





2874

ECOLOGICAL ASSESSMENT OF AKATORE CREEK SWAMP

Wildlands

Providing outstanding ecological services to sustain and improve our environments

Ecological Assessment Of Akatore Creek Swamp

Contract Report No. 2874

Project Team:

Steve Rate - Field work and report preparation.

Kelvin Lloyd - Report review.

Prepared for:

Otago Regional Council

70 Stafford Street,

Private Bag 1954

Dunedin

February 2012

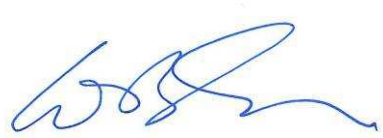
Cover photograph (top left): Akatore Creek Swamp from Akatore Road.

DUNEDIN OFFICE: 764 CUMBERLAND STREET, DUNEDIN 9016
Ph 03-477-2096; Fax 03-477-2095

HEAD OFFICE: 99 SALA STREET, P.O. BOX 7137, TE NGAE, ROTORUA
Ph 07-343-9017; Fax 07-343-9018, email ecology@wildlands.co.nz, www.wildlands.co.nz

CONTENTS

Reviewed and approved for release by:



_____

W.B. Shaw
Director/Principal Ecologist
Wildland Consultants Ltd

1. INTRODUCTION

Otago Regional Council has publicly notified Proposed Plan Change 2 (Regionally Significant Wetlands) to the Regional Plan: Water for Otago on 2 July 2011 (Otago Regional Council 2011). This change would add wetlands currently listed in Schedule 10 (Additional Wetlands) of the Plan to Schedule 9 (Significant Wetlands).

The Akatore Creek Swamp is located within tributaries of Akatore Creek, approximately 5 km south of Taieri Mouth. A submitter has challenged the inclusion of part of this wetland in Proposed Plan Change 2, and confirmation is therefore required as to whether part of this wetland meets the criteria for regional significance.

This report provides a description of vegetation and habitats in the wetland, and an assessment of ecological significance. Wetland boundaries have been assessed, along with management requirements.

2. METHODS

A field visit was undertaken on 14 February 2012 to the portion of the Akatore Creek Swamp located on the property of Steve and Deanne Amende (Figure 1).

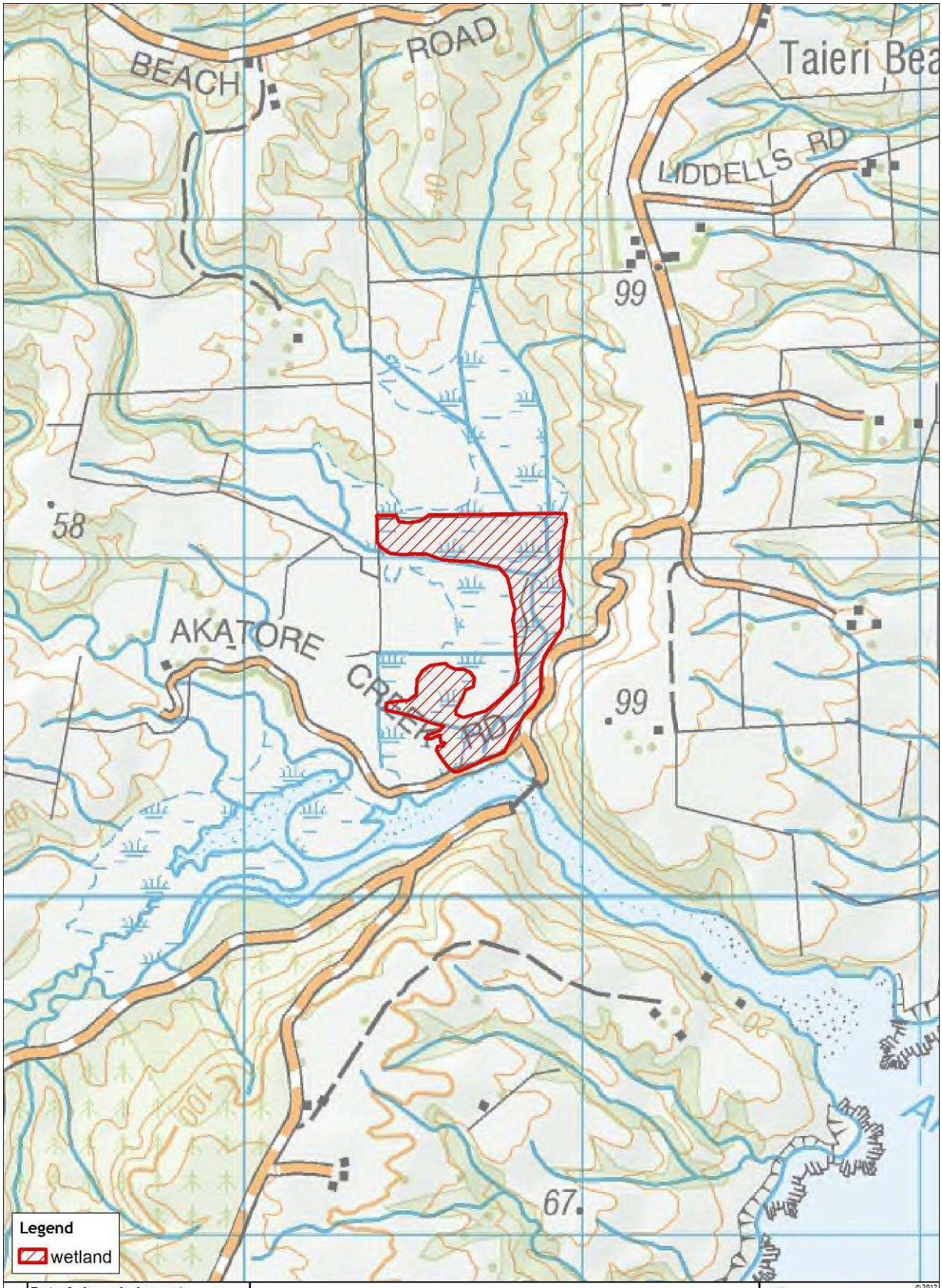
The initial aim of the visit was to determine whether a wetland was present, according to the wetland definition in the Resource Management Act 1991:

