



**Rangitāiki-Tarawera Rivers Scheme Liaison Group Meeting
to be held in Committee Meeting Room 1, Bay of Plenty Regional
Council's Whakatāne Office on Wednesday, 4 December 2014
commencing at 11.00 am**

- 1 Welcome and Introduction
- 2 Apologies
- 3 Previous meeting notes 13 March 2014
- 4 Financial Report
- 5 Maintenance, Flood Damage Repair Project and Capital Works Report
- 6 Resource Consent Compliance Report
- 7 Rangitāiki Spillway Project and Floodway Widening Stopbank Reconstruction Works Update
- 8 Asset Management Plan Review/LTP Update
- 9 Rivers Scheme Sustainability Project Update
- 10 Other Business
 - a. Rangitāiki River Forum update
 - b. Mānuka marginal vegetation trial
 - c. Thornton culvert

Meeting notes from the Rangitaiki-Tarawera Rivers Scheme Liaison Group meeting held in the Bay of Plenty Regional Council's Committee Meeting Room 1 on Thursday, 13 March 2014 commencing at 11:00 am

Chair: Councillor N Bruning

Councillors: Chairman D Leeder, Councillors C Holmes and T Marr

Liaison Group Members: Wayne Checkley, Scottie Muir, Linda Conning and Monty Ramanui

Bay of Plenty Regional Council: Ken Tarboton (Group Manager Environmental Hazards), Bruce Crabbe (Operations Manager), Tony Dunlop (Principal Works Engineer), Roger Waugh (Programme Leader), David Boothway (Engineering Manager), Kirsty Brown (Asset Management Officer), Katalin Maltai (Engineering Officer I)

Apologies: D Wright

Councillor Bruning opened the meeting.

1 Tabled items

- 1 Copies of the letters sent to the Chief Executive requesting:
 - (a) Matahina Re-consenting Process Review.
 - (b) Monitoring of consents on the Rangitāiki and Tarawera Rivers.
- 2 Draft Annual Plan 2014/2015 targeted rates information.

2 Confirmation of meeting notes

Resolved:

- 1 The notes from the previous meeting were approved as a true and correct record.

Conning/Checkley
CARRIED

3 Matters arising from the previous meeting notes

Ken Tarboton gave an overview of the action items resulting from the 22 November 2013 meeting. Discussion was held on the following topics:

- **Noe's stopbank:** David Boothway advised that the most recent technical assessment had shown the stopbank to have a 'more than minor effect' and should therefore be removed. He advised that this recommendation has been made to the Consents and Compliance Section for their action. It was questioned why the effect has changed from the initial position of 'no effect' to 'more than minor effect'. David advised that a "fresh review" going back to first principles had been made. Brief discussion followed questioning if flood protection was required in the Galatea area.

- **Legal advice to forum:** the group was advised that the legal advice received by the Rangitāiki River Forum in relation to the Matahina Dam appeal remains legally privileged and it not available to the group.
- **Ongoing consents monitoring:** Ken Tarboton advised that a comprehensive review of consents and compliance reporting is currently underway. Consequently the liaison group's request for regular reporting by the Consents Section regarding the ongoing monitoring of conditions for all consents relating to river scheme operations on the Rangitāiki and Tarawera Rivers has been put on hold until the review had been completed. Detailed discussion followed. Colin Holmes explained that the aim of the request is to "provide some comfort to ratepayers" that the consent conditions of the Matahina Dam and other consents are being monitored correctly. Colin also commented that he felt reporting to the group would still be beneficial. Ken advised that simple reporting (to the same level made to the Rangitāiki River Forum) can be provided.

Chairman Leeder expressed disappointment in the response made by the Consents Section and requested that for the next liaison group meeting the following is reported:

- 1 What consents are being monitored?
- 2 How is the monitoring being checked?
- 3 How to give assurance of compliance with the consents?

Linda Conning also advised that legislation around environmental reporting is currently before Parliament.

- **Request by liaison group for review of Matahina Dam consenting process:** the group was advised that a meeting has been arranged between representatives from the liaison group to persuade the chief executive and the chairman that a review would be a good use of ratepayer money.
- **Clarification:** regarding the paragraph on page 4 relating to trust funding was requested. Linda Conning explained that under the Matahina Dam consent conditions, TrustPower is required to:
 - Establish a trust alongside Ngāti Awa where parties can apply for river enhancement funding.
 - Develop a suitable report on the enhancement of the river to guide the fund.

