PROJECT RIVER RECOVERY REPORT 2012/01

Project River Recovery Annual Report

1 July 2012 – 30 June 2013

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Department of Conservation
Te Papa Atawhai

newzealand.govt.nz

Project River Recovery is a Department of Conservation project that mitigates habitat degradation in braided rivers and wetlands in the upper Waitaki basin. It is funded through a compensatory agreement with Meridian Energy Limited and Genesis Energy in recognition of the adverse effects of hydroelectric power development on these ecosystems.

Project River Recovery Reports are internal reports that provide a record of research or management work carried out or funded by Project River Recovery.

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In the interest of forest conservation, we support paperless electronic information sharing. Limited copies of this report are printed. It is also available from the departmental website in pdf form; refer www.doc.govt.nz/braidedrivers, then *Project River Recovery's Work*, then *Publications*.

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Summary

- This report summarises Project River Recovery's progress towards its six key objectives as identified in its strategic plan for the period 1 July 2012 – 30 June 2013.
- A mid-term review of Project River Recovery's (PRR) effectiveness and efficiency over its 20 years of operation was carried out by Landcare Research Ltd.
- The review found PRR has been a highly effective braided river restoration agency since its inception and has been very resource-efficient at achieving its outcomes. Reviewers did not see a need for any major changes to how PRR operates in terms of effectiveness, outcome delivery, strategic planning or stakeholder communication.
- PRR continues to give highest priority to maintaining the high natural quality of 'near-pristine' riverbeds above the glacial lakes of the upper Waitaki basin. The success of this work depends on working closely with various stakeholders including Land Information New Zealand, Environment Canterbury, and landholders.
- 3 350 hours of targeted, ground-based spot spraying of weeds was carried out in seven riverbeds.
- This is the ninth year of results from the jointly run Tasman River predator-control project between PRR and the kakī recovery group. The project uses a range of predator control and monitoring techniques.
  - Over the year 863 hedgehogs, 243 stoats, 285 feral cats, 60 ferrets, 43 possums, 12 weasels and 4 rats were caught.
  - From 33 monitored wrybill nests, 64% hatched chicks and of these, 11–66% successfully fledged. Flooding was the main cause of nest failures and egg loss.
  - From 201 monitored black-fronted tern nests, 18% hatched chicks, and of these, 20–24% successfully fledged. Predation was the main cause of nest failures and egg loss. Use of motion-triggered cameras at nest sites indicated black-backed gulls were the predominant predator of black-fronted tern eggs and chicks.
  - Analysis and reporting on outcomes from the first 5 years of monitoring results is in progress.
- A programme of intensive predator management and monitoring in a 1 kilometre radius around a black-fronted tern colony in the upper Ohau River is in its third year of operation.
  - During the twelve month period from 1 March 2012 to 28 February 2013, a total of 198 hedgehogs, 123 ferrets, 66 feral cats, 21 stoats, 33 rats, 6 weasels and 10 possums were caught.
  - Of 351 observed nests at the island colony, 87% hatched chicks and, of these, it is estimated that 51–69% successfully fledged. Small colonies which established on either side of the river adjoining the island site were less successful .
- PRR continues to support a PhD study of flood-induced processes affecting Russell lupin mortality in the Ahuriri riverbed. This work is being carried out by Luke Javernick from the Canterbury University Civil and Natural Resources Engineering Department and will be completed in late 2013.
- Other wetland management has included fence maintenance, weed control and water-level manipulation at Waterwheel and Ruataniwha wetlands.

- PRR staff consulted with stakeholders as required by ongoing operations.
- The braided river multi-species poster, braided river field guide and braided river teacher resource continue to prove popular, and have been distributed for free to many schools and visitors.
- PRR spent $528,600 in the 2012/2013 financial year with most resources directed to weed control ($202,953), project management ($190,544) and predator control/research ($133,872).

1. Introduction

Project River Recovery (PRR) commenced operations in 1991 following establishment of a compensatory funding agreement with energy providers in the upper Waitaki River. The agreement recognises the adverse impacts of hydroelectric power development on braided river and wetland ecosystems, and a key focus of the programme over its 21 years of operation has been to maintain integrity of remaining braided riverbeds, particularly from the impacts of invasive plants. The programme has also invested considerable effort into assessing the impacts of mammalian predators on riverbed fauna and developing effective methods for their control in riverbed environments.

