Fish Salvage Guidance for Works in Waterways

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1. Background

Freshwater fish, including eels, are found in a range of aquatic environments, ranging from native forest streams through to wetlands, ponds, and highly modified urban drains and artificial waterways. There is a responsibility under several Acts of Parliament to protect these fish, which has implications for anybody undertaking works in and around waterways. Individuals or groups attempting to obtain a resource consent for an activity that will adversely impact fish communities may be required to carry out fish salvage. It is important to note that fish salvage should not be the first mitigation considered. If it is possible to preserve the habitat of fish from effects, that should occur preferentially. The ability to salvage any fish present does not mitigate against unnecessary habitat destruction.

This document provides guidance around fish salvage[1] in Canterbury, to help address uncertainties around what is required of contractors and councils working in waterways. In particular, the purpose of this document is to provide guidance as to:

- Where fish salvage needs to be considered in relation to waterway works.
- What kinds of activities may trigger the need for fish salvage.
- What types of salvage methods are available.
- Who needs to be involved.

This information will be critical in the preparation of an Assessment of Environmental Effects (AEE) to avoid requests for further information and ensure the smooth processing of a consent application or compliance assessment.

Many of New Zealand's freshwater fish species are endemic, which means they are native to this country and found nowhere else. Native fish (found naturally in New Zealand and elsewhere) are found in waterbodies throughout Canterbury (Figure 1); commonly encountered species include several bully species, inanga (a whitebait species), and eels (Figure 2 and Figure 3). Rare and threatened species, such as Canterbury mudfish, lamprey or lowland longjaw galaxiids tend to have more restricted ranges.

When working in rivers the Freshwater Fisheries Regulations 1983 dictate that indigenous, or native, fish shall not be knowingly destroyed, as detailed under Section 70:

Section 70 No killing of indigenous fish

(1) No person shall in any water intentionally kill or destroy indigenous fish.

[1] We define fish salvage here as removing fish from a work area prior to commencing works, with the aim of avoiding and minimising impacts of work activities on aquatic species. Note that fish passage is a separate matter, which is generally better provided for through the resource consent process.

> *(2) No person, having taken indigenous fish from any water, shall leave the fish upon the bank or shore of any stream or lake, except where such indigenous fish is used in accordance with any provisions of a District Anglers Notice relating to lures.*

Many organisations and contractors are unaware of the legal requirements that may apply to, and may require, fish salvage to be undertaken for waterway projects and maintenance. Permits, consents or approvals must be obtained under any relevant legislation (including the Resource Management Act 1991, the Freshwater Fisheries Regulations 2003, the Fisheries Act 1996, and/or the Conservation Act 1987). Offences could be committed under these Acts and Regulations for not having an appropriate approval, taking the wrong fish or using the wrong method to take them, or killing fish.

Note that this document does not cover all of the legal requirements associated with working around waterways, and only provides guidance for fish salvage. For example, works in or around waterways will usually trigger the need for a resource consent under the Resource Management Act. Seek the advice of an expert before conducting any works around waterways.

This document was prepared by Christchurch City Council and Environment Canterbury with input from internal and external construction and drainage engineers, ecologists and planners.

