ANNUAL REPORT

NASSELLA TUSSOCK CONTROL

CANTERBURY AND MARLBOROUGH REGIONS

Financial Year 2008-2009

Prepared for Land Information New Zealand

by

Landward Management Ltd
PO Box 5627
DUNEDIN

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LIST OF LAND DEFINITIONS

Crown Riverbed
Crown riverbed in this document refers to land belonging to the Crown that is administered by Land Information New Zealand (LINZ); referred to as Unalienated Crown Land (UCL).

Areas of riverbed requiring Nassella tussock control were identified using the following criteria:

- **Areas of braided riverbed bounded on both sides by marginal strip or road reserve.**

- **Areas of braided riverbed bounded on one or both sides by land not subject to *ad medium filum* (AMF) rights[1].**

Marginal Strip
Marginal Strip in this document refers to lands of the Crown administered by the Department of Conservation (DoC).

Road Reserve
Road Reserve in this document refers to land administered by territorial authorities (District Councils or Unitary Authorities).

Application of these criteria is considered appropriate because it is expected that these particular areas will require the greatest attention for pest management. Other areas may be identified in the future, but they are less likely to have a high priority for pest management.

[1] Where a river abuts a property and connection is not interrupted by a legal road, the adjoining landowner may own the riverbed to the middle of the river. These are called *ad medium filum* rights. This situation is more prevalent in South Island braided rivers.

1. INTRODUCTION

Land Information New Zealand has responsibilities for managing the control of pest plants (weeds) on UCL, on behalf of the Crown. In most cases, Crown riverbed comprises areas of braided river or stream beds bounded on both sides by marginal strips or road reserves.

Many weed species occur on UCL. The weeds in these waterways can pose serious threats to adjoining farmland and conservation areas and act as sources of weed reinfestation. The council's Regional Pest Management Strategy (RPMS) has been developed under the Biosecurity Act 1993 to deal with these weeds. Some weeds have been categorised according to their threat to economic values, while others have been listed as threats to conservation values. Control of weeds on UCL is therefore an important aspect of the Crown's land management programme. The aim of weed control is to reduce infestations of pest plants to low levels, after which only ongoing inspection and maintenance control is required.

Landward Management Ltd. (Landward) is the contractor responsible for managing and coordinating biosecurity operations (plant and animal pest control) on UCL, for LINZ. This role includes the following tasks:

- Preparation of annual weed/pest control programmes
- Preparation of tenders and contracts for engagement of weed/pest control contractors
- Monitoring and inspection of operations
- Monitoring resource consent compliance
- Annual reports on operations
- Reporting on other issues which may be of relevance to biosecurity operations.

This report outlines Nassella tussock (*Stipa trichotoma*) control operations carried out on UCL in the Canterbury Region and Marlborough District for period 1 July 2008 to 30 June 2009 financial year. Actual Nassella control operations were completed prior to 31 October 2008. The areas of operations were as follows:

- Lower Awatere River
- Ure River
- Conway River
- Upper Kahutara River

- Hurunui River
- Waipara River
- Kowai River
- Waiau River
- Mason River
- Lottery River
- Clarence River

2. MARLBOROUGH DISTRICT

2.1 Lower Awatere River

Nassella sites have been identified by Marlborough District Council (MDC) in the Awatere River. Previously LINZ control has focused on the area from State Highway 1 (SH1) to the river mouth. However, in 2007/08 two new sites were identified above the SH1 Bridge. These were also included in the control programme this season.

In 2008/09 about 500ha was searched for Nassella plants, with 850 plants grubbed in 70 hours. The work was carried out between 2 and 18 September 2008. This was a significant decrease in the total plants destroyed from the previous year. This is likely to be due to flooding in the Awatere River which had buried a lot of the Nassella sites under silt.

In 2009/10 a similar programme will be required to destroy any plants before they have the chance to set seed. It is likely that there will be a large increase in plants that will be grubbed due to the amount of seedling growth to be expected following the floods during the 2008/09 season.

