Reservoir Creek Restoration Report

Issues, Options and Recommendations

June 2007

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Cover: Photograph of Reservoir Creek as its journey reaches conclusion at the Waimea Estuary (moana) and Tasman District Council kowhaiwhai.

TABLE OF CONTENTS

Page No.

Acknowledgements

1 Executive Summary 1
1.1 Purpose 1
1.2 Key Future Objectives 1

2 Background 3

3 Future Management Objectives and Outputs 5
3.1 History 5
3.2 Cultural Health Index (CHI) 6
3.3 Waimaori Streamcare 7
3.4 Water Quality 7
3.5 Freshwater Fisheries 8
3.6 Plants and Revegetation 10
3.7 Signage 12

4 Conclusion 13

5 Appendices 13

1 EXECUTIVE SUMMARY

1.1 Purpose

The purpose of this report is to provide an overview of the Tasman District Council and Ministry for the Environment-funded Restoration Project of Reservoir Creek in Richmond. The project focuses on improving water quality, maintaining flood flow capacity, enhancing the public's and residents' relationship with this urban stream. The stated objective was to integrate the management and enhancement of Reservoir Creek for ecological, amenity and water quality purposes.

1.2 Key Future Objectives and Outputs

- An opportunity is available for further exploration of both the physical and the verbal history of the area. This would be of value to the community.

- Tangata whenua ki Whakatu to finalise report highlighting traditional associations, mahinga kai and overall stream health for Reservoir Creek. Further Cultural Health Index (CHI) assessments will be initiated above Hill Street with the next Sustainable Management Fund (SMF)-supported project from 1 July 2007.

- The proximity to all of the schools makes this an ideal resource for education about managing waterways for water quality and instream habitat. Waimaori streamside monitoring, supported by the Council, will continue from 1 July 2007 above Hill Street, as part of SMF grant 2242 – Reservoir Creek: Enhancement of an Urban Taonga. Local schools and community groups will be given the opportunity to "adopt" areas under the supervision of Council Parks & Reserves staff

- Consider efficient and effective use of the rock armouring and improvements to the bed/channel morphology, with the view to creating increased habitat variety. Meanders and run-riffle pool sequences should be developed where possible. As well as improving habitat diversity and creating shelter, bank shading and run-riffle turbulence benefits aquatic fauna by cooling and oxygenating the creek during the summer months.

- Continuing the Parks & Reserves Department's streamside planting programme. Maintaining the involvement of the schools and community groups in the future plantings is to be encouraged. Further plantings will occur in Zones 7-8 as part of SMF grant 2242 – Reservoir Creek: Enhancement of an Urban Taonga.

- Careful streamside management by both private and public landowners from October to April each year should continue to be encouraged, allowing the vegetation to provide shade in order to lower the water temperature, provide habitat for insects (food supply for fish and birds) and act as cover for aquatic fauna such as the threatened longfin eel.

- Ideally, in time, all the exotic grasses should be replaced with more desirable species such as *Carex spp* where possible, as these provide greater stream shading and cause minimal clogging of the channel whilst not posing a flood flow threat.

- Ongoing education of local residents as to the importance of creating shade for a significant portion of the stream is important, as many residents desire a "mown lawn to the edge" stream to maximise their view. While this may be acceptable in some limited locations, it is generally undesirable, as the summer heating of the stream has a strong adverse effect on stream fauna.

- Ongoing education of local residents about the fate of stormwater flows from their properties. Residents need to be aware that there is no treatment of stormwater and that any contaminants put into the stormwater system will directly enter Reservoir Creek.

- Continue freshwater fisheries monitoring from 1 July 2007 above Hill Street as part of SMF grant 2242 – Reservoir Creek. Continue limited monitoring downstream of Hill Street to provide ongoing results, allowing an assessment of the effectiveness of stream enhancement in the upper catchment.

- Several fish passage issues will also be investigated by the project partners over the following year, including the 450 metre piped sections from Hill Street to Easby Park, the overhanging stand-pipe culvert at Easby Park, and the dam associated with the Reservoir.

- Where practicable, the reservoir and the upper catchment will be managed to provide detention structures (developed into wetlands or open ponds) to moderate flow fluctuations.

- Opportunities for extending walking tracks along the length of Reservoir Creek will be explored and, where practicable, walking tracks will be constructed.

- Landscaping to enhance the four strategically placed interpretative signs will maximise public interest. The presence of the signs will ensure community awareness and may encourage future participation in waterway management.

