

Canterbury Regional Code of Practice for Defences Against Water and Drainage Schemes

July 2015



CONTENTS

1 Introduction	3	4 Certification of Work Plans	27
1.1 Legislative context	4	4.1 Certification of annual work plans or operational work plans	27
1.2 Objectives and principles	5	4.2 Timeframe for submittal of work plans	27
1.3 Potential effects to be managed	6	4.3 Information to be submitted	28
1.4 Users' guide	7	4.4 Certification process	28
1.5 Exclusions	8	4.5 Duration of certification	28
1.6 Flood Protection and Drainage Bylaw	8	4.6 Fees	28
2 General requirements	8	4.7 Flood Protection and Drainage Bylaw approval	29
2.1 Planning the works	8	4.8 What does certification mean?	29
2.2 Engagement and notifications	8	5 Monitoring and Review	29
2.3 Work practices	9	5.1 Monitoring of work practices	29
General Requirements: Planning and worksite design	10	5.2 Review of Code of Practice	29
General Requirements: Timing of works	10	6 Useful links and guidance documents	30
General Requirements: Accidental discovery protocol	11		
General Requirements: Fuel and hazardous materials management	11		
General Requirements: Pest species control	12		
General Requirements: Erosion and sediment control	12		
General Requirements: Worksite reinstatement	13		
General Requirements: Complaints and adverse effects management	13		
General Requirements: Cultural effects	13		
3 Activity Specific Requirements	14		
3.1 Activity descriptions	16		
3.1.1 Drain works	16		
3.1.2 River works	18		
3.1.3 Tree works	21		
3.1.4 Vegetation and fairway clearance	22		
3.1.5 Other	22		
3.2 Work-type requirements	23		
Work-type Requirements: Earthworks and land disturbance	24		
Work-type Requirements: Work adjacent to or in flowing water	24		
Work-type Requirements: Culverts and structures	24		
Work-type Requirements: Diversions	25		
Work-type Requirements: Vegetation removal outside flowing water (dry)	25		
Work-type Requirements: Vegetation and silt removal in water	26		
Work-type Requirements: Use of agrichemicals	26		

Appendices

Appendix A: Work plan template (optional)	31
Appendix B: Standard forms (optional)	34

1 INTRODUCTION

This Code of Practice sets out standards and guidelines for undertaking works within the riverbed to install, maintain, use or remove defences against water and for drainage network maintenance activities. It is intended to be used by local authorities and network utility operators which undertake works on flood protection assets and defences against water within the Canterbury region.

The proposed Canterbury Land & Water Regional Plan, Rule 5.138, provides for the installation, maintenance, use and removal of defences against water as a permitted activity subject to a number of conditions. One of these conditions is that the work is undertaken by, or on behalf of, a local authority or network utility operator in accordance with a plan that has been certified by Environment Canterbury as being in accordance with this Code of Practice.

Local authorities and network utilities operate a range of assets which are located within the riverbed including flood protection assets such as stopbanks, groynes, rock protection and berm planting, as well as infrastructure assets that require protection from flood waters to maintain functionality (for example, intake structures, bridge or power pylon foundations). Installation, maintenance, use or removal of these works has the potential to cause adverse environmental effects if it is not managed and undertaken appropriately. This Code of Practice sets out the way these works can be undertaken in a way that avoids, remedies or mitigates potential adverse environmental effects.

Works covered by this Code of Practice

The works covered by this Code of Practice are those within the beds of lakes and rivers where they are undertaken for the purpose of installing, maintaining, using or removing defences against water and to undertake maintenance activities for drainage schemes where the work is undertaken by, or on behalf of, a local authority or network utility operator.

For the purposes of this Code of Practice:

- **“River”** has the meaning defined in the Resource Management Act 1991: “A continually or intermittently flowing body of freshwater; and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal).”
- **“Installation”** means any works required to maintain the functionality and design performance standard of an asset or scheme defined as a defence against water. It does not include installation of new capital works to create a new flood protection scheme, or the installation or improving of an existing asset to a higher performance standard. However, new physical works may be installed where there is no change in the scheme’s designed level of service or functionality (for example, addition of a groyne to protect existing assets and maintain level of service). See also the definition of “Maintenance” below, particularly in respect of upgrade works.
- **“Maintenance”** has the meaning defined in the proposed Canterbury Land & Water Regional Plan: “Repairing and keeping a structure, land or vegetation in good and safe condition and includes upgrading and minor alterations as long as any upgrading or minor alteration does not materially increase the footprint, height or external envelope of the structure.” Upgrades to existing assets can occur under this Code of Practice where there is no increase in the design performance standard of the scheme. For example, stopbank upgrades such as buttressing or slope correction do not increase the level of protection (design height and design flood event or return period), but do improve the likely performance of the stopbank in an under-design or design flood event. Similarly, stopbank heights may be increased where they currently do not meet the scheme design height (which may occur, for example by degradation at vehicle crossing points, riverbed aggradation or foundation settlement).

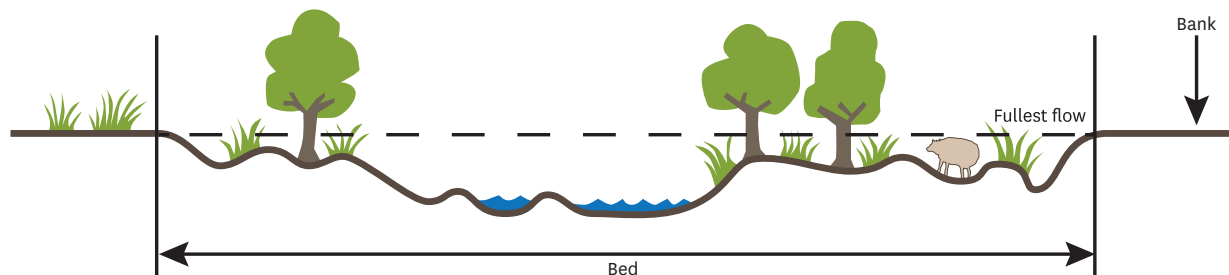
- A material increase in the footprint, height or external envelope of the structure would be one which has a more than minor effect on flood carrying capacity or river geomorphology does not meet the definition of maintenance in the proposed Land & Water Regional Plan (that Plan allows for some change to the footprint, height or external envelope of the structure).
- **“Defence against water”** has the meaning defined in the proposed Land & Water Regional Plan: “Any structure or equipment, including any bund, weir, spillway, floodgate, bank, stopbank, retaining wall, rock or erosion protection structure, groyne, vegetation (including anchored tree protection) or reservoir, that is designed to have the effect of stopping, diverting, controlling, restricting or otherwise regulating the flow, energy or spread of water, including floodwaters, in or out of a waterbody, artificial watercourse, or artificial lake. For the purpose of this definition, dams are excluded.”

This Code of Practice only applies to works undertaken **within the bed of a river or lake**. This has the meaning defined in the proposed Land & Water Regional Plan:

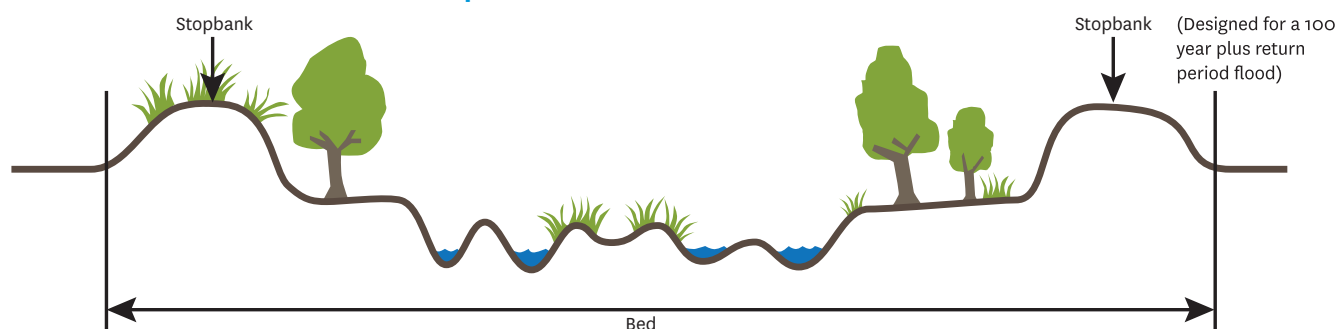
- **“Bed”** means the space of land extending between the outward extremities of any stopbank or any flood protection vegetation, as shown on the maps which form part of the CRC Flood Protection and Drainage Bylaw 2013, and where there is no stopbank or flood projection vegetation or relevant map in the CRC Flood Protection and Drainage Bylaw 2013, means:
 - (a) in relation to any river–
 - (i) ...;
 - (ii) ..., the space of land which the waters of the river cover at its fullest flow without overtopping its banks; and
 - (b) in relation to any lake, except a lake controlled by artificial means,–
 - (i) ...;
 - (ii) in all other cases, the space of land which the waters of the lake cover at its highest level without exceeding its margin; and
 - (c) in relation to any lake controlled by artificial means, the space of land which the waters of the lake cover at its maximum permitted operating level.”

The area defined as the bed of a river is summarised in the following diagrams:

Riverbed definition: Rivers without stopbanks



Riverbed definitions: Rivers with stopbanks



Structure of Code of Practice

This Code of Practice is set out in four sections:

- **Section 1** provides background information as to its purpose and how it is to be used. Users should review Section 1 to determine whether the Code is relevant to their proposed works and make sure those works are not excluded from consideration under the Code.
- **Section 2** sets out general requirements which must be met for all activities to be undertaken under the Code. The requirements in Section 2 are specified for all activities.
- **Section 3** provides guidance on requirements for a range of activities that may be undertaken in the installation, maintenance, use and removal of defences against water. Users should:
 - Check whether the proposed activity is listed in *Table 3* on page 15 (refer also to the relevant activity description in Section 3.1 for detail)
 - If the proposed activity is listed in *Table 3*, identify the relevant requirements for that activity as set out
 - Refer to the relevant requirements and develop a work plan including them
 - If the proposed activity is not listed in *Table 3*, but does fall within the definition of “Installation, maintenance, use and removal of defences against water”, consider the potential environmental effects of the activity and determine measures required to address them.
- **Section 4** provides details of the process for gaining certification of work plans. Users are encouraged to submit annual work plans, standard work instructions or operational and maintenance plans where those documents adequately address relevant requirements set out in this Code. Where such documentation is provided, and sufficiently meets the criteria, Environment Canterbury will issue certification for works to be undertaken for up to three years.

1.1 Legislative context

This Code of Practice has been developed to enable local authorities and network utility operators to undertake works to install, maintain, use and remove defences against water and drainage schemes. Works under this Code may be undertaken by the local authority or network utility operators themselves, or by third parties (such as contractors) where they are working on behalf of a local authority or network utility operator.

The primary types of work to be undertaken under this Code are flood protection works carried out by Environment Canterbury and other local authorities within the Canterbury region as part of their statutory responsibilities for providing defences against water and drainage. In addition, works to defend from water other infrastructure within the bed of a river or lake may also be undertaken under this Code.

Statutory responsibilities for provision of defences against water

Under the Soil Conservation and Rivers Control Act 1941, Environment Canterbury has a statutory function to minimise and prevent damage by floods and erosion. It also has powers under that Act to maintain and improve defences against water. In some areas, local authorities also provide local drainage and flood protection measures under the Soil Conservation and Rivers Control Act 1941 and the Land Drainage Act 1908. In addition, all infrastructure provided by local authorities is subject to the provisions of the Local Government Act 2002 which, among other things, requires the Council to provide “good quality infrastructure” which is “efficient, effective and appropriate to present and anticipated future circumstances”.

A range of other statutes also governs the provision of river and drainage management activities undertaken by local authorities, including:

- Order in Council for Local Government Reorganisation, 9 June 1989
- Civil Defence Emergency Management Act 2002
- Public Works Act 1981

- River Boards Act 1908
- Ashley River Improvement Act 1925
- Ellesmere Land Drainage Act 1905
- South Canterbury Catchment Board Act 1958
- Waimakariri River Improvement Act 1922

Works undertaken by network utility operators

“Network utility operator” is defined in section 166 of the Resource Management Act 1991 and includes persons or organisations which undertake and provide a range of network utilities including, but not limited to, energy transmission and pipelines; telecommunications and radio communications; electricity distribution; water distribution including irrigation; drainage or sewerage systems; and transportation. Users seeking to undertake works under this Code of Practice as a network utility operator should refer to section 166 of the Resource Management Act to confirm that they meet the criteria.

The functioning of networks sometimes requires assets to be located within the riverbed and such assets may require defences against water to maintain their functionality. Depending on the network utility and organisation, a range of statutory powers and/or functions may apply.

Resource Management Act

Functions undertaken under all of the above statutes are subject to the provisions of the Resource Management Act. The purpose of that Act is to “promote the sustainable management of natural and physical resources”.

Section 13(1) states:

“No person may, in relation to the bed of any lake or river, –

- (a) Use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed; or
- (b) excavate, drill, tunnel, or otherwise disturb the bed; or
- (c) introduce or plant any plant or any part of any plant (whether exotic or indigenous) in, on, or under the bed; or
- (d) deposit any substance in, on, or under the bed; or
- (e) reclaim or drain the bed –
 unless expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent.”

There is no national environmental standard relevant to the installation, maintenance, use or removal of defences against water.

The proposed Canterbury Land & Water Regional Plan contains a rule which provides for the installation, maintenance, use and removal of defences against water as a permitted activity.

This Code of Practice has been developed to detail how defences against water can be installed, maintained, used and removed in a way which avoids, remedies and mitigates potential adverse environmental effects so that it is appropriate for these works to be undertaken as a permitted activity under this regional rule.

While this Code of Practice has been written to help with compliance with regional rules for associated activities for works in river and lake beds, it is the responsibility of those working in

accordance with this Code to make sure they comply with the regional rules for associated activities (for example, refuelling, storage of hazardous substances and discharges to air). The certification process outlined in Section 4 states that work plans are in accordance with this Code; it does not include certification that work complies with all relevant rules.