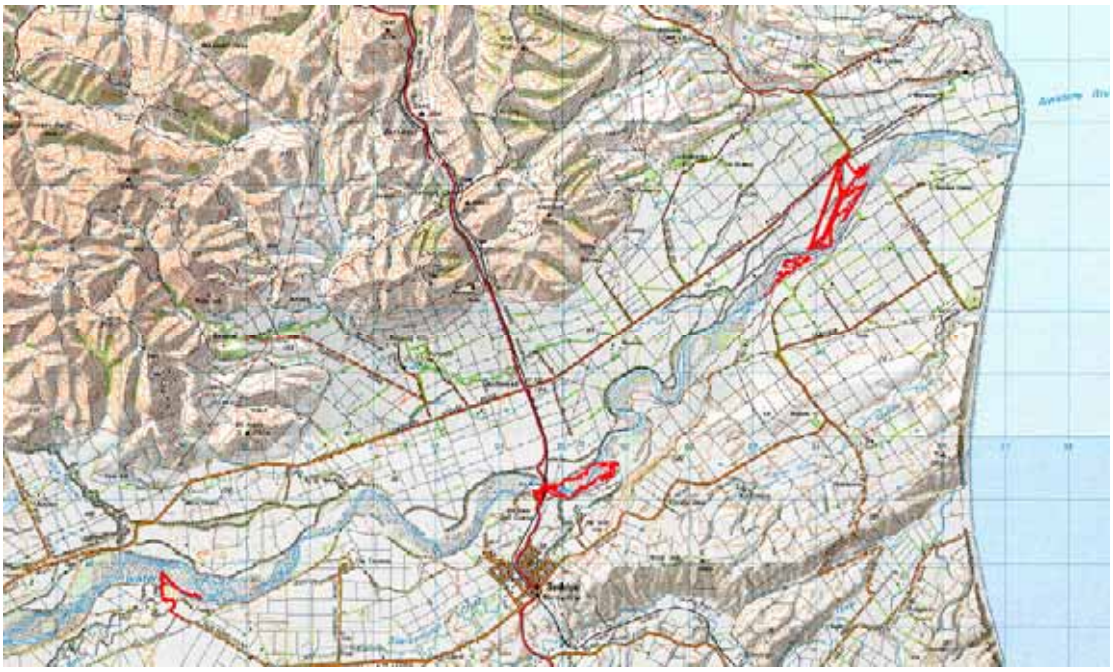

Figure 1. Treatment area on the Lower Awatere River

2.2 Lower Waima (Ure) River

The MDC identified an area between the SH 1 Road Bridge and the Ure Road Bridge as requiring Nassella control.

In 2008/09 control was extended upriver to Blue Mountain because of reports of isolated plants upstream of the Ure Road Bridge. A larger area of approximately 220ha was searched between 2 September and 8 October 2008, which resulted in 61 plants being grubbed over 56 hours of searching. This compares with last year's total of 152 plants.

Due to flooding, parts of the river bed had been scoured out or buried in silt and debris, making plant detection difficult. The lower number of plants destroyed is more a reflection of this, than there being no plants to detect.

Continued surveillance and grubbing will be required for 2009/10.

