

WAIMAORI STREAM-CARE PROGRAMME

RESERVOIR CREEK - URBAN TAONGA
JULY 2007-JULY 2008

FINAL REPORT



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APPENDIX 1 – Labelled Map of Monitoring Sites on Reservoir Creek

The following report documents the results and observations of educational monitoring workshops carried out in conjunction with the Ministry for the Environment SMF project “Reservoir Creek: Enhancement of an Urban Taonga” 2242, Tasman District Council, Project Partners and members of the Richmond community.

1: BACKGROUND

The Waimaori Streamcare Programme:

- Is a monitoring, education and action programme.
- encouraging schools and communities to become kaitiaki (guardians) of their local streams.
- recognises the critical importance of educating young New Zealanders in the care of their natural and historic heritage.
- offers a link from education to restoration - with education as the starting point for ongoing action.

1.1: Waimaori – Freshwater in it’s Natural State

In the traditional maori view, all things in the natural world posses mauri (the physical life force) which is protected by a Kaitiaki (spiritual guardian) or Atua.

Tangata (people) possess mauri-ora, of a higher order than mauri, but conferring on us a certain responsibility towards other living things. Tikanga (traditional custom),

is integral to Waimaori education. Students are encouraged take action as physical guardians of Nga Tuku Iho, the treasured resources.

Traditional values of wai are relative to all life on the planet. Matauranga maori has the personification of earth as mother (papatuaknuku), illustrating that waterways are the lifeblood of the land and all it's resources. As kaitiaki we aim to protect the mauri of our environment, knowing it is what sustains us.

1.2: Waimaori & Reservoir Creek – an Urban Taonga

Monitoring education on Reservoir Creek has been a focus of the Waimaori project since 2004 and has been incorporated into the SMF project, fostered by teachers at Henley, Salisbury, Garin, St Pauls and Waimea Intermediate schools in Richmond. Due to time constraints and clashes of schedule we were unable to successfully carry out all the monitoring we'd envisaged during the final school term of 2007 and second term of 2008.

A final monitoring session conducted upstream of the Reservoir, allowed the Henley School students – Kaitiaki of Reservoir Creek at Welsh Place, to compare that stream environment, (urban/residential), with the indigenous native forest environment in the upper catchment.

We had planned to monitor both above and below the Reservoir, as two classes were involved, but cattle and related impacts on the creek below the Reservoir meant it was not fit for sampling. Prior to cattle intrusion the site had been ideal with good access for the children and abundance of macro-invertebrates.

However, the creek above the reservoir has all the diversity, natural value and good water quality that an ideal stream environment should offer. Here is a forest remnant that has significant values due to its high level of representativeness, diversity and the presence of important species such as tawa that are at the southern extreme end of their range. When following the track upstream, native trees centuries old can be appreciated.

All of these factors plus the abundance of plants integral to Maori rongoa practice provide a clear demonstration of the taonga value of this place, rich with historic example.

1.3: The importance of Riparian vegetation

The report "Forest Assessment Reservoir Creek" conducted by Te Ngahere - supports the Waimaori educational advice, stating that in order to actively enhance and protect stream life, riparian vegetation and shading has to be provided.

Local residents at the Welsh Place monitoring site thought the overgrown grass and weeds to be unsightly, obstructive and a cause of allergies. The report pointed out that having trees at the stream edge, (shade canopy), would potentially prevent weeds flourishing.

The public forums have been immensely valuable, enabling greater ecological awareness to residents and stakeholders, while identifying the level of support and

action taken by individuals who care for their environment. Also this has highlighted council's obligation to acknowledge the needs and desires of the community.

2: RESULTS

2.1: REFERENCE OF MONITORING SITES*

RES1		RES5	Welsh Place
RES1a	Above Reservoir	RES6	Templemore Pond
RES2	Below Reservoir	RES7	Salisbury Road
RES3	Keith's track, seat	RES8	Aquatic Centre
RES4	Easby Park	RES9	Estuary

*See appendix for labelled map of sites.