In developing this Code of Practice, the relevant Objectives and Policies of the proposed Land & Water Regional Plan have been considered – see that proposed Plan for a list of Objectives and Policies.

Canterbury Water Management Strategy

The Canterbury Water Management Strategy vision:

“To enable present and future generations to gain the greatest social, economic, recreational and cultural benefits from our water resources within an environmentally sustainable framework”

The 10-year goals in the Strategy which are relevant to this Code of Practice include:

- Ecosystems, habitats and landscapes will be protected and progressively restored, and indigenous biodiversity will show significant improvement
- Water quality will be protected and starting to return to within healthy limits for human health and ecosystems
- Opportunities to exercise kaitiakitanga and rangitiratanga will be operative, and increasing
- Opportunities for recreational activities will be returning and improving.

1.2 Objectives and principles

This Code of Practice has been developed to give effect to the objectives and policies of the proposed Land & Water Regional Plan. It enables local authorities and network utility operators to undertake works associated with defences against water and drainage scheme maintenance in an efficient and effective manner, while at the same time avoiding, remedying or mitigating potential adverse environmental effects.

The objective of the Code of Practice is therefore:

To avoid, remedy or mitigate any adverse effects on the environment associated with the installation, maintenance, use and removal of defences against water and drainage scheme maintenance while enabling the efficient and effective operation, ongoing maintenance, repair, development and upgrading of infrastructure.

The Code has been developed on the following principles:

- Environmental and ecological values (such as threatened native fish and their habitat) shall be identified and appropriate measures (including minimising instream works, avoiding sediment deposition, avoiding or mitigating effects on fish passage) put in place to avoid, remedy or mitigate adverse effects
- Environmental enhancement opportunities shall be considered and, where practicable, incorporated into the work
- Cultural matters shall be investigated, sites of significance identified, and appropriate construction and accidental discovery procedures adopted to avoid, remedy or mitigate adverse effects. This should occur through engagement with tangata whenua to identify issues and determine appropriate measures

- Waterway and riparian amenity and recreational values shall be maintained
- Waterways shall not be narrowed, restricted, or realigned to a degree that reduces flood capacity, increases erosion risk, or destabilises river alignment
- Riverbed levels shall be unchanged or conform with design mean bed level requirements
- Existing flood and erosion protection infrastructure shall not be weakened
- Performance of other infrastructure such as bridges, water intakes and power pylons shall not be adversely affected
- New flood protection infrastructure shall be maintained on an ongoing basis by the local authority or network utility operator
- Location, timing, duration and scale of works shall be considered.

1.3 Potential effects to be managed

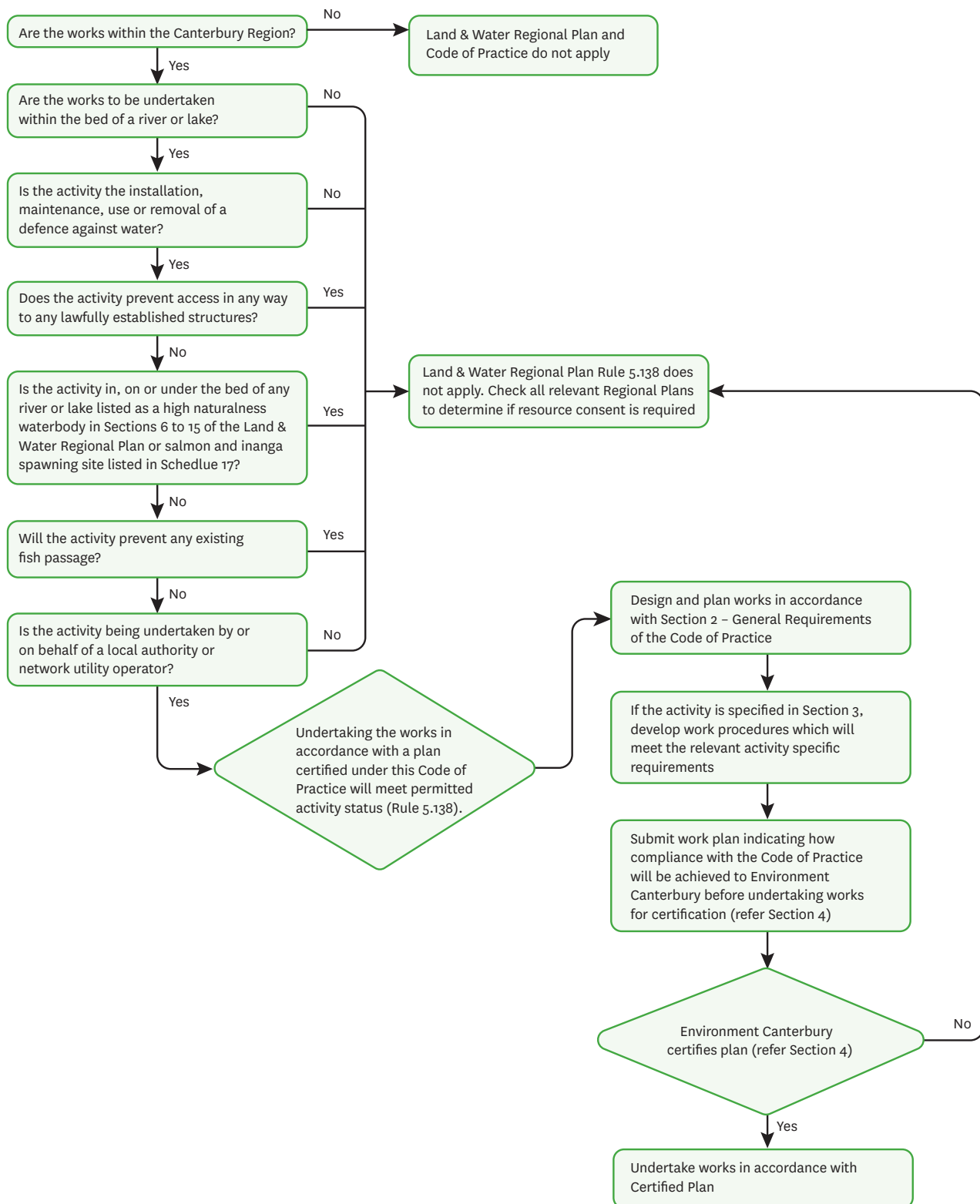
Potential effects on the environment associated with works detailed in this Code of Practice generally fall within the categories set out in *Table 1*. There are both potential adverse and potential beneficial effects of undertaking activities detailed in this Code. The procedures set out in Sections 2 and 3 of the Code are designed to avoid, remedy or mitigate potential adverse effects as far as practicable, while at the same time maximising potential beneficial effects.

Table 1: Potential Environmental Effects

Effects type	Potential adverse effect	Potential beneficial effect
Effects on flooding and erosion	<ul style="list-style-type: none"> • Reduced flood-carrying capacity • Cause areas of potential erosion • Threaten existing flood-protection works or other structures • Increased flooding of land adjacent to watercourses 	<ul style="list-style-type: none"> • Enhancement of flood-carrying capacity • Stabilise areas of potential erosion • Enhance and protect existing flood-protection works or other structures • Reduced flooding of land adjacent to watercourse
Effects on riverbed plants and animals	<ul style="list-style-type: none"> • Spread of introduced exotic species • Removal of fish and large invertebrates (koura, kākahi) • Negative impact on water quality • Destruction or reduced quality of habitat • Loss of ecosystem health • Impede fish passage • Reduce fish abundance • Disturb nesting and rearing sites • Interrupt fish spawning 	<ul style="list-style-type: none"> • Positive impact on water quality • Potential to create or enhance quality of habitat through appropriate planning of works • Create open gravels for native bird nesting habitat • Remove habitat for mammalian predators • Remove pest plant species and minimise weed spread
Effects on cultural values	<ul style="list-style-type: none"> • Reduced abundance of mahinga kai • Disturb culturally, historically or archaeologically significant areas 	<ul style="list-style-type: none"> • Enhancement of habitat quality • Protection of culturally, historically or archaeologically significant areas
Effects on amenity values	<ul style="list-style-type: none"> • Decline in amenity values • Visible dirty water • Unsightly vehicles and machinery • Odour from spraying, machinery fumes, weed decomposition • Noise of machinery 	<ul style="list-style-type: none"> • Potential for enhanced recreational opportunities (eg via regional parks)
Effects on people and communities	<ul style="list-style-type: none"> • Reduced quality of recreational opportunities • Disruption to recreation areas, especially during weekends and public holidays • Impacts on artificial structures, including bridges, gauging sites and intakes 	<ul style="list-style-type: none"> • Provide flood protection • Enhanced public access • Economic benefits (eg allowing land to be used for productive purposes)

1.4 Users' guide

The following diagram sets out the process for deciding whether proposed works are able to be undertaken as a permitted activity under the proposed Land & Water Regional Plan and helps users to navigate this Code of Practice.



1.5 Exclusions

This Code of Practice is concerned only with **how** activities are undertaken within the beds of rivers and lakes to help in compliance with permitted activity provisions under the proposed Land & Water Regional Plan.

The Code does **not** cover any of the following matters and certification of work plans under this Code does not provide approval of any of the following:

- a) **Design or performance standards and guidelines** – the Code does not provide guidance on **what** activities should take place or to what standard in order to achieve any specific performance standard for defences against water. Works falling within this Code relate to the installation, maintenance, use and removal of defences against water to maintain scheme functionality or asset performance. It is the asset owner's responsibility to determine the level of maintenance or other works required to maintain scheme functionality and performance.
- b) **Health and safety requirements** – it is the responsibility of the local authority or network utility operator undertaking the work to meet all requirements of the Health and Safety in Employment Act 1992 and any subsequent health and safety legislation.
- c) **Site access arrangements** – certification of work plans under this Code does not provide the local authority or network utility operator with legal access to any sites. The local authority or network utility operator must arrange all necessary legal access to sites to undertake the proposed works.
- d) Any other **statutory approvals** which may be required to complete the works, including but not limited to district plan requirement.
- e) This Code of Practice does not cover activities undertaken in the coastal marine area, gravel extraction activities or induced river or lake openings.

To facilitate gravel extraction for flooding and erosion hazard control purposes, Environment Canterbury has developed the River Gravel Extraction Code of Practice. This Code enables the extraction of gravel as a permitted activity. For more information about how gravel can be extracted under the Code, go to www.ecan.govt.nz/gravel

1.6 Flood Protection and Drainage Bylaw

Any works within the vicinity of flood protection and flood control works, drainage networks, survey benchmarks and hydrological devices owned or controlled by Environment Canterbury, where those activities have the potential to adversely affect the integrity or effective operation and maintenance of flood protection and flood control works, benchmarks and hydrological devices require approval under the Flood Protection and Drainage Bylaw 2013. More information on the bylaw can be found at www.ecan.govt.nz/floodbylaw

2 GENERAL REQUIREMENTS

This section of the Code of Practice details requirements which apply to any works associated with the installation, maintenance, use and removal of defences against water covered by the Code. Irrespective of the specific work type or activity, the general requirements must be met.

2.1 Planning the works

One of the most effective methods of avoiding and minimising potential environmental effects for works in the bed of rivers or lakes is to undertake effective planning. This involves:

- Planning to undertake the work **at a time when the potential effects can be minimised**. Consideration should be given to:
 - Avoiding sensitive spawning and migration times with consideration of locations of native and introduced fish (refer to Section 2.3 for details regarding sensitive times)
 - The nesting season and location of native birds
 - Where works are within recreational areas, avoiding times of high recreational use (public holidays, weekends, times of specific events). Working on Saturdays is not precluded but consideration should be given to effects on recreational users
 - Long-range weather forecasts and whether conditions (weather and flow) are likely to be favourable for the duration of the works
- Planning to undertake the work **as quickly as practical** in order to minimise the length of time that potential adverse effects may occur. Consideration should be given to:
 - Ensuring materials, equipment and machinery are available before starting
 - Making sure that once works start, they can proceed uninterrupted
- Planning to undertake the work in a way that **minimises the area to be disturbed**. Consideration should be given to:
 - Whether there are any culturally, historically or archaeologically significant areas or sites which may be affected by the works
 - Whether there are any sites of significant ecological value within the area
 - How is the site to be accessed
 - The extent of the area that needs to be worked
 - Whether the work can be undertaken outside flowing water
- **Planning for the unexpected**. Consideration should be given to what will need to happen:
 - In the event of unfavourable weather or flow conditions
 - If there is a spill on site
 - If archaeological discoveries are made

Details to help in planning are provided in section 2.3 of this Code of Practice.

2.2 Engagement and notifications

Users are encouraged to engage with tangata whenua, Fish & Game and the Department of Conservation where works are likely to be undertaken in culturally or environmentally significant areas.

Ngāi Tahu

Statutory Acknowledgement and Silent File areas

Persons intending to undertake works as a permitted activity in accordance with this Code of Practice are required to confirm whether the worksite areas are within Silent File or Statutory Acknowledgement areas as identified in the Ngāi Tahu Claims Settlement Act 1998. These areas can be checked as follows:

- Statutory Acknowledgement areas in the Canterbury region are listed in Schedule 19 of the proposed Land & Water Regional Plan. They are also mapped on the Canterbury Maps tool available at www.canterburymaps.govt.nz
- Silent File areas can be checked using the Canterbury Maps tool
- Other sites of significance, as identified on “Significant Site Maps 2006” (these will be available on Canterbury Maps, but had not been published as at June 2015).

The Statutory Acknowledgement and Silent File areas are not default layers on the Canterbury Maps tool. These layers need to be added to the individual user’s viewer in order to become visible. Refer to the help guide on www.canterburymaps.govt.nz under “Adding other Canterbury Map’s Layer”.