2 BACKGROUND

Reservoir Creek is very visible and accessible to the Richmond community, being an urban waterway within the confines of the Richmond Township. As with all urban streams, the management of flood flow water for the protection of life and property is of major importance. As the surrounding land has changed from pasture to housing, the changing nature of the catchment has generated considerable interest in the creek. In particular, the within-stream habitat has been seen to be degraded by sedimentation, lack of adequate riparian shade, pollution from stormwater drains, channelisation and introduced aquatic vegetation. Positive improvements are also occurring and opportunities exist to improve this situation further, while also raising awareness of the importance of streams generally.

Tasman District Council Parks & Reserves Department has for many years improved access, plantings and habitat along Reservoir Creek. The Engineering Services Department has endeavoured to work with the Reserves Department's requirements while maintaining the flood flow capacity. Keep Richmond Beautiful has voluntarily adopted several areas of the stream's margins. In 2004, Tasman District Council (TDC) in partnership with Department of Conservation (DoC), Waimaori Streamcare, Forest & Bird, Salisbury Girls' School and local community advocates, drafted a proposed Reservoir Creek management plan (pRCMP). The stated objective was to integrate the management and enhancement of Reservoir Creek for ecological, amenity and water quality purposes. Some of the provisions of the pRCMP that have been initiated included:

- TDC – monitoring two sites for water quality, community planting day bulletins and provision of native plants and supervision, creation of reserves from subdivision and extension of walkways;
- TDC/DoC – fish pass design and installation;
- TDC/Waimaori – removal of concrete ford fish pass barrier;
- Waimaori Streamcare, Salisbury School – monitoring water quality, macroinvertebrates and Environmental Impact Assessment for concrete weir removal; and
- Community stream care groups, Keep Richmond Beautiful, Waimaori, Salisbury School, local residents-participation on community planting days.

The above actions facilitated increased community interest and participation in the future management of the creek.

In November 2005, DoC advised various members of the pRCMP working party of potential funding from the Minister of Environment as a means to advance the objectives of the plan.

Following application to the Ministry for the Environment, through the Minister's Sustainable Management Fund, funding was secured to support a community project sponsored by TDC called *Reservoir Creek: Restoration of an Urban Stream* during the 1 July 2006 to 30 June 2007 financial year. The project overview states:

Reservoir Creek is a small modified urban taonga that joins the maunga (Richmond Hills) to the moana (Waimea Estuary). The waterway has indigenous aquatic fauna and aesthetic values (TDC 2001). By collectively promoting sustainable management the project aims to strengthen partnerships between future kaitiaki, including community groups, schools, tangata whenua and local government. The project will maintain and enhance natural habitats, water quality and public access, while recognising that maintenance of the ability to transport floodwaters is essential.

The purpose of this project was to identify a focus for the future to:

- increase the participation of schools, resource managers, tangata whenua, environmental and community groups in kaitiakitanga of Reservoir Creek;
- increase awareness of the biodiversity and cultural health values of Reservoir Creek;
- improve the water quality and the life-supporting capacity of the stream; and
- enhance community well-being through enjoyment of a living healthy waterway.

This was achieved by:

- maintaining and enhancing aquatic and terrestrial ecosystems within and along riparian areas;
- enhancing and maintaining water quality;
- enhancing public access and recreational opportunities;
- enhancing and maintaining the natural character of the streambed and riparian areas;
- enhancing and maintaining the stability of the river banks and the ability to convey flood waters;
- an ongoing commitment by all stakeholders to communicate about all plans and work involving Reservoir Creek to maximise Council's ability to find compromises that meet everyone's responsibilities; and
- identifying, advocating protection and maintenance of any areas of cultural heritage within the riparian areas.

The project was actively supported by a wide range of community participants in partnership with TDC staff. Project partners included, but are not limited to:

- Waimaori Streamcare Programme;
- Tangata whenua ki Whakatu;
- Keep Richmond Beautiful;
- Department of Conservation;
- six local schools;
- various research institutions, private contractors and consultants;
- members of the Richmond community.