Linda also commented that there needs to be proactive action from Council to ensure enhancement projects are compatible with river scheme works. Roger Waugh added that he has been in discussion with Ngāti Awa regarding this topic. He has been advised that the trust has not been established yet but they are happy for Council's involvement when it is. A brief discussion followed on the Water Management Plans for the Rangitāiki and Kaituna Rivers.

4 2013/2014 Financial Report

Roger Waugh gave an update of the financial year for the period ending February 2014. In summary the following key points were highlighted:

- Total operating revenue is higher due to the additional revenue item of \$997,000.
- Contract works expenditure is currently over spent by \$36,000.
- Total operating expenditure is underspent by \$566,000 for the July 2013 to February 2014 period.

- LAPP premium was less than previous year.
- Overhead charges and recoveries (staff and internal costs) currently underspent by \$290,000.

Councillor Holmes questioned why overhead charges were so underspent when they are a fixed cost. It was explained that this was due to staff time going to Capex (flood repair works) rather than Opex and a timing factor of when the overheads come through. It was also explained that the funding requirements were lower due to the lower than projected interest and targeted rates. Chairman Leeder commented on the issue for Council regarding over-rating.

Detailed discussion followed on credit balances and reserve funds. The group was questioned about possible options for the \$997,000 additional revenue, whether to transfer into reserves or pay off debt. The group members felt it was too early to make a decision.

Linda Conning questioned whether it is possible to use reserve funds towards projects like the Floodway Widening Project. Bruce Crabbe advised that the project is capital works (loan funded) and any surplus funds would be better to be transferred into reserves.

Roger continued by giving a breakdown of the capital works expenditure. He advised that the Floodway Widening Project is forecasted to be overspent due to the re-phasing of works between this and the next financial year.

Brief discussion was held whether the spillway construction could be brought forward. The group was advised that the accelerating the spillway construction would be assessed and programmed accordingly.

5 **2013/2014 Capital Works Report update**

Bruce Crabbe provided an update of the Floodway Widening Contract. In summary the following was advised:

- Works on the Floodway Widening Contract are progressing well and are 95% complete. The expected completion date is 5 April 2014.
- The contract has been managed by Arch Delahunty, Works Engineer. Arch has developed a good working relationship with affected landowners.
- Contractors' performance has been very good (Waiotahi Contracts Ltd and Doug Gerrand Ltd) despite wet weather delays at the start of the contract.
- Some interesting archaeological discoveries have been made and Arch has been working in with Ngāti Awa, Historical Places Trust and the Department of Culture and Heritage.
- Expenditure is tracking to finish on target with extra works being within the contingency sum. More work has been carried out in this financial year so Council will be approached to transfer over funds from next year's budget.
- New hydraulic modelling of the spillway and floodway has revealed it would not currently pass the required flow of 190 m³/s as previously shown. The engineering team is currently investigating and costing alternative options. The liaison group will be updated on the findings once investigation has concluded.

Wayne Checkley advised that he has received a lot of queries relating to the width of the Bridge. It was advised that all the bridges have an impact on the flow and options for improving flood convergence out into the river are being investigated further. The liaison group will be updated on the findings of the spillway investigation at the next meeting.

Councillor Holmes questioned whether the recommendation made by George Johnston at the Rangitāiki River Forum to re-hydrate the eastern lagoon on the true right bank at the

Rangitāiki River mouth had been actioned. The group was advised that a consent application was currently being prepared. Funding needed to be finalised with possible partial grants through the Environmental Enhancement Fund or TrustPower's Trust Fund.

Wayne Checkley expressed concern regarding the spread of kikuyu grass and that something needs to be done. Tony Dunlop acknowledged that this was the issue for farmers and that it is extremely difficult to get rid of. He advised that it spreads rapidly along the highways and via birds.

