

## Part A: Wetland classification, wetland condition, pressure indicators

**Wetland name:** Lake Forsyth/Wairewa  
**Region:** Banks ER, Akaroa ED  
**Altitude:** <5m

**Date:** February – March 2010  
**GPS Ref. (NZTM):** E1579147 N5149948  
**No. of plots sampled:** Overview only

### A.1.1 Wetland classification

| Classification: I System | IA Subsystem | II Wetland Class | IIA Wetland Form |
|--------------------------|--------------|------------------|------------------|
| Palustrine               | Seasonal     | Marsh            | Coastal Lagoon   |
| Lacustrine               | Permanent    | Marsh            | Coastal Lagoon   |
| Estuarine                | Non-tidal    | Saltmarsh        | Coastal Lagoon   |

**Field team:** Mark Parker & Frances Schmechel

### A.1.2 Recording wetland condition

| Indicator  | Indicator components                    | Specify and Comment   | Score 0– 5 <sup>1</sup> | Mean score  |
|--|---|---|-------------------------|-------------|
| Change in hydrological integrity                   | Impact of manmade structures            | Old train embankment and artificial opening   | 3                       | 2.7         |
|  | Water table depth                       | Naturally variable lagoon size/depth. Artificial opening may impact wetland areas for short periods | 2                       |             |
|  | Dryland plant invasion                  | Dryland plants invading approximately 30% of wetland area   | 3                       |             |
| Change in physico-chemical parameters              | Fire damage                             | No evidence of fire damage  | 5                       | 2.7         |
|  | Degree of sedimentation/erosion         | High sediment inputs, high lake water turbidity   | 2                       |             |
|  | Nutrient levels                         | Nutrient status very high, algal blooms common  | 1                       |             |
|  | Von Post index                          | Not assessed  |                         |             |
| Change in ecosystem intactness                     | Loss in area of original wetland        | Estimated that 30% of previous wetland extent lost due to pasture development                       | 3                       | 3           |
|  | Connectivity barriers                   | Surrounding vegetation clearance, culverts and rail trail embankment affecting connectivity         | 3                       |             |
| Change in browsing, predation & harvesting regimes | Damage by domestic or feral animals     | Grazing in palustrine marsh areas, large areas of pugging and sedimentation                         | 3                       | 2.7         |
|  | Introduced predator impacts on wildlife | Minimal predator control occurring  | 2                       |             |
|  | Harvesting levels                       | Eel, whitebait and duck harvesting  | 3                       |             |
| Change in dominance of native plants               | Introduced plant canopy cover           | Willows and exotic grasses at top end of lake   | 3                       | 2.5         |
|  | Introduced plant understorey cover      | Exotic grasses and herbs in high abundance  | 2                       |             |
| <b>Total wetland condition index /25</b>           |   |   |                         | <b>13.6</b> |

<sup>1</sup> Assign degree of modification as follows: 5=v. low/ none, 4=low, 3=medium, 2=high, 1=v. high, 0=extreme

**Main vegetation types:**

|   |           |
|---|-----------|
|   | Area (ha) |
| Wet pasture with <i>Juncus edgariae</i>                                     | 36.7      |
| <i>Crassula sinclairii</i> - water milfoil turf with native musk            | 21.9      |
| Sea rush rushland with marsh ribbonwood and exotic grasses                  | 11.2      |
| Marsh ribbonwood shrubland with pohuehue, coprosma spp. and porcupine shrub | 8.1       |
| Willow forest with <i>Coprosma</i> spp. and <i>Pittosporum</i> spp.         | 3.8       |

|                |       |
|----------------|-------|
| Vegetated Area | 98.2  |
| Total Area     | 152.6 |

**Native fauna:**

Lake Forsyth/Wairewa has an international significance ranking for bird habitat, with very high numbers and diversity of wetland birds. It is a wintering site for threatened species such as banded dotterel and also has over 50% of the national population of crested grebes over-wintering there (O'Donnell, 2000).

**A. 1.3 Wetland pressure indicators (catchment)**

| Pressure                                | Score <sup>2</sup> | Specify and Comment  |
|---|--------------------|--|
| Modifications to catchment hydrology    | 3                  | Vegetation clearance, artificial opening, culverts and train embankment. |
| Water quality within the catchment      | 3                  | Probable moderate pollution. Development and grazing in wetland areas.   |
| Animal access                           | 3                  | Stock grazing some wetland areas, low impediment to access.              |
| Key undesirable species                 | 2                  | 18 of 43 listed species thought to be present in catchment.              |
| % catchment in introduced vegetation    | 3                  | Estimate 50-75% of catchment introduced vegetation. Grey willow present. |
| Other pressures                         | 1                  | Road and recreation trail on wetland edge.                               |
| <b>Total wetland pressure index /30</b> | <b>15</b>          |  |

<sup>2</sup>Assign pressure scores as follows: 5=extreme, 4=very high, 3=high, 2=moderate, 1=low, 0=none/very low

## Part B: Ecological significance assessment

### B. 1.1 Assessment of Ecological significance

| Criteria                 | Rank     | Notes  |
|--------------------------|----------|--|
| Representativeness       | Moderate | Wetland habitat that retains key hydrological functions. Mix of native and exotic vegetation present.  |
| Rarity / Distinctiveness | High     | Crested grebe over wintering site. White heron feeding site. Coastal wetlands, habitats of this type reduced to less than 20% of former extent in this land environment.   |
| Diversity and pattern    | Moderate | Wetland area has a moderate variety of native and exotic vegetation types and species. Connections to surrounding habitats modified but generally intact. Surrounding area very diverse, including large areas of modified native shrubland and grassland. |
| Naturalness              | Moderate | The site has various weed species present and has high nutrient status but still retains the key wetland functions of a coastal lagoon habitat.  |
| Ecological Context       | High     | The wetlands provide habitat for large numbers of non-migratory and migratory bird species, including threatened species and international migrants.   |

The site is assessed against criteria developed for the Proposed Canterbury Regional Policy Statement (Wildland Consultants Limited, 2011)

Lake Forsyth/Wairewa is assigned an overall ecological significance ranking of **High**.

#### References:

- Clarkson BR, Sorrell BK, Reeves PN, Champion PD, Partridge TR, Clarkson BD (2004) *Handbook for monitoring wetland condition. Coordinated Monitoring of New Zealand Wetlands*. A Ministry for the Environment Sustainable Management Fund Project (5105)  
(Describes the assessment method generally. In particular, Table 5 was used to determine the indicator scores and Table 6 for the pressure scores)
- O'Donnell CFJ. 2000. The significance of river and open water habitats for indigenous birds in Canterbury, New Zealand. Environment Canterbury Unpublished Report U00/37.
- Wildland Consultants (2011) *Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna and wetlands in Canterbury*. Wildland Consultants Contract Report No. 2289c. Prepared for Environment Canterbury.