The project implementation plan was developed in six stages and managed by the TDC Environmental Education Officer and an appointed project co-ordinator. A "deliverables" report was completed at the end of each stage and forwarded to the Ministry for the Environment (MfE). Some of the outputs included:

- European History of Reservoir Creek (Appendix 1)
- Tangata Whenua History of Reservoir Creek (Appendix 2)
- Cultural Health Index (CHI) of Reservoir Creek (Appendix 3)
- Waimaori Streamcare Monitoring of Reservoir Creek (Appendix 4)
- Water Quality – Temperature Effects in Reservoir Creek (Appendix 5)
- Freshwater Fisheries Survey/Fish Pass Construction (Appendix 6)
- Revegetation Planting Plan/School Arbour Day Plantings/Removal of Noxious Plants (Appendix 7)
- Mobile Display Board (Appendix 8)
- Educational Display Panels at Four Locations (Appendix 9)

3 FUTURE MANAGEMENT OBJECTIVES AND OUTPUTS

The process going forward is the desire for a continued enhancement of Reservoir Creek. This is not a management plan, as the TDC already has overarching management plans and strategies that relate to Reservoir Creek. They include:

- Richmond Ward Reserves Management Plan (1999)
- Riparian Land Management Strategy (2001)
- Tasman-Nelson Regional Pest Management Strategy (2007)
- Long Term Council Community Plan
- Proposed Tasman Resource Management Plan
- Richmond urban stormwater management plans
- Tasman District Recreation Strategy (1996)
- Resource Management Act (1991) Esplanade reserves
- Reserves Act (1977) Local Purpose and Recreation Reserves

This document does not intend to pre-empt existing and publicly approved Council management policy nor has it the authority to do so. Rather, this report is to build on the considerable community interest and pride in Reservoir Creek that will continue after June 2007.

The purpose of this report is therefore to explain what has already happened and suggest achievable actions for the future. It is intended that the recommendations provided in this report be referred to by the community and Council departments as a summary of the outcomes and intentions of the 2006/2007 SMF project so that the achievements of the project can be built on into the future.

3.1 History

Both the tangata whenua and European history reports are attached as Appendices 1 and 2. The objective of these reports was to provide an initial look into the historic richness of Reservoir Creek and the opportunities it presents for understanding who we are, where we have been, and how we as a community might approach the future.

3.1.1 History – Outcome Achieved

- Increased awareness and community groups' participation in kaitiakitanga of Reservoir Creek.

3.1.2 History – Benefit

- Identification of areas of cultural heritage within the riparian areas of Reservoir Creek.
- Protection and maintenance of these areas.

Recommendations for the Future

- The reports are not a complete assessment of European or tangata whenua ki Whakatu historical background as it relates to the Reservoir Creek environment, therefore an opportunity exists to expand them. For example, three surviving members of Richmond's original European pioneers took time to assist with the history reports. This resulted in a snapshot of life along Reservoir Creek in the 1920s-1940s.

- An opportunity is available to get these individuals around the table and record their personal experiences, should that be desired. Additionally, there is little doubt of early ahi kaa roa (long-term residency) of Dellside Reserve. There are characteristics of this location that would have accommodated a permanent settlement in pre-European times. Further exploration of both the physical and the verbal history would be of value to the community.

3.2 Cultural Health Index (CHI)

The purpose of the CHI study was to develop a tool to facilitate the input and participation of tangata whenua into land and water management processes and decision-making on Reservoir Creek. The CHI for streams was developed by linking Western scientific methods and cultural knowledge about stream health. Environmental indicators or tohu are essential for measuring the health and well-being of water (wai). The health of a water body is also an indication of the health of nga atua kaitiaki (the spirit guardians) and of tangata whenua.

Reservoir Creek CHI site selections were discussed with project partners and iwi monitors, with the aim being to complement other monitoring locations along the creek. This included Waimaori Streamcare stations, electric fishing and TDC water quality monitoring sites. In addition, research on the history of Reservoir Creek identified several sites that had traditional associations with tangata whenua ki Whakatu.[1]

Six sites were selected from the maunga (Richmond Hills) to the moana (Waimea Estuary) to provide for a wide range of tangata whenua values, habitats, land uses and to benefit from other project monitoring sites for comparison purposes. The draft results of the CHI assessment for Reservoir Creek are provided in Appendix 2.

3.2.1 CHI – Outcome Achieved

- Increase tangata whenua participation in kaitiakitanga of Reservoir Creek.
- Increase awareness of the cultural health values of Reservoir Creek.

3.2.2 CHI - Benefit

- Identification of sites for promotion of future protection and enhancement within the riparian areas of Reservoir Creek.