Where works are to occur in a Statutory Acknowledgement or Silent File area, or another site of significance, the Papatipu Rūnanga is to be notified of the intention to carry out the works and the intended type and scope of works, not less than 10 working days before commencement, to enable the Rūnanga to advise of any sites of significance that may be affected by the proposed works.

Works shall not interfere with any sites of significance identified by Papatipu Rūnanga unless expressly agreed with them.

Absence of a Statutory Acknowledgement or Silent File area does not necessarily mean that a proposed worksite does not have cultural values or is not significant to the Papatipu Rūnanga. Users are encouraged to engage with Papatipu Rūnanga regarding their work programme to identify any areas of significance and agree appropriate measures to avoid, remedy or mitigate any effects, and “accidental discovery” protocols should be in place.

Additional engagement to be undertaken by Environment Canterbury

In addition to the above, Environment Canterbury has undertaken to engage with Papatipu Rūnanga to seek input on the appropriateness of measures addressing cultural values and to provide notification of the works to be undertaken in the beds of rivers and lakes. It has been agreed that such engagement will occur via an annual hui to review the Code of Practice and work plans Environment Canterbury is certifying.

Stakeholder engagement

Environment Canterbury also intends to engage with the Department of Conservation and Fish & Game annually to review their annual works programme including, but not necessarily limited to:

- Sites of anticipated significant bed disturbance
- Channel realignment works

- The proposed location, duration and timing of these works.

The purpose of these discussions will be to inform stakeholders of scheduled significant works and to agree, where necessary, appropriate methods of reinstating ecological values where they may be affected. This may include agreeing the need to notify the Department of Conservation or Fish & Game before works are undertaken (for example, works in flowing water during trout or salmon spawning seasons). Such notification will generally occur five days before works start.

2.3 Work practices

This section sets out the work practices required to be followed for all activities undertaken in accordance with this Code of Practice.

In considering these general requirements, as well as the activity-specific requirements set out in Section 3, users should be mindful of the overall objectives and principles set out in Section 1. Some requirements are subject to practicability and, in certain circumstances, the environmental effects of following the requirements may be greater than using alternate methodologies. The following factors will be taken into account when deciding whether complying with the requirements of the Code is practicable:

- Increased environmental impacts – the methodology proposed in the Code may increase the environmental impact of the activity in certain locations (for example, bunding around an activity may release more sediment than undertaking the activity itself)
- Weather conditions – adverse conditions may compromise the mitigation methodology (such as revegetation).
- Safety constraints – the site may have particular constraints that will require an alternative methodology in order to be able to work in a safe manner
- Emergency works – departures from standard procedure may be required to address emergency situations.

Alternative methodologies should be discussed with Environment Canterbury before submitting workplans for certification.

Specific catchment notes

If working within the **Pareora** catchment, any diversion of water to maintain, repair or replace existing infrastructure may be subject to rules in the Pareora Catchment Environmental Flow and Water Allocation Regional Plan.

If working within the **Waipara** catchment, any taking, diversion or use of water to maintain, repair or replace existing infrastructure may be subject to rules in the Waipara Catchment Environmental Flow and Water Allocation Regional Plan.

If works are undertaken within the **Waimakariri** River, the tributary of the Waimakariri River upstream of the Gorge Bridge or in the Eyre River, refer to the Waimakariri River Regional Plan to make sure the activity complies with the requirements of this plan.

Catchment-specific plans will be replaced by sub-regional sections of the proposed Land & Water Regional Plan as they are developed. Refer to the Environment Canterbury website to determine the current planning framework for your area.

In addition to the region-wide rules in the proposed Land & Water Regional Plan, additional rules may be introduced by the sub-regional sections of the proposed Land & Water Regional Plan. Check the relevant sub-regional section to determine whether there are any additional requirements.

General Requirements: Planning and worksite design

All works shall be planned and the worksite designed to take account of the following requirements:

- Works should be planned and scheduled to take account of:
 - The likelihood of suitable weather and river flow conditions
 - The spawning and migration seasons and locations of salmon and native fish. Refer to “General Requirements: Timing of Works” for details
 - The nesting season of native birds. Refer to “General Requirements: Timing of Works” for details
 - Recreational interests and amenity (including contact recreation)
 - The need to minimise duration and frequency of activity
 - Activities on adjoining properties
 - The availability of suitable plant to undertake the works
 - Access to the worksite
 - Safety on and around the site
 - The impact of traffic, dust and noise on the environment
 - The location of key mahinga kai species including koura and kākahi
 - The presence of native fauna and key habitat such as lizards and bats (roosting trees)
 - The potential for fire risk
- Where possible, works should avoid areas of cultural or heritage significance
- The layout of each worksite shall be determined before the start of the work and shall be designed and formed to avoid potential environmental effects as far as practicable
- Where practicable, site work areas shall be accessed via existing tracks and existing stream crossings. Vegetation disturbance shall be kept to a minimum – see below
- Where practicable, the natural character of the river is to be preserved
- Works and structures shall not reduce flood-carrying capacity or cause erosion to the bed or banks
- Works shall be planned to be undertaken outside the area of flowing water. Where this is unavoidable, all measures shall be taken to minimise bed disturbance and release of sediment
- Crossing of the active flowing channel shall be kept to a practical minimum, so that any potential sediment disturbance and impacts on instream habitats will be minimised. For example, use only one crossing point typically upstream of riffles, sediment control or minimisation measures
- Provide appropriate signage or other controls when the worksite is in areas open for public access
- Risk management measures shall be in place to minimise the potential for damage arising from inclement weather and/or elevated river levels during the carrying out of the work
- Risk management measures shall be in place to minimise the potential for the works to start a fire.

Advice Note: River flow conditions can be checked on Environment Canterbury’s website and the River Report 24-hour Infoline (0900 RIVER (74837)). Refer to www.ecan.govt.nz for further information.

Commentary

Particularly when working in remote areas, access to the worksite can be a significant cause of potential environmental effects of undertaking works. Wherever possible, access should be planned to occur via existing access tracks, even though these may not necessarily be the most direct route to the worksite. Any vegetation disturbance to access the site should be kept to the minimum practicable and shall be determined taking into account not only the extent of area disturbed but also the type of species and their ecological value. Reinstatement works should restore disturbed vegetation as far as possible. Disturbance of any vegetation that provides a flood protection or attenuation purpose requires prior written approval of the authority responsible for the flood protection scheme (typically Environment Canterbury).

Where there is public access through a worksite, design of the site and access should take into account how public access can be managed around the worksite and / or alternative access can be provided. The need to provide alternative access will need to take into account the duration of the works proposed, the frequency of use by the public and whether it is safe and practicable to provide alternative access. If access is to be disrupted, consultation should be carried out with the agency responsible for managing the area.

Before undertaking works, it is recommended that the site is checked for any historic or culturally significant areas. This can be undertaken by reference to district plans, search of the Heritage New Zealand register and consultation with iwi groups.

The site should also be checked to identify whether the work area is likely to contain any critically endangered fish species. This can be done by consulting the IUCN Red List (www.iucnredlist.org) and the New Zealand Freshwater Fish Database. Particular care should be taken to avoid any effects on critically endangered fish or their habitat.

General Requirements: Timing of works

All works shall be timed to minimise the potential for adverse environmental effects arising from the proposed works. This shall include:

- All practicable measures shall be undertaken to minimise adverse effect on amenity values. This includes:
 - No work (other than emergency works or works required for safety or infrastructure operational requirements) shall be carried out on Sundays or public holidays
 - Works shall only occur between the hours of 7am and 7pm, except in the case of an emergency or if necessary for safety or infrastructure operational requirements
 - Public access shall not be prevented for longer than is necessary to undertake the works safely
- If works undertaken in braided rivers involving disturbance of the riverbed are to be carried out between 1 September and 1 February, the following shall be undertaken to prevent any disturbance of nesting birds:
 - A suitably qualified person shall inspect the proposed area of works no earlier than 8 days before the works are carried out and shall locate any bird breeding sites of birds listed in *Table 2*

- The person carrying out the inspection shall prepare a report or site plan that identifies all the located bird breeding or nesting sites
- Any person carrying out works within the riverbed are to be informed of any bird breeding or nesting sites. No vehicle or machinery shall operate within 100 metres of any nesting or breeding bird sites
- Where work ceases for more than 8 days, the site is to be re-inspected for bird breeding and nesting sites in accordance with the above procedure
- Where works are not in braided rivers, but involve disturbance of the bed between 1 September and 1 February, the person undertaking the works shall check the worksite area, including the area 100 metres upstream and 100 metres downstream of the site, for any nesting or breeding birds listed in *Table 1*, before starting the work. If nesting or breeding birds listed in *Table 1* are identified, works shall be planned to ensure that no vehicle or machinery operates within 100 metres of any identified nesting or breeding birds
- Where practicable, work in inanga, salmon or trout spawning areas shall not be carried out during spawning seasons. For inanga, the spawning season is March to May (inclusive). For salmon, it is April to June (inclusive)

Note: Any works in inanga or salmon spawning sites listed in Schedule 17 of the proposed Land & Water Regional Plan is outside Permitted Activity Rule 5.138 and resource consent will be required.

- Where practicable, works in the active riverbed or any associated lagoon or drainage habitat shall not be carried out during the opening weekend of duck shooting season (the first weekend in May) and angling season (1 October to 1 November)

Table 2: Target species for bird nesting surveys

South Island pied oystercatcher	Grey duck	Black fronted tern
Black stilt	NZ shoveler	White winged black tern
Pied stilt	Grey teal	Australasian bittern
Wrybill	NZ scaup	Marsh crake
Banded dotterel	Black billed gull	Spotless crake
Black fronted dotterel	Red billed gull	Cormorant / shag colonies
Blue duck	Caspian tern	Royal spoonbill
Paradise shelduck	White fronted tern	Crested grebe

General Requirements: Accidental discovery protocol

This procedure relates to the accidental discovery of archaeological material. It does not replace the requirement to undertake reasonable investigation before starting works make sure known archaeological sites are not affected by proposed works.

Any disturbance of archaeological material is subject to the provisions of the Heritage New Zealand *Pouhere Taonga* Act 2014.

Environment Canterbury is currently preparing internal policy guidance relating to the accidental discovery of archaeological sites. The following will be replaced by reference to this policy guidance when that policy becomes available. Local authorities

and network utility operators working under this Code of Practice shall ensure they are able to comply with the provisions of the Heritage New Zealand *Pouhere Taonga* Act 2014.

1. In the event of any discovery of archaeological material the operator shall immediately:
 - a) Cease work and mark off the affected area
 - b) Advise Environment Canterbury of the disturbance
 - c) Advise Heritage New Zealand *Pouhere Taonga* of the disturbance
2. If the archaeological material is determined to be *koiwi tangata* (human bones) or *taonga* (treasured artefacts) by Heritage New Zealand *Pouhere Taonga*, the person undertaking the works shall immediately advise the office of the appropriate rūnanga (office contact information can be obtained from Environment Canterbury) of the discovery.
3. If the archaeological material is determined to be *koiwi tangata*, the authorisation holder shall immediately advise the New Zealand Police of the disturbance.
4. Work may recommence if Heritage New Zealand *Pouhere Taonga* (following consultation with rūnanga if the site is of Māori origin) provides a statement in writing to Environment Canterbury that appropriate action has been undertaken in relation to the archaeological material discovered. Environment Canterbury shall advise the person undertaking the works on written receipt from Heritage New Zealand *Pouhere Taonga* that work can recommence.

Note 1: This may be in addition to any agreements in place between the authorisation holder and the Papatipu Rūnanga (Cultural Site Accidental Discovery Protocol).

Note 2: Under the Heritage New Zealand *Pouhere Taonga* Act 2014, an archaeological site is defined as any place associated with pre-1900 human activity, where there is material evidence relating to the history of New Zealand. For sites solely of Māori origin, this evidence may be in the form of accumulations of shell, bone, charcoal or burnt stones. In later sites, artefacts such as bottles or broken glass, ceramics and metals may be found or evidence of old foundations, wells, drains, tailings, races or other structures. Human remains/*koiwi* may date to any historic period.

It is unlawful for any person to destroy, damage, or modify the whole or any part of an archaeological site without the prior authority of Heritage New Zealand *Pouhere Taonga*. This is the case regardless of the legal status of the land on which the site is located, whether the activity is permitted under the district or regional plan or whether a resource or building consent has been granted. The Heritage New Zealand *Pouhere Taonga* Act 2014 provides for substantial penalties for unauthorised damage or destruction.

General Requirements: Fuel and hazardous materials management

Note: Separate rules control refuelling and storage of hazardous substances in the bed of a river. Those operating under this Code of Practice shall ensure they can comply with the rules in the proposed Land & Water Regional Plan, or obtain a resource consent. The following requirements have been written to help compliance with the rules on refuelling and hazardous substances storage.

All works shall be carried out in a manner which avoids the potential for fuel and any other hazardous materials to enter the water. This includes:

- All practicable measures shall be undertaken to avoid the spillage of fuel or any other hazardous materials anywhere in the bed of a river or watercourse
- Fuel and hazardous materials shall not be stored within:
 - 20 metres of a surface water body or bore; or
 - a group or community drinking water protection zone as set out in Schedule 1 of the proposed Land & Water Regional Plan
- The refuelling of machinery shall not take place over the wet bed of a river or lake, or in any area where spills may enter surface water
- All refuelling and bulk deliveries shall be directly supervised by the equipment operator
- All mobile plant shall be refuelled in a designated area, on an impermeable base, away from drains or watercourses. Where this is not practicable, drip trays shall be used
- All non-mobile plant shall have drip trays or other spill containment measures installed
- A written spill response plan shall be developed and communicated to all persons responsible for fuel storage and refuelling on site. A copy shall be kept on site at all times
- If a spill occurs, the following steps should be undertaken, in addition to any actions required under the site's spill response plan:
 - a) Be safe
 - b) Identify the spilt material
 - c) Put on the necessary personal protective equipment
 - d) Stop the source if you can to prevent the spill getting any worse or spreading
 - e) Try to soak as much of the spill up with appropriate absorbent material
 - f) If the spilt material has soaked into the ground, the area of the spill should be scooped up and removed off site and disposed of at a suitable disposal facility
 - g) Complete the spill response form and send it to Environment Canterbury
 - h) If the spill is more than 1 litre or has the potential to cause harm, contact the Pollution Hotline immediately (0800 76 55 88).

