of 20° to 40° to the bank facing downstream. Align snags with root-balls so that the root-ball is against bank and at the upstream end.

- Document the following:
 1. The objectives for snag management
 2. The action to be taken for each individual snag
 3. The methods and machinery to be used
 4. The season and time period when snag management will be carried out.

If a fish kill or sick fish are observed, the site manager should immediately contact the Fishers Watch Hotline on 1800 043 536 to initiate a fish kill investigation by Fisheries NSW.

Contact List for Fisheries NSW Regional Conservation Managers

Under Section 199 of the FM Act, Roads and Maritime must consult with Fisheries NSW before carrying out or authorising dredging or reclamation work in waterways that are not covered by this Code. Fisheries NSW Regional staff are listed in the table below.

Table 1: Fisheries NSW Regional Conservation Managers.

Region	Catchments covered	Contact name and Postal address	Telephone (02)	Fax (02)
North West and Central West	Namoi, Gwydir, Border Rivers, Bogan, Macquarie, Castlereagh	David Ward Aquatic Ecosystems Unit 4 Marsden Park Road Calala NSW 2340	6763 1255	6763 1265
South West	Murrumbidgee, Murray, Lower Darling	Luke Pearce Aquatic Ecosystems Unit Unit 3/556 Macauley Street Albury NSW 2640	6042 4213	6021 0113
North Coast	Coastal catchments from Queensland border to Hastings River	Marcus Riches or Patrick Dwyer Aquatic Ecosystems Unit 1243 Bruxner Highway Wollongbar NSW 2477	6626 1397	6626 1377
Central	Coastal catchments from Manning River to Central Coast	Scott Carter Aquatic Ecosystems Unit Private Bag 1 Nelson Bay NSW 2315	4916 3931	4982 2306
Hawkesbury-Nepean and northern beaches of Sydney	Hawkesbury-Nepean	Marcel Green Aquatic Ecosystems Unit PO Box 21 Cronulla NSW 2230	8437 4933	9966 0650
Sydney Metropolitan Area	Port Jackson south to the Hacking River	Carla Ganassin Aquatic Ecosystems Unit PO Box 21 Cronulla NSW 2230	9527 8552	9527 8576
South Coast	Lachlan and coastal catchments from Wollongong to Victorian border	Allan Lugg Aquatic Ecosystems Unit PO Box 97 Huskisson NSW 2540	4428 3401	4441 8961
		or	or	or
		Trevor Daly PO Box 17 Batemans Bay NSW 2536	4478 9103	4472 7542

Definitions

Aquatic vegetation	Vegetation that inhabits freshwater but does not include noxious weeds within the meaning of the <i>Noxious Weeds Act 1993</i> .
Bank-full	A within channel flow where the flow is contained by the riverbanks and has not yet overtopped the riverbanks to extend out onto the floodplain.
Dredging	Has the same meaning as defined under the FM Act and associated Fisheries Management (General) Regulation 2010. In summary it includes any work involving excavating water land or work that involves the removal of woody debris, snags, gravel beds, cobbles, rocks, boulders, rock bars or native freshwater aquatic vegetation from water land. It also includes work that involves the removal of material from water land that disturbs, moves or harms woody debris, snags, gravel beds, cobbles, rocks, boulders, rock bars or native freshwater aquatic vegetation.
Disturbed zone	Has the same meaning as defined in the <i>Environmental Assessment Procedure for Routine and Minor Works</i> (RTA 2011) (EIA – PO5 I)
Flood debris	Timber limbs, branches, twigs that are less than three metres in length and less than 30 centimetres in diameter and deposited material such as silt, sediment, fines, clay or mud. Excludes gravel, cobbles, rocks, large woody debris, snags.
Key fish habitats	Aquatic habitats that are important to the sustainability of the recreational and commercial fishing industries, the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. Key fish habitats are shown in Local Government Area maps at http://www.dpi.nsw.gov.au/fisheries/habitat/protecting-habitats#KFH
Marine vegetation	Has the same meaning as defined under the FM Act and Fisheries Management (General) Regulation 2010. All saltmarsh, mangroves, seagrass and seaweeds (whether living or dead) occurring below the highest astronomical high tide on public water land including the foreshore of public water land that is below the highest astronomical tide level of the waters by which the land or area is submerged.