ABOVE & BELOW RESERVOIR - RES1a & RES2

DATE	AIR TEMP	WATER TEMP	CLARITY	FLOW
13 December	19	14.2	100%	Average

While assessing the creek in September 07 with colleagues, the upper reaches were found in good condition, though it was noted that there were a high number of flatworms present on rocks sampled around and below the reservoir.

On that occasion (in September – CHI monitoring), we discovered that some earthworks and engineering works had been carried out directly below the Reservoir, but the macro-invertebrates, indicated good water quality. Flow, clarity and temperature were also above average.

The overall quality of this site has gradually declined since, due to a number of impacts, these include:

- ❖ A wide track made by contractors to get machinery to the creek while assessing dam leakage.
- ❖ The track became access way for cattle (belonging to landowner), allowing cattle to reside in the creek.

Although no stream workshops have been carried out with students at this site during 2008, cultural health indicator (CHI) assessments have provided regular observations of these sites.

RES3 KEITH'S TRACK

DATE	AIR TEMP	WATER TEMP	CLARITY	FLOW
17 September	18.4	11.7	60%	Average
21 January	25	18	30%	Low

On arrival at this newly established site, Waimea students were quickly identified a threat to the streams health, a fresh cow dump right at the creek edge. Thick vegetation around this narrow part of the creek is desirable as a buffer but is not a successful barrier to stock. This is also a CHI monitored site, with natural value but some weed invasion. Mayflies, dobsonflies, and all types of caddis larvae were recorded at this survey

In January a group of children attending out of school care during summer holidays embarked on a hikoi up Reservoir Creek to monitor this site. There are 3 types of macro-invertebrates that indicate good water quality – mayfly, stone fly and uncased caddis larvae, all of these were present here on this occasion.

On the journey up to this site through Easby Park, TDC contract workers were weeding next to the stream, when asked if they'd been advised to clear any of the weed in the creek, they said no, and continued pushing weeds at the stream edge into the creek.

While we've acknowledged this weed is helpful in providing shade and cover, without maintenance it blocks flow, and inhibits oxygen levels in water.

In April 2008 Waimea Intermediate students, adopted this site. Prior to our stream visit we had an in-class session to introduce Waimaori, and the RC project. This included display of macro-invertebrate life as indicators, aerial map of the creek and a showing of the NZ film "Longfin."

The stream survey revealed a great number and diversity of aquatic insects, three examples of caddis larvae, mayflies and stoneflies. Traps were pre-set the night before but no fish caught.

RES4 EASBY PARK

DATE	AIR TEMP	WATER TEMP	CLARITY	FLOW
28 August 2007	19.2	10.3	93%	Low
30 November 2007	16	13.3	55%	low
28 March 2008	20.3	16	40%	low
22 May 2008	20.5	10.4	60%	low

This site is located within Easby Park, accessed from Marlborough Crescent. At first glance of the creek directly beneath, and to either side of the footbridge, weed growth in the creek looked as if it may be a problem.

But results of sampling revealed masses of mayflies in the growth, these being found in abundance at all sessions. This site has often been found to be above average.

Though shade trees have been removed here, in-stream growth of water vegetation compensated with natural shaded habitat. Also found at this survey, stoneflies and uncased caddis. Salisbury girls helped to clear a passage through the growth at each visit.

Salisbury students have adopted this site, having monitored the Salisbury Road site in the past. Each year the group is renewed, and 2008 has seen a greater numbers

of girls involved, with volunteers undertaking riparian planting at Easby Park in June.

Koura were found at this site during August and November 07, and May 08 with Henley School students. Also while demonstrating stream monitoring at the community harakeke clean -up day, held during April to engage with public and raise awareness.

RES5 WELSH PLACE

DATE	AIR TEMP	WATER TEMP	CLARITY	FLOW
6 September 07	13.1	12.5	100%	Too low to record
10 September 07	20	14.3	40%	Too low to record
13 September 07	15.7	13	100%	Too low to record
4 December (am) 07	17	15.6	75%	Too low to record
4 December (pm) 07	26	16.4	100%	Too low to record
10 April 08	20.1	16.8	40%	Too low to record

This site has many enthusiastic Kaitiaki from Henley Primary, so was monitored on three occasions in September. Henley School is located a short distance from this site, along the Alexander walkway. The muddy substrate, and related sediment here, provides good habitat for short-fin eels, present on each occasion.