The above requirements assume temporary worksites and that any fuel or hazardous substances stored are temporary measures in approved containers only. Establishment and use of permanent storage sites is not covered by this Code of Practice. Refer to the proposed Land & Water Regional Plan for further details.

General Requirements: Pest species control

Works shall be undertaken in a manner that avoids the potential for distribution of pest species. This includes:

- Construction material imported from another catchment, such as rock, shall be free of plants and plant seeds before depositing it on the bed or banks of any waterbody
- To prevent the spread of pest species, including but not limited to didymo, the operator shall ensure that activities are undertaken in accordance with Biosecurity New Zealand's hygiene procedures and that machinery shall be free of plants and plant seeds before use in the riverbed.

- If you are moving items between catchments you must, if staff and/or machinery and gear have been in contact with water:
 - i. *Check:* Before leaving the river, remove all obvious plant material, including clumps of algae, seeds and stems. Leave it at the affected site. If you find any later, do not wash it down drains. Treat it with the approved cleaning methods below, dry them and put them in a rubbish bin
 - ii. *Clean:* Soak and scrub all items for at least 1 minute in either hot (60°C) water, a 2% solution of household bleach or a 5% solution of salt, nappy cleaner, antiseptic hand cleaner or dishwashing detergent
 - iii. *Dry:* If cleaning is not practical, after the item is completely dry to touch, wait an additional 48 hours before contact or use in any other waterway

Note: When working in the Lower Waitaki catchment, cleaning of equipment and machinery must be carried out between rivers and tributaries within the catchment (for example, do not take equipment from the Waitaki River to the Hakataramea River without first cleaning the equipment and machinery).

Commentary

Didymo has been declared an unwanted organism under the Biosecurity Act 1993. It is an offence to spread an unwanted organism. Didymo is a member of the group of single-celled aquatic plants (freshwater algae) known as diatoms. Although it is microscopic, didymo can form dense colonies called algal blooms which can be seen with the naked eye. Young colonies look like raised pimples on the surfaces of river rocks, but as the mucilage elongates to form stalks, the colonies form impenetrable mats that form thick strands and can cover all surfaces, including other plants, logs and debris. It can also form flowing 'rat's tails' that can turn white at their ends and look similar to tissue paper.

- *Colour* – Didymo is beige/brown/white but can appear green when filamentous algae grows on it
- *Touch* – although it looks slimy, it doesn't feel slimy, but rather spongy and scratchy like cotton wool
- *Odour* – live didymo has no distinctive odour
- *Strength* – didymo is very securely attached to river stones and does not fall apart when rubbed between fingers

Definitive identification requires microscopic analysis.

General Requirements: Erosion and sediment control

Works shall be undertaken to minimise, as far as practicable, the disturbance of sediment and its discharge into waterways, and to avoid the potential for erosion to occur or be exacerbated as a result of the works. This includes:

- All practicable measures shall be undertaken to minimise the discharge of sediment to the waterway arising from the works, including the use of sediment traps where practicable
- Works and structures shall not cause erosion to the bed or banks of any waterway
- Works and erosion and sediment control measures shall not prevent the passage of fish or cause the stranding of fish in pools or channels
- Machinery shall be kept out of water as far as practicable. Where this is unavoidable, all measures shall be taken to minimise bed disturbance and release of sediment (for example, use of a single crossing point, sediment and erosion control measures)

- Where the temporary diversion and damming of flow paths is undertaken, this shall not cause unplanned erosion of the bed or banks of any waterbody, and shall be reinstated so the waterbody is aligned similarly to that which existed before the diversion, unless ecological values are improved by it. Measures shall be undertaken to provide for fish passage through the diversion
- Using appropriately-sized machinery
- Discharges of sediment or other contaminants (but excluding diverted water) from the site shall not occur for more than 10 hours in any 24-hour period, and for not more than 40 hours in any calendar month.

Note: Refer also to Environment Canterbury's Erosion and Sediment Control Guide available at www.ecan.govt.nz. This document provides details of methods of erosion and sediment control for a range of construction activities and operations.

General Requirements: Worksite reinstatement

Upon completion of works, the site shall be tidied and reinstated to similar, if not better, quality than before the works.

This includes:

- All unused materials, offcuts and equipment shall be removed from the site as soon as practicable following completion. Areas disturbed by machinery shall be reinstated to match the surrounding area
- Any natural material disturbed by the works shall be reshaped and formed to a state consistent with the surrounding area, unless agreed otherwise with the landowner
- All litter and empty containers shall be removed
- All fences, gates and access ways shall be reinstated
- All grassed areas shall be replanted and any areas of vegetation disturbance shall be replanted with appropriate species unless agreed otherwise with the landowner. Revegetation responsibilities extend beyond the initial grassing and/or planting of areas and include sufficient time to achieve suitable grass strike or plant establishment

Commentary

The above requirements relate to completion of works and do not preclude windrowing of material (for example, associated with drain-clearing activities) when undertaken in accordance with the relevant work-type requirements in section 3 of this Code of Practice.

General Requirements: Complaints and adverse effects management

Works should be undertaken so as not to cause adverse effects and, if any such effects do occur, these are investigated and addressed in a timely manner. This includes:

- A complaints register shall be kept recording the details of any complaints received and actions taken. Details recorded shall include:
 - Complainant's name
 - Time of incident
 - Works being undertaken at the time of the complaint
 - Conditions at the time of the complaint (weather, flow)
 - Investigations undertaken
 - Nature of any remedial action taken

The complaint register shall be made available to Environment Canterbury on request.

- If adverse effects are identified either through complaints or observations / audits on site, action shall be taken as soon as practicable to address the cause of the effect and undertake any remedial or mitigation measures considered necessary.

General Requirements: Cultural effects

Te Rūnanga o Ngāi Tahu is the statutory authority representing iwi members and includes 10 local rūnanga known as Papatipu Rūnanga. 'Papatipu' refers to ancestral land. Local Papatipu Rūnanga have mana whenua with kaitiaki status (guardianship) over land and water within their takiwā or territory. The following measures have been included throughout this Code of Practice to ensure that any potential effects of works on areas of significance to Papatipu Rūnanga are avoided, remedied or mitigated as appropriate:

- Cultural matters shall be investigated, sites of significance identified, and appropriate construction and accidental discovery procedures adopted to avoid, remedy or mitigate adverse effects. This should occur through engagement with the relevant Papatipu Rūnanga to identify issues and determine appropriate measures
- Persons intending to undertake works as a permitted activity in accordance with this Code of Practice are required to confirm whether the worksite areas are within Silent Files or Statutory Acknowledgement areas as identified in the Ngāi Tahu Claims Settlement Act 1998.
- Where sites are within Statutory Acknowledgement Areas or Silent File areas, the Papatipu Rūnanga shall be notified of the intention to carry out the works and the intended type and scope of works, not less than 10 working days before commencement to enable the rūnanga to advise of any site of significance that may be affected by the proposed works
- Works shall not interfere with any sites of significance identified by Papatipu Rūnanga unless expressly agreed with Papatipu Rūnanga
- Works shall be planned to avoid any adverse effects on the habitat, spawning times or migration of native fish
- Worksites shall be checked before commencement to determine whether any native nesting birds are present. Where such birds are present, works shall be planned to avoid any adverse effects on them
- Work is to be planned to avoid disturbance to key mahinga kai species including koura and kākahi, wherever practicable
- Works shall be planned to avoid disturbance of native fauna and key habitat for species such as lizards and bats (roosting trees) as far as practicable
- Consideration shall be given to use of native vegetation to restore areas of vegetation disturbance and bank stabilisation and erosion control
- Accidental Discovery Protocols shall be in place and work shall cease if any kōiwi tangata or taonga are discovered

Commentary

Environment Canterbury will engage with Papatipu Rūnanga annually to seek input on the appropriateness of measures in addressing cultural values and to provide notification of works to be undertaken in the beds of rivers and lakes. It has been agreed that such engagement will occur via an annual hui to review the Code of Practice and work plans Environment Canterbury is certifying.

Environment Canterbury will work with Papatipu Rūnanga to discuss and identify needs or opportunities for cultural or environmental training of operators undertaking works, as well as opportunities to promote use of native species for bank stabilisation through the implementation of this Code of Practice or other works undertaken by Environment Canterbury.

3 ACTIVITY SPECIFIC REQUIREMENTS

In addition to the general requirements set out in Section 2 of this Code of Practice, there is a range of additional measures that are required depending on the activities carried out. Activities carried out in managing defences against water reflect the various techniques that can be used including stopbank works, maintenance of flood-carrying capacity (for example, drain clearing), measures to control and manage the direction and location of flood flows within the riverbed (such as rock or other groynes), and measures to protect the berm (for example, rock lining, berm vegetation). Works involved in managing defences against water typically involve the following types with potential to cause adverse environmental effects:

- Earthworks and land disturbance
- Works adjacent to or In flowing water
- Maintenance of culverts and structures
- Diversions (within the riverbed)
- Vegetation removal carried out in the dry (outside flowing water)
- Vegetation and silt removal carried out in flowing water
- Use of agrichemicals

This section of the Code of Practice contains work-type requirements that must be followed when undertaking activities involving any of the above work groups.

Table 3 provides a link between typical activities carried out to manage defences against water and the work type requirements.

Activities not listed in Table 3 may be certified as being in accordance with this Code of Practice provided they meet the general requirements, adequately address management of potential adverse environmental effects, are not specifically excluded by section 1 of the Code and are considered to be activities associated with the installation, maintenance, use and removal of defences against water as defined in section 1. Certification of work plans for activities not listed in this section should, where possible, be discussed with Environment Canterbury before submittal for certification.

Certification of work plans as being in accordance with the Code of Practice is only one condition required to be satisfied to undertake works as a permitted activity under Rule 5.138 of the proposed Land & Water Regional Plan. All conditions of Rule 5.138 must be satisfied to undertake works as a permitted activity. If these conditions cannot be satisfied, resource consent will be required.

In addition, approvals under the Flood Protection and Drainage Bylaw 2013 will be required for any works within the vicinity of flood protection and flood control works owned or controlled by Environment Canterbury, where those activities have the potential to adversely affect the integrity or effective operation and maintenance of the works.

This section of the Code of Practice is set out as follows:

- Table 3 provides an overview linkage between specific activities and the work-type requirements
- Section 3.1 provides background information on each of the activities including a description of the activity and potential environmental effects to be managed
- Section 3.2 contains work-type requirements for each of the identified work types



Table 3: Activities covered by Work-type Requirements

Activity type	Activity	Work-type requirements							
		General requirements (Part 1)	Earthworks and land disturbance	Works adjacent to or in flowing water	Culverts and structures	Diversions	Vegetation removal – dry	Vegetation and silt removal – wet	Use of agrichemicals
Drain works	Aquatic weed cutting	✓		✓				✓	
	Culvert / floodgate installation and maintenance	✓		✓	✓				
	Drain construction and battering	✓	✓	✓					
	Powerpole and rock drop construction	✓		✓					
	Silt removal	✓		✓				✓	
	Chemical control of weeds	✓							✓
	Drain clearing and maintenance	✓		✓				✓	✓
	Lateral erosion control of drains	✓	✓	✓	✓				
River works	Stopbank construction	✓	✓						
	Stopbank maintenance	✓	✓						✓
	Channel realignment / improvements	✓		✓		✓			
	Placement of maintenance rock	✓		✓	✓	✓			
	Groyne fence construction and maintenance	✓	✓	✓		✓			
	Anchored tree protection	✓		✓			✓		
	Rock groyne construction and maintenance	✓	✓	✓		✓			
	Rock stockpiling on river berms	✓					✓		
	Hayman protection erosion or scour control	✓	✓	✓					
	Removal of flood debris	✓		✓	✓				
Tree works	Enhancement planting	✓	✓						
	Pole planting and layering	✓	✓	✓			✓		
	Tree removal	✓		✓			✓	✓	
Vegetation and fairway clearance	Mechanical clearance	✓		✓			✓	✓	
	Spraying - riverbeds, drains and berms	✓							✓
	Fairway edge clearing	✓		✓			✓	✓	
	Fairway widening - tree removal	✓		✓			✓	✓	
Other	Pest control	✓							✓
	Fencing, gates, signage and staff gauges	✓							
	Flood pumping	✓							
	Road / track construction and maintenance	✓	✓						
	Maintain or enhance wetlands and habitat	✓	✓	✓					

3.1 Activity descriptions

3.1.1 Drain works

Wherever practicable, drains should be managed as natural waterways and opportunities should be sought to enhance aquatic and riparian habitat if this can be done without adversely affecting the function of the drainage system.

If they are listed as a known or identified inanga spawning site in Schedule 17 of the proposed Land & Water Regional Plan, works in drains must be avoided during inanga spawning season.

Outside the spawning season, consideration must be given to undertaking drain works in a manner that minimises the impact on inanga spawning habitats. Some suggested methodologies for different types of drain works are included in the “Work-type requirements” section below.

Aquatic weed cutting

Aquatic weed cutting is generally undertaken using a purpose-built weed cutter boat or manually. Weed is generally removed and stockpiled on the berm so it can dry before disposal. Aquatic weed cutting is undertaken to mitigate the effects of excessive aquatic weed growth on waterway capacity and water-quality characteristics. Compared with other available aquatic weed control methods, weed cutting minimises disturbance to the bed and banks of the watercourse and does not require chemicals. Further, riparian vegetation is not disturbed and birdlife can remain in the vicinity while the activity is carried out.