Reclamation	Has the same meaning as defined under the FM Act and Fisheries Management (General) Regulation 2010. Using any material (eg sand, soil, silt, gravel, concrete, timber or rocks) to fill in or reclaim water land or depositing any such material on water land for the purposes of constructing anything over water land (such as a bridge) or draining water land for the purpose of its reclamation.
Snag	Any piece of large woody debris that is both greater than three metres in length and 300 millimetres in diameter, or any rock larger than 500 millimetres in two dimensions, located in a waterway (either fresh, estuarine or marine) and is, or would be, wholly or partly submerged at a 'bank-full' flow level or highest astronomical tide level. It does not include exotic plant species, such as willow and camphor laurel trees or other vegetation listed under the <i>Noxious Weeds Act 1993</i> .
Water land	Has the same meaning as defined under the FM Act and Fisheries Management (General) Regulation 2010. Land submerged by water whether permanently or intermittently, whether forming an artificial or natural waterbody and includes wetlands.

APPENDIX 1 – LETTER OF ENDORSEMENT FROM FISHERIES NSW FOR THE CODE



Department of
Primary Industries

TRIM REF: OUT14/26464

Mr Michael Crowley
Acting General Manager Environment
Roads and Maritime Services
Level 17 101 Miller Street
NORTH SYDNEY NSW 2060

Dear Mr Crowley

Re: Code of Practice for Minor Works in NSW waterways

I refer to the subject code of practice for minor works in NSW waterways (the Code) and recent changes to the regulations of the *Fisheries Management Act 1994 (FM Act)* which provide for the exemption of certain dredging work, and certain reclamation work, carried out by the Roads and Maritime Service from certain requirements of the *FM Act* relating to the protection of aquatic habitats.

I am pleased to provide this letter of endorsement with respect to the Code, acknowledging its consistency and compliance with the objectives of Part 7, Division 3 of the *FM Act* and clause 263A of the *Fisheries Management (General) Regulations 2010*.

The development of the Code between our respective agencies represents a significant reduction in assessment and processing times and simplifies the consultation process between Roads and Maritime Services and the NSW Department of Primary Industries (Fisheries) for minor and/or routine road works.

I would like to acknowledge the excellent working relationship that exists between our two agencies and the dedication and professionalism of staff involved in the development of the code.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Peter Turnell'.

Peter Turnell
A/Executive Director, Fisheries NSW

Date: 9 September 2014

Fisheries NSW
Port Stephens Fisheries Institute
Locked Bag 1, NELSON BAY NSW 2315
Tel: 02 4984-3909 Fax: 02 4982 1107
ABN 72 189 919 072 www.dpi.nsw.gov.au

**APPENDIX 2 – ENVIRONMENTAL ASSESSMENT PROCEDURE FOR
ROUTINE AND MINOR WORK: STANDARD SAFEGUARDS LIST**

Environmental assessment procedure for routine and minor work

Standard safeguards list

EIA-PO5-G01-T02

Contents

1	Introduction.....	10
2	Standard safeguards	10

Introduction

The standard safeguards are used to ensure any routine or minor work is carried out with minimal harm to the environment. The safeguards are grouped by environmental issues. Not all safeguards will apply to every proposed activity. The project manager should consider the scope and location of the work and then use the standard safeguard list to determine which are relevant to the proposed activity being carried out. It is the responsibility of the project manager to determine which of the standard safeguards are relevant for the proposed activity and ensure that their method of implementation is included in an environmental management plan (EMP) for the work.

If advice is required on identifying which safeguards apply to the work or how they are to be implemented, or if relevant safeguards cannot be applied or implemented for the proposed work, the project manager should consult with regional environment staff and complete the *Step 2 memo* (EIA-P05-G01-T04).

Standard safeguards

Table 1: Standard safeguards list.