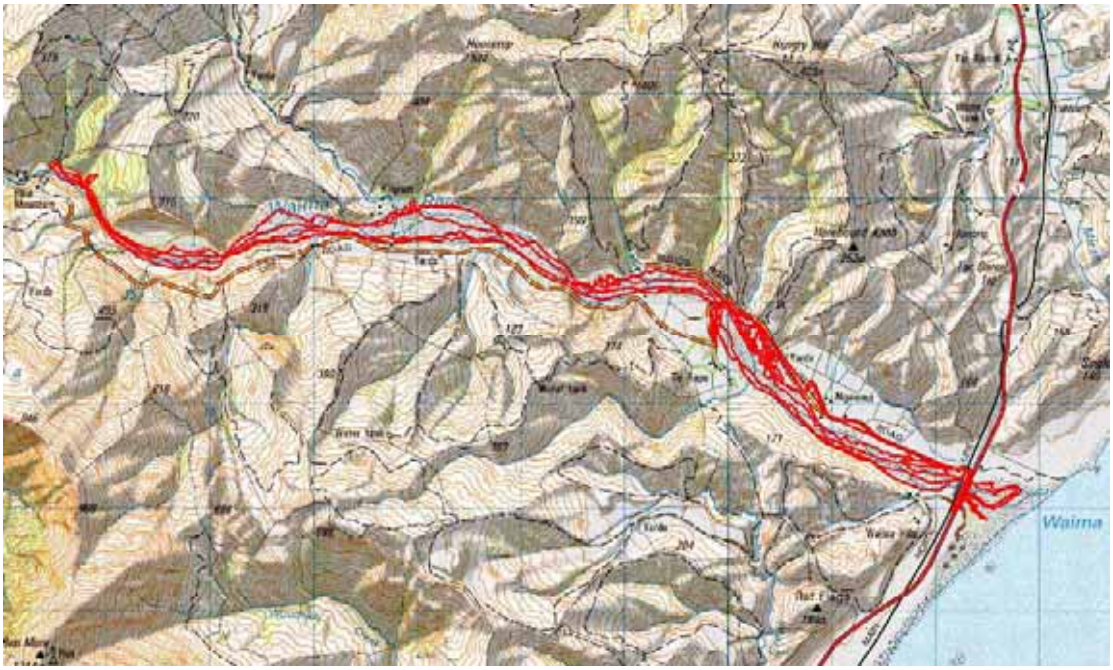

Figure 2. Treatment area on the Waima (Ure) River

3. KAIKOURA DISTRICT

3.1 Conway River

An area of approximately 900ha was searched by foot in the Conway River from the Inland Road Bridge to the river mouth between 14 and 19 August 2008.

In total 123 Nassella plants were removed over 160 hours spent searching, which compares favourably with previous years totals of 287 (2007/08) and 378 (2006/07). The trend is showing a gradual decrease in the number of Nassella plants in this riverbed, which is pleasing.

A similar programme will be put in place for the 2009/10 season.

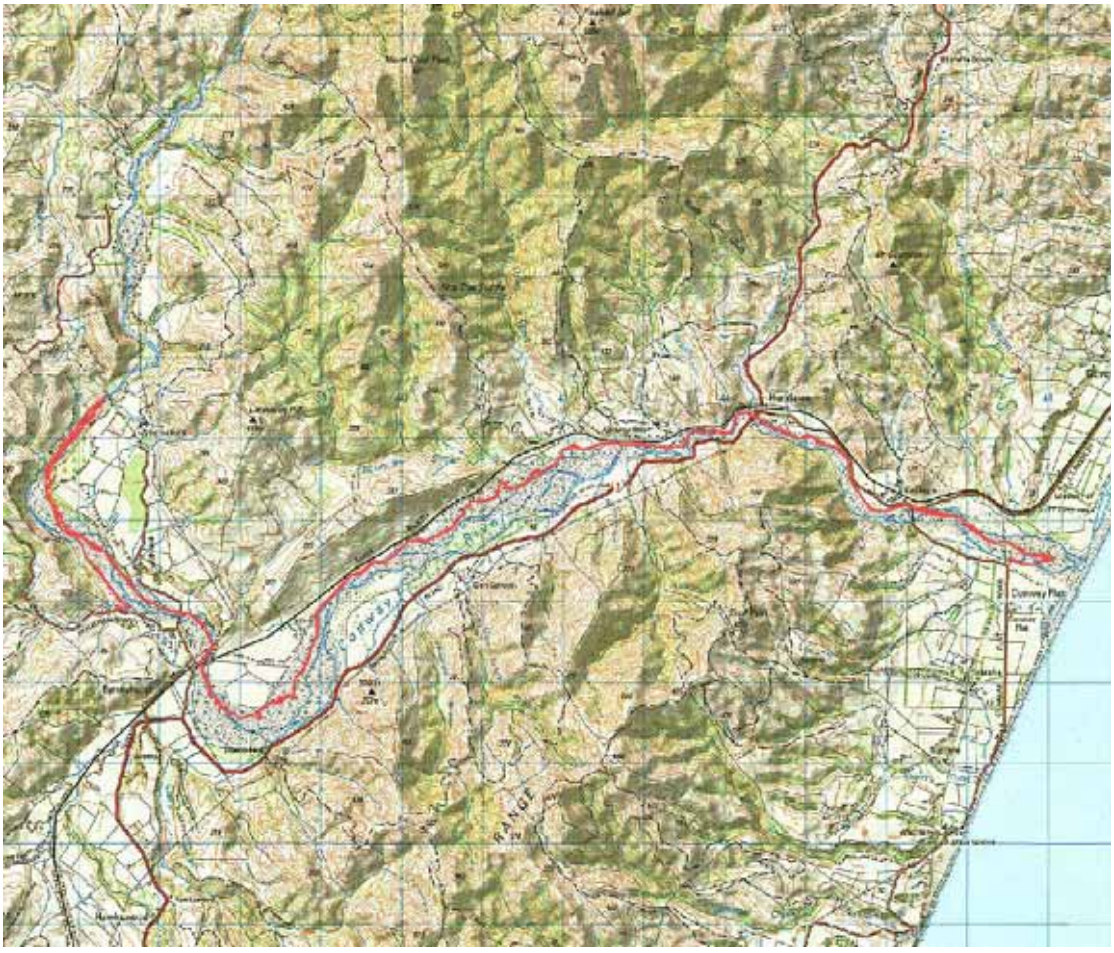

Figure 3. Treatment area on the Conway River

3.2 Clarence River

The 2007/08 season was the first year Nassella control had been carried out in the Clarence River. This was due to Environment Canterbury (ECan) Biosecurity staff finding an infestation upstream of the SH1 Bridge.