6 **2013/2014 Maintenance and Flood Damage Report update**

Tony Dunlop gave a brief update on the 2013/2014 maintenance and flood damage repair programmes. In summary that group was advised that:

- Flood damage repair works are progressing very well and are in final stages of completion with only four repair sites left to be finished.
- Routine maintenance works is also progressing well and is on track for the year. Tony commented that willow maintenance works have been stepped up. Brief discussion followed on the black aphid which is currently attacking willows by sucking out the sap. Tony advised that it is unsure what the effect will be on the willows and that they are monitoring to wait and see.

Tony continued by giving a 'fly over' presentation providing an aerial view of the rivers as at the end of February 2014. Specific works site and areas of interest were highlighted and explained.

Ken Tarboton acknowledged the efforts of Tony and staff with the flood damage repair programme.

7 **Draft Annual Plan**

Roger Waugh advised that the draft Annual Plan 2014/2015 was adopted by Council for public consultation at yesterday's meeting.

In summary the group was advised that:

- Capital works for 2014/2015 – overall reduction in expenditure.
 - Flood protection and repair capital of \$3 million has now been completed.
 - Tarawera River stopbanks – Stage 1: Funding had been provided in the long term plan for topping up of the Tarawera River stopbanks. Modelling has now confirmed that the existing stopbanks are meeting the service level (1% AEP) and no capital works are required.
- A decrease of 1.1% in targeted rates is forecast from the previous financial year.

8 **Other business**

No other business was raised.

Close meeting 12:50 pm.

1 River scheme sustainability (RSS) project update

Open discussion.

1.1 Dams:

- Tiipene Marr – People are more likely to object to dams than they use to.
- Linda Conning – New Zealand is fixated in having dams which partially block off the river. I have seen ones that allow fish passages; there are other ways of generating electricity than damming rivers. Personally I do not support this, ecologically I do not they think they are acceptable. I would want more information on this.
- Wayne Checkley – one hour flooding in the Waioeka would be sufficient to power Canterbury.
- David Boothway – if we want to generate power from dams how do we do it in a way that ticks the boxes for everyone? We should complete further research into international best practice.
- Scottie Muir – Use the dam at a floodable event and possibly release slowly. Use geothermal for other possibilities.
- David Boothway – Would want to look into the barriers that keep the equilibrium for sustainability. We do not want a “tragedy of the commons”.
- Colin Holmes – Dams have a good place but they should be smaller and cater for biological aspects better. I’m not sure what they do for water quality. Small multipurpose dams have a lot going for them. Almost impossible to meet all the aspects. I see six smaller dams as a really good investment for our community. There should be no dams with consents allowing peaking – ruin the river.
- David Boothway – hydroelectric dams can quick start from 0-10 where as others take a while. As the peak rises you’re lifting your platform and hydroelectric dams can follow that peak quicker.
- Agreed Scottie Muir’s idea of taking the peaking out of the Matahina is a good idea.
- Wayne Checkley – Look into off-peak power energy.
- Ken Tarboton – These discussions will be repeated at other meetings such as Eastern Bay Spatial Planning in the future.

1.2 River straightening:

- Scottie Muir – Straightening the river will cause more work.
- Wayne Checkley – It is pretty difficult to straighten rivers in this area.
- Tiipene Marr – If we straightened the river completely it would cause the river to run faster which could affect biodiversity due to increased flow. The Tarawera River and whitebait is an example.
- Tiipene Marr – Why don’t we bottle the water at areas when it’s not saltwater? Could be a new industry. In 100 years we need to think if we will be farming, we might need a different industry.

1.3 Stopbanks:

- Colin Holmes – We have utilised stopbanks to their max and I believe that technology is at its end and there are better ways. Given our time again we might have done things differently to how we have recently.

- Linda Conning – Look at how sustainability they are. Stopbanks are not a fail-safe and we shouldn't rely on them.
- Wayne Checkley – We should think about earthquakes and how the land moves.
- Colin Holmes – Seems to be more about sea level change rather about flood protection. Why don't we put 100 year flood protection on every building?

1.4 **Create floodable areas:**

- Colin Holmes – Not sure on the biology of wetlands – but in a flood event wouldn't the whole biodiversity be destroyed.
- Scottie Muir – How are you going to pump the water out of the river to keep the wetlands flooded?
- David Boothway – Not pump but rather spillways. Create a healthy environment.