General
<p>G1. If the scope of work changes at any time, review under the Roads and Maritime Services <i>Environmental assessment procedure for routine and minor works</i> (EIA-PO5-1) to determine any new measures to take.</p> <p>G2. An environmental management plan is prepared and implemented before work starts.</p> <p>G3. No new access tracks to be created for the work.</p> <p>G4. Parking vehicles and storage of plant/equipment is to occur on existing paved areas. Where this is not possible, vehicles and plant/equipment are to be kept away from environmentally sensitive areas and outside the dripline of trees.</p> <p>G5. Any access to waterways using barges/boats or similar is to be via an existing boat ramp with no disturbance to the bank or surrounding vegetation.</p>
Erosion and sedimentation
<p>E1. Erosion and sediment control measures are to be implemented and maintained to:</p> <ul style="list-style-type: none"> • Prevent sediment moving off-site and sediment laden water entering any water course, drainage line, or drain inlet • Reduce water velocity and capture sediment on site • Minimise the amount of material transported from site to surrounding pavement surfaces • Divert clean water around the site. <p>(In accordance with the Landcom/Department of Housing <i>Managing Urban Stormwater, Soils and Construction Guidelines</i> (the Blue Book)).</p> <p>E2. Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.</p> <p>E3. Erosion and sediment control measures are not to be removed until the work is complete and areas are stabilised.</p> <p>E4. Work areas are to be stabilised progressively during the work.</p> <p>E5. A progressive erosion and sediment control plan is to be prepared for the work.</p>

E6. The maintenance of established stockpile sites during is to be in accordance with the RTA <i>Stockpile Site Management Procedures. 2001.</i>
Water quality
<p>W1. There is to be no release of dirty water into drainage lines and/or waterways.</p> <p>W2. Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) is to be carried out on a regular basis to identify any potential spills or deficient erosion and sediment controls.</p> <p>W3. Water quality control measures are to be used to prevent any materials (eg concrete, grout, sediment) entering drain inlets or waterways.</p> <p>W4. Measures to control pollutants from stormwater and spills would be investigated and incorporated in the pavement drainage system at locations where it discharges to the receiving drainage lines. Measures aimed at reducing flow rates during rain events and potential scour would also be incorporated in the design of the pavement drainage system.</p> <p>W5. Potable water is used for wash down.</p> <p>W6. Excess debris from cleaning and washing is removed using hand tools.</p> <p>w7. Containment material is used to capture / filter water used in wash down.</p>
Potential or actual acid sulphate soils
X1. Potential or actual acid sulphate soils are to be managed in accordance with Roads and Maritime's <i>Guidance for the Management of Acid Sulphate Materials 2005.</i>
Air quality
<p>A1. Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust.</p> <p>A2. Work (including the spraying of paint and other materials) is not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.</p> <p>A3. Vegetation or other materials are not to be burnt on site.</p> <p>A4. Vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation.</p> <p>A5. Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with Roads and Maritime's <i>Stockpile Site Management Guideline (2011).</i></p>
Noise and vibration
<p>N1. Work to be carried out during normal work hours (ie 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays is to minimise noise impact.</p> <p>N2. Noise impact is to be minimised in accordance with Practice Note 7 in Roads and Maritime's <i>Environmental Noise Management Manual and Environmental fact sheet No. 2- Noise management and Night Works.</i></p> <p>N3. Measures, including allowing adequate distance that rollers can come to adjacent buildings and/or using non vibrating rollers, are to be used to minimise or prevent vibration impact.</p>
Biodiversity
<p>F1. There is to be no disturbance or damage to threatened species or critical habitat.</p> <p>F2. Work must not harm threatened fauna (including where they inhabit bridges or other structures eg timber fence posts).</p> <p>F3. If unexpected threatened fauna or flora species are discovered, stop work immediately and follow the <i>Unexpected threatened species find procedure</i> in Roads and Maritime's <i>Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process).</i></p> <p>F4. Vegetation that has been protected or planted as part of offset work provided as part of an approved project (eg in association with fauna crossings) is not to be removed.</p>