These and other goals are set out in a 7-year strategic plan which is aligned with the current funding agreement with energy providers Meridian Energy Limited and Genesis Power Limited. The current strategic plan has been operative since July 2005 and is due for renewal in 2013 for a further 7 years. This annual report summarises progress towards the six key objectives identified in the strategic plan, describes changes in staff, presents financial statements, and lists recent publications and internal reports, for the year from 1 July 2012 to 30 June 2013.

2. Staff

The project currently employs three permanent staff. Chris Woolmore continues to manage Project River Recovery, assisted by Sue Anderson and Rhys Garside. Rhys plays a key role in our summer weed control work, focusing on high priority, small scale weed-control operations. Larger scale weed control is mostly undertaken by contractor OK Vegetation Control. Sue continues to focus her efforts on management of natural heritage in braided rivers. This work includes a trial programme of intensive predator control in the upper Ohau River to protect nesting black-fronted terns. The Ohau predator work is serviced by contractor Ecological Contracting Services Limited. PRR also works closely with the kakī recovery team in the Tasman River where we jointly fund a large-scale predator-control project to protect a range of riverbed fauna.

3. Project review

Project River Recovery has been operating for over 20 years now and is just over half way through the consenting period for upper Waitaki hydro power resource consents to which the project is tied. Provision is made under the current funding agreement between the Department, Meridian Energy and Genesis Power to complete a review of the project. As there has been no formal review of the project to date, it was agreed an independent review covering the full term of Project River Recovery's operation would be carried out during August and September 2012.

The review was completed by John Innes and Alan Saunders from Landcare Research and a report containing the review findings is available on request. The report's objectives, conclusions and recommendations, taken directly from the review summary, are set out below (Innes and Saunders 2012).

Objectives

- Determine the difference that PRR work has made to the maintenance and enhancement of indigenous species, ecosystems and habitats in upper Waitaki basin braided river and wetland systems.
- Assess the effectiveness of PRR in meeting 2006–2012 strategic plan objectives.
- Provide an opinion on the efficiency of PRR in relation to the ecological outcomes achieved and the operational effort expended.
- Determine if PRR has worked in a cost-effective manner when commissioning work and incurring expenditure.
- Consider how well PRR measures and conveys outcomes for stakeholders.
- Assess how effectively the current PRR strategic planning approach enables communication and guiding of its future actions.
- Consider how PRR can increase its effectiveness or improve the way it delivers outcomes.

Conclusions

- PRR has been a highly effective braided river restoration agency since its inception due to its sustained secure funding, high quality staff and its effective management inside the Department of Conservation.
- PRR now sustainably and efficiently maintains low weed density in 63% of the upper Waitaki basin, and contributes valuably to ongoing experimental management of nesting success of braided river birds.
- We consider that PRR has been very resource-efficient at achieving ecological and other outcomes, and that it has worked in a cost-effective manner when commissioning work and incurring expenditure.
- The strategic planning approach currently used by PRR satisfactorily outlines future actions while retaining managerial flexibility, and allows adequate communication with stakeholders.

Recommendations

- We do not see a need for any major changes to how PRR operates in terms of effectiveness, outcome delivery, strategic planning or stakeholder communication.
- PRR should continue its current primary emphases on woody weed and mammal pest management in the upper Waitaki basin.
- PRR strategic planning for 2013–2019 should reflect the broadening array of growing future pressures, including land-use intensification, water allocation and increasing recreation on braided rivers and their associated lakes.
- Brief but explicit strategies for advocacy (including education) and research should be included in the next strategic plan.
- PRR staff should commit to attending at least one workshop or conference and writing at least one reviewed scientific publication between them every 2 years, to maintain their current position of leadership in braided river restoration.
- PRR should consider facilitating research into the relative importance of disturbance arising from recreationist activity as a damage factor for nesting braided river birds and into the effectiveness of its advocacy programmes.

4. Progress toward objectives of the strategic plan

PRR's progress towards achieving the objectives of the strategic plan is summarised below. Detailed reports of seasonal results and outcomes from trials and analysis of data are recorded through PRR's internal report series and are available on request.