Recommendations for the Future

- The draft report is now with tangata whenua ki Whakatu to finalise traditional associations, mahinga kai and overall stream health for Reservoir Creek. Further CHI assessments will be initiated above Hill Street with the next SMF-supported project from 1 July 2007.

3.2.3 Waimaori Streamcare

Through the Waimaori Streamcare programme, previously run as the Department of Conservation's Whitebait Connection, schools have been encouraged to adopt their local stream. The delivery of stream-side workshops has provided a vehicle for educating and raising awareness in the community.

While at the stream, participants are asked to identify the life within and around the waterway as an indicator of stream health. Iwi representation presents history and tikanga to emphasise the importance of kaitiakitanga, a sense of guardianship that encourages people to actively protect the freshwater areas in their locality.

Waimaori's involvement with Reservoir Creek began in 2005[2] while introducing Salisbury School's environmental group to monitoring and identification in their neighbouring stream. They took it up with such enthusiasm that their efforts have had positive and tangible results, with the removal of a concrete weir at Templemore Pond and the establishment of the school's own native tree nursery.

[1] Templemore Pond was identified as a waka building site but was not included in the river CHI assessment.
[2] Waimaori was a part of the original TDC RCMP 2004.

From 1 July 2006 to 30 June 2007 the following Richmond schools participated in the SMF restoration project:

Schools Involved	Site Allocated
St Paul's School/Garin College	Aquatic Centre
Henley Primary	Welsh Place
Waimea Intermediate/Garin College	Kareti Drive to Templemore Bridge
Salisbury Girls' School	Salisbury Road underpass/Easby Park
Waimea College	Reservoir and above

It is estimated that approximately 330 school-aged children and students collectively made 1,770 trips to Reservoir Creek. The results of these stream monitoring workshops are presented in Appendix 3.

3.3 Waimaori Streamcare – Outcome Achieved

- Increased school and community groups' participation in kaitiakitanga of Reservoir Creek.
- Increased awareness of the biodiversity values of Reservoir Creek.

3.3.1 Waimaori Streamcare – Benefit

- Identify water quality and aquatic fauna values and monitor success against the established baselines.

Recommendations for the Future

- Waimaori streamside monitoring supported by the TDC will continue from 1 July 2007 above Hill Street as part of SMF grant 2242 – Reservoir Creek: Enhancement of an Urban Taonga, with the view to continue "adopt a reach" with selected Richmond schools. This is an opportunity to promote the environmental well-being of Reservoir Creek for the present and into the future. The proximity to all of the schools makes this an ideal resource for education about managing waterways for water quality and instream habitat.

3.4 Water Quality

Sections of Reservoir Creek have been channelised with the design to accommodate and manage flood flows. Flood flow management is identified as the overriding management need of the waterway at present. However, a lack of riparian cover combined with sluggish flows, infestations of watercress and periphyton, and minimal instream habitat features, have impacted on the water quality and consequently the biodiversity opportunities within the waterway. Increased urbanisation in the catchment has allowed an increased impact from polluted stormwater.

The TDC's State of the Environment (SoE) monitoring programme (operating since 2000 in this waterway) aims to gather appropriate data to fulfil the Council responsibilities to monitor and protect water quality[3]. Reservoir Creek is a good example of a small urban waterway where water quality is heavily influenced by the surrounding land use. Nitrogen and Phosphorus levels exceed recommended guideline values regularly. Water clarity is poor and *E.coli* often exceeds the "action" limits for contact recreation. Water temperatures frequently exceed criteria for protecting ecosystem health (results are presented in Appendix 5). Additionally, the macroinvertebrate community index is low, with periphyton samples indicative of poor water quality.

[3] From "State of the Environment" Surface Water Quality in Tasman District.

3.4.1 Water Quality – Outcome Achieved

- Increased school and community group participation in the protection of Reservoir Creek from pollution.
- Increased commitment within Council to improve water quality in this catchment.
- Increased biodiversity in Reservoir Creek.

3.4.2 Water Quality – Benefit

- Continue to assess water quality values and monitor change against the established baselines.

Recommendations for the Future

- Consider efficient and effective use of the rock armouring and improvements to the bed/channel morphology with the view to creating increased habitat variety. Run-riffle-pool sequences should be developed where possible. This would have the added benefit of creating some turbulence, benefiting aquatic fauna by the cooling effect and enhanced levels of dissolved oxygen during the summer months.