The area was searched on 2 September 2008, with no plants found during 8 hours of searching. Due to flooding, parts of the river bed had been scoured out or buried in silt and debris, making plant detection difficult. The lack of plants found is more a reflection of this than there being no plants to detect, although there is a very low level of infestation at this site.

Another search of this site in 2009/10 would be prudent given the difficulties experienced in the 2008/09 season.

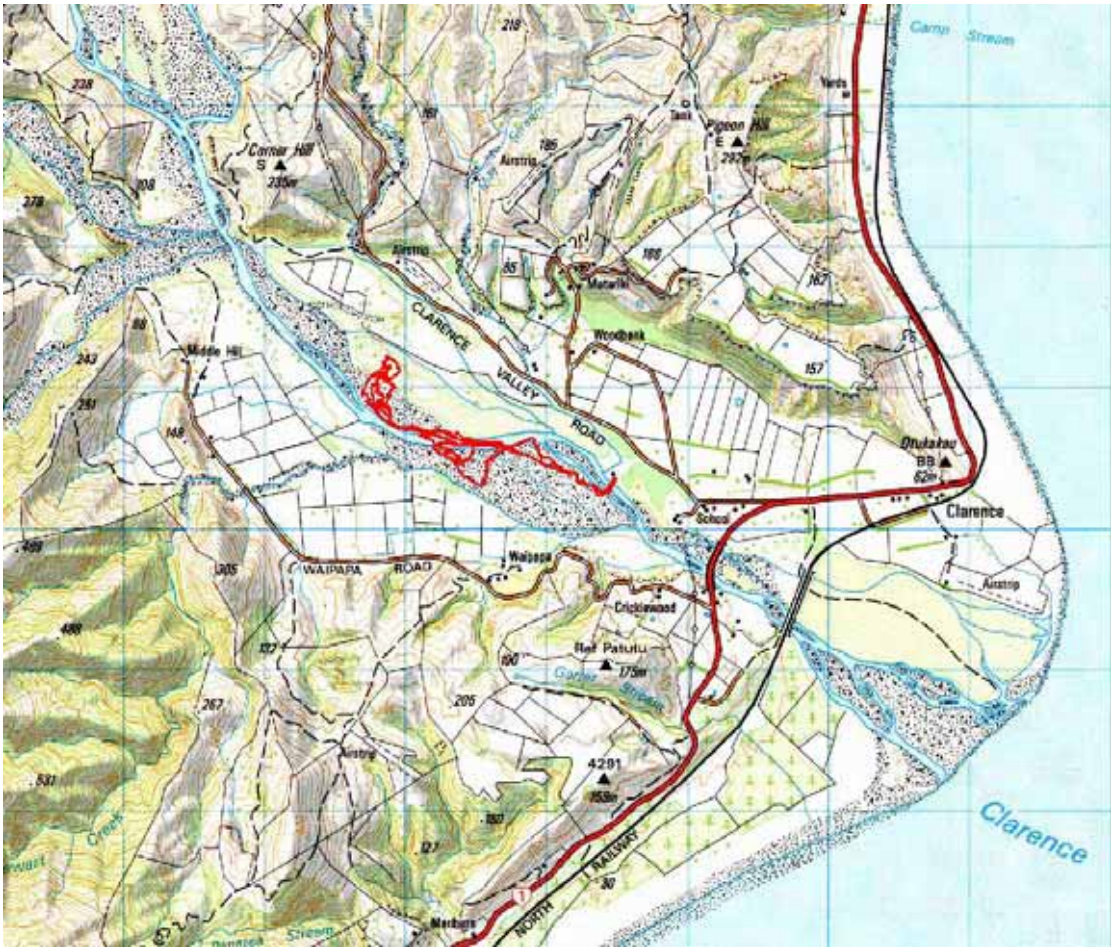

Figure 4. Treatment area on the Clarence River

3.3 Kahutara River

In the Kahutara river, a search on foot for Nassella tussock was undertaken on 19 September 2008 over an area of 284ha from SH1 to an area of UCL adjacent to Blunts Road.