Potential effects

- Erosion of the bed and banks of the watercourse at access locations, and where concentrated flows from the drying site re-enter the watercourse
- Destruction of habitat and removal of a potential food source for aquatic life in the reach where the activity is undertaken
- Capture of fish species from the watercourse
- Temporary loss of public amenity during activity
- Odour and amenity effects from weed drying and decomposition on berms
- Downstream effects on water quality and aquatic fauna resulting from decomposition of cut weed if it is not removed from the watercourse
- Blockage of downstream flood protection infrastructure, such as floodgates, from cut weed

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Works adjacent to or in flowing water
- Vegetation and silt removal in water

Chemical control of weed

Note: Separate rules control agrichemical use. Those operating under this Code of Practice shall make sure they can comply with those requirements in the proposed Land & Water Regional Plan, or otherwise obtain their own resource consent.

This activity involves use of chemical sprays to control target weed species on beds and banks of waterways. This is a ground-based (not aerial spraying) operation carried out to maintain drainage capacity and remove pest plants from the riparian margin area.

The activity is undertaken using spot-spraying techniques (rather than blanket spraying) as far as practicable to avoid, remedy or mitigate potential adverse environmental impacts on the drain bank and aquatic habitats.

Potential effects

- Adverse effects on non-target species of flora and fauna
- For emergency spill of chemicals into adjacent drains with adverse effects on aquatic life
- Short-term amenity effects of dead weeds and chemical spray odours
- Fish abundance and spawning success affected by water de-oxygenation during plant composition
- Removal of aquatic habitat
- Removal of inanga spawning habitat
- Spray drift into waterways or neighbouring properties

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Use of agrichemicals

Mechanical and hand weed clearing

Mechanical weed removal is carried out to maintain effective drainage and channel capacity for conveyance of flood flows. This activity involves clearance of vegetation and removal of pest plants which cannot be achieved by applying herbicides. These works are often undertaken together with removal of accumulated sediment and reshaping of drainage banks to restore the design capacity of drainage channels.

The activity typically involves excavation of material from the drain using a hydraulic excavator with a cleaning bucket. A slotted, self-drainage weed-clearing bucket is normally used. The excavator typically operates from one bank when clearing a drain, although sometimes work from both banks may be required for wider channels. Material removed from the drain is disposed of to make sure it neither re-enters the drain nor impedes surface drainage.

Potential effects

- Mechanical clearing is non-selective and desirable plant species may be removed
- Removal of fish and invertebrates from the waterway with excavated material
- Loss of cover and spawning vegetation for native fish and invertebrates
- Deterioration of water quality from sediment release which can persist for significant periods and have the following effects on aquatic fauna:
 - Fish and invertebrates killed by water de-oxygenation in heavily silted waterways
 - Fish migrations interrupted
 - Reduced food availability for invertebrates and fish
- Reduced native fish and invertebrate abundance
- Short-term adverse visual and odour effects

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Vegetation and silt removal in water
- Use of agrichemicals

Silt removal

Silt removal involves excavation of material from the bed of a drain using a hydraulic excavator. The purpose is to remove excess sediment deposited on the channel bed to maintain channel capacity, typically in drains with a low gradient. Excavated material is generally placed adjacent to the drain in windrows where it may remain for drying before disposal.

Potential effects

- Removal of fish and invertebrates from the waterway with excavated material
- Reduced native fish and invertebrate abundance
- Loss of cover and spawning vegetation for native fish and invertebrates
- Deterioration of water quality from sediment release, which can persist for significant periods and have the following effects on aquatic fauna:
 - Fish and invertebrates killed by water de-oxygenation in heavily silted waterways
 - Fish migrations interrupted
 - Reduced food availability for invertebrates and fish
- Short-term suspended solids loading in waterways, affecting water quality
- Short-term disturbance of aquatic habitat
- Damage to drain batters, causing erosion and stability issues
- Loss of amenity from restriction of access, placement of windrows and drying of excavated material before disposal

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Vegetation and silt removal in water

Culvert and floodgate installation and maintenance

Culverts provide permanent access across drains and natural watercourses, without obstructing water flows or impeding fish passage. Floodgated culverts provide for water to be drained into a watercourse but prevent backflow through the floodgate in order to prevent flooding of upstream land.

Please refer to the specific regional rules for culvert installation, alteration, extension and use to ensure compliance with those rules. Failure to comply with the regional rules for temporary or permanent culverts will require a resource consent.

Culverts and floodgates have a limited life and need to be cleaned, maintained, repaired or replaced so their function can continue at design capacity. Inspections of floodgates are required on a

regular basis and normally involve removal of any debris that may cause blockages, lubrication of hinges, cutting or spraying excessive bank vegetation, and checking that any safety barriers/signs are in sound condition.

Components of floodgates can be removed for rebuilding or outright replacement. The work is carried out when water levels at the site permit and this can be quite limiting in tidally influenced areas. Hand-held tools are used but larger structures can require a crane.

Potential effects

- Reduction of flood-carrying capacity
- Erosion at culvert / floodgate structure
- Impedance or blocking of fish passage
- Temporary effect on water quality during construction
- Impact on amenity values (construction effects)

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Works adjacent to or in flowing water
- Culverts and structures

Drain maintenance and battering

Drain re-construction and battering is undertaken to re-establish a drain alignment and/or to stabilise channel banks. Generally the activity involves excavation, placement, compaction and shaping of material to blend in with the surrounding area. In some instances importation of fill material may be required. On completion of the earthworks, revegetation of the worksite is undertaken to provide a protective surface in order to mitigate erosion and scour.

As a maintenance function, this activity can be required as part of restoration work following lateral bank erosion or flood damage. Further, stopbanks may be found to have batters steeper than the scheme design batter, which can occur due to stock or vehicle damage, and in older schemes where construction tolerances were inconsistent.

Work should be planned to enable sufficient time for grass re-establishment in favourable weather conditions (typically autumn). If works are undertaken when grass re-establishment may be difficult, consideration should be given to use of hydro-seeding and / or irrigation to facilitate timely, good-quality grass strike to minimise potential for batter erosion and scour.

Re-battering should consist of the provision, placement and compaction of suitable material for the construction of the batter to restore the line of the drain. Saturated material should not generally be used for this work. Any eroded material or material that has fallen into the drain during the work should be removed and disposed of.

Potential effects

- Short-term increased erosion potential in drains and banks before vegetation reestablishment
- Temporary effect on water quality from sediment discharge during construction
- Temporary disturbance of aquatic habitat and vegetated banks
- Removal of inanga spawning habitat and eggs

- Temporary impediment of fish passage during construction
- Effects on amenity values in terms of access and dust during construction

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Works adjacent to or in flowing water
- Earthworks and land disturbance

Powerpole and rock drop structure maintenance

Rock or powerpole drop structures are an erosion-control method used to control bed scour. Powerpole drop structure dimensions are determined by site-specific requirements, but typically consist of a horizontal powerpole held in place by a series of vertical piles and keyed into the stable channel bank at the upstream and downstream ends. Rock drop structures take a similar form but are constructed from graded rock. Successive drop structures are constructed in steeply graded channels. Successive drops are separated by a minimum distance along the bed and a scour pad (consisting of boulders or similar material) is constructed on the downstream side of the last drop in the series of drops.

Potential effects

- Temporary disturbance of bed and bank material resulting in sediment discharge
- Obstruction of fish passage
- Temporary loss of amenity during construction

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Works adjacent to and in flowing water

Lateral erosion control of drains

Lateral erosion control activities are typically carried out where erosion of the batter will:

- Undermine fences or other structures
- Endanger a public roadway
- Cut off maintenance access along the drain
- Cause a reduction in the capacity of the drain or induce further erosion

Lateral erosion control at the erosion site can be undertaken from a selection of methodologies including rock rip-rap, bulk or stacked concrete rip-rap, powerpoles, gabion baskets, or timber boarding, with the resulting structure cross-section keying into the stable channel bank at the upstream and downstream ends.

Potential effects

- Short-term adverse effects on water quality from sediment disturbance and disturbance of habitat
- Short-term disturbance of riverbanks
- Short-term amenity effects during construction
- Change of flow paths moving erosion elsewhere, for example at the edge of the worksite if the length of the control is insufficient

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance
- Works adjacent to and in flowing water
- Culverts and structures

3.1.2 River works

Stopbank construction

Stopbank construction encompasses building stopbank structures (including reconstruction of existing stopbanks) and improving the integrity of existing structures (for example, raising, widening, relocation, and structural integrity modifications).

Construction typically requires preparation of the worksite, followed by the importation, placement and compaction of suitable fill materials. Establishment of grass cover is completed on finished earthwork surfaces.

Potential effects

- Erosion and discharge of sediment from the worksite with adverse effects on water quality
- Disturbance of riparian and aquatic habitats
- Temporary amenity effects from construction – access restrictions and dust

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance

Stopbank maintenance

Stopbank maintenance activities are carried out to retain or restore design height, shape and surface conditions. Such work may be required due to degradation at crossing points, foundation settlement, original construction not meeting design height or bed aggradation, for example. Maintenance activities encompass:

- Earthworks to maintain height and shape
- Maintenance of stopbank carriageways
- Removal of weeds by spraying
- Mowing of grassed surfaces

Potential effects

- Erosion and discharge of sediment from the worksite with adverse effects on water quality
- Disturbance of habitats and wildlife
- Potential for adverse impacts on non-target species of flora and fauna, and for spray drift into waterways or neighbouring properties
- Emergency spill of chemicals into adjacent drains with adverse effects on aquatic life
- Temporary amenity effects from construction - access restrictions and dust

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance
- Use of agrichemicals

Channel realignment/improvements

River realignment/improvement works are undertaken to increase channel capacity, and mitigate the effects of lateral erosion and bed scour.

The typical approach to realignment is to locally lower a portion of dry riverbed to create a new link to an existing, and preferably flowing, braid. The work is typically carried out in an upstream direction using an excavator, loader or bulldozer.

Note that this Code of Practice only covers realignment or channel improvement within the riverbed.

Potential effects

- Temporary effects on water quality from disturbance of riverbed sediments
- Disruption of habitat and wildlife
- Temporary amenity effects during construction
- Generating fish passage barriers
- Disturbance of pool-run-riffle sequence

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Diversions

Placement of maintenance rock

Rock is used in flood-protection work to deflect floodwaters from potentially vulnerable structures (for example, bridge abutments, stopbanks, support and intake structures), to train flood flows to the main flood channel and to absorb energy in floodwaters. Rock may be placed in a linear formation (such as rock lining of the berm to prevent erosion), around structures (to protect pylons or bridge abutments for example) or at an angle to the main flow (such as rock groynes).

Rock armouring is required to be topped up as rock settles or following flood events. Rock is carted to the placement site and either tipped or placed mechanically. Rock should usually be placed as there is greater control over placement so quantities can be optimised. However, mechanical placement is not always possible, in which case tipping may be used.

Potential effects

- Short-term disturbance of bed and bank material during placement
- Disturbance of vegetation to access the worksite
- Machinery working in or close to flowing water can discharge sediment or spill fuel
- Short-term amenity effects

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Diversions
- Culverts and structures

Groyne fence construction and maintenance

Groyne fences are used to control bank erosion, and consist of a series of vertical piles and horizontal wires against which whole trees or poles are attached with foliage extending into the stream channel. In Canterbury, typical groyne fence constructions include:

- 2-rope groyne fence
- 3-rope groyne fence
- Unstayed groyne fence
- Groyne A-fence

Potential effects

- Temporary effects on water quality from sediment disturbance during maintenance works
- Temporary disruption of in-stream and bed habitats during maintenance works
- Change of flow paths moving erosion elsewhere; for example, at the edge of the worksite if the length of the control is not sufficient, or to adjacent infrastructure
- Temporary amenity effects during maintenance works

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance
- Works adjacent to and in flowing water
- Diversions

Anchored tree protection

Light and heavy anchored tree protection measures are used to control lateral bank erosion. Construction typically requires clearance of the site adjacent to the berm edge, and anchoring of trees or tree bundles in place with anchor ropes and deadmen.

Potential effects

- Temporary effects on water quality from sediment disturbance during construction
- Temporary disruption of in-stream and bed habitats during construction
- Change of flow paths causing moving erosion elsewhere; for example, at the edge of the worksite if the length of the control is insufficient, or to adjacent infrastructure

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Vegetation removal – dry

Rock groyne construction and maintenance

Rock groynes are used to control the location of the active channel within the riverbed and to control lateral bank erosion. Groyne construction typically includes formation of an access track to the site, work to direct flow away from the site, formation of gravel embankments along a proposed protection line, dumping and placement of rock on the proposed protection line, and reinstatement of access tracks on completion of work.

Potential effects

- Temporary effects on water quality from sediment disturbance during construction
- Temporary disruption of in-stream and bed habitats during construction
- Change of flow paths moving erosion elsewhere; for example, at the edge of the worksite if the length of the control is insufficient, or to adjacent infrastructure
- Temporary amenity effects during construction

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance
- Works adjacent to and in flowing water
- Diversions

Rock stockpiling on river berms

Rock is stockpiled at strategic locations on berms to make sure a supply is readily available during flood events for measures to be taken to limit the erosion of berms and groynes, or adjacent to flood-protection structures. Rock stockpiling is undertaken because:

- Quarry sites are typically located a long way from where the rock is required in an emergency
- Quarries may have limited or no access during flood events
- The rate of rock supply from quarries to the site is limited to the production capacity of the quarry and the capacity of transportation

Proposed rock stockpile sites are cleared of vegetation and levelled so trucks can manoeuvre both in the dumping phase and later in the loading. Typically, the stockpile area is fenced off and a locked gate is installed for public safety purposes and to minimise theft.

Potential effects

- Temporary disturbance to berm habitat during stockpile establishment and replenishment
- Propagation of weed species in the stockpile

- Uncontrolled disturbance to berm habitat from theft/ uncontrolled removal of stockpiled rock

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Vegetation removal – dry

Hayman protection erosion or scour control

Hayman protection is an erosion/scour control method typically used for controlling bank erosion in small, steep-sided and graded waterways.