- Continuing Parks & Reserves Department's streamside planting programme. Maintaining the involvement of the schools and community groups in the future plantings is to be encouraged and in the general prevention of pollution via the stormwater system.

- Careful streamside management by both private and public landowners from October to April each year should continue to be encouraged, allowing the vegetation to provide shade in order to lower the water temperature, provide habitat for insects (food supply for fish and birds) and act as cover for aquatic fauna such as the threatened longfin eel. Ideally, in time all the exotic grasses should be replaced with more desirable species such as *Carex spp* where possible, as these do not pose a flood flow threat.

- Ongoing education of local residents as to the importance of creating shade for a significant portion of the stream is seen as important, as many residents desire a "mown lawn to the edge" stream to maximise their view.

- Enhanced aesthetic, biodiversity and flood water management values.

3.5 Freshwater Fisheries

In March 2006 TDC carried out a survey to determine the diversity and abundance of fish in Reservoir Creek. A total of seven sample stations from above the Reservoir to below Salisbury Road were selected. Native fish were observed and/or captured at six stations. Inanga observations in the lower reaches, below Templemore Pond, were consistent with those of previous investigations. Removal of the concrete weir below Templemore Pond had resulted in the migration of a limited number of inanga upstream to Hill Street.

As part of the SMF restoration project the Reservoir was surveyed in September 2006, with support by project partners. Waimea High School students also participated in this event and carried out stream monitoring above the Reservoir as part of the Waimaori Streamcare programme. Longfin eels, koura and a large number of dragonfly/damselfly nymphs were captured.

In October 2006 instream fish passage issues were identified and several problems were corrected by the removal of willows at the Aquatic Centre and the diversion of the creek around a small waterfall above Salisbury Road. The construction of a new fish pass at the Templemore Pond outlet, with in-

kind assistance from two local engineers, was an immediate and outstanding success. Follow-up spotlight surveys indicated that hundreds of inanga and banded kokopu were migrating upstream through the new fish pass.

The SMF project fish survey in December 2006 was conducted by the project co-ordinator and DoC and examined six stations from Easby Park to the Richmond Aquatic Centre. These results are presented in Appendix 4. Notable from this investigation was the discovery of adult banded kokopu at Easby Park and thousands of inanga upstream from the new fish pass at the Templemore Pond outlet.

Throughout the Waimaori Streamcare programme school children have been recording freshwater fish observations at each of their respective monitoring sites. These sites were selected to complement the fish survey investigation stations. The fish observation data can be accessed in Appendix 3.

3.5.1 Freshwater Fish – Outcome Achieved

- School and resource managers' participation in kaitiakitanga of Reservoir Creek.
- Increased awareness of the biodiversity values of Reservoir Creek.
- Enhanced community well-being through the enjoyment of a living healthy river (eg, establishment of a whitebait run).
- Several blockages to fish passage have been removed or improved.

3.5.2 Freshwater Fish – Benefit

- Maintain and enhance aquatic fauna values in Reservoir Creek.
- Identify, protect and maintain fish passage in Reservoir Creek.
- Established baseline from which it is possible to monitor success.

Recommendations for the Future

- Freshwater fisheries monitoring will continue from 1 July 2007 above Hill Street as part of SMF grant 2242 – Reservoir Creek: Enhancement of an Urban Taonga. This will be achieved by the Waimaori Streamcare monitoring and spotlight surveys.

- Several fish passage issues will also be investigated by the project partners over the following year, including the 450 metre piped sections from Hill Street to Easby Park, the overhanging stand-pipe culvert at Easby Park, and the dam associated with the Reservoir.

- Future monitoring as part of the District fish passage survey will include Reservoir Creek as an example of a restored urban water.

3.6 Plants and Revegetation

Much of the land tenure along Reservoir Creek has reserve status (Reserves Act 1977) and is administered by the TDC via the Richmond Ward Reserves Management Plan (RWRMP). There are many general policies in the RWRMP that match the objectives of the SMF restoration project[4]. Some of these include:

- Monitor the natural values of reserves, especially indigenous flora, fauna, and ecosystems, to ensure that the natural values are adequately protected.
- Ensure that reserves are freely available for use by individuals and groups.
- Include native species, using locally sourced plant material, in reserves planting programmes.
- Eradicate or contain plant and animal pests (required by the Pest Management Strategy).
- Ensure that areas of indigenous vegetation and wildlife habitat on reserves are protected, especially those areas adjoining the sea, streams, lakes and rivers.
- Enhance, wherever possible, the habitat values as part of reserve maintenance and development.