> *Wetland includes permanent or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.*

The wetland class (as per Johnson and Gerbeaux 2004[1]) and condition were then assessed, and the wetland was evaluated using the ecological significance criteria in the Regional Plan: Water for Otago (to a maximum of three values). A brief basis is provided for these determinations. The Regional Plan criteria are:

A1: Habitat for nationally or internationally rare or threatened species or communities.
A2: Critical habitat for the life cycles of indigenous fauna which are dependent on wetlands.
A3: High diversity of habitat types.
A4: Wetland with a high degree of naturalness.
A5: Wetland scarce in Otago in terms of its ecological or physical character.
A6: Wetland which is highly valued by Kai Tahu for mahika kai or other waahi taoka.
A7: Wetland with a high diversity of indigenous flora and fauna.
A8: Wetland which is regionally significant habitat for waterfowl.
A9: Performing a significant hydrological function including maintaining water quality or low flows, or reducing flood flows.

[1] Johnson P. and Gerbeaux P. 2004: Wetland types in New Zealand. Department of Conservation, Wellington.



Data Acknowledgment
NZTOPO50, Crown Copyright Reserved

Report: xxxx
Client: Wildlands GIS
Ref: 01 0087
Path: E:\gis\Stephen\Akatore_Creek_Swamp\mxd\
File: Akatore Creek Swamp.mxd

Figure 1: Akatore Creek Swamp, Amende property

0 375 750 m

© 2012 Wildlands
www.wildlands.co.nz, 0508 WILDNZ

Scale:	1:15,000
Date:	15/02/12
Cartographer:	RPB
Format:	A4

The wetland was not assessed against criterion A6, which does not have an ecological basis.

Photographs of the wetland - including a wide overview photograph - and of vegetation and habitats were taken where practicable.

The extent of the wetland that meets the criteria for regional significance was mapped in a GIS (Figure 1). Topo50 topographic maps was used for mapping purposes.

3. CURRENT SCHEDULING OF WETLAND

The following information for Akatore Creek wetland and Stoneygrove wetland (combined into Akatore Creek Swamp in Proposed Plan Change 2) are provided in the Regional Plan: Water for Otago (Otago Regional Council 2011).

9 Schedule of significant wetlands

Akatore Creek (Map F46)

Physical Description: Extensive area of saltmarsh and swamp above coastal marine area south of Akatore Creek. Altitude 5-10m.