To reduce deposition of sediment downstream and stabilise the waterway, construction of Hayman protection involves placement, fastening and anchoring of vertical poles along a design alignment against which netting is secured. Installation of the poles and netting requires excavation, which is backfilled to typical bed level.

Potential effects

- Temporary effect on water quality from sediment disturbance during construction
- Temporary disturbance of bed and bank habitat during construction
- Short-term amenity effects during construction
- Modification of flow paths can move erosion elsewhere; for example, to the edge of the worksite if the length of control is insufficient, or towards other flood-protection structures

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance
- Works adjacent to and in flowing water

Removal of flood debris

Debris in a channel fairway can regrow and cause increasing restriction of waterway capacity, and redirect flows towards the banks.

In braided waterways, removal is carried out in the dry typically using excavators, loaders, trucks or scrapers. The work is timed, and site access is obtained, considering wildlife and ecological values. This sometimes dictates the short-term (up to one week) stockpiling of the excavated material on the berm. In single-thread waterways, debris removal is carried out using an excavator or dragline working from a bank. Timing, staging and access are determined considering wildlife and ecological values.

Potential effects

- Temporary disturbance of the channel bed, banks or berms
- Temporary water-quality effects from discharge of sediment
- Habitat disturbance to create site-access tracks
- Temporary amenity effects on areas of high public use
- Removal of aquatic habitat

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Culverts and structures

3.1.3 Tree works

Enhancement planting

Please refer to the specific regional rules for vegetation planting and removal to ensure compliance with those rules. Failure to comply will require a resource consent.

Enhancement planting is undertaken to improve and maintain ecological values of riparian and in-stream habitats, where a variety of species (predominantly natives) are planted among the existing flood-protection vegetation. This activity is often undertaken in conjunction with construction and maintenance of flood-protection structures, and also standalone.

Typically, enhancement planting requires preparation of the worksite by removal of existing weed and grass cover and minor earthworks/landscaping. Preparation is followed by site planting and a maintenance period to help with successful plant establishment.

Make sure that plants listed in the Biosecurity NZ Unwanted Organisms Register are not used for enhancement planting projects.

Potential effects

- Temporary disturbance of banks/berm resulting in sediment discharges to water
- Temporary disturbance to public access and amenity
- Failure of plants to establish on site can cause adverse amenity effects in terms of dead vegetation, erosion and sediment discharge from exposed soil, and establishment of weed species

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance

Pole planting and layering

Please refer to the specific regional rules for vegetation planting and removal to ensure compliance with those rules. Failure to comply will require a resource consent.

Pole planting is carried out to establish edge protection in areas cleared of vegetation such as gorse, broom or old man's beard. Where soils have good moisture-holding capacity, or the water table is within about 600 millimetres of the surface, poles can be placed in lines made by a bulldozer, loader or excavator. In dryer areas, poles are planted at greater depth in holes formed by excavators or bulldozers.

Layering is undertaken to increase the density of existing live-edge protection. Trees are felled in a downstream direction with the head in the lowest part of the adjacent bed, and 25% to 30% of the stump is left attached to the parent stump.

Pole planting and layering can help improve water quality and habitat by increasing the vegetative buffer between waterbodies and adjacent land uses.

Consider using appropriate native species for bank stabilisation and erosion control where possible.

Note: Crack, grey or pussy willow shall not be planted. These species listed in the Biosecurity NZ Unwanted Organisms Register and the Regional Pest Management Plan shall not be planted or introduced.

Potential effects

- Temporary disturbance of channel bed and banks
- Habitat disturbance to create site-access tracks
- Temporary water-quality effects from discharge of sediment
- Temporary amenity effects in areas of high public use
- Trees carried downstream if anchoring/installation procedures are insufficient
- Barriers to recreation access

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Earthworks and land disturbance
- Works adjacent to and in flowing water
- Vegetation removal – dry

Tree removal

Please refer to the specific regional rules for vegetation planting and removal to ensure compliance with those rules. Failure to comply will require a resource consent.

Tree removal is typically undertaken as part of maintenance of channel-edge protection or to maintain vegetation health.

Tree removal typically occurs when trees are diseased or too large, or are in locations that restrict channel capacity. Other maintenance activities requiring tree removal can include taking wind-blown trees from access tracks or stopbanks, tree removal in berm plantations heavily infested with old man's beard and other pest species, or flood-damaged trees.

Tree removal is typically not carried out in the active channel area, and if trees are felled into the active channel they are quickly removed. The root systems of felled trees continue to support bank stability and are often retained for this purpose.

Potential effects

- Temporary effects on water quality from sediment disturbance
- Temporary disturbance of riparian habitat
- Temporary disruption to amenity and access
- Contamination of surface water from spillage of chemicals used for poisoning stumps

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Works adjacent to and in flowing water

- Vegetation removal – dry
- Vegetation and silt removal – wet

3.1.4 Vegetation and fairway clearance

Please refer to the specific regional rules for vegetation planting and removal and agrichemical use to ensure compliance with those rules. Failure to comply will require a resource consent.

Mechanical clearance

This activity includes removal of vegetation including roots, and ripping of the cleared work area. The activity can occur as part of the site preparation works for flood-protection measures, or as part of the maintenance of fairway alignment and capacity.

Potential effects

- Temporary effects on water quality from discharge of sediment
- Disturbance of habitat from the works and site-access tracks
- Temporary disruption to amenity and access in areas of high public use

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Vegetation removal – dry
- Vegetation and silt removal – wet

Spraying - riverbeds, drains and berms

This activity involves chemical sprays to control weeds in fairway, berm, stopbank and drainbank vegetation.

This is a ground-based activity, typically undertaken using spot spraying techniques to mitigate potential adverse environmental impacts on riparian and aquatic habitats.

Potential effects

- Adverse impacts on non-target species of flora and fauna
- Fish abundance and spawning success affected by water de-oxygenation during plant composition
- Removal of aquatic habitat
- Removal of inanga spawning habitat
- Spills of chemicals into surface water with adverse effects on aquatic life
- Short-term amenity effects of access restrictions, dead weeds and chemical spray odours
- Spray drift into waterways or neighbouring properties

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Use of agrichemicals

Fairway edge clearing

Clearance of vegetation on the edge of the fairway is typically undertaken in preparation for construction of flood-protection measures as part of maintenance of fairway alignment and capacity, or of vegetation health.

Potential effects

- Temporary effects on water quality from sediment disturbance
- Temporary disturbance of riparian habitat
- Temporary disruption to amenity and access
- Contamination of surface water from spillage of chemicals used for poisoning stumps

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Vegetation removal – dry
- Vegetation and silt removal – wet

Fairway widening – tree removal

Tree removal to facilitate fairway widening is typically undertaken where trees are too large or there is restricted channel capacity. Further, tree removal on the fairway may be undertaken to maintain vegetation health. The activity requires access to the target vegetation, and both the vegetation and its roots are typically totally removed.

Potential effects

- Temporary effects on water quality from sediment disturbance
- Temporary disturbance of riparian habitat
- Temporary disruption to amenity and access

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Works adjacent to and in flowing water
- Vegetation removal – dry
- Vegetation and silt removal – wet

3.1.5 Other

Pest control

The control of pest animals such as rabbits is undertaken to maintain the integrity and function of planting areas and flood-protection structures.

Pest control typically involves laying of bait. This has the potential for adverse effects on non-target species in both riparian and aquatic habitats if appropriate measures are not adopted. Further, bait laying has the potential to adversely impact the amenity and recreational values of a control area.

Potential effects

- Adverse effects on non-target flora and fauna
- Poisons entering waterways and adversely affecting fish life and aquatic vegetation
- Short-term effects on amenity values

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Use of agrichemicals

Fencing, gates, signage and staff gauges

Fencing, gates and signage are erected and maintained to warn of danger, control activities (for example, lighting of fires, shooting, control vehicle speed, dumping of rubbish), protect flora and fauna, inform or direct. Staff gauges are installed and maintained to monitor water levels. Construction typically involves erection of posts and removal of a small area of vegetation to ensure visibility. For information panels, a small shelter may also be constructed.

Potential effects

- Temporary habitat disruption during construction and maintenance actions
- Trapping of debris, causing localised erosion and barriers to species travel
- Amenity effects if inappropriately designed, sited or constructed

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (refer to Section 2 of this Code of Practice)

Flood pumping

Flood pumping is undertaken in emergency situations to lower water levels threatening flood-protection infrastructure and adjacent land uses.

It is done in a planned and controlled manner with flood pump use determined by a deployment protocol that includes gauge-specific trigger water levels.

When not in use, flood pumps and associated fittings are stored under cover, away from any watercourse such as at a depot.

Potential effects

- Short-term erosion at the pump discharge location
- Transfer of polluted surface water from a watercourse to the outlet location with adverse effects on fish life and aquatic vegetation

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)

Road/track construction and maintenance

Road and tracks are formed and maintained to provide access for the maintenance of river-protection works, and for access to infrastructure and recreational users. They also serve as a control to limit disturbance of habitat and wildlife. Track formation on the berm involves grading topsoil to one side and shaping underlying gravel (or adding gravel from an adjacent suitable and approved riverbed site). Formation of riverbed tracks is carried out by a grader or bulldozer levelling riverbed gravel along an alignment chosen to avoid disruption to habitat and wildlife.

Potential effects

- Discharge of sediment from erosion of road/track surface and soil disturbance during construction
- Disturbance to habitat during construction
- Temporary loss of amenity during construction and maintenance activities

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Earthworks and land disturbance

Riverbed works to maintain or enhance wetlands and habitat

Riverbed works undertaken to maintain or enhance wetlands and habitat include:

- Enhancing/managing form and alignment of the watercourse/wetland
- Managing water levels and water-quality parameters (for example, temperature and oxygen depletion).

While this activity is undertaken to achieve beneficial effects for the worksite, the activity does have the potential to trigger short-term adverse effects from construction/maintenance works in terms of erosion, disruption to habitat and amenity effects.

Potential effects

- Temporary effects on water quality from disturbance of bed and bank sediment
- Temporary disruption to habitat and wildlife
- Temporary amenity effects during construction/maintenance activities

Work-type requirements

Refer to the following work-type requirements when undertaking this activity:

- General requirements (see Section 2 of this Code of Practice)
- Earthworks and land disturbance
- Works adjacent to and in flowing water

3.2 Work-type requirements

This section sets out the requirements to be followed for each of the work types identified in the introduction to Section 3 of this Code of Practice. Activities carried out to manage defences against water typically require one or more of the following work-group activities. Requirements relevant to the work being carried out shall be identified and included in the work plan for certification.

Work-type Requirements: Earthworks and land disturbance

In addition to the general requirements set out in Section 2 of this Code of Practice, when undertaking works involving earthworks and land disturbance, the following measures shall be taken:

- Erosion control methodology selection and design shall take into account worksite-specific aesthetic and habitat values
- Works shall be planned to minimise the area disturbed as far as practicable
- Design and construction shall take into account transition effects at upstream and downstream ends to mitigate against potential for erosion and scour
- Where works are undertaken on or near existing stopbanks, all practicable measures shall be taken to make sure the integrity of the stopbank is maintained, including any ancillary structures or features such as culverts
- The supply, placement and compaction of fill materials, including site drainage and moisture content adjustment activities, shall be undertaken to minimise adverse effects on wildlife, vegetation and ecological values
- All practicable measures shall be taken to avoid nuisance effects of dust. Use of dust suppressants (other than water) must comply with specific rules in the proposed Land & Water Regional Plan to be a permitted activity
- On completion, the site shall be contoured to match existing ground levels and drainage features shall be reinstated to avoid potential for ponding of surface water
- Disturbed areas shall be stabilised as soon as practicable following completion to minimise the potential for soil erosion. This may involve grassing or planting with appropriate species
- Ensure that vegetation cover (whether grass or other planting) is achieved as soon as practicable, including appropriate planting conditions and watering to achieve sufficient growth and cover. The grass mix used should be appropriate to the site conditions.

For stopbanks administered by Environment Canterbury, slope stabilisation shall be undertaken by grassing rather than planting tree or shrub vegetation as root establishment in stopbanks can undermine performance.

Work-type Requirements: Work adjacent to or in flowing water

In addition to the general requirements set out in Section 2 of this Code of Practice, when undertaking works adjacent to or in flowing water, the following measures shall be taken:

- Select the location of the proposed works carefully to minimise the extent of works and time spent working in the water
- Where works are undertaken in water and there is potential for fish to be stranded, the person or organisation undertaking the works shall ensure that native and sport fish recovery is conducted for the duration of the works and at least one day after they have been completed. Fish recovery shall be conducted both instream (for suffocating fish) and bank side (for stranded fish). Recovered fish shall be returned upstream of the targeted section of waterway
- Where practicable, fish-spawning areas should be avoided during spawning periods. Refer to General Requirements: Timing of works for details

- Fish passage shall be maintained as far as practicable. Where fish passage cannot be maintained for the duration of the works, the period during which fish passage is restricted shall be minimised as far as practicable and fish recovery shall be undertaken where there is any potential for fish stranding
- Wherever practicable, machinery should work from the watercourse banks (in the dry) rather than in flowing water
- Discharges from the site shall not occur for more than 10 hours in any 24-hour period, and for not more than 40 hours in any calendar month
- Where temporary diversions are constructed to mitigate potential effects, these shall be planned taking into account current and anticipated flow rates, size of the existing tributary and distributary braids, velocity of water and angles of flow. Work plans shall anticipate rising water levels immediately upstream of any diversion and in channels accepting diverted river flows. Drainage of drying channels shall be checked to make sure any pools created retain a downstream connection for fish passage
- Any stream crossings shall be constructed to cause minimum disturbance to banks and vegetation. Wherever practicable, temporary culverts shall be installed rather than providing crossing points through flowing water. If crossing points through flowing water are required, these should generally be located upstream of a riffle where possible
- Avoid disturbing the structure of the beds of waterways, including visible dry channels, wherever practicable.