Routine maintenance carried out by TDC contractors involved mowing right to the stream edge, this causes blockage of the waterway. Recommendations were made to TDC staff responsible for park maintenance, so that contractors could adopt better methods, i.e. allow riparian vegetation to remain where it is improving habitat and helping to lower temperature levels for stream life.

It appears contractors maintaining the riparian edge at Welsh Place have improved in their methods, which has resulted in better clarity and presence of inanga there. High water temperatures are an issue here, but results show temperatures to be lower than previous summers usually peaking in February.

However, on April 8th 2008 TDC engineering contractors were instructed to clear riparian vegetation at creeks around the TDC district, including Reservoir Creek at Welsh Place. The restoration efforts that had been carried out there were destroyed as a result of this engineering maintenance.

A high percentage of arbour day riparian planting carried out by students in 2007 was cut out, along with all grass to the extreme edge of the creek. This went against our recommendation that grass should be shortened but not completely removed. While grass provides shade to maintain cooler water temperatures it also provides cover, a requirement for good inanga habitat.

A further detrimental consequence of this destruction was that monitoring sessions scheduled to take place that week had to be re-located. This was due to the huge amount of grass in the creek for quite a distance along the Alexander Walkway.

RES5a HILL/SUTTON ST INTERSECT

DATE	AIR TEMP	WATER TEMP	CLARITY	FLOW
8 April	18.2	14.7	75%	Low - average

Stream monitoring has continued in 2008 with strong enthusiasm from teachers and pupils of Henley school. Welsh Place has been the ideal monitoring location for them due to close proximity, but offers little diversity as it is a channelled part of the creek with low banks and little shade. It is also the first area to get inundated with hard surface run-off and exposure to the sun.

The station above Hill Street is located on private land. Fish traps were set here and it was found to be significant fish habitat, with banded kokopu caught.

The creek has flowed through pipes from Easby Park to this site and the macro-invertebrate search revealed very little, mostly snails and worms. Temperature level and clarity recorded at this survey were fair to good, so maybe lack of biodiversity was due to low oxygen and flow rate.

A parent volunteer at this session mentioned seeing maintenance work going on downstream. On completion of the survey we investigated and were horrified to discover the damage and loss.

Flow rates here, though fairly low, were greater than expected as there had been little significant rainfall prior to our survey. Being aware of council engineers plan to draw down water in the Reservoir, we were inclined to assume this was very likely the reason for the increased flow rate.

The draw down had in fact been in progress since two weeks prior but we were not notified, despite assurances from TDC staff that we'd be informed of the scheduling. This information is highly relevant to our data gathering, a point made clear during prior communications with (TDC) engineering planners.

RES7 SALISBURY RD

DATE	AIR TEMP	WATER TEMP	CLARITY	FLOW
10 April 08	15.9	13.3	75%	low

As a result of the incident at Welsh Place, monitoring there was not an option. The Salisbury road site (downstream of Welsh Place) was chosen due to short notice, but was not ideal as access to the creek at this site is very limited, the creek being very deep in parts.

It was fortunate that many parent volunteers attended, so a full survey was carried out with their assistance. Freshwater shrimp and damselflies were present, but no sensitive macro-invertebrates.

Students commented on a foamy trail observed while walking downstream, an issue that has often been noted in the creek. Local residents say it's been a common occurrence for quite some time and may be entering the creek from a private drain.

3: CONCLUSIONS

Working with the kaitiaki of Reservoir creek has been enjoyable and it's sad to farewell the Salisbury girls and other students at the end of each year. It has been especially gratifying to assist with co-ordinating the monitoring groups who volunteered with restoration planting alongside Reservoir creek in 2008.

Garin students involved in planting at the Aquatic Centre – (RES8), had been monitoring at this site in the past, while attending St Pauls School, involved with Waimaori. This sort of progression is a satisfying result, linking individuals and groups to their environment, kaitiakitanga in action.