Wetland Value	Value Type
A high degree of naturalness	A4
Scarce wetland type; a complete sequence of indigenous vegetation from the high tide mark through saltmarsh and flax to tall *Leptospermum - Carmichaelia - Olearia* scrub. Scrub considered an intrinsic part of the wetland and the only example of its type in the Ecological Region.	A5
Wetland which is highly valued by Kai Tahu for mahika kai or other waahi taoka.	A6

10 Schedule of additional wetlands

Site Number	Wetland Name	NZMS 260 Series Map Sheet	Map Reference(s)	See Plan Map
84.	Stoneygrove Wetland	I45	915 527	G8

4. ECOLOGICAL CONTEXT

The Akatore Creek Swamp is located in Tokomairiro Ecological District in the Otago Coast Ecological Region. The Landcover Database v2 (LCDB2) indicates that all potential wetland classes (Herbaceous Freshwater Vegetation, Flaxland, Herbaceous Saline Vegetation, Lake and Pond, River, and River and Lakeshore Gravel and Rock) cover less than 2.59% of all land in Tokomairiro Ecological District.

The site is located on Acutely Threatened Land Environments, where <10% land cover remains in indigenous vegetation (Walker *et al*. 207).

Several protected areas are located near to the site. Conservation Area - Akatore Wildlife Management Area (45.83 ha) is located on the southern side of Akatore Creek Road. Akatore Creek Marginal strip (0.5 ha) is located to the south of the Wildlife Management Area. Akatore Stream Marginal strip (10.94 ha) is located *c*.220 m to the west of the site. QEII OSP covenant 5/12/131 is located *c*.250 m to the southeast and contains riparian indigenous forest on the northern margins of Akatore Creek.

5. VEGETATION AND HABITATS

5.1 Oioi rushland

Saltmarsh wetland vegetation comprising saltmarsh ribbonwood (*Plagianthus divaricata*) and scattered flax (*Phormium tenax*), mingimingi (*Coprosma propinqua*), and manuka (*Leptospermum scoparium*) are emergent over dense oioi (jointed wire rush; *Apodasmia similis*), with creeping bent (*Agrostis stolonifera*) at ground level (Plate 1). Other species present include orache (*Atriplex prostrata*), *Rumex crispus, Epilobium pallidiflorum,* and in a muddy area, *Mimulus repens.* Along the main creek channel near the eastern property boundary, saltmarsh ribbonwood becomes dominant. Adjacent to gorse (*Ulex europaeus*) shrubland a few low shrubs of *Coprosma elatirioides* are present and there is a strip where rautahi (*Carex geminata*) is dominant.

5.2 Gorse shrubland

Gorse shrubland contains open wetland areas with rautahi, sweet vernal (*Anthoxanthum odoratum*), Edgar's rush (*Juncus edgariae*), and scattered flax, mingimingi, and manuka (Plate 2). Under areas of dense gorse there is little other vegetation. There are two radiata pine (*Pinus radiata*) also present.

Plate 1: Oioi rushland with saltmarsh ribbonwood.

Plate 2: Gorse shrubland and a strip of rautahi sedgeland.

5.3 Rautahi sedgeland

Swamp wetland vegetation occurs in the northwest part of the site (Plate 3). This vegetation comprises scattered mingimingi, toetoe (*Austroderia richardii*), and flax over sedgeland dominated by rautahi and *Juncus edgariae*, with local purei (*Carex secta*). Lotus (*Lotus pedumculatus*) and Yorkshire fog (*Holcus lanatus*) are also present at lower abundance.

Plate 3: Rautahi sedgeland with scattered flax and mingimingi.

5.4 *Juncus* spp./sphagnum bog

A modified bog wetland is present in the southwestern part of the site (Plate 4). In this wetland, abundant Edgar's rush (*Juncus edgariae*) and soft rush (*J. effusus*) occur over sphagnum moss (*Sphagnum cristatum*), *Blechnum penna-marina*, *Gonocarpus micranthus*, *Celmisia gracilenta*, *Centella uniflora*, sharp spike sedge (*Eleocharis acuta*), rautahi, catsear (*Hypochaeris radicata*), and *Nertera scapanioides*. There are also a few scattered flax, small silver birch (*Betula pendula*), and *Baumea tenax*. Pasture grasses become more abundant towards the west.

5.5 Remuremu-glasswort saltmarsh

A saltmarsh wetland dominated by herbfield is located in the south of the property next to Akatore Creek Road and alongside the Akatore Creek tributary near the south-eastern property boundary (Plate 5). Abundant remuremu (*Selliera radicans*) and glasswort (*Sarcocornia quinqueflora*) occur with patchy saltgrass (*Puccinellia* spp.), and creeping bent on drain margins and on higher points within the saltmarsh. Also present at lower abundance are *Samolus repens*, sharp spike sedge, *Leptinella dioica*,

and New Zealand celery (*Apium prostratum*), *Suaeda novae-zelandiae*, and saltmarsh ribbonwood on drain margins. Batchelors button (*Cotula coronopifolia*) was seen in ditches alongside this saltmarsh vegetation.