1.5 **Tidal gates:**

- Wayne Checkley – I live on the Rangitāiki – the river level moves 1 m during the day – the cost of reducing that wouldn't be worth it.
- Linda Conning – Can you build them on sand?
- Tiipene Marr – Salt would cause intrusion, it is already happening and with us being lower than the sea level this would happen.

1.6 **Land use changes:**

- Linda Conning – Will only happen if driven by some kind of catastrophe. I can't see the landowner voluntarily giving up their land. If flooding becomes more frequent it may be the only way to keep using the land.
- 50 years ago the land use was the same. Dairy still as strong on the plains. Dairy 100 years ago as well.
- Wayne Checkley – What if farmers drained their own land.

1.7 **Other options:**

- Linda Conning – upstream land use – could be forestry if we wanted to reduce flooding downstream. Encourage forestry and discourage land use change in that area.

Programme: Rangitaiki-Tarawera Rivers Scheme
Revenue and Expenditure for the Period ending June 2014

		July - June			
		Budget	Actual	Variance	
		\$000	\$000	\$000	
1	Operating revenue by class				
2	Targeted rates	2,792	2,792	(0)	Higher
3	External interest income	15	7	8	Lower
4	Other revenue	4	1,071	(1,067)	Higher
5	Fees and charges	11	0	10	Lower
7	Total operating revenue by class	2,821	3,869	(1,048)	Higher
8					
9	Expenditure by class				
10	Administration expenses	6	12	7	Overspend
11	Grants and subsidies	0	0	0	-
12	Other Expenses	387	308	(79)	Underspend
13	Employee expenses	0	0	0	-
14	Consultancy fees	79	29	(50)	Underspend
15	Contract work	388	501	113	Overspend
16	Finance Costs	575	567	(8)	Underspend
17	Depreciation	247	178	(69)	Underspend
19	Subtotal - Expenditure (before charges and recoveries)	1,681	1,595	(86)	Underspend
20					
21	Overhead charges and recoveries				
22	Rangitaiki-Tarawera Rivers Scheme	880	879	(1)	Lower
24	Net overhead charges and recoveries	880	879	(1)	Lower
25					
26	Total operating expenditure	2,562	2,475	(87)	Underspend
27					
28	Net (surplus) deficit	(259)	(1,394)	(1,135)	
29					
30	Funding required				
31	General Rates	263	263	0	
32	Investment Income	458	458	0	
33	(Increase) decrease in reserves required	(980)	(2,115)	(1,135)	
35	Total Funding Required	(259)	(1,394)	(1,135)	
36					
37	Capital expenditure				
38					
39	Flood Repair Project				
40	Flood Repair Project Budget	2,200	0	(2,200)	
41	Magee 2.4 to 2.2 km 200m Rock Est Cost	0	119	119	
42	Fonterra R B 10.3 to 10.5km 200m Rock	0	118	118	
43	Edgecumbe Domain 8.7km 300m Rock	0	184	184	
44	Nicholas Farms LB 9.3 km 100m Rock	0	230	230	
45	Ruiter - Leaming LB 6.9 & 7.4 km 300m	0	124	124	
46	Van Den Topp RB 1.2 to 1.9 km 400m	0	352	352	
47	Omataroa Trust RB 20.4 km 200 metres	0	96	96	
48	Ruaihona Marae LB 23.3 km 100 metres	0	76	76	
49	Karaka RB 22.2 & 22.0km 200 metres	0	22	22	
50	Ririnui RB 22.2 km 100 metres Rock plac	0	47	47	

One off extraordinary payment (\$994k)

Disaster Insurance (Budget \$276 Actual \$159k)