4.1 Objective 1: Maintain indigenous vegetation and enhance habitat by removing problem weeds

Ongoing riverbed weed-control programme

Project River Recovery completed another year of its ongoing weed control programme in the braided rivers, tributaries, and various natural and managed wetlands of the upper Waitaki basin. Our priority continues to lie with preventing new incursions of invasive weeds and removing newly established infestations at important locations across the 32,000 hectares of braided-river habitat in the upper Waitaki basin. Many sites in the river headwaters remain largely 'natural' in terms of the number of weed species present and the extent of their distribution. The rationale for selection of priority sites and their locations are set out in PRR's weed control plan (Woolmore 2004).

PRR continues to maintain the excellent natural condition of riverbeds above Lakes Tekapo, Pukaki, and Ohau, and the Ahuriri River above Longslip Creek. Invasion by several potentially damaging weeds at these sites has been prevented or reversed in its early stages. For example, excellent progress has been made in the reduction of Russell lupins in the Tasman River as a result of accurately recording locations of weeds using GPS and consistently removing plants prior to seeding each year over the last 10 years. The rivers below the lakes, and the Ahuriri River below Longslip Creek, contain many more species of invasive plants, and infestations are larger in size. Not all invasive weeds can be controlled at these sites, and we continue to work towards achieving sustainable and realistic weed-control programmes at selected priority sites, often combining our control efforts with other agencies (Environment Canterbury, Land Information New Zealand) and landholders, as well as other DOC weed work.

This season greatest effort was directed into the Tasman, lower Ohau and upper Ahuriri Rivers using contract staff. In the Tasman River additional effort was required following more regrowth of Russell lupin than expected. Sites in the middle of the river have been recently disturbed as the main river channels migrate across the valley and this seems to have stimulated seedling germination from a buried seedbank. Despite this extra work, we continue to see a steady decline in lupins over time. In the lower Ohau, maintenance control of broom was completed throughout the riverbed at known infestation sites and in the Ahuriri River scattered crack willow was aerially sprayed using a handheld wand on individual plants and a half boom on denser patches.

PRR, ECan and LINZ continue to implement a collaborative weed-control programme in the upper Tekapo River targeting gorse, broom, lupins and willows for the sixth consecutive year. LINZ and ECan contractors completed the weed control work. Programmed work in Forks Stream was not completed due to other higher priority work taking longer than expected.

Other minor weed infestations were controlled by PRR staff in the Godley River, Mistake Creek, Cass River, upper Ahuriri River, upper Ohau River and in our constructed Ruataniwha and Waterwheel wetlands. In weed control operations undertaken by PRR contractors and staff,

herbicides were applied from the ground using knapsack sprayers, except in the Ahuriri River where aerial application was used. Table 1 summarizes the hours and amounts of herbicide PRR used this year. Target weeds included willow, broom, gorse, wilding pines, yellow tree lupin, buddleia and Russell lupin. A summary of the year's weed control operations is provided in Appendix 1.

Effectiveness of weed control was monitored by site inspections, before and after weed control. The level of control achieved was generally excellent. Contractor work practices were monitored by site visits and discussions with contract staff. All weed control operations have again committed to, and maintained, high standards.

Yellow tree lupin /buddleia

Rhys continues to make excellent progress in achieving our goal of zero density of mature yellow tree lupin and buddleia outside residential sites in the upper Waitaki basin. All known establishment sites of both species were checked for regrowth and controlled where necessary.

The number of known sites with yellow tree lupins present remains relatively constant, and encouragingly, the average number of lupins being found at these sites continues to decline compared with previous seasons, although there can be significant fluctuations in the number of seeds germinating from year to year.

We are also making good progress with containing the spread of buddleia in river systems and maintaining zero density of seeding buddleia at known riverbed sites. Numbers of seedlings recorded and controlled in the lower Twizel River site fluctuates annually but once again few mature plants were seen. Scattered plants were also removed from the lower Ohau River.