Plants play an important role in stream ecology by interacting with stream biota and the surrounding land. Plants enhance aesthetic values, provide shade and shelter, which ameliorates the temperature and conditions; shed leaves to form a food supply for stream animals and micro-organisms, plant roots control erosion by binding soil and reducing the direct impact of the force of floods, thereby reducing downstream sedimentation.[5]

A major outcome of the SMF restoration project by the Parks & Reserves Department was the identification of riparian planting areas, the appropriate plant species to use in each area, and the increased "take action" stage to physically implement the planting with schools and community groups. Through project partner participation at public forum meetings with TDC Parks & Reserves staff, Reservoir Creek was divided into eight zones along its length. Each zone then had its vegetation features identified and plant species listed. Riparian planting areas were then identified in each zone and the plant species suitable for each were listed. This made up the basis for a report entitled *"Reservoir Creek: Restoration of an Urban Stream Revegetation Planting Plan"*. An overview of the zones is illustrated below. The plan in its entirety is attached as Appendix 7.

[4] The SMF project aim was to promote sustainable management by enhancement of natural habitats, improvement of water quality, and provision for public access.
[5] Reservoir Creek – Restoration of an Urban Stream Revegetation Planting Plan.

Reservoir Creek- Restoration of an Urban Stream

Riparian Planting Zones

Tasman District Council

Zone 1
1 Waimea Estuary to Salisbury Road

Zone 2
1 Salisbury Road to Templemore Pond

Zone 3
1. Templemore Pond to Walker Place walkway bridge

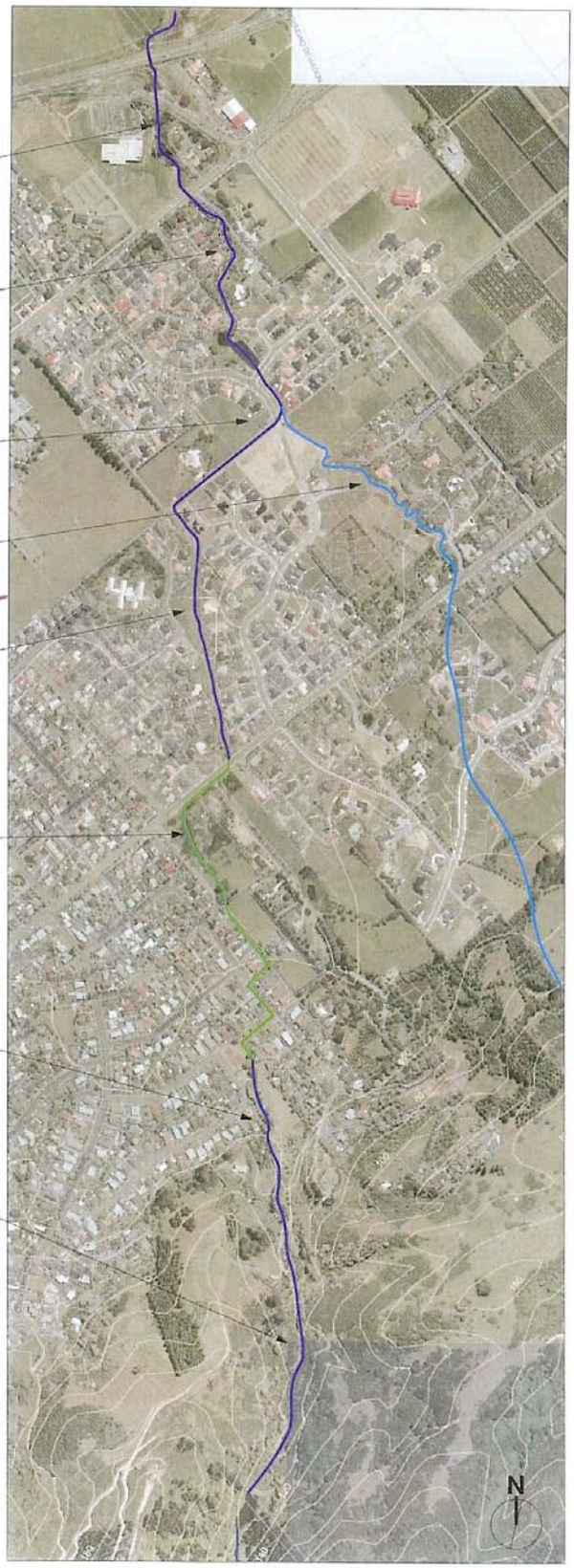
Zone 4
1 Stillwater Creek confluence to Hill Street culvert pipe