Matahina Consent Resolved

		July - June			
		Budget	Actual	Variance	
51	Powes RB 23.1km 120 metres Rock place	0	45	45	
52	Newdicks- Penotito RB 28.5 to 29.00 Rock	0	95	95	
53	Carters lease 27.3km 40 metres Rock	0	55	55	
54	Carters- Coates LB 27.7 km 100 metres	0	163	163	
55	Eivers LB 25.3 km 300 metres	0	19	19	
56	Poananga RB 25.7 km 300 metres Rock	0	129	129	
57	McCayley -Carters RB 267km 150 metres	0	276	276	
58	Flood Repair Project Budget vs Actual	2,200	2,150	(50)	Underspend
59					
60	Rangitaiki Floodway Widening Project				
61	Rangitaiki Floodway widening-Investn	0	14	14	Overspend
62	Rangitaiki Floodway Widening Stage 1	0	5	5	Overspend
63	Rangitaiki Floodway Widening St 2A	2,700	3,024	324	Overspend
64	Rangitaiki Floodway Widening St 2B	0	59	59	Overspend
65	Rangitaiki Floodway Widening Stage 3	0	76	76	Overspend
66	Rangitaiki spillway control structure	0	68	68	Overspend
67	Rangitāiki Floodway Widening Budget vs Actual	2,700	3,246	546	Overspend
68					
69	Other Capital				
70	Geotech Works Savage Compensation Rangi	0	13	13	Overspend
71	Rangitaiki-Tarawera stopbank geotech	0	4	4	Overspend
72	Capacity Review Rangitaiki/Tarawera	0	(4)	(4)	Underspend
73	Other Capital Budget vs Actual	0	13	13	Overspend
74					
75	Disposals				
76					
77	Total capital expenditure	4,900	5,408	508	Overspend

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Programme: Rangitaiki-Tarawera Rivers Scheme
Revenue and Expenditure for the Period ending September 2014

	July - September				2014/15			
	Budget \$000	Actual \$000	Variance \$000		Budget \$000	Forecast \$000	Variance \$000	
1 Operating revenue by class								
2 Targeted rates	690	690	(0)	Higher	2,761	2,761	(0)	Higher
3 External interest income	5	2	3	Lower	19	15	3	Lower
4 Other revenue	1	(5)	6	Lower	4	(2)	6	Lower
5 Fees and charges	3	0	3	Lower	11	7	4	Lower
7 Total operating revenue by class	698	688	11	Lower	2,794	2,781	13	Lower
8								
9 Expenditure by class								
10 Administration expenses	1	3	1	Overspend	6	7	1	Overspend
11 Grants and subsidies	0	0	0	-	0	0	0	-
12 Other Expenses	208	165	(43)	Underspend	233	195	(38)	Underspend
13 Employee expenses	0	0	0	-	0	0	0	-
14 Consultancy fees	0	8	8	Overspend	0	8	8	Overspend
15 Contract work	41	130	89	Overspend	399	399	0	-
16 Finance Costs	159	187	28	Overspend	636	673	37	Overspend
17 Depreciation	48	45	(4)	Underspend	193	188	(5)	Underspend
19 Subtotal - Expenditure (before charges and recoveries)	457	536	79	Overspend	1,467	1,470	3	Overspend
20								
21 Overhead charges and recoveries								
22 Rangitaiki-Tarawera Rivers Scheme	205	242	37	Higher	850	872	22	Higher
24 Net overhead charges and recoveries	205	242	37	Higher	850	872	22	Higher
25								
26 Total operating expenditure	662	778	116	Overspend	2,317	2,343	26	Overspend
27								
28 Net (surplus) deficit	(36)	90	127		(477)	(438)	39	
29								
30 Funding required								
31 General Rates	62	62	0		250	250	0	
32 Investment Income	108	108	0		432	432	0	
33 (Increase) decrease in reserves required	(207)	(80)	127		(1,159)	(1,121)	39	
35 Total Funding Required	(36)	90	127		(477)	(438)	39	
36								
37 Capital expenditure								
38 Rangitaiki Left Stopbank: Te Teko School	31	1	(30)	Underspend	126	116	(10)	Underspend
39								
40 Rangitaiki spillway control structure	31	0	(31)	Underspend	126	116	(10)	Underspend
41								
42 Rangitaiki Floodway Widening Project								
43 Rangitaiki Floodway Widening St 2A	0	18	18	Overspend	0	19	19	Overspend
44 Rangitaiki Floodway Widening St 2B	595	309	(286)	Underspend	2,391	2,391	0	-
45 Rangitaiki Floodway Widening Stage 3	0	3	3	Overspend	0	4	4	Overspend
46 Rangitaiki Floodway General	0	4	4	Overspend	0	7	7	Overspend
47								
48 Disposals								
49								
50 Total capital expenditure	658	335	(323)	Underspend	2,643	2,653	10	Overspend