Table 1. Project River Recovery's weed control effort (person hours) and the amount of herbicide, penetrants and dye used by Project River Recovery staff and contractors, July 2012 – June 2013. Contract spraying was done by OK Vegetation Control using knapsack sprayers . Aerial spraying was done by Central South Island Helicopters using handheld wand or boom. Work carried out by Land Information New Zealand and Environment Canterbury in the Tekapo River is excluded from this table.

SITE	GROUND HOURS	AERIAL HOURS	GLYPHOSATE (LITRES)	AQUAKYNDE (LITRES)	HERBISAFE (LITRES)	DYE (LITRES)	TRICLOPYR (LITRES)	XTREE BASAL (LITRES)
Tekapo								
Mistake Stream	18.0		0.3		0.3	0.1		
Ahuriri Upper	85.0	14.4	47.0	13.0	39.3			140.0
Forks								
Tasman	1294.0		58.7		58.7	40.0		
Cass	9.0		0.1		0.2	0.1	0.1	2.0
Ohau tern Island	30.0		2.7		2.7	0.7		3.0
Godley	18.0		0.2		1.1	0.4	0.9	
Lower Ohau	1787.5		184.2		137.4	125.6		
Ruataniwha/ Waterwheel wetland	42.0				<0.1	<0.1	<0.1	5.0
YTL/ buddleia	98.0		0.6		0.9	0.3	0.3	
Total	3350.5	14.4	293.8	13.0	240.7	167.3	1.4	150.0

4.2 Objective 2: Explore opportunities to enhance wetland conservation

The constructed Ruataniwha and Waterwheel wetlands continue to provide habitat for a range of native fauna and flora and we manage these wetlands by manipulating water levels and controlling weeds. No further wetland construction is planned; future wetland conservation efforts will concentrate on protecting existing wetlands.

4.3 Objective 3: Continue to build knowledge of natural heritage in braided-river ecosystems

4.4.1 Riverbed bird surveys

Walk-through counts of riverbed birds have been used for many years in New Zealand to record numbers of birds present in different river systems. A regular cycle of repeated surveys can be useful for long-term monitoring of population trends in threatened, as well as more common species.

PRR completed surveys of all the Upper Waitaki rivers over 3 consecutive years in the early 1990s. Our intention is to repeat these surveys over 3 consecutive years for each river system on a rotational basis to make a direct comparison with the 1990s counts. The third year of counts was completed last season in the Tekapo and Ohau rivers and the next rivers programmed for survey are the Ahuriri, Hopkins and Dobson Rivers. Unfortunately river levels were again too high during November for these surveys to be completed in 2012.

4.4 Objective 4: Test the effectiveness of large-scale predator control

Tasman River

The Tasman valley predator control project completed its ninth year of operation this season. PRR and the Kakī Recovery Project are jointly implementing a large-scale, extensive predator-trapping programme in the Tasman valley. The project takes a catchment-based approach, using a wide variety of control methods that are applied continuously throughout the year.

After nearly 9 years of continuous predator trapping and monitoring of banded dotterel, wrybill and black fronted tern breeding success, mixed results have been achieved. Large numbers of predators continue to be caught each year, with 5884 hedgehogs, 2616 stoats, 1551 feral cats and 649 ferrets removed since the programme commenced. Wrybill hatching success has been consistently high, with no egg loss due to predation other than 2006 (1 of 19 nests) and 2009 (3 of 26 nests), although nest failures due to other causes, especially flooding, have increased. Wrybill fledging success has averaged around 41% since predator control commenced (range 27–61%).

Similar results were achieved for banded dotterel with high hatching success at nests (range 71–97%) and very few failures attributed to predation. These results are very good compared to other monitored systems with no predator control, where predation continues to be a significant cause of nest failures.

Conversely, breeding outcomes for black-fronted tern have been consistently disappointing with hatching success only exceeding 50% in 2 of 6 years of monitoring (range 18– 71%) and predation consistently being the largest cause of nest failures. Fledging success was also low, ranging from 0% (2 years) to 27%. Despite the apparently promising results for wrybill and banded dotterel

compared to sites where no predator control is present, a recent analysis of data from the project was unable to attribute significant improvements in breeding success for wrybill and banded dotterel as a direct result of predator trapping effort. This highlights the dilemma between a need for adequate and robust experimental design on one hand and challenges in finding representative non-treatment controls and the large costs of replicating treatments on the other when undertaking catchment-scale predator management.