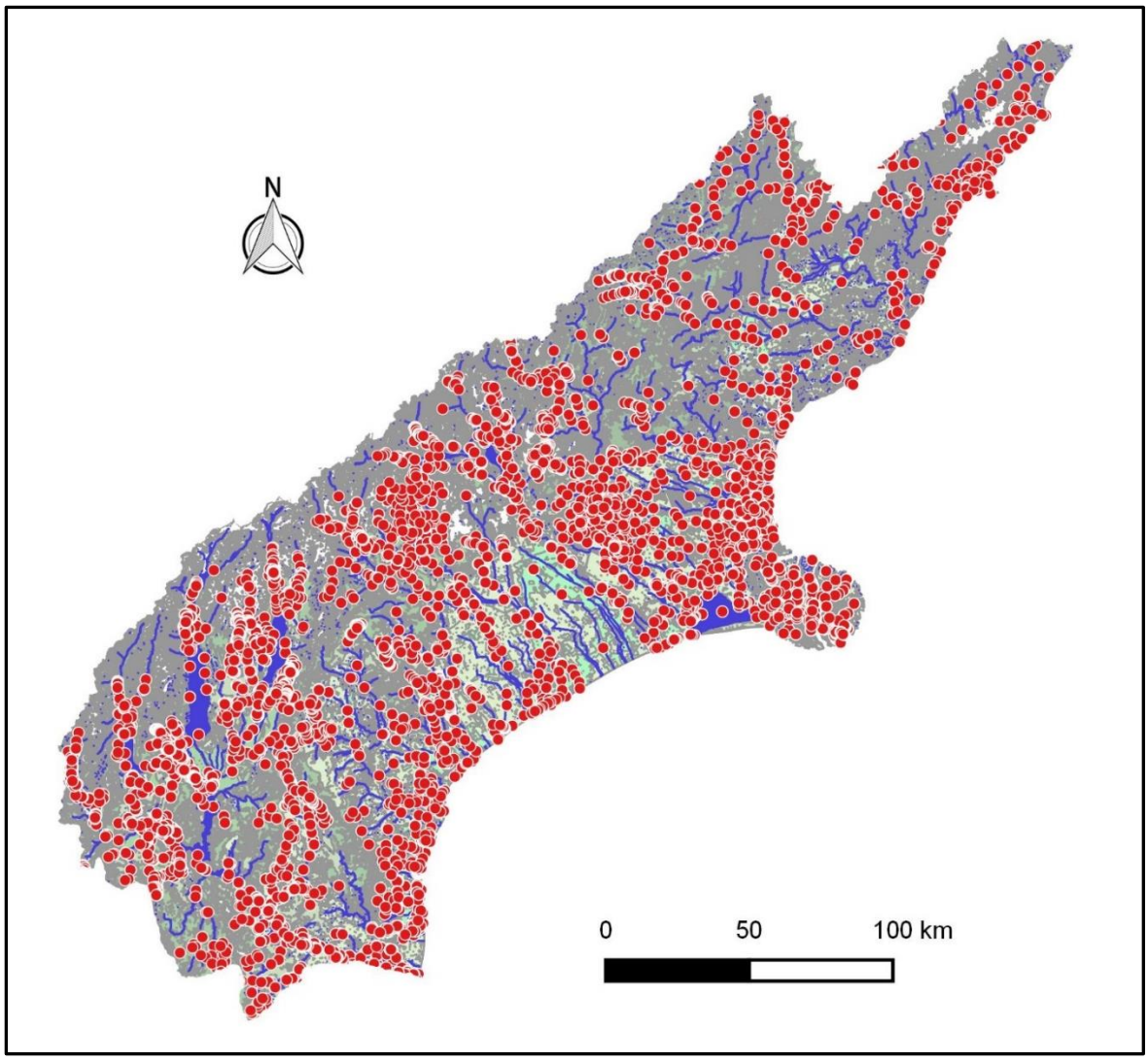

Figure 1: Location of native fish recorded in Canterbury, extracted from the New Zealand Freshwater Fish Database on 22 March 2017. Note that the absence of a record at a given location may simply mean the site has not been sampled, not that fish are absent from that location.

Figure 2: A large longfin eel caught in a Canterbury waterway. Longfin eels are an At Risk species in decline[2].

[2] Goodman, J. M., Dunn, N. R., Ravenscroft, P. J., Allibone, R. M., Boubee, J. A. T., David, B. O., Griffiths, M., Ling, N., Hitchmough, R. A., and Rolfe, J. R. (2014). Conservation status of New Zealand freshwater fish, 2013. New Zealand Threat Classification Series 7, Department of Conservation.

Figure 3: An adult inanga. Juvenile inanga are commonly known as whitebait. Inanga are classified as an At Risk species in decline[2].

2. Where is Fish Salvage Necessary?

General Advice: If a watercourse has water in it most of the time and the water depth is more than one or two centimetres, then it may contain fish and fish salvage may be required.

While deeper waterways provide habitat for a greater range of species, even very small streams, or concrete and timber-lined drains with minimal water, will often contain small-bodied species such as bullies or juvenile eels. Several species of fish, notably eels and lamprey, will burrow into stream beds or banks during times of low flow such that a temporary absence of water does not indicate an absence of fish. Fish are also highly mobile, recolonising a previously dewatered reach rapidly once flow returns. Even waterways that are mostly dry may include isolated pools that contain fish.

3. What Activities may Require Fish Salvage?

General Advice: If the activity involves channel dewatering or will disturb the bed and submerged banks of a watercourse, and the watercourse may contain fish that might be harmed or killed by the activity, then fish salvage or other mitigation will likely be required.

Particular activities that may require fish salvage or other mitigation include:

- Decommissioning waterways prior to piping or realigning.
- Waterway restoration projects.
- Installation of fish passes.
- Channel dewatering (including isolated areas).
- Bank protection works.
- Bridges and other structures on the bank – both new builds and repairs.
- Sediment removal (including routine waterway maintenance).