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Rangitāiki -Tarawera River Scheme: 2013-2014 Completed Routine Maintenance Works & Actual Costs				
1	30/10/2014			
2	Reach	Work Type- Location	Map Ref	Activity Actuals Status
3				
4	Reach 1 Rangitāiki			
5	Mouth to Edgumbe			
6		Riverbank Weed spraying		\$1,945
7		Various - (FD Sites) Gorse		Ongoing
8		R/B Langdons Willows on Beach.		
9		Paddy's Lucerne	LB10.6-12.4	Ongoing
10		R/B Fonterra EastPac [D/Stream]		completed
11		Willow Maintenance		\$60,807
12		Pratt/Webb 300mts	RB 7.8	Hold
13		Kath Morgan 400mts	RB 8.8	completed
14		Fonterra 500mts	RB 9.9	completed
15		River Bank maintenance		\$3,567
16		Rock /Rubble Replenishment-		\$167,501
17		Laws Corner		completed
18		Thornton Rd -Boat ramp		completed
19		Fencing		\$19,700
20		Checkleys Reinstate		Completed
21				
22		Down Stream East Pac	R/B 10.1	Completed
23		Minor floodgates Inspection/Maint		\$10,135 ongoing
24				
25		S/Bank Mowing		Ongoing
26		Seepage Outlets		Ongoing
27		Inspection		
28		Stopbank Maint		\$11,296
29		4 x Concrete s/Banks, Reseal.		Completed
30		Laws Corner Repair Stop bank Top	LB	Completed
31				
32		Pest Control		
33		R/B East Pac		Ongoing
34		Nicholas Farms S/Bank	RB 9.3	Ongoing
35		Nicholas Farms S/Bank	RB 9.6	Ongoing
36		Fertilise Stopbanks - FD Repairs		
37				
38	Reach 2 Rangitāiki			
39	Edgumbe to Te Teko			
40		Riverbank Weed spraying		\$19,448 completed
41		Passmore's Gorse RB		Ongoing
42		Various, Old Rock Works		Ongoing
43		Mapou, Powers, Pryors, Lamonts, Hunias,		Ongoing
44		Warbricks, Sub Station, BOP Lease Land		Ongoing
45		Zincs, Lawrance		Ongoing
46		Willow Maintenance		\$15,700
47		River Bank Maintenance		\$1,986
48		Karaka 800mts	RB21.8to22.3	Completed
49		Omataroa.		Completed
50		River Bank		\$198
51		S/Bank Mowing		
52		Rock Replenishment		\$36,944
53		Walkers/Omataroa	LB 20.6-20.75	completed
54				
55		Planting		\$5,300
56		Te Teko School- Native planting		completed
57				
58		Fencing		\$4,675
59		Campbells 1200mts	LB 14.2to15.4	Part of
60		Warbricks 1700mts	RB15.1 to 16.8	2014/15
61				
62		Minor floodgates Inspection/Maintenance		\$780
63		Seepage Outlets L&RB		Ongoing
64				
65		Fence Maint		\$1,246
66		Te Teko School Community Planting		
67		Stop Bank Maintenance		\$7,994
68		Lawrance ,Hydro Rd, Wash outs	RB13.6	2014/15
69				
70		Animal Pest Control		Ongoing
71		Warbricks 16.5 Rabbits.		Ongoing
72		Hunias S/Bank Grass Seed		Completed
73		Fertilise new Stopbanks/FD repairs		
74		Warbricks S/Bank Grass seed		Completed
75	Reach 3 Rangitāiki			
76	Te Teko to Matahina			
77		Riverbank Weed spraying		\$5,070
78		Omataroa Rangitāiki 300mts	RB 26.9	Ongoing
79		Carters Lease 300mts	RB 27.2	Ongoing
80		Opp Teteko Pub	RB23.8	Ongoing
81		Rock sites gorse (FD sites)	Various	Ongoing
82				