<p>F5. All pathogens (eg Chytid, Myrtle Rust and <i>Phytophthora</i>) are to be managed in accordance with Roads and Maritime's <i>Biodiversity Guidelines 2011 - Guide 7 (Pathogen Management)</i> and <i>DECC Statement of Intent 1: Infection of native plants by Phytophthora cinnamomi</i> (for <i>Phytophthora</i>).</p> <p>F6. Declared noxious weeds are to be managed according to requirements under the <i>Noxious Weeds Act 1993</i>. and <i>Guide 6 (Weed Management)</i> of Roads and Maritime's <i>Biodiversity Guidelines 2011</i>.</p> <p>F7. Fauna handling must be carried out in accordance with the requirements of Roads and Maritime's <i>Biodiversity Guidelines - Guide 9 (Fauna Handling)</i>.</p> <p>F8. Work must not create an ongoing barrier to the movement of wildlife.</p>
Traffic
<p>T1. Where possible, current traffic movements and property accesses are to be maintained during work. Any disturbance is to be minimised to prevent unnecessary traffic delays.</p>
Non-Aboriginal heritage
<p>H1. Work to be carried out in accordance with the approved Conservation Management Plan for the heritage item (where available).</p> <p>H2. If unexpected archaeological remains are uncovered during the work, all work must cease in the vicinity of the material/find and the steps in Roads and Maritime's <i>Standard Management Procedure: Unexpected Archaeological Finds July 2012</i> must be followed. Roads and Maritime Services Senior Regional Environmental Officer must be contacted immediately.</p> <p>H3. If any items defined as relics under the NSW <i>Heritage Act 1977</i> are uncovered during the works, all work must cease in the vicinity of the find and the Roads and Maritime Services Senior Regional Environmental Officer contacted immediately.</p> <p>H4. If an existing heritage item or item identified on Roads and Maritime's s.170 register is on site or in the near vicinity of the work, the item is to be protected to prevent any damage or disturbance.</p> <p>H5. Any painting of a heritage item is to be in the same colour scheme as that of the existing colour scheme.</p>
Aboriginal heritage
<p>B1. If Aboriginal heritage items are uncovered during the work, all work in the vicinity of the find must cease and the Roads and Maritime's Aboriginal cultural heritage advisor and the senior regional environmental officer contacted immediately. Steps in the Roads and Maritime's <i>Standard Management Procedure: Unexpected Archaeological Finds July 2012</i> must be followed.</p>
Waste management
<p>M1. Lead paint materials are to be managed in accordance with the Australian Standard AS4361.1 '<i>Guide to Lead Paint Management – Part 1 Industrial Applications 1995</i>'.</p> <p>M2. Resource management hierarchy principles are to be followed:</p> <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) • Disposal is carried out as a last resort. <p>(In accordance with the <i>Waste Avoidance & Resource Recovery Act 2001</i>)</p> <p>M3. Bulk project waste (eg fill) sent to a site not owned by Roads and Maritime Services (excluding Office and Environment and Heritage licensed landfills) for land disposal is to have prior formal written approval from the landowner, in accordance with RTA <i>Environmental Direction No. 20 – Legal Off-site disposal of Bulk RTA Project Wastes</i>.</p> <p>M4. If coal tar asphalt is identified and is to be removed, it is to be disposed of to landfill in</p>

<p>accordance with Roads and Maritime's <i>Environmental Direction No.21 – Coal Tar Asphalt Handling and Disposal</i>.</p> <p>M5. There is to be no disposal or re-use of construction waste on to other land.</p> <p>M6. Waste is not to be burnt on site.</p> <p>M7. Waste material, other than vegetation and tree mulch, is not to be left on site once the work has been completed.</p> <p>M8. Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.</p>
<p>Visual amenity</p>
<p>V1. The use of shotcrete is to be managed in accordance with Roads and Maritime's <i>Shotcrete Design Guidelines 2005</i>.</p> <p>V2. Landscaping is to be managed in accordance with Roads and Maritime's <i>Landscape guideline, 2008</i>.</p> <p>V3. Noise walls are to be managed in accordance with Roads and Maritime's <i>Noise wall design guidelines, 2006</i>.</p> <p>V4. Bridge work is to be managed in accordance with RTA's <i>Roads and Maritime's BRIDGE AESTHETICS July 2012 design guideline</i>.</p> <p>V5. Works to be carried out in accordance with EIA-N04 <i>Guidelines for visual impact assessment and landscape character assessment</i>.</p>
<p>Hazard and risk</p>
<p>R1. All fuels, chemicals and liquids are to be stored in an impervious bunded area a minimum of 50 metres away from:</p> <ul style="list-style-type: none"> • Rivers, creeks or any areas of concentrated water flow • Flooded or poorly drained areas • Slopes above 10 per cent. <p>R2. Refuelling of plant and equipment is to occur in impervious bunded areas located a minimum of 50 metres from drainage lines or waterways.</p> <p>R3. Refuelling of plant and equipment on barges is to occur within a double-bunded area.</p> <p>R4. Cleaning of spray bars (or equivalent equipment) is to occur in suitable areas (eg not table drains) and not cause water pollution.</p> <p>R5. Vehicle wash down and/or cement truck washout is to occur in a designated bunded area.</p> <p>R6. An emergency spill kit is to be kept on site at all times. All staff are to be made aware of the location of the spill kit and trained in its use.</p> <p>R7. If an incident (eg spill) occurs, Roads and Maritime's <i>Environmental Incident Classification and Management Procedure</i> is to be followed and the Roads and Maritime Services Contract Manager notified as soon as practicable.</p>
<p>Community consultation</p>
<p>C1. Community consultation is to be carried out in accordance with Roads and Maritime's <i>Community - Engagement and Communications October 2012</i>.</p> <p>C2. Complaints received are to be recorded and attended to promptly in accordance with Roads and Maritime's <i>Community - Engagement and Communications October 2012</i>.</p> <p>C3. Existing access for nearby and adjoining properties is to be maintained at all times during the work unless otherwise agreed to by the affected property owner.</p>