Though the enhancement project has reached final stages, the public forums, if continued would ensure on-going awareness and co-ordination of care of Reservoir Creek. Waimaori will continue to encourage monitoring and protective action on Reservoir Creek beyond the projects' completion, and endeavour to maintain the relationships that have been fostered through these initiatives.

3.1: Barriers to success

During the course of the project, there have been both successes and challenges. It is important that all project partners continue working towards compromises that foster the natural habitat, promote diversity, and fish passage.

Many additional students were introduced to stream-care with this project in 2008, but opportunities to conduct planned monitoring sessions were lost, due to major silting of the creek that occurred in May.

3.2: Poor water quality follows earthworks in upper catchment

As preparation for pine harvest in the upper catchment, contractors undertook earthworks to provide road access for logging. Sufficient forethought of possible impacts this may cause to the creek were not given due consideration. A major rain event did occur soon after the earthworks were carried out, and did result in major silting and discolouration of the creek for weeks afterward.

These events coincided with the siphoning out of water from the actual reservoir, consequently silty water being collected there, was pumped downstream. These incidents are difficult to remedy after the fact, and highlight the duty of TDC (as set out in the Resource Management Act) for them to closely monitor the way in which contractors carry out work on their behalf.

Though this incident is localised, it's a problem that is occurring more often throughout New Zealand. With increases of land being sub-divided, pine harvests, effluent run-off from dairy farming and application of spray, fertilizers and herbicides, managing water quality in our lakes and waterways is a challenge for all people in every industry need to address.

3.3: Riparian Management

A structured riparian management plan, clarifying roles and responsibilities of all relevant authorities could lead to workable solutions, communication needs to be fostered amongst council staff, between departments and with the community.

To reduce further impacts on the creek, an alternative water source for cattle to exclude them from the creek would be desirable. Under section 17 of the Resource Management Act “there is a general duty of every person to avoid, remedy or mitigate adverse effects on the environment”.

As Reservoir Creek is the taonga of all the people who reside in Richmond, and holds recreational value for all, there should be measures taken to prevent cattle from entering the creek. This has been discussed among project partners who agree that it would be in the public’s best interest to further protect/enhance this creek by way of council subsidies, made available for this purpose.

SMF funding has resulted in positive action, awareness and advocacy, bringing community together, working towards enhanced habitat and riparian buffer zones. Recommendations have been made in the hope that the planned pine harvest complies with resource management regulations, and that every possible effort be made to reduce adverse impacts on the creek’s mauri and bio-diversity.