In the current season, 183 Fenn, 305 DOC250, 90 DOC150, 220 Twizel cat traps, and 571 Victor leg-hold traps are in place. Over the year, these traps caught a further 863 hedgehogs, 285 feral cats, 243 stoats, 60 ferrets, 43 possums, 12 weasels and 4 rats (Cleland et al. 2013).

Outcomes of 33 wrybill and 201 black-fronted tern nesting attempts were followed and documented, achieving similar results to previous seasons. Wrybills had a hatching success rate of 64%. The main cause of nest failures and egg loss was due to flooding of nesting sites. Very few failures were attributed to predation. Of the chicks that hatched, estimates of fledging success ranged widely from 11–66 % reflecting the difficulty that monitoring staff had following chicks through to fledging age this season. Black-fronted tern hatching success was again low at 18%, with highest causes of nest and egg failures being predation, followed by flooding and desertion. Nearly 75% of nest failures and 73% of egg failures were attributed to predation events. Tern fledging success was also low with only 20–24% of hatched chicks surviving to fledging age.

Monitoring breeding outcomes from a selection of nests during the season using motion triggered trail cameras indicated black backed gulls were the most frequent predator of black fronted tern eggs and chicks at the nest. The feasibility of undertaking a control operation for black backed gulls next year will be assessed.

Ohau River

Recognising the poor breeding outcomes being achieved for black-fronted terns in the Tasman River and other managed sites around the country, an alternative approach to predator management is being trialled by PRR in the upper Ohau River. This project is currently in its third year of operation.

Briefly, the upper Ohau predator control programme consists of a grid arrangement of predator kill traps in a 1 kilometre radius around the colony nesting site (Anderson and Woolmore 2014). A variety of trap and bait types were selected to target the range of predators present and provide choices of preferred baits. A total of 169 DOC150 and 165 DOC250 traps were placed at 100 metre spacings with a further 60 modified SS Twizel cat traps (double sets), 27 Timms and 27 Belisle Super-X traps placed at 200 metre spacings. During the twelve month period from 1 March 2012 to 28 February 2013, a total of 66 feral cats, 123 ferrets, 198 hedgehogs, 21 stoats, 33 Norway rats, 6 weasels and 10 possums were caught.

Rabbit numbers continue to be monitored with spotlight counts and controlled to low numbers using night shooting and patch poisoning within the 1 kilometre management area. Rabbits are a key prey item for high level predators, so by removing rabbits from the area close to nesting birds it is anticipated that predators will spend more time hunting in 'prey rich' areas away from the colony.

Toxins have been applied to control Norway rats and possums following their implication in egg predation in previous season's work. Diphacinone cereal pellets were laid in 158 bait stations targeting Norway rats and encapsulated potassium cyanide baits were laid in 71 bait stations to target possums from August through to February.

Norway rat and possum numbers continue to be monitored using WaxTags® placed systematically along the river margins. Norway rats are known to frequent wetland areas and may benefit from removal of higher order predators during the trapping programme. A low rate of rat and possum chews was again detected during monitoring periods this year.

Breeding outcomes for terns nesting at the island site have again been encouraging this season. Around 500 adults were present at the island colony during its peak and hatching success was high (87% of 351 monitored nests hatching chicks). Estimated fledging success for the colony was between 198 and 267 chicks (51–69%). Small colonies that established on either side of the river adjoining the island site were less successful. On the true right side only 1 out of 28 nests hatched a chick, which in turn failed to reach fledging age. On the true left side, 6 out of 12 nests hatched chicks, and of these 2 chicks may have fledged.

4.5 Objective 5: Facilitate research by external agencies to improve our understanding of the ecology of braided-river systems

PRR continues to support the completion of a PhD study on the Ahuriri River by Luke Javernick from the Canterbury University Civil and Natural Resources Engineering Department. The objective of this research is to investigate how flood-induced processes affect lupin mortality and determine the correlating flood events that drive these processes. Field work will be conducted to identify the processes involved in lupin mortality, as well as to acquire topographic data of a selected study reach. Laboratory experiments will investigate individual processes detrimental to lupins, such as drowning induced by prolonged inundation. The topographic data will be used in a numerical model of the study reach to simulate a range of flood events and forecast lupin mortality based on the field and laboratory results. Expected outcomes from this study are threefold. Firstly, it will aid in the restoration of the Ahuriri River by identifying riparian areas that can recover naturally from lupin invasion through flood events. Secondly, it can be used to develop a risk analysis to inform managers and the public. Thirdly, it will contribute quantitative information relating river hydraulics to vegetation mortality, a subject seriously overlooked for herbaceous plants like Russell lupin. This work is due for completion in December 2013.