A total of 77 plants were destroyed which was a significant decrease on last year's total of 211, and the year before when 1,143 plants were grubbed.

Flooding in the river had washed away a number of riverbed islands, or covered them in silt. This will be one of the reasons for the decrease in numbers of plants grubbed this season. There is a strong probability that Nassella will regrow in these areas next season, so an increase in plants grubbed will be expected for the 2009/10 season.

The infestation of gorse and broom is dense in this river which makes the searching difficult, and in the 2008/09 season high water levels also contributed to the problems experienced by the contractor.

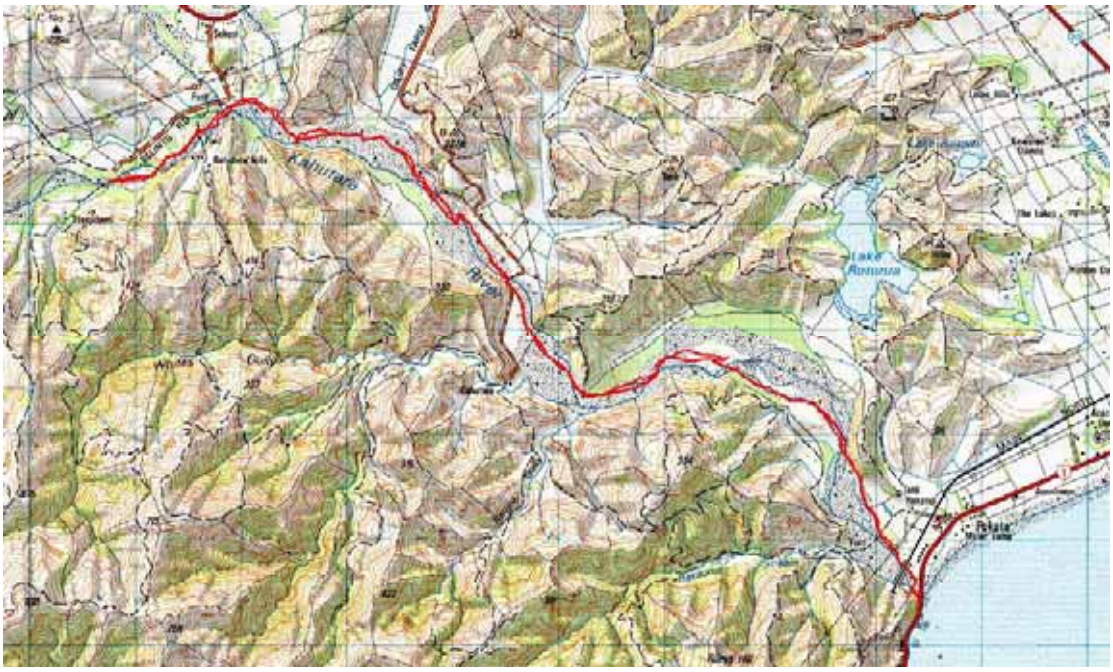

Figure 5. Treatment area on the Kahutara River

4. NORTH CANTERBURY DISTRICT

4.1 Hurunui River

The Hurunui River bed is a very large area to cover and in previous years there have been large numbers of plants in the riverbed.

In 2008/09 an area of approximately 1,500ha from Mandamus River confluence to the mouth of the Hurunui River was searched between 19 August and 15 September 2008. In total 4,390 plants were destroyed over 396 hours spent searching. Previous years had resulted in 7,989 plants (2007/08) and 11,082 plants (2006/07) being destroyed.

Given the continuing decrease in the number of plants grubbed, it would appear that progress is being made in reducing the Nassella infestation on UCL in the Hurunui River. However, it should be noted that the Hurunui, like other rivers in Canterbury, experienced major flooding resulting in islands being washed away. This would have contributed to lower Nassella numbers, and it is likely there will be an increase in numbers again next season.

Work in this riverbed is hampered by the amount of gorse and broom. Another major problem in the 2008/09 season was high flows restricting the ability of the contractor to do the work, as well as being a major hazard.

Figure 6. Treatment areas on the Hurunui River

4.2 Waipara River

Some of the Waipara River areas are indistinct as to whether they are UCL, District Council road reserve, marginal strip, or AMF land.

In 2008/09 an area of approximately 550ha was searched on foot between 2 August and 23 October 2008. A total of 218 hours was spent searching and grubbing. Total plants grubbed were 6,543, compared to 9,541 plants in 2007/08 and 7,990 plants in 2006/07.