83		River Bank Maintenance		\$969	
84		Willow Maintenance		\$7,325	
85		Coates/McLeod 300mts	RB 25.6		Completed
86		Carters Lease 300mts	RB 26.9		Completed
87		Penitito/NewDicks Mulching	27.9 to28.5		Completed
88		TeTeko Rugby Club Mulching			Completed
89					
90		Planting		\$10,352	
91		TeTeko Rugby Club			Completed
92		Burning			
93		Newys Downstream			
94					
95		Rock Replenishment			
96		Cribbs			Monitoring
97		Fencing		\$8,851	completed
98					
99		Stop Bank Maintenance		\$1,216	completed
100		F/Gate, Culvert Main		\$3,286	Ongoing
101		Penitito install 1 x Culvert and 2 x F/Gates[300]			Completed
102					
103	Reach 4 Rangitāiki				
104	Waiohau Valley				
105		Riverbank Weed spraying		\$2,773	
106		Rock Works - Gorse. Wilsons			Ongoing
107		Waikokopu Stream ,Spray Regen			Ongoing
108		Willow Maintenance			
109		Waikokopu Stream Mulch			Completed
110					
111		Planting		\$6,930	
112		Waikokopu Stream Riparian Plan			2014/15
113		Rock			
114		Wilson's			Monitor
115		Channel/Beach Alignment			
116		Whites Large Beach	L/B 49.8		Monitor
117	Reach 5 Rangitāiki				
118	Aniwhenua to Murupara				
119		Riverbank Weed spraying		\$490	completed
120		River Bank Maintenance		\$8,450	completed
121					
122		Willow Maintenance - Clearing/Layering		\$12,569	completed
123		Layering		\$3,518	
124		Trench Willows		\$10,291	
125		Burning			
126		Planting			
127		Rock			
128		Planting		\$300	
129		Channel / Beach Alignment	73.85		
130		Fence		\$3,887	
131	Reach 6 Galatea				
132	Horomanga, Ohutu, etc				
133					
134		Channel/riverbank Weed Spraying		\$14,397	
135		Horomanga/Ohutu/Haumea, Ruarepaua			Ongoing
136					
137		Willow Maintenance			
138		Horomanga Layering			2014/15
139		Willow Clearing (Galatea School Planting)			Completed
140		School Planting		\$3,786	Completed
141		Rock Replenishment			
142		Fence Maint		\$400	
143					
144	Reach 7 Whirinaki				
145		Channel/riverbank Weed Spraying			
146		Spray Beaches			
147		Willow Maintenance		\$258	
148		Tree layering		\$1,950	
149					
150		Browns 80mts TW/Layer	R/B 2.3		completed
151		Ngatimanawa 60mts Layer	L/B 3.55		Completed
152		Ngatimanawa 50mts TW [Wpt 343]	L/B 4.3		Completed
153					
154		Trench willows - Repairs various	R/B 3.8	\$29,501	completed
155					
156		Channel/Beach Alignment			
157	Reach 8 Tarawera				
158	Mouth to SH 30				
159		Riverbank Weed spraying	RB 0.5	\$12,353	completed
160		Glyceria weed control			
161		Willow Maintenance/River Bank/clearing			
162					
163		John Beavan - Wilsons- Bulls 800m - Mulching	LB 16.1	\$45,259	Completed
164					
165		Rock Replenishment			

166		Various- Otakiri Rd			
167					
168		Fencing		\$5,358	completed
169		Various desilting		\$1,825	completed
170		Minor floodgates Inspection/ Maint			
171		Lease Area Fertiliser.			completed
172		Planting		\$86	
173		Stop Bank Maintenance		\$4,354	
174		Animal Pest Control			Ongoing
175		1.2 to 1.5 Repair Top of bank			Completed
176					
177	Reach 9 Tarawera	Riverbank Weed spraying			completed
178	Upstream SH 30				
179		Rock Replenishment			
180		Kawerau Golf Course 100 m	33.9 & 35.4km	\$18,935	Completed
181					
182	Old Rangitaiki Channel	Replace Weed Boom			Completed
183		Pump Maintenance			Completed
184					
185		Floodgate Inspection/ Maintenance ORC			
186		FG 1 Awaiti		\$1,572	completed
187		FG2 ORC		\$2,044	completed
188		Floodgate Inspection / maintenance		\$10,247	
189		Bregmans Reserve,			Completed
190		Repair 300mm Culvert			Completed
191		Move Fence Back 2mts, Install gate			Completed
192		Widen Top of Bank.			Completed
193		Fence Maint		\$225	Completed
194		River Bank		\$150	Completed
195		Rock/Rubble		\$1,577	
196		Stop Bank Misc Maintenance		\$67,657	
197		Reids Central S/Bank Access Konini Place			Completed
198		Section 109 Access S/Bank			Completed
199					
200		Total Actual Routine Maintenance Costs		\$677,433	
201					
202		Flood Damage			
203					
204		Ngatimanuwa Whirinaki River - Trench willows		\$25,750	completed
205		Ngatimanuwa Whirinaki River - Trench willows		\$9,435	completed
206					
207					
208		Total Actual Maintenance and Flood Damage costs		\$712,618	