Plate 4: *Juncus* spp./sphagnum bog.

Plate 5: Remuremu-glasswort saltmarsh (middle), with pasture in the foreground.

5.6 Mudflat

The southern part of the Akatore Creek tributary flows through an area of mudflat which has little vegetation but provides habitat for indigenous fauna. Open water habitats are also present (Plate 6).

Plate 6: Mudflat and open water.

5.7 Mixed scrub

On the edge of Akatore Creek, between Akatore Creek Road and Akatore Road, is a strip of bracken (*Pteridium esculentum*), gorse, broom, and a few kohuhu (*Pittosporum tenuifolium*) and kanuka (*Kunzea ericoides*), which does not constitute wetland vegetation. This area is backed by *Eucalyptus* sp., macrocarpa (*Cupressus macrocarpa*), and radiata pine. Part of this area extends beyond the property boundary.

Plate 7: Mixed scrub (middle).

6. THREATENED, AT RISK, AND LOCALLY UNCOMMON PLANT SPECIES

Mimulus repens is classified as At Risk-Naturally Uncommon in de Lange *et al*. (2009). It was recorded in a muddy area within oioi rushland and in a drain along the western property boundary. *Baumea tenax* is locally uncommon in Tokomairiro Ecological District.

7. FAUNA

7.1 Fish

There are no New Zealand Freshwater Fish Database (NIWA 2011) records for fish within the wetland, although two species have been recorded from a waterway in the southwestern corner of the property: inanga (*Galaxias maculatus*) and common bully (*Gobiomorphus coditianus*). Inanga is classified as At Risk-Declining in Allibone *et al*. (2010).

7.2 Birds

Spur-winged plover (*Vanellus miles*), yellowhammer (*Emberiza citrinella*), redpoll (*Carduelis flammea*), Australasian harrier (*Circus approximans*), pied stilt (*Himantopus himantopus leucocephalus*), variable oystercatcher (*Haematopus unicolor*), and South Island fernbird were recorded during the site visit. Pukeko (*Porphyrio melanotus*) has been recorded by the landowner. Fernbird and pied stilt are classified as At Risk-Declining, and variable oystercatcher as At Risk-Recovering

(Miskelly *et al*. 2008). Fernbird were very abundant in oioi rushland and common in rautahi sedgeland, while oystercatchers and stilts are likely to utilize river and other open habitats.

7.3 Mammals

Possum (*Trichosurus vulpecula*) sign was recorded on the site visit, while rabbits (*Oryctolagus cuniculus cuniculus*) and feral cats (*Felis catus*) have been recorded by the landowner. Cattle (*Bos taurus*) from neighbouring properties occasionally access wetland habitats at the site.

8. REGIONAL SIGNIFICANCE CRITERIA

The Akatore Creek Swamp meets criteria A1, A3, A5, and A7, and possibly A9 (Table 1).

Table 1: Regional significance criteria met by the part of Akatore Creek Swamp in the Amende property.

Criteria	Definition	Met	Justification
A1	Habitat for nationally or internationally rare or threatened species or communities.	**Yes**	Abundant fernbird (At Risk-Declining) and *Mimulus repens* (At Risk-Naturally Uncommon) are present.
A2	Critical habitat for the life cycles of indigenous fauna which are dependent on wetlands.	Unlikely	Loss of this wetland is unlikely to be crucial for the survival of fernbird in Tokomairiro Ecological District. There are larger wetlands which provide habitat for fernbird and other fauna in the Ecological District.
A3	High diversity of habitat types.	**Yes**	Four wetland vegetation/habitat types dominated by indigenous species: oioi rushland, rautahi sedgeland, *Juncus* spp./sphagnum bog, and remuremu-glasswort saltmarsh.
A4	Wetland with a high degree of naturalness.	No	Modified by drainage and weeds, although saltmarsh herbfiled, rautahi sedgeland, and oioi rushland are in moderate to good condition.
A5	Wetland scarce in Otago in terms of its ecological or physical character.	**Yes**	Bogs at or near sea level are regionally uncommon. Contains an intact ecological sequence from mudflat to saltmarsh to swamp.
A6	Wetland which is highly valued by Kai Tahu for mahika kai or other waahi taoka.	-	Not assessed.
A7	Wetland with a high diversity of indigenous flora and fauna.	**Yes**	Saltmarsh in Otago has relatively few plant species, but all the usual species appear to be present here.
A8	Wetland which is regionally significant habitat for waterfowl.	No	Little open water present.