The Freshwater Fisheries Regulations 1983 make no distinction regarding the scale of the activity, so fish salvage or other mitigation should always be considered, regardless of the size of the project. However, the scale and specifics of the activity will determine the most appropriate method of salvage or other mitigation. The most appropriate methods should be determined with the guidance of a council or consulting freshwater ecologist who can tell you the most appropriate methods of fish salvage and ensure the work is done correctly. An activity that involves dewatering of an area of stream will likely require fish salvage to be carried out

by an ecologist or other suitably trained and permitted person under the guidance of an ecologist.

Activities that may result in fish being stranded on the bank will require fish to be returned to a suitable stretch of water by an ecologist or suitably trained person. Such activities include the removal of weed and sediment using a digger or dredging methods. Activities with the potential to impact downstream water quality to the detriment of fish should be mitigated primarily through monitoring of water quality (with trigger levels that dictate when works should cease) and changing the timing of the works, but fish salvage may be required in the event of fish stranding or suffocation.

General Advice: Speak to a council or consulting ecologist during the project planning or consent application phase to determine if and how fish salvage should be undertaken.

A Case study of Waterway Maintenance

Many lowland waterways are subjected to regular aquatic plant and fine sediment removal to aid drainage and mitigate against flooding. Studies have highlighted the ecological and water quality effects of standard practice methods of drainage clearance and the need for associated fish salvage.[3,4,5] Consequently, Environment Canterbury's "Code of Practice for Defences Against Water and Drainage Schemes" states on page 24 that:

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.

The Environment Canterbury Code of Practice for Defences Against Water and Drainage Schemes provides an example of an approach to fish salvage developed between engineers and ecologists.

4. What Fish Salvage Methods should be used?

General Advice: A range of fish salvage methods are available, but the method used should be effective at avoiding and minimising fish mortality, and be appropriate for the scale and significance of potential effects caused by the activity.

Prior to conducting any work, an initial fish population assessment may be helpful to identify the scale and significance of potential effects and the most appropriate fish salvage method or mitigations to employ. Timing of the works in relation to sensitive periods (e.g., fish spawning or migration) is a key first consideration for avoiding and minimising effects. The next step is ensuring all practicable steps have been taken to isolate the worksite (e.g., by

[3] Hudson, H.R. and Harding, J.S., 2004. Drainage management in New Zealand; A review of existing activities and alternative management practices. Department of Conservation, Science for Conservation 235.

[4] Ballantine, D. and Hughes, A., 2012. The effects of drain clearing on water quality of receiving environments; Water quality effects of drain clearing. Prepared by NIWA for Environment Southland. May 2012.

[5] James, A., 2013. A review of the ecological effects of macrophyte management in soft-bottomed waterways. Waikato Regional Council Technical Report 2013/03. Prepared by EOS Ecology for Waikato Regional Council, January 2013.

using sheet piling). The types of fish salvage methods that may be used include electric fishing, trapping (e.g., fyke nets and minnow traps), and seine netting. If the activity may result in fish stranding on the bank (e.g., weed clearance or sediment removal), then salvage may involve both in-channel salvage (e.g., trapping or electric fishing) as well as examining the banks (including sediment spoil piles) for stranded fish. The decision on which method to use should be made with the guidance of a council or consulting ecologist.

All fish salvage methods assume appropriate permissions, permits, and controls are in place. The method chosen will rely on expert judgement and will depend on factors such as fish species present, water depth and velocity, fine sediment depth, and macrophyte (weed) cover.

5. Who should be Involved?

General Advice: A freshwater ecologist should be involved in any project likely to require fish salvage and they can advise on mitigations.

A council or consulting freshwater ecologist with fisheries experience is the appropriate person to assess whether fish salvage is required and what methods should be used.

Fish salvage requires a Special Permit under Section 97 of the Fisheries Act 1996, and the permits are issued by the Ministry for Primary Industries (MPI). Additional authorisations are also typically required from the Department of Conservation, Fish and Game, and rūnanga. While “general authorisation” Special Permits may be valid for a wide range of projects, they still usually require that MPI and other organisations are notified in advance of any salvage work being conducted. In addition, there are a number of activities not covered by general authorisations (e.g., relocating fish outside of the catchment it was caught from) that may require a project-specific Special Permit and associated authorisations from the Department of Conservation, Fish and Game, and rūnanga.

Special Permits and other authorisations typically include a reporting requirement (usually an annual report in the case of Special Permits), including as a minimum what species were caught and their abundance.

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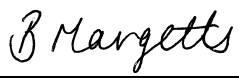
Signature:		
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Date:	1 March 2018	26 March 2018
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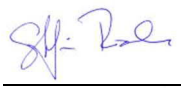
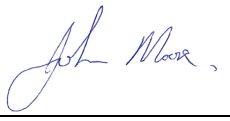
Signature:		
Position:	Director, Science	Manager, Planning & Delivery WWW
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