4.6 Objective 6: Continue to increase public awareness of braided rivers and wetlands

PRR staff continue to deliver presentations to schools in support of the braided river education resource, a teacher/student resource addressing values, issues and management in braided river ecosystems. The new colour information booklet and CD of teacher assessment notes has been distributed to secondary schools throughout the South Island and continues to raise interest from teachers.

PRR continues to support the Waterwise Trust programme for selected students from South Island secondary schools to investigate water issues in the Waitaki catchment. PRR and other DOC staff at Twizel contributed to another successful programme this year and the Trust has confirmed that this will now become an annual event.

In addition to talks to secondary schools, PRR has provided similar support to University field trips and met with various stakeholders including the PRR Liaison Group, the Tekapo/Pukaki/Ohau Operational Agreement working group, Fish and Game, ECan, and various private landholders.

PRR's information resources continue to be updated and reprinted as necessary and distributed to schools, businesses and other community groups, with the braided river multi-species poster and braided river field guide still proving to be popular.

5 Project River Recovery's financial statements 1 July 2012 – 30 June 2013

Project River Recovery spent $528,600 in the 2012/2013 financial year ($499,348,264 in 2011/12). PRR's revenue and expenditure for the financial year is itemised in tables 2–4. The PRR Trust Account had a balance of $136,420 at the end of the 2012/2013 financial year. These funds are invested in an interest bearing call deposit account at Westpac Bank, Government Branch, Wellington.

Table 2. Project River Recovery statement of financial performance for year ending 30 June 2013

	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
	($000)	($000)	($000)	($000)	($000)	($000)	($000)	($000)	($000)	($000)
REVENUE										
Stakeholder transfers from revenue in advance	492	499	485	472	555	425	437	428	556	416
Other revenue	37	0	0	0	0	0	0	0	12	1
TOTAL REVENUE	529	499	485	472	555	425	437	428	568	417
EXPENDITURE										
Personnel costs										
Salaries	138	140	129	119	118	172	108	109	68	98
Wages	0	2	1	12	13	4	1	4	1	9
Other personnel	0	-3	-2	6	3	1	1	0	7	2
Total personnel costs	138	139	128	137	134	177	110	113	76	109
Administration costs										
Communications/EDP	0	0	0	0	1	1	0	2	1	0
Accommodation	27	27	26	26	25	25	25	25	25	25
Office costs	0	0	0	0	1	2	0	0	0	1
Total administration costs	27	27	26	26	27	28	25	27	26	26
Operating costs										
Professional fees	5	1	9	2	15	12	23	6	7	152
Travel	1	1	1	7	5	1	1	2	4	1
Vehicle expenses	40	41	42	38	37	17	12	14	13	11
Field operations	306	278	273	260	335	190	257	261	436	106
Information and publicity	2	1	4	6	5	1	2	3	2	7
Grants and miscellaneous	10	11	2	3	0	2	6	2	4	7
Total operating costs	363	333	331	316	397	223	301	288	466	284
TOTAL EXPENDITURE	529	499	485	479	558	428	437	428	568	419
NET SURPLUS (DEFICIT)	0	0	0	-7	-3	-3	0	0	0	-2

Table 3 Summary of core task expenditure over the 2012/13 financial year

TASK	EXPENDITURE 2012/13 ($)	EXPENDITURE 2012/13 (%)	EXPENDITURE 2011/12 ($)	EXPENDITURE 2011/12 (%)
001 Project management	190,544	36.0	167,131	33.5
002 Weed control	202,953	38.4	210,395	42.1
004 Research and monitoring	66,870	12.7	78,087	15.6
003 Wetland enhancement	0	0.0	0	0.0
006 Advocacy	1231	0.2	357	0.1
007 Predator control	67002	12.7	43,378	8.7
TOTAL	528,600	100.0	499,348	100.0