Work-type Requirements: Culverts and structures

In addition to the general requirements set out in Section 2 of this Code of Practice, when undertaking works involving culverts and other structures (including rock protection), the following measures shall be taken:

- Works shall be undertaken to avoid erosion of the beds and banks
- Excavation shall be the minimum necessary to carry out the works safely and efficiently
- Excavated material not removed from the site shall be stockpiled safely outside the flowing water while awaiting backfilling
- Stream or drainage channel flows shall be temporarily dammed or diverted away from the site to allow for works to be undertaken in the dry. Where this is not possible, works shall be planned so the impact on flowing water is kept to a minimum
- Bed armouring shall be used where there is a risk of scour at the outlet
- Design and installation shall ensure that the capacity of the watercourse is not reduced
- Founding conditions shall prevent settlement of the culvert
- Install the culvert at design levels and grade
- Consider ability to pass debris or mechanisms to prevent blockage in flood events
- Culverts shall not impede fish passage or cause the stranding of fish in pools or channels. Culvert inverts shall be below bed level to allow for fish passage

- Materials used for construction shall be free of contaminants and suitable for the structure. For example, rock used should be suitable for the purpose (including size, grading, shape and quality) and be free of soil, mud, clay or other soluble debris
- Rock should be sourced locally as far as possible to fit in with the surrounding landscape. It shall have a similar appearance to existing rock-protection works in the vicinity.

For guidance on culvert installation and sediment control during construction, refer to the following publications:

- Christchurch City Council's "Waterways, Wetlands and Drainage Guide"
- Environment Canterbury's "Erosion and Sediment Control Guidelines"
- New Zealand Transport Agency's "Fish Passage Guidance for State Highways"
- Auckland Regional Council's "Fish Passage Guidelines for the Auckland Region"
- The Department of Conservation's "Fish Passage at Culverts" (December 1999).

Work-type Requirements: Diversions

In addition to the general requirements set out in Section 2 of this Code of Practice, when undertaking works involving diversions of active channels within the riverbed, the following measures shall be taken:

- Diversions shall be planned taking in to account current and anticipated flow rates, size of the existing tributary and distributary braids, velocity of water and angles of flow
- Work plans shall anticipate rising water levels immediately upstream of any diversion and in channels accepting diverted river flows
- Drainage of drying channels shall be checked to make sure any pools retain a downstream connection for fish passage
- Any temporary diversions shall not be in place for more than 4 weeks in any 12-month period
- Fish recovery shall be conducted in dry channels and stranded fish returned to flowing water
- Fish passage shall not be restricted
- Changes or drying of channels shall be planned with particular regard to nesting bird islands (for example, black-billed gulls, black-fronted terns and white-fronted terns) downstream to make sure these islands remain with flow on both sides to prevent increased access by people, dogs and predators.

Note: The above covers both temporary and permanent diversions of active channels within the riverbed. Permanent diversions may be undertaken, for example, to divert active braids away from defences against water to prevent erosion, scour or undermining.

Work-type Requirements: Vegetation removal outside flowing water (dry)

Please refer to the specific regional rules for vegetation planting and removal and for agrichemical use to ensure compliance with those rules. Failure to comply will require a resource consent.

In addition to the general requirements set out in Section 2 of this Code of Practice, when undertaking works involving vegetation clearance outside flowing water (all works in the dry such as on the river berm), the following measures shall be taken:

- Works shall be planned to minimise the extent of vegetation affected
- All removed material shall be taken to an appropriate disposal site or windrowed for composting in an area where it will not cause adverse effects in flood events. This may be within the riverbed but outside areas of active channels/flowing water
- Berm vegetation which provides a flood protection/attenuation function shall not be disturbed or removed without the prior written approval of the authority responsible for the flood-protection scheme
- Wherever possible, clearing of vegetation shall be undertaken to remove it with its roots intact, rather than smashing vegetation over. This should be achieved by root raking or a similar process that minimises the volume of riverbed material shifted
- Site clearance should be carried out so that removed vegetation is not pushed into flowing or ponded water and before seeding takes place
- Access to lawfully established structures, including flood-protection works, or to flood-control vegetation shall not be prevented
- No vegetation used for flood control or bank stabilisation shall be disturbed, removed, damaged or destroyed except by or on behalf of the person or agency responsible for maintaining that vegetation for flood-control purposes
- No woody vegetation is disposed of other than for *in situ* decomposition of sprayed weeds that are grown in, on, over or under the bed
- Introduction or planting of vegetation shall not be of a species listed in the Biosecurity New Zealand Register of Unwanted Organisms or the Canterbury Pest Management Plan
- Introduction or planting of vegetation in, on or under the bed of any river or lake listed as a "High naturalness waterbody" in sections 6 to 15 of the proposed Land & Water Regional Plan shall only be of indigenous plant species that occur naturally in the catchment
- The disturbance, removal, damaging or destroying of any plant or vegetation in, on or under the bed of any river or lake listed as a "High naturalness waterbody" in sections 6 to 15 shall only be of (a) a non-indigenous species; or (b) indigenous species that form the understorey of plantation forest that is being harvested and a minimum 5 metres set back from the river or lake is provided upon replanting (if replanting occurs)
- Except for clearance around utilities or existing structures, removal of a species listed in the Biosecurity New Zealand Register of Unwanted Organisms or the Canterbury Pest Management Plan, or clearance for the purposes of maintaining existing fencelines, vehicle tracks, firebreaks, drains, ponds, dams or crossing, the activity shall not occur in an inanga or salmon spawning site listed in Schedule 17 of the proposed Land & Water Regional Plan
- In a flood control rating district scheme area, the introduction or planting of any plant is by or on behalf of the person or agency responsible for maintaining that vegetation for flood-control purposes
- Where vegetation is to be replanted, consider planting appropriate indigenous species.

Work-type Requirements: Vegetation and silt removal in water

Please refer to the specific regional rules for vegetation planting and removal to ensure compliance with those rules. Failure to comply will require a resource consent.

In addition to the general requirements set out in Section 2 of this Code of Practice, when undertaking works involving vegetation or silt removal from water, the following measures shall be taken:

- Where practicable, bank vegetation between the spring high tide and neap low tide level shall not be disturbed to minimise the potential for damaging inanga spawning habitat (spawning season is March to May inclusive)
- When removing material from the watercourse, this shall be done without changing the watercourse capacity or damaging any structures
- Where weed is harvested from within the watercourse, avoid sedimentation by, for example, cutting weed rather than pulling roots where these are in a sediment base watercourse
- Provide a means of ensuring that disturbed vegetation and debris does not migrate downstream (by, for example, using a debris catcher). Transportation of material can allow water to leak from the caught material, causing erosion or scour of banks. Removal and transportation shall be undertaken in a way that avoids scour and erosion
- Where there is a confining layer between the drain and groundwater, make sure drain clearance works (vegetation and silt removal) do not breach this layer
- All silt or vegetation shall either be removed from the site to an appropriate disposal site or stockpiled or windrowed nearby for drying and/or composting *in situ*
- If vegetation or silt removed from the watercourse is to be dried and/or composted near the worksite, the drying and composting area shall be located and shaped so it does not allow any concentrated liquid formed to enter the waterway directly. This may require contouring of the site and / or installation of leachate collection and treatment areas
- Ensure that any disturbed vegetation and debris does not accumulate around culverts, fences or other structures. Such structures shall be checked on completion of the activity and any caught vegetation or debris removed
- Inspect the targeted section of the waterway and identify features such as pools, riffles, woody debris, trout spawning habitat or threatened species habitats that should not be disturbed during excavation and make sure these features are preserved as far as practicable
- Where practicable, only remove fine sediment from the channel. Where course substrate is present it provides valuable habitat for fish and invertebrates and has the added benefit of being a poor root environment for recolonising macrophyte
- Small variations in streambed profile have minimal effect on hydraulic efficiency and provide habitat diversity. Avoid excessive levelling of the streambed to preserve these features as far as practicable
- Where works are undertaken in water and fish may be stranded as a result, the person or organisation undertaking the works shall ensure that native fish and sport fish recovery is conducted for the duration of the works and at least one day after they have been completed. Fish recovery shall be conducted both instream (for suffocating fish) and bank side

(for stranded fish). Recovered fish shall be returned upstream of the targeted section of waterway

- The activity shall not prevent access to lawfully established structures, including flood-protection works, or to flood-control vegetation
- No vegetation used for flood control or bank stabilisation shall be disturbed, removed, damaged or destroyed except by or on behalf of the person or agency responsible for maintaining that vegetation for flood-control purposes
- No woody vegetation is disposed of in, on, over or under the bed of a lake or river other than for *in situ* decomposition of sprayed weeds that are grown in, on, over or under the bed
- Except for clearance around utilities or existing structures, removal of a species listed in the Biosecurity New Zealand Register of Unwanted Organisms or the Canterbury Pest Management Plan, or clearance for the purposes of maintaining existing fencelines, vehicle tracks, firebreaks, drains, ponds, dams or crossing, the activity shall not occur in an inanga or salmon spawning site listed in Schedule 17 of the proposed Land & Water Regional Plan
- Where vegetation is to be replanted, consider planting appropriate indigenous species.

Work-type Requirements: Use of agrichemicals

Please refer to the specific regional rules for agrichemical use to ensure compliance with those rules. Failure to comply will require a resource consent.

In addition to the general requirements set out in Section 2 of this Code of Practice, when undertaking works involving agrichemicals, the following measures shall be taken:

- Consider any practicable economic alternative management methods to spraying aquatic weeds (for example, hand or mechanical clearance)
- The agrichemical being used shall be approved under the Hazardous Substances and New Organisms Act 1996 and shall be used in accordance with the conditions of the approval
- Notify rūnanga 10 days before weed spraying including location, chemicals to be used, timing and spray method
- Agrichemicals shall not be mixed, and equipment and containers shall not be cleaned or rinsed:
 - Within 5 metres of a surface waterbody or bore
 - In the bed of the river or lake, unless the mixing or dilution takes place within a sealed, banded system that contains a volume of at least 110% of the largest spray tank to be filled, or the mixing or dilution is for a hand-held application technique or method
- If water used for mixing or dilution is taken from surface water or groundwater, a backflow prevention system shall be in place and operational to prevent the agrichemical flowing back into the source water
- Where there is a discharge to surface water, the use of agrichemicals shall not occur within a group or community drinking water protection zone (as set out in Schedule 1 of the proposed Land & Water Regional Plan), or into a river or artificial water course within 250 metres upstream or 100 metres downstream of any surface water intake. Within a lake, the discharge may not be within 250 metres of any surface water intake

- Staff undertaking spraying shall hold a current and appropriate certification
- Signs shall be erected advising of the activity and location before spraying starts
- No spraying shall occur within 250 metres of any school, dwelling or other residential building
- Spot spray techniques shall be used as far as practicable to avoid spraying of non-target species; blanket spraying shall be avoided
- Undertake works in calm conditions as far as practicable to avoid spray drift on to nesting birds
- A daily work-in-progress logbook shall be maintained and be available onsite with the operator. The logbook shall include the following information:
 - Operator names
 - Start and finish times
 - Location
 - Target plants
 - Chemical (including additives) used, manufacturer's names and mixing rate
 - Method of application
 - Plant condition
 - Estimated wind speed and direction
 - Weather conditions
 - Rain (start/finish time)
- Between December and February, in the tidal zones of waterways identified as important inanga habitat, avoid spraying vegetation that could provide spawning habitat and egg decomposition sites wherever practicable
- To avoid potential negative impacts on bees and the honey industry, do not spray during the peak of the flowering season wherever possible
- Spraying of aquatic vegetation over significant areas (as opposed to isolated or small area spot spraying) should be conducted in early spring to late autumn when plant biomass and water temperature are low to reduce the risk of water de-oxygenation.

Commentary

Iwi management plans for the Canterbury region seek to encourage alternative means of vegetation control to agrichemicals. Consideration should be given to alternatives to spraying aquatic weeds including hand or mechanical clearance. Further long-term weed control measures should be considered and implemented where practicable, including shading and nutrient management and encouraging indigenous species such as raupo.

4 CERTIFICATION OF WORK PLANS

This section details the information requirements and process for obtaining Environment Canterbury certification that proposed work plans are in accordance with this Code of Practice.

The certification process is required for works that would otherwise require resource consent under section 13(1) of the

Resource Management Act 1991 and the person undertaking those works is seeking to be able to do so as a permitted activity under Rule 5.138 of the proposed Land & Water Regional Plan.

The activities listed in section 3 of this Code of Practice include activities and work types that would not otherwise require resource consent under section 13(1) of the Resource Management Act (for example, fencing and flood pumping). Such works have been included in this Code because they form a significant element of Environment Canterbury's flood-protection routine maintenance works and the activity-specific requirements provide a good practice baseline for these activities. Certification of work plans for these activities – those that would not otherwise require resource consent – is not necessary to undertake the works.

Certification is only required to achieve permitted activity status under Rule 5.138 of the proposed Land & Water Regional Plan. Certification that work plans are in accordance with this Code of Practice is only one element of Rule 5.138. If the other conditions of Rule 5.138 cannot be met, resource consent will be required and certification of work plans will not. The conditions of any resource consent will take precedence over the requirements of this Code of Practice.

4.1 Certification of annual work plans or operational work plans

Many of the activities undertaken to manage defences against water are able to be planned in advance because they are routine maintenance or regular activities undertaken in response to specific river or stream bed conditions.

To avoid the need for multiple applications for certification of work plans, Environment Canterbury strongly encourages users to submit work plans for their scheme maintenance activities to be carried out under this Code of Practice which are valid for no less than one year.