APPENDIX 3- CHAPTER 10 (AQUATIC HABITATS AND RIPARIAN ZONES) OF ROADS AND MARITIME'S *BIODIVERSITY GUIDELINES: PROTECTING AND MANAGING BIODIVERSITY ON RTA PROJECTS* (RTA 2011).

Guide 10: Aquatic habitats and riparian zones

Background

Aquatic habitats include all areas of land submerged by water, permanently or intermittently, and include both artificial and natural bodies of water. It includes wetlands, rivers, creeks, lakes, dry river beds and estuaries.

Riparian zones are those vegetated lands immediately next to aquatic habitats and include riverbank vegetation.

The distance the riparian zone extends from a waterway varies greatly depending on factors such as the nature of the waterway and the local geology and landform. However, it is generally accepted to be 50 metres from the top of the highest ('bankfull') bank of a waterway or the edge of a wetland where aquatic vegetation changes to terrestrial vegetation (Department of Primary Industries (Fisheries) 2012).

Aquatic habitats and riparian zones have an important ecological role in providing habitats and resources for a large number of terrestrial and aquatic flora and fauna. Even heavily disturbed and weed infested riparian zones can play an important ecological role.

Construction and maintenance works within aquatic habitats and riparian zones can disturb aquatic habitats, alter flow or obstruct fish passage and can also impact downstream aquatic biodiversity. Damage can be caused by the movement of machinery, vehicles and personnel and through unsuitable clearing procedures during construction.

The 'Degradation of native riparian vegetation', 'Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands', and the 'Removal of large woody debris (snags) from rivers and streams' are listed as *Key Threatening Processes under the Fisheries Management Act 1994* (NSW)(FM Act).

Construction or maintenance works within aquatic habitats and/or riparian zones may require consultation with the **regional Fisheries Conservation Manager** of the NSW Department of Primary Industries (DPI) (Fisheries).

Some activities may require permits including temporary or permanent obstruction of fish passage, use of explosives in a waterway or harm to vegetation including saltmarsh, mangroves and seagrass.



FIGURE 10.1: Even disturbed aquatic habitat and riparian zones can provide important resources for flora and fauna (Photo: Lester Piggott).

Objective

The objective of this guide is to provide guidance for limiting impacts on aquatic flora and fauna and their habitats, and to ensure the movement of fish up and downstream is maintained at all times during works in a waterway.

Application of this guide

This guide is applicable to all RTA construction and maintenance sites where works are in an aquatic habitat or within the riparian zone (50 metres from the highest bank of a waterway or the edge of a wetland).



FIGURE 10.2: The Murray River, Albury
(Photo: Josie Stokes).

Specialist input requirements

Consult with the regional **Fisheries Conservation Manager**. Contact details for regional Fisheries Conservation Managers in each catchment area can be found on the DPI website (www.dpi.nsw.gov.au/fisheries/habitat/contacts).

Management requirements

Aquatic habitats and riparian zones are sensitive environmental areas and any activities in these areas should be avoided as much as practicable. If activities are required in these areas, existing guidelines that detail design and management measures are:

- Department of Primary Industries (Fisheries) (2012) *Policy and Guidelines for Fish Habitat Conservation and Management*.
- Department of Environment and Climate Change (DECC)(2008) *Managing urban stormwater: Soils and construction, Volume 2D: Main Road Construction*, Sydney (Blue Book).
- Fairfull, S and Witheridge, G (2003) *Why do fish need to cross the Road? Fish passage requirements for waterway crossings*, NSW Fisheries, Cronulla.