Table 4 Statement of financial position as at 30 June 2013

	MERIDIAN	GENESIS	TOTAL
	$	$	$
OPENING BALANCE 1 JULY 2012	11,425.79	5,998.93	17,424.72
Funds transferred to Westpac Trust account during 2012/13	560,841.40	66,286.72	627,128.12
Subtotal	572,267.19	72,285.65	644,552.84
Less transfers (withdrawals) from Trust Account to Operating during 2012/13	444,185.36	65,493.64	509,679.00
Plus interest on Trust Account applied 31st March 2013	1,365.42	180.66	1,546.08
CLOSING BALANCE IN WESTPAC TRUST ACCOUNT 30 JUNE 2013	129,447.25	6,972.67	136,419.92
POST BALANCE DATE TRANSACTION RELATED TO 2013 YEAR			
Amount in advance in Department Balance Sheet transferred to Trust Account after balance date	0.00	0.00	0.00
FUNDS AVAILABLE AS AT 30 JUNE 2013	129,447.25	6,972.67	136,419.92

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Appendix 1

Project River Recovery weed control programme summary 2012/13

Location:	Tasman River
Start date:	27-Nov-12
Finish date:	29-Jan-13
Target species:	Russell lupin. Also: broom; crack willow; vipers bugloss; woolley mullein; sweet briar; wilding trees
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye
Area treated:	4460 ha scattered plants; total area 4460 ha
Results:	Post-control inspection – excellent control achieved
Other:	1294 person hours; 58.74 litres Glyphosate concentrate applied; annual monitoring not completed

Location:	Lower Ohau River
Start date:	1-Oct-12
Finish date:	25-Nov-12
Target species:	Broom. Also Russell lupin; buddleia; yellow tree lupin; sweet briar; willow; wilding trees
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye
Area treated:	678 ha scattered plants; total area 678 ha
Results:	Post-control inspection – excellent control achieved
Other:	1787.5 person hours; 184.25 litres Glyphosate concentrate applied.

Location:	Ahuriri River – Ben Avon to Birchwood
Start date:	2 Feb 2013 and 7 March 2013
Finish date:	2 Feb 2013 and 7 March 2013
Target species:	Willow
Control method:	Aerial half boom and handheld wand: Glyphosate 510 Agpro green 700 ml per 100 L water (gun). Handheld low pressure backpack: X-Tree basal (premixed product)
Area treated:	930 ha; total area 935 ha
Results:	To be assessed in 2014
Other:	8.9 hrs flying time; 12 litres Glyphosate concentrate applied; 140 litres X-Tree basal applied

Location:	Ahuriri – SH8 to Longslip Creek
Start date:	20-Feb-13
Finish date:	20-Feb-13
Target species:	Willow
Control method:	Aerial boom, half boom, handheld wand. Glyphosate 510 Agpro green 6.3 L per ha boom, 700 L per 100 L gun
Area treated:	225 ha; total area 925 ha
Results:	To be assessed in 2014
Other:	6.5 hrs flying time; 35 litres Glyphosate concentrate applied

Location:	Mistake Creek, Godley true right
Start date:	20-Nov-12
Finish date:	21-Nov-12
Target species:	Lupins
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye. Grazon 90 ml per 15 L + Herbisafe 90 ml per 15 L + Agpro blue marker dye
Area treated:	Recorded GPS spot locations
Results:	Visual inspection, excellent results
Other:	26 person hours; 0.39 litres Glyphosate concentrate and 0.6 litres Grazon concentrate applied

Location:	Cass River
Start date:	12 Dec 2012 and 18 Feb 2013
Finish date:	12 Dec 2012 and 18 Feb 2013
Target species:	Willow; broom; lupins
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye. Handheld basal bark application. X-tree basal ready to use
Area treated:	Recorded GPS spot locations
Results:	Visual inspection, excellent results
Other:	9 person hours; 0.22 litres Glyphosate; 2 litres X-tree basal