Major flooding occurred in the Waipara River and had washed away a number of riverbed islands, or covered them in silt. This will be one of the reasons for the decrease in numbers of plants grubbed this season. There is a strong probability that Nassella will regrow in these areas next season, so an increase in plants grubbed will be expected for the 2009/10 season.

Figure 7. Treatment area on the Waipara River

4.3 **Kowai River**

This year there was an increase in the number of plants destroyed (103) over the 60ha searched between 22 and 25 August 2008. This is probably due to more intensive searching this season, with approximately 60 hours spent searching in 2008/09. Previous years have found 33 plants in this area in 24 hours in 2006/07 and 24 plants in 28 hours in 2005/06.

The gorse is very thick through this riverbed and makes searching very difficult. The worst patch of Nassella was located in the middle of the Kowai River in amongst the thick gorse, which obviously makes the searching more challenging for the contractor.

A similar programme will be put in place for 2009/10.

Figure 8. Treatment area on the Kowai River

4.4 Waiau River

The Waiau River Nassella control area is huge, and includes all areas from Manuka Island to the mouth of the Waiau River.

In 2008/09 an area of approximately 1,300ha was searched between 14 October and 17 October 2008, and a total of 355 hours was spent grubbing out 1,332 plants. Last year 350 hours was spent searching which resulted in 5,593 plants being grubbed, and in 2006, 403 hours searching resulted in 2,014 plants grubbed.

There was a large increase in Nassella plants being grubbed in 2007/08 compared to previous years, because new sites were found which were heavily infested with Nassella plants. This season there was a drop in plant numbers again, due to the heavy flooding which had washed away many of the riverbed islands and covered other areas in silt.

In 2009/10 more resources are likely to be needed for Nassella grubbing in the Waiau River, as a flush of new growth will be expected following last year's flooding. Work will have to concentrate on the known "hotspots".

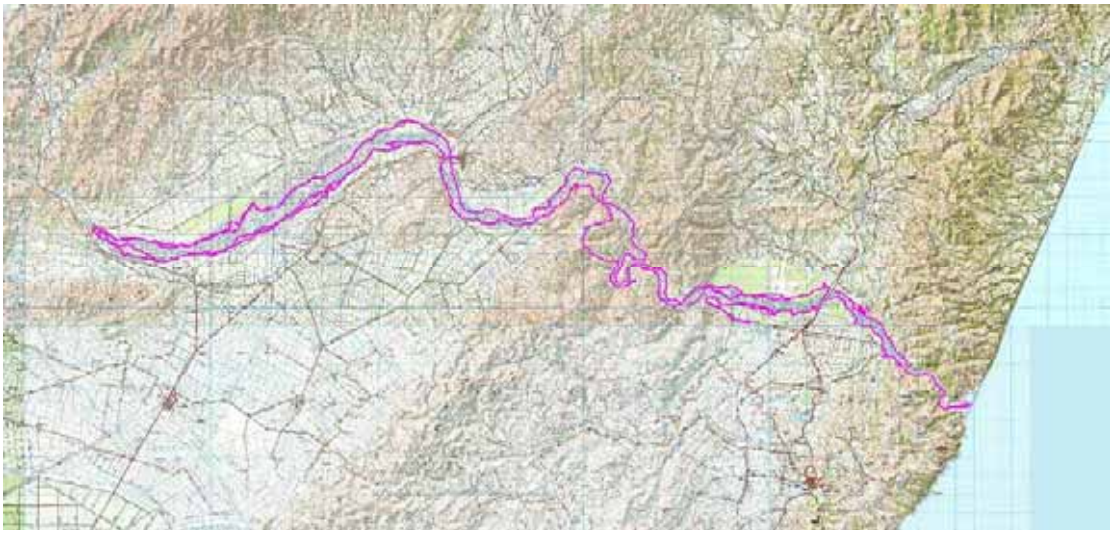

Figure 9. Treatment area on the Waiau River.

4.5 Mason River

The Mason River includes all areas of the riverbed from the Inland Road to the confluence of the Mason River with the Waiau River.

In 2008/09 there were 41 Nassella plants grubbed in the Mason River on 19 September 2008, using four men and a total of 38 hours. Previous year's totals were 82 plants in 2007/08 and 121 plants in 2006/07.

A lot of the Mason River is becoming covered in gorse, broom and blackberry, which makes it difficult to locate the Nassella plants, and some sites are being smothered. This season high river levels also made searching difficult and hazardous.

No large tussocks were found in the riverbed in 2008/09, so it appears that good headway is being made in the Mason River, but maintenance work is still required.