Criteria	Definition	Met	Justification
A9	Performing a significant hydrological function including maintaining water quality or low flows, or reducing flood flows.	Likely	Wetland is likely to moderate flows in the lower reaches of Akatore Creek during flood events. High tides flow into the wetland. The wetland is likely to help protect water quality within Akatore Creek.

9. WETLAND BOUNDARIES

Re-drawn wetland boundaries are provided separately as GIS shape files. The total mapped area of significant wetland vegetation is 18.28 ha (Figure 1). Mudflat and open water habitats have been included in the significant area because they provide habitat for At Risk bird species (and are likely to also provide habitat for indigenous fish and invertebrate species), are an integral part of the wetland, and form part of an ecological sequence. A smaller area of oioi rushland, adjacent to sphagnum bog, has been added to the significant area as it is also an integral part of the site and helps to buffer the bog vegetation. The *Juncus* spp./sphagnum bog is retained in the significant area as, while modified, it is a rare habitat type. Other wetland habitats (rautahi sedgeland, oioi rushland, saltmarsh herbfield) have been retained in the significant area due to their intrinsic value as well as provision of habitat for fernbird and forming parts of an ecological sequence.

Gorse shrubland has been excluded from the significant area because the presence of gorse is indicative of the wetland having dried out, and this part of the site is dominated by exotic species. Restoration work carried out by the landowner is likely to improve the values of this part of the site over time.

Wetland boundaries are not mapped beyond the Amende property, except to the east of the site which was readily observed from the road. No adjustments were made to the boundary south of Akatore Creek Road.

10. MANAGEMENT

The landowner is poisoning gorse within gorse shrubland. The landowner has indicated a wish to create ponds at the site, and there appears to be ample opportunity for these in areas not currently considered significant. Drains may be left to gradually fill in over time or blocked to help restore a more natural hydrology. Planting of locally-sourced indigenous species could be undertaken on the terrace riser abutting gorse shrubland, providing an opportunity to recreate an ecological gradient from wetland to dryland (forest) habitats. Stock have been removed from wetland habitats on the property and are restricted to fenced pasture habitat. Rare stock incursions into the wetland occur from neighbouring properties, but adverse effects are minor. The management activities outlined above have the potential to greatly improve ecological values of the site over time.

ACKNOWLEDGMENTS

Anja McAlevey, Tom De Pelsemaeker, and Dale Meredith (Otago Regional Council) provided project liaison. We are grateful for Deanne and Steve Amende in allowing access to their property. Steve Amende accompanied SR on the site visit and provided important site information.

REFERENCES

Allibone R., David B., Hitchmough R., Jellyman D., Ling N., Ravenscroft P. and Waters J. 2010: Conservation status of New Zealand freshwater fish, 2009. New Zealand Journal of Marine and Freshwater Research 44: 271-287.

de Lange P.J., Norton D.A., Courtney S.P., Heenan P.B., Barkla J.W., Cameron E.K., Hitchmough R., and Townsend A.J. 2009: Threatened and uncommon plants of New Zealand (2008 revision). *New Zealand Journal of Botany 47*: 61-96.

Johnson P. and Gerbeaux P. 2004: Wetland types in New Zealand. Department of Conservation, Wellington.

Miskelly C.M., Dowding J.E., Elliott G.P., Hitchmough R.A., Powlesland R.G., Robertson H.A., Sagar P.M., Scofield R.P., Taylor G.A. 2008: Conservation status of New Zealand birds, 2008. *Notornis 55*: 117-135.

NIWA 2011: New Zealand Freshwater Fish Database. National Institute of Water & Atmospheric Research Ltd. Available at: http://fwdb.niwa.cri.nz

Otago Regional Council 2011: Regional Plan: Water for Otago.

Walker S., Cieraad E., Grove P., Lloyd K., Myers S., Park T. and Porteous T. 2007: Guide for users of the threatened environment classification, Version 1.1, August 2007. Landcare Research New Zealand. 34 pp. plus appendix.

Call Free 0508 WILDNZ
Ph: +64 7 343 9017
Fax: +64 7 3439018
ecology@wildlands.co.nz

99 Sala Street
PO Box 7137, Te Ngae
Rotorua 3042,
New Zealand

Regional Offices located in
Auckland, Hamilton, Tauranga,
Whakatane, Wellington,
Christchurch and Dunedin

ECOLOGY RESTORATION BIODIVERSITY SUSTAINABILITY

www.wildlands.co.nz