Where users have documented standard work practices or operational and maintenance plans that detail the measures to be used which are in accordance with this Code of Practice, such documentation may be submitted to Environment Canterbury for certification (meaning it may not be necessary to prepare a separate document for certification purpose). If Environment Canterbury determines that the work practices are in accordance with the Code of Practice, Environment Canterbury will provide written confirmation to that effect. Such confirmation will specify that the measures provided in the submitted documentation are determined to be in accordance with this Code of Practice and that the certification is not an endorsement of all aspects of the documentation (meaning it is not certifying the appropriateness of the overall operational or maintenance plan).

4.2 Timeframe for submittal of work plans

Applicants seeking certification of work plans under this Code of Practice are encouraged to submit work plans no later than 30 September in each calendar year. Work plans submitted by this deadline will be processed and outcomes advised to the applicant by 31 October.

Work plans submitted outside this timeframe will be assessed and determined on a case-by-case basis.

4.3 Information to be submitted

Work plans requiring certification submitted to Environment Canterbury shall contain *all* of the following information:

- The local authority or network utility operator for which the work is being undertaken
- For the person responsible for overseeing the work, name and contact details including, as a minimum, email and mobile phone number
- Location of the proposed work, including watercourse name, topographical plan showing location of the proposed works and map grid reference
- Details of the proposed works including, as a minimum:
 - Scope and extent of proposed works
 - Reason for works being undertaken
 - Timing, duration and frequency of proposed works
 - How the worksite will be accessed

- Sediment and erosion control measures where applicable
- Methods to be used to manage potential environmental effects

- Identification of the relevant provisions of this Code of Practice and confirmation that these measures will be complied with during the proposed works.

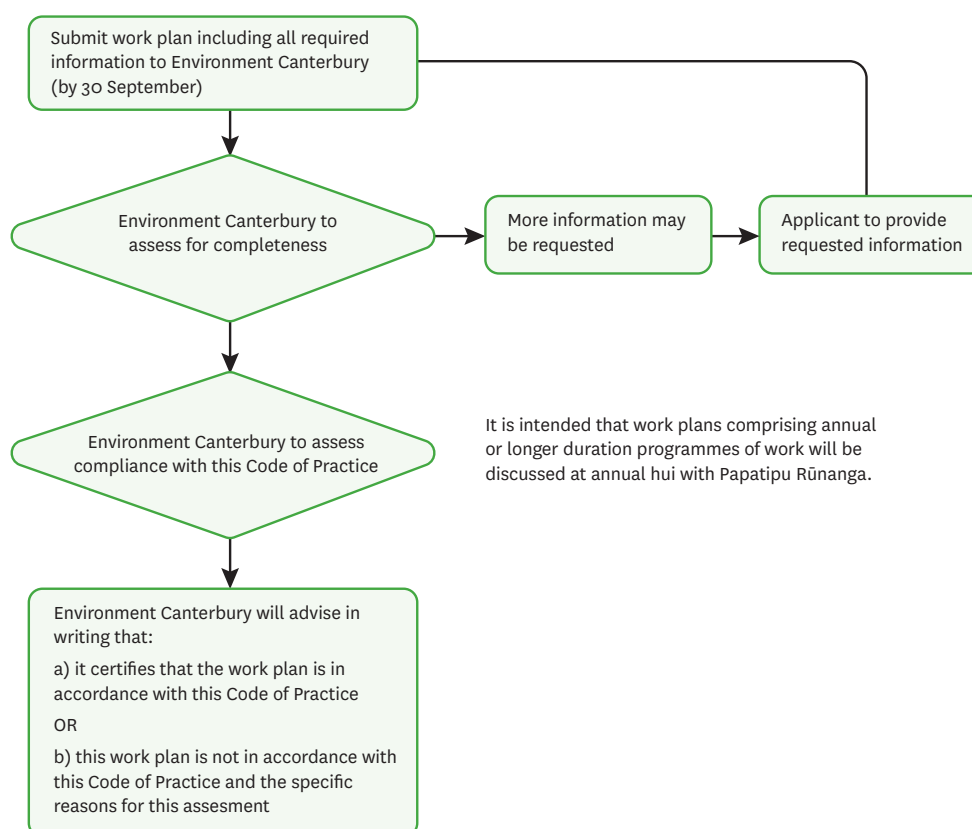
Appendix A contains an optional template form for submittal of this information. Applicants may also submit annual work plans, standard work instructions or operational/maintenance plans provided the above details are included.

4.4 Certification process

The certification process is a non-statutory process undertaken by the Rivers, Parks and Survey section of Environment Canterbury. The process for certification is as set out in the following diagram.

The process certifies that the work plan is in accordance with this Code of Practice. Conditions are not able to be imposed on the work plan via the certification process.

Certification process



It is intended that work plans comprising annual or longer duration programmes of work will be discussed at annual hui with Papatipu Rūnanga.

4.5 Duration of certification

The duration of certification will typically match the duration applied for as long as it is three years or less:

- If the application documentation is based on standard work instructions or operational/maintenance plans, certification duration shall typically be three years
- If the application documentation is based on an annual work plan, duration will typically be one year
- If the application documentation is based on a single activity, the certification duration will typically be of sufficient length to enable the activity to occur in favourable conditions.

4.6 Fees

Environment Canterbury may, by using the consultative procedure in section 83 of the Local Government Act 2002, prescribe any fee payable by any person who applies for certification of work plans under this Code of Practice. Environment Canterbury may, in its absolute discretion, refund, remit or waive the whole or part of such fee.

4.7 Flood Protection and Drainage Bylaw approval

Requests for approvals under the Flood Protection and Drainage Bylaw and certification of work plans under this Code of Practice may be made concurrently to Environment Canterbury.

4.8 What does certification mean?

The certification process only confirms that the work plan presented has been prepared taking into account the relevant provisions of this Code of Practice. Certification of work plans **does not:**

- Confirm that the works are a permitted activity. If there is any concern regarding the permitted activity status of the proposed works, the applicant should discuss this with Environment Canterbury planning officers and may choose to seek a certificate of compliance per section 139 of the Resource Management Act
- Provide any comment or approval of the design or construction standards of the proposed works in terms of their functionality or necessity
- Provide any other statutory approvals or rights to access land for the proposed works
- Provide any approval or comment on proposed measures to address health and safety issues or hazards associated with the proposed works

5 MONITORING AND REVIEW

5.1 Monitoring of work practices

Work practices certified under this Code of Practice may be undertaken as permitted activities under Rule 5.138 of the proposed Land & Water Regional Plan, subject to meeting the other conditions of Rule 5.138.

Any work plans certified as being in accordance with the Code of Practice will be provided to Compliance Monitoring staff of Environment Canterbury to inform and assist their undertaking of permitted activity monitoring and enforcement activities under the Resource Management Act.

5.2 Review of Code of Practice

This Code of Practice will need to be updated as work practices are improved, there are changes in the requirements for installing, maintaining, using or removing defences against water, or requirements need to be amended to address differing expectations or regulations.

To ensure that this Code of Practice remains current and that the objectives set out in Section 1 are met, a review will be undertaken by Environment Canterbury. This review will take place as determined by Environment Canterbury's Regional Engineer and is expected to occur every three years.

The review will include:

- A review of plans certified under this Code of Practice since the previous review, including any complaints and monitoring or enforcement action undertaken
- Feedback from Ngāi Tahu
- Comment from user groups (local authorities and network utility operators) and interested or affected parties (for example, the Department of Conservation and Fish & Game)
- Consideration of any changes to good practice procedures and/or requirements informed by any statutory or regulatory changes since the previous review and expertise within the Rivers section of Environment Canterbury
- Consideration of the extent to which the Code has been effective in meeting the objectives set out in Section 1
- Identification of recommended changes to address any issues raised.

A report summarising the above process and recommended changes will be made to the Council of Environment Canterbury which will approve, reject or amend the recommended changes.

Any changes will be implemented as soon as practicable following the Council decision, the changes will be notified to all affected parties, and the updated version of the Code will be published on Environment Canterbury's website.

6 USEFUL LINKS AND GUIDANCE DOCUMENTS

The following documents have been referred to throughout this Code of Practice and provide additional guidance and information:

- **Proposed Land & Water Regional Plan, Canterbury Regional Council**
Available on Environment Canterbury's website, www.ecan.govt.nz
- **Resource Management Act 1991**
(and as updated by subsequent amendments). Available at www.legislation.govt.nz
- **Canterbury Water Management Strategy**
Available on Environment Canterbury's website, www.ecan.govt.nz
- **Flood Protection and Drainage Bylaw 2013**
Available on Environment Canterbury's website, www.ecan.govt.nz
- **Statutory Acknowledgement Areas under the Ngāi Tahu Claims Settlement Act**
The list of areas is included in Schedule 19 of the proposed Land & Water Regional Plan. The areas are also mapped on www.canterburymaps.govt.nz. These areas are not default layers on the Canterbury Maps tool. They need to be added to the individual user's viewer to become visible. Refer to the help guide at www.canterburymaps.govt.nz under "Adding other Canterbury Maps Layer"
- **River Flow Information**
This can be obtained from Environment Canterbury's website (www.ecan.govt.nz) and from the River Report 24-hour infoline (0900 RIVER or 0900 74837)
- **Canterbury Maps**
This mapping tool is available at www.canterburymaps.govt.nz and includes layers that will help planning works and identifying significant sites
- **New Zealand Freshwater Fish Database and the IUCN Red List**
These sites can be used to check for the likely presence of rare or endangered fish at proposed worksites. See www.niwa.co.nz and www.iucnredlist.org
- **Heritage New Zealand Pouhere Taonga Act 2014**
Available at www.legislation.govt.nz
- **Heritage New Zealand Pouhere Taonga**
Information about archaeological and heritage sites, www.heritage.org.nz
- **Biosecurity New Zealand's Hygiene Procedures**
See www.biosecurity.govt.nz
- **Erosion and Sediment Control Guidelines, Environment Canterbury**
Available on Environment Canterbury's website, www.ecan.govt.nz
- **Waterways, Wetlands and Drainage Guide, Christchurch City Council**
Available on Christchurch City Council's website, www.ccc.govt.nz
- **Fish Passage Guidance for State Highways, New Zealand Transport Agency**
Available on NZTA's website, www.nzta.govt.nz
- **Fish Passage Guidelines for the Auckland Region, Auckland Regional Council Technical Publication 131**
Available on Auckland City's website, www.aucklandcity.govt.nz
- **Fish Passage at Culverts, Department of Conservation**
Available on the Department of Conservation's website, www.doc.govt.nz
- **Biodiversity New Zealand Unwanted Organisms Register**
Available at www.biosecurity.govt.nz

APPENDIX A: WORK PLAN TEMPLATE (OPTIONAL)

Local authority

or network utility operator: _____

Contact person:

Name: _____

Position: _____

Address: _____

Phone: _____

Email: _____

Proposed worksite:

Location: _____

Watercourse: _____

NZMS map grid: _____



Locality Plan Attached

Proposed work details:

Scope and extent of work: _____

Reason for work being undertaken: _____

Timing, duration and frequency of works: _____

☐

I attach a site plan and methodology which details site access, sediment and erosion control methods, and proposed methods to avoid, remedy or mitigate potential adverse effects.

In addition to the General Requirements of the Code of Practice for Defences against Water and Drainage Schemes, the following work-type requirements are relevant and the necessary requirements will be complied with:

☐

I also require approval under the Flood Protection and Drainage Bylaw 2013. An application for bylaw approval is:

- Attached
- To be submitted at a later date but before undertaking works

☐
☐

Name: _____ Date: _____

Signature: _____

APPENDIX B: STANDARD FORMS (OPTIONAL)

Date of find: / /

Location: _____

Map Reference: NZMS 260: _____

Details of find e.g. human remains/tools/ animal remains

Has work stopped?: Yes/No

Was a Site Assessment form completed for the work? Yes/No

Was consultation undertaken with: Rūnanga Yes/No

Heritage New Zealand Yes/No

Police Yes/No

Rūnanga/Heritage New Zealand/Police notified: _____

Date notified: / /

Details of conversation

Process to follow:

- 1)
- 2)
- 3)
- 4)
- 5)

Other details

Reported by: _____

Date: _____

Details of adverse environmental effect

Interested parties notified:

- 1)
- 2)
- 3)
- 4)

Procedure undertaken

Corrective action required? Yes/No

Operator name(s): _____

Date: / /

Start and finish time of application: _____

Location: _____

Target plants: _____

Chemicals used: _____ Manufacturer: _____

Mixing rate: _____

Additives used: _____ Manufacturer: _____

Mixing rate: _____

Locations where mixing carried out: _____

Application method: _____

Any water-quality monitoring carried out? Yes/No

Location of water-quality monitoring sites: _____

Water quality monitoring results: _____

Estimated wind speed and direction: _____

Weather conditions: _____

Rain (start/finish time): _____

Ground conditions: _____

Other

Location: _____

Target plant condition: _____

*Include manufacturer's name

Name: _____

Date: / / Time of spill: _____ Time now: _____

Your contact information: _____

Location of spill (grid reference and/or landmark): _____

Type of substance spilled: _____

Cause and nature of spill: _____

If possible, ascertain: Manufacturer: _____

Chemical trade name: _____

UN number: _____

Availability of material data sheets: _____

Estimate of quantity of substance spilled: _____

Status of spill (circle as appropriate): Contained Uncontained Continuing

Weather conditions at site: _____

Is the spill likely to enter a waterway (drain, stream, lake, etc)?	Yes/No
Is the spill likely to enter a public or stock water supply?	Yes/No
Is any injury/illness associated with the spill?	Yes/No
Is there public access to the site?	Yes/No
Is there risk to the public?	Yes/No

Directions:

- Follow the emergency procedures in the site workplan
- Contact the Pollution Hotline (0800 76 55 88) and advise of the spill

Environment Canterbury offices

Christchurch
PO Box 345
Christchurch 8140
P: 03 365 3828
F: 03 365 3194

Timaru
75 Church Street
PO Box 550
Timaru 7940
P: 03 687 7800
F: 03 687 7808