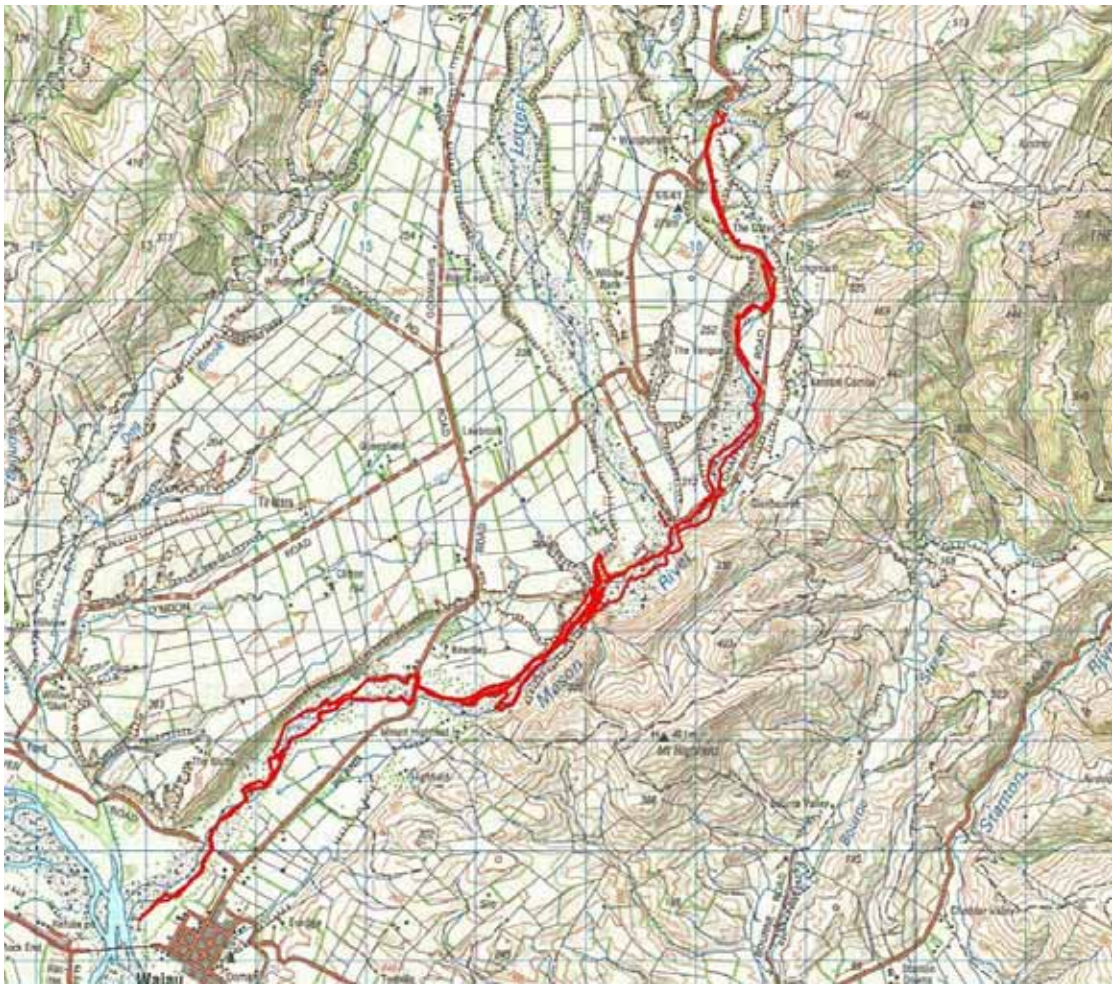

Figure 10. Treatment area on the Mason River

4.6 Lottery River

The Lottery river Nassella programme covers the river from Blair Logie to the confluence with the Mason River.

In 2008/09 only 4 plants were grubbed during 12 hours of work by 2 men on 19 September 2008. In 2007/08, 12 plants were found over a period of 31 man hours and in 2006/07, 28 plants were grubbed over 33 hours.

The Lottery River is covered by broom, gorse and blackberry, and this has smothered some previous Nassella prone sites, and made it difficult for the contractor to locate Nassella plants.

Progress is pleasing on this site with the steady reduction in Nassella numbers. Maintenance of this area will continue in 2009/10.