The environmental assessment may have identified special requirements that constrain the timing of work such as periods of threatened fish migrations, or periods where flooding is identified as a risk.

The project manager and/or environment manager should ensure that the sensitivity of aquatic habitats and riparian zones and the measures in place to protect them are regularly communicated to all staff eg during inductions and toolbox talks.

Establish exclusion zones within aquatic habitats and riparian zones

The project manager and/or environment manager should ensure that aquatic habitats and riparian zones where works are not required are protected by exclusion zones. The following general guidance should be given to the contractor by the project manager and/or environment manager when establishing exclusion zones within aquatic habitats and riparian zones:

1. Mark out and manage exclusion zones according to *Guide 2: Exclusion zones*.
2. Exclusion fencing should not be installed in the waterway, within 3 metres of the top of the bank or in sensitive areas (eg saltmarsh or mangroves). Exclusion fencing should be used outside these sensitive areas.
3. Identify the construction footprint within the waterway on a map and include in relevant plans such as a Construction Environmental Management Plan (CEMP). The location of aquatic habitat features within or adjacent to the footprint should be clearly identified on the map (eg snags, aquatic vegetation, seagrass beds and gravel beds).

Accessing the waterway

The project manager and/or environment manager should ensure that:

- Access to the waterway minimises the removal of riparian vegetation.
- Access to the waterway is restricted to the minimum amount of bank length required for the construction activity.
- Vehicles and machinery are kept away from the banks of a waterway where possible.
- Refuelling of vehicles and plant, and chemical storage and decanting does not take place within 50 metres of aquatic habitats or riparian zones.
- Boats or other water craft are used in a manner so as to avoid boat wash that could cause erosion of the banks and propeller damage to seagrass beds.

Clearing of riparian and aquatic vegetation

See *Guide 4: Clearing of vegetation and removal of bushrock* when vegetation clearing is required. In addition, the project manager and/or environment manager should ensure that the following is considered:

- Clearing is avoided within the riparian zone during periods when flooding is likely to occur.
- Works are undertaken in accordance with any permit issued under the FM Act for the harm or removal of saltmarsh, mangroves and seagrass.
- Clearing does not allow vegetation/trees to fall into the waterway.
- Retaining the roots and stumps of trees on the bank of a waterway in order to maintain bank stability. Cut trees off between 300 and 600 millimetres above the ground level.
- Consulting with **DPI (Fisheries)** before clearing to identify any trees proposed to be removed that could potentially be used for re-snagging of a waterway (see *Guide 5: Re-use of woody debris and bushrock*).
- Managing Willows (*Salix* species) and other weed species in accordance with *Guide 6: Weed management*.



FIGURE 10.3: Snag timber from the Hume Highway Duplication project was placed in the Murray River and now provides habitat for threatened native fish species such as Murray Cod (*Maccullochella peelii peelii*) and Trout Cod (*Maccullochella macquariensis*) (Photo: J Fredrickson, DPI).

Removal/relocation of snags

Snags are branches, trunks and whole trees that fall into rivers and streams. DPI (Fisheries) defines snags greater than 3 metres in length or 300 millimetres in diameter as being key fish habitat for native fish. Snags form essential habitat for aquatic and terrestrial flora and fauna.

Snags may need to be removed and/or relocated before undertaking works. Only the minimum number of snags should be disturbed. The project manager and/or environment manager should ensure the hierarchy below (low to high impact) is followed when snags need to be disturbed:

1. **Lopping** – protruding limbs are cut and allowed to sink to the river bed.
2. **Realignment** – the snag is rotated from its existing position.
3. **Relocation** – the snag is physically moved from one location in the waterway to another location. Relocation of snags should be undertaken so as to cause the least disturbance to the bed or nearby sensitive aquatic habitat.
4. **Removal** – the snag is completely pulled from the water.

The project manager and/or environment manager should ensure that **DPI (Fisheries)** are consulted where snags are proposed to be lopped, realigned, relocated and/or removed.