Location:	Godley True left
Start date:	13 Nov 2012 and 21/22 Jan 2013
Finish date:	13 Nov 2012 and 21/22 Jan 2013
Target species:	Broom; gorse; lupins
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye. Grazon 90 ml per 15 L + Herbisafe 90 ml per 15 L + Agpro blue marker dye
Area treated:	Recorded GPS spot locations
Results:	Visual inspection, excellent results
Other:	16 person hours; 0.22 litres Glyphosate concentrate and 0.4 litres Grazon concentrate applied

Location:	Ahuriri
Start date:	16, 19 and 27 November 2012; 10 December 2012; 7 February 2013
Finish date:	16, 19 and 27 November 2012; 10 December 2012; 7 February 2013
Target species:	Lupins; broom, gorse
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye. Grazon 90 ml per 15 L + Herbisafe 90 ml per 15 L + Agpro blue marker dye
Area treated:	Recorded GPS spot locations
Results:	Visual inspection, excellent results
Other:	21 person hours; 0.23 litres Glyphosate concentrate and 0.24 litres Grazon concentrate applied

Location:	Ohau tern island
Start date:	10, 12 September 2012; 28 November 2012; 11, 14, 15 February 2013
Finish date:	10, 12 September 2012; 28 November 2012; 11, 14, 15 February 2013
Target species:	Willow; broom; sweet briar; vipers bugloss; woolley mullein; tall exotic herbaceous vegetation
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye. Grazon 90 ml per 15 L + Herbisafe 90 ml per 15 L + Agpro blue marker dye. Handheld basal bark application, X-tree basal ready to use
Area treated:	1.2 ha; total area 1.2 ha
Results:	Visual inspection, excellent results
Other:	30 person hours; 2.7 litres Glyphosate concentrate and 3 litres X-tree basal applied

Location:	Jollie River
Start date:	19-Dec-12
Finish date:	19-Dec-12
Target species:	Broom
Control method:	Handheld basal bark application, X-tree basal ready to use
Area treated:	Recorded GPS spot locations
Results:	Not inspected
Other:	7 person hours; 8 litres X-tree basal applied

Location:	Waterwheel wetland
Start date:	8, 13, 16, 18 January 2013
Finish date:	8, 13, 16, 18 January 2013
Target species:	Broom
Control method:	Handheld – knapsack spot spray. Grazon 90 ml per 15 L + Herbisafe 90 ml per 15 L + Agpro blue marker dye. Handheld basal bark application, X-tree basal ready to use
Area treated:	Scattered plants
Results:	Visual inspection, excellent results
Other:	31 person hours; 2.02 litres Grazon concentrate; 4 litres X-tree basal applied

Location:	Ruataniwha wetland
Start date:	15, 29 November 2012; 7 January 2013
Finish date:	15, 29 November 2012; 7 January 2013
Target species:	Broom; sweet briar
Control method:	Handheld – knapsack spot spray. Grazon 90 ml per 15 L + Herbisafe 90 ml per 15 L + Agpro blue marker dye. Handheld basal bark application, X-tree basal ready to use.
Area treated:	Scattered plants
Results:	Visual inspection, excellent results
Other:	7 person hours; 0.03 litres Grazon concentrate; 5 litres X-tree basal applied.

Location	Upper Waitaki
Start date:	1, 7 November 2012
Finish date:	1, 7 November 2012
Target species:	Buddleia
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye
Area treated:	Recorded GPS spot locations
Results:	Visual inspection, excellent results
Other:	11 person hours; 0.07 litres Glyphosate concentrate. All plants encountered recorded by size class and GPS location.

Location:	Upper Waitaki
Start date:	14-Sep-12
Finish date:	6-Dec-12
Target species:	Yellow tree lupin
Control method:	Handheld – knapsack spot spray. Glyphosate 510 Agpro green 110 ml per 15 L + Herbisafe 110 ml per 15 L + Agpro blue marker dye. Grazon 90 ml per 15 L + Herbisafe 90 ml per 15 L + Agpro blue marker dye
Area treated:	Recorded GPS spot locations
Results:	Visual inspection, excellent results
Other:	78 person hours; 0.45 litres Glyphosate concentrate and 0.26 litres Grazon concentrate applied. All plants encountered recorded by size class and GPS location.