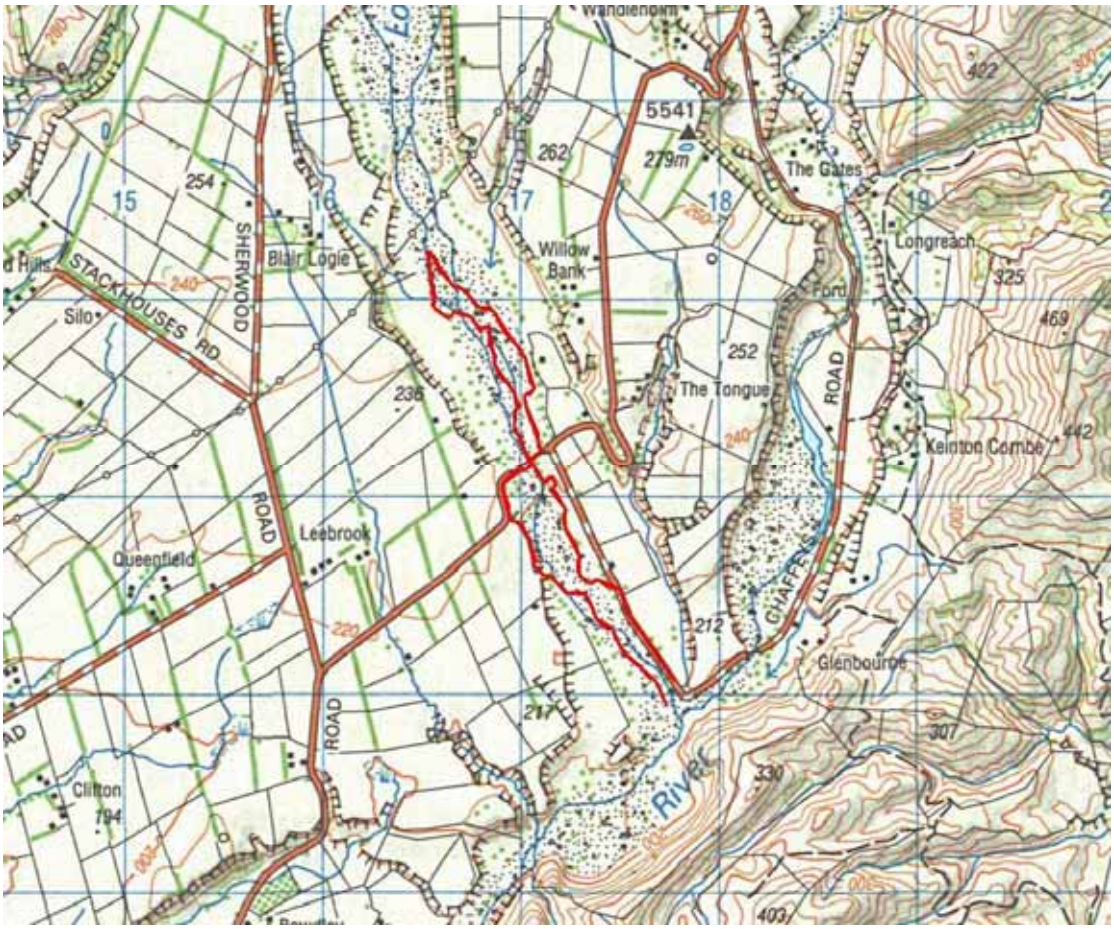

Figure 11. Treatment area on the Lottery River

5. SUMMARY

Nassella grubbing in the 2008/09 season was significantly affected by flooding that occurred in many of Marlborough and Canterbury's rivers. As detailed in this report, this flooding washed away riverbed islands, scoured out other areas, and also deposited a lot of silt. This made finding the Nassella plants much more difficult and ultimately resulted in reduced numbers of plants destroyed. Unfortunately, this is likely to mean a flush of new plants next season, so the number of nassella tussock being grubbed will probably increase in 2009/10 in many of the riverbeds where LINZ works.

Another major issue in many of the areas where Nassella grubbing is necessary is the increased amount of gorse, broom and blackberry that is being encountered by the contractor. These weeds make searching for Nassella much more difficult. However, it is also worth noting that they may also be competitively excluding Nassella plants, potentially resulting in reduced numbers.

Nassella continues to be an ongoing problem in a number of rivers in the Canterbury region and Marlborough district. At some sites, the number of Nassella plants being grubbed appears to be dropping, which may indicate progress being made, but to prevent Nassella from spreading and becoming a larger percentage of the LINZ biosecurity costs, it is important to continue an ongoing maintenance programme in the rivers detailed in this report.