4: Tabled monitoring on Reservoir Creek for 2007 & 2008

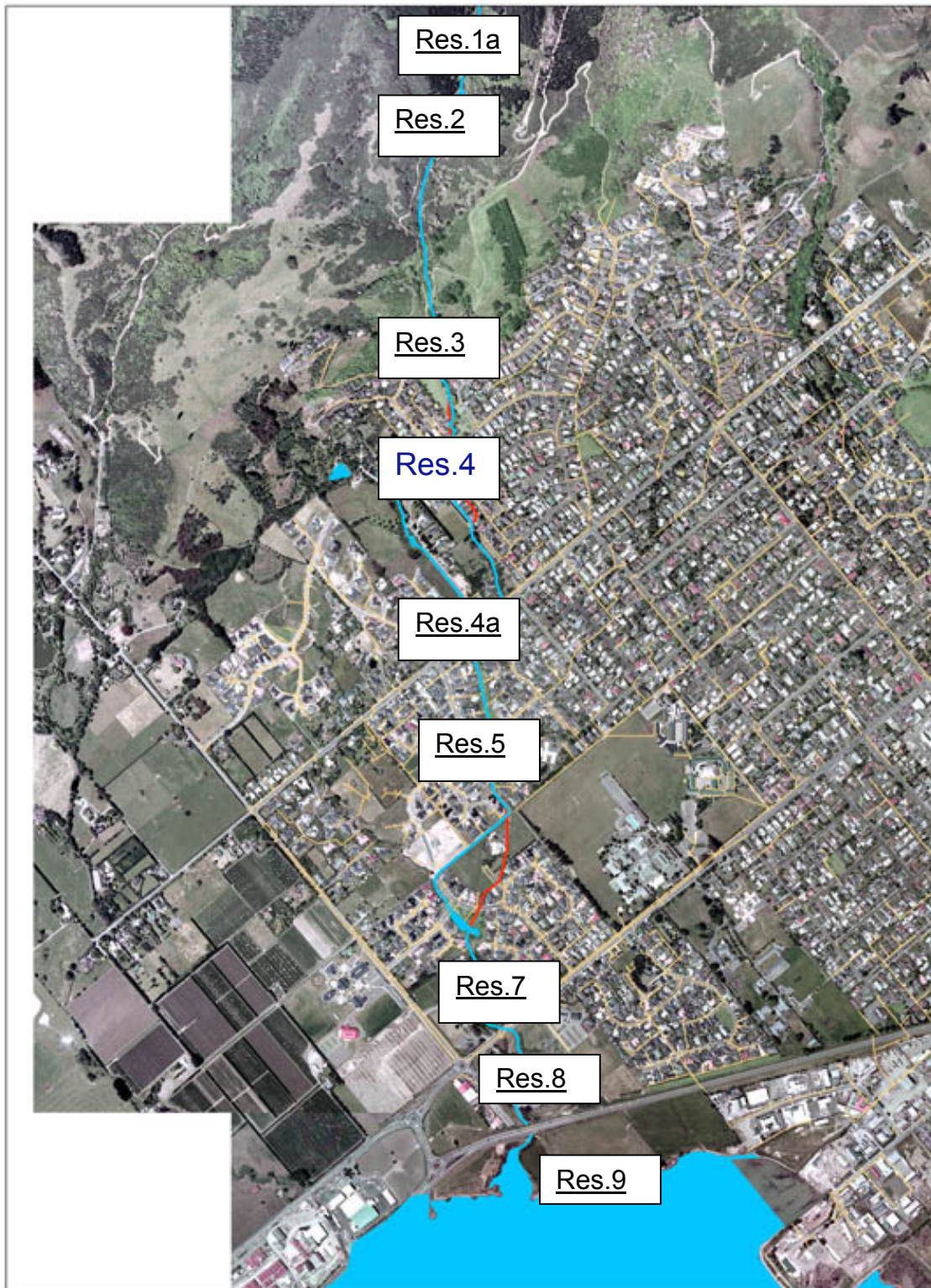
2007

School/Teachers	Site Reference	Stream surveyed	No. students
GARIN COLLEGE Sam Demello	RES2 Reservoir Below	Dec 06 Planned session cancelled (Nov/Dec)	30
WAIMEA INTERMEDIATE Claire McCarthy	RES3 Dellside	Sep 07 & Nov 07	27
SALISBURY GIRLS Carolyn Shirtliffe	RES4 Easby Park	Aug 07 & Nov 07	8
HENLEY SCHOOL Ali Alder Cath Stevenson Sue Strawbridge	RES5 Welsh Place RES1a	Sep 07 & Dec 07 Sep 07 & Dec 07 Sep 07	27 31 28

2008

School/Teachers	Site Reference	Stream surveyed	No. students
CLM	RES3 Dellside	Jan 08	11
WAIMEA INTERMEDIATE Marina Bennett	RES3 Dellside	April 08	32
SALISBURY GIRLS Carolyn Shirtliffe	RES4 Easby Park	March 08	10
HENLEY SCHOOL Ali Alder	RES5 Welsh Place	April 08	27
Cath Stevenson	RES5a Hill/Sutton St	April 08	26
Sue Strawbridge	RES7 Salisbury Rd	April 08	31
Finn Deeley	RES4 Easby Park	May 08	23
Bonnie Curd	Postponed due to silting		30

APPENDIX 1 Labelled Map of Monitoring Sites on Reservoir Creek



MAP REFERENCE OF MONITORING SITES			
RES1		RES 4a	Hill/ Sutton Street intersect
RES1a	Above Reservoir	RES5	Welsh Place
RES2	Below Reservoir	RES6	Templemore Pond
RES3	Keith's track, seat	RES7	Salisbury Road
RES4	Easby Park	RES8	Aquatic Centre
		RES9	Estuary