FIGURE 10.4: Snags are an important part of Australian rivers, providing aquatic habitat and stabilising river bed and banks (Photo: J Fredrickson, DPI).

Site rehabilitation

The project manager and/or environment manager should ensure that the following is considered during site rehabilitation:

- Stabilising the banks of the waterway through revegetation and/or armoring according to available landscape plans.
- Banks are protected from stock and/or human access.
- Appropriate fencing is used during rehabilitation and maintenance.
- Temporary stabilisation techniques are used while long-term measures such as the revegetation are establishing (techniques are described in the Blue Book).
- Removing temporary works, flow diversion barriers and sediment control barriers within aquatic habitats as soon as practicable and in a manner that does not promote future channel erosion.

Supporting documents

1. Environmental assessment and associated supporting documents (eg ecological report, conditions of approval).
2. Environmental management plans and associated sub-plans and procedures for the works.
3. Department of Environment and Climate Change (DECC) (2008) *Managing urban stormwater: Soils and construction, Volume 2D: Main Road Construction*, Sydney (Blue Book).
4. Department of Primary Industries (Fisheries) (2012) *Policy and Guidelines for Fish Habitat Conservation and Management* (Eds. S Fairfull and S McGirr) Department of Primary Industries, Wollongbar.
5. Fairfull, S and Witheridge, G (2003) *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*. NSW Fisheries, Cronulla.
6. Gorham, P (2008, accessed 7 April 2011) Primefact 30: Aquatic weed management in waterways and dams, Industry and Investment NSW (www.dpi.nsw.gov.au/primefacts).
7. *RTA Environmental Protection (Management Plan) QA Specification G35* (Accessed via the RTA intranet TechInfo page, Techdocs).
8. *RTA Environmental Protection (Management System) QA Specification G36* (Accessed via the RTA intranet TechInfo page, Techdocs).

Biodiversity Guide 10 – Aquatic habitats and riparian zones

Objective

The objective of this guide is to provide guidance for limiting impacts on aquatic flora and fauna and their habitats, and to ensure the movement of fish up and downstream is maintained at all times during works in a waterway.

Application of this guide

This guide is applicable to all RTA construction and maintenance sites where works are in an aquatic habitat or within the riparian zone (50 metres from the highest bank of a waterway or the edge of a wetland).

Management requirements:

- Avoid activities in aquatic habitats and riparian zones as much as practicable.
- The sensitivity of aquatic habitats and riparian zones and the measures in place to protect them should be regularly communicated to all staff eg during inductions and toolbox talks.
- Protect aquatic habitats and riparian zones where works are not required with exclusion zones. Exclusion fencing should be used outside sensitive areas (eg saltmarsh or mangroves).
- The location of aquatic habitat features within or adjacent to the footprint should be clearly identified on environmental management plans.
- Access the waterway so that riparian vegetation removal is minimised and restricted to the minimum amount of bank length required for the construction activity.
- Keep vehicles and machinery away from the banks of a waterway where possible.
- Refuelling of vehicles and plant, and chemical storage and decanting should not take place within 50 metres of aquatic habitats.
- Use boats or other water craft in a manner so as to avoid boat wash that could cause erosion of the banks and propeller damage to seagrass beds.
- Avoid clearing within the riparian zone during periods when flooding is likely to occur.
- A permit is required under the *Fisheries Management Act 1994 (NSW)* (FM Act) for the harm or removal of saltmarsh, mangroves and seagrass.
- Ensure that any clearing undertaken does not allow the vegetation/trees to fall into the waterway.
- Retain the roots of trees on the bank of a waterway in order to maintain bank stability.
- Consult with **Department of Primary Industries (DPI)(Fisheries)** before clearing to identify any trees proposed to be removed that could potentially be used for re-snagging of a waterway.
- Only the minimum number of snags should be disturbed.
- **DPI (Fisheries)** must be consulted before works commence where snags require lopping, realignment, relocation and/or removal.
- During rehabilitation, stabilise the banks of the waterway through revegetation and/or armouring according to available landscape plans.
- Protect banks from stock and/or human access using appropriate fencing during the rehabilitation and maintenance period of the work site.
- Remove all temporary works, flow diversion barriers and sediment control barriers within aquatic habitats as soon as practicable and in a manner that does not promote future channel erosion.