Zone 5
1 Walker Place walkway bridge to Hill Street culvert pipe

Zone 6
1 Hill Street culvert pipe to Easby Park culvert pipe

Zone 7
1 Easby Park culvert pipe to Dellside Reserve

Zone 8
1. Dellside Reserve to Reservoir creek dam



Scale 1:7000

Legend
Reservoir Creek
Stillwater Creek
Stormwater Pipe

In the year to June 2007 plantings were carried out in Zones 1 and 2 as part of "arbour day" recognition by three Richmond schools and the Keep Richmond Beautiful (KRB) community group. TDC Parks & Recreation Department staff liaised with participants, organised the preparation of planting sites, demonstrated planting techniques and assisted/supervised with the planting. Further plantings took place in Zones 4-5 in July 2007 with three Richmond schools and the KRB community group. Most of these initial early stage plantings consisted of *Carex sp* (see Appendix 7 for a complete list of plants for each respective zone).

3.6.1 Plants and Revegetation – Outcome Achieved

- Increase school, resource managers, and community group's participation in kaitiakitanga of Reservoir Creek.
- Increase awareness of the biodiversity and amenity values of Reservoir Creek.

3.6.2 Plants and Revegetation – Benefit

- Maintaining and enhancing aquatic and terrestrial ecosystems within and along riparian areas both from an amenity and biological viewpoint.
- Increased stream biodiversity through the provision of shade, food and temperature control.
- Enhance the stability of the river banks and the ability to carry flood waters.

Recommendations for the Future

- Further plantings will occur in Zones 7-8 as part of SMF grant 2242 – Reservoir Creek: Enhancement of an Urban Taonga.

- Local schools and community groups will be given the opportunity to "adopt" areas under the supervision of TDC Parks & Reserves staff. Waimaori Streamcare schools are keen to be involved in the planting programme where zones fall within the area of their respective monitoring stations. Salisbury School has made a great number of contributions with plants from their nursery for Reservoir Creek. Waimea High School has also initiated a nursery and is keen to support revegetation plan on Reservoir Creek. These nurseries also provide a good educational opportunity for students.

- Providing shade to the creek will be an ongoing balance between the desire to plant taller vegetation and the need to maintain the flood carrying capacity and residents' views.

3.7 Interpretative Signage and Recreation

Four major panels have been created and installed at the Aquatic Centre, Templemore Pond, Welsh Place and Easby Park. The objective of the signs is to distribute information to the wider community. It is expected that this will flow on to a shared community focus for the future sustainable management of Reservoir Creek and other urban waterways.

The reservoir is recognised as a focus of recreation in the upper catchment. Feedback suggests that a number of people regularly walk up to the reservoir, although seldom further into the upper catchment.

3.7.1 Interpretative Signage and Recreation – Outcome Achieved

- Better community knowledge and awareness of the Creek and the life contained within.
- An improved community understanding of the cultural values of Reservoir Creek to Maori and the people of Richmond.
- Publicity about recreation opportunities.

3.7.2 Interpretative Signage and Recreation – Benefit

- Ongoing desire to see improvements in the catchment leading to better protection of the values of Reservoir Creek.
- Awareness of the biodiversity and cultural values of Reservoir Creek.
- Enhanced community well-being through better knowledge of a living healthy waterway and recreational corridor.
- Opportunities for better access to short and long walks in a more natural environment in close proximity to Richmond.

Recommendations for the Future

- Landscaping to enhance the four strategically placed interpretative signs will maximise public interest. The presence of the signs will ensure community awareness and may encourage future participation in waterway management.

- The reservoir is to be assessed by the TDC Engineering Services Department due to structural and safety concerns. It is recognised that it may be necessary to lower or possibly remove the reservoir, depending on the outcome of the structural assessment.

4 CONCLUSION

The SMF project has seen a co-ordination of the management programmes by the various arms of Council and recognition of the desires of the community to bring about a rapid improvement in the Reservoir Creek environment. The expectations of the community and the desire to see a well managed urban waterway will continue to see groups working together. It is hoped that the community takes the opportunities to contribute to reserve and stormwater management plans as they are developed and that they continue to actively participate in the day to day management of the waterway.

5 APPENDICES