Rangitāiki -Tarawera River Scheme: 2014-2015 Maintenance Works Plan & Estimated Costs				
7/10/2014				
Reach	Work Type- Location	AMP Annual Budget	Map Ref	Proposed Maint. Works
Reach 1 Rangitāiki				
Mouth to Edgecumbe				
	Riverbank Weed spraying	\$2,587		
	Fonterra, EastPac [Paddys lucene]		R/B 10.6	\$1,000
	Various FD sites		R/B & L/B	\$2,000
	S/Bank. Gorse,B/Berry		R/B & L/B	\$2,000
	Fraser's [Goarse]		LB 12.9 to 17.6	\$2,500
	Willow Maintenance	\$7,155		
	Learnings 700mts		L/B 6.4	\$8,000
	Webb 300mts		R/B 7.7	
	River Bank			
	G Monks - Reids central			\$2,000
	Rock Replenishment	\$56,296		
	Thornton Rd LB (V D Topps Lease)		0.8 - 1.9km	\$104,000
	Laws Corner		5.8 km	\$50,000
	Fencing	\$9,502		
	Campbells (C Fraser)			\$3,000
	Minor floodgates Inspection/Maint	\$780		\$700
	S/Bank Mowing			
	Various		LB & RB	\$3,000
	Seepage Outlets Inspections/Maintenance			\$800
	Stopbank Maint	\$3,050		
	Laws Corner		LB 5.8	\$6,000
	Fertise lease areas			\$1,500
	Planting	\$4,847		
	Ruiters		LB 7.8	\$4,000
	Monks RB - Manuka Planting			\$2,000
	Pest Control			
	Various		LB & RB	\$2,500
Reach 2 Rangitāiki				
Edgecumbe to Te Teko				
	Riverbank Weed spraying	\$2,911		
	Various F/D sites - gorse,B/berry		LB & RB	\$2,500
	Stopbank spraying Gorse,B/Berry			\$2,000
	Campbell/Fraser			\$1,000
	Willow Maintenance	\$9,766		
	Putuwaki Trust Remove Blue gum		LB 16.3	\$1,500
	Ngatiawa Farms 300m		RB 18.0	\$5,000
	Ngatiawa Farm,Martins 900m		RB 19.8	\$10,000
	Ngatiawa Farms Remove Blue Gums		RB 18.7	\$4,000
	S/Bank Mowing			
	Edge TeTko Rd		Various	\$1,000
	Planting	\$5,615		
	Ngatiawa,Martans 900m Pole planting.		RB 19.8	\$2,500
	WanikauTrust -Manuka Trial		RB 18.9	\$12,000
	Fencing	\$8,848		
	Warbricks 1700m		RB 16.0	\$5,500
	Campbell/Fraser			\$3,000
	Rock	\$59,984		
	Minor floodgates Inspection/Maintenance	\$780		
	Seepage outlets		Lb & RB	\$1,000
	Stop Bank Maintenance	\$3,050		
	Lawrence		RB 13.6	\$4,000
	Ngatiawa Farms Mulch S/Bank		RB 18.6	\$2,000
	Pest Control			
	Various S/Bank control		L&RB	\$2,000
Reach 3 Rangitāiki				
Te Teko to Matahina				
	Riverbank Weed spraying	\$2,911		
	Various F/Damage Repairs,[Willow,Goarse,B/Berry]		LB&RB	\$3,000
	Willow Maintenance	\$13,195		
	Burning			
	Neweys		LB 24.3	\$1,500
	Planting	\$8,939		

80	TeTeko Rugby club		LB24.0	\$4,000
81	Poanagas		RB25.8	\$7,000
82	Rock	\$33,423		
83				
84	Fencing	\$1,777		\$1,000
85				
86	Stop Bank Maintenance			
87	F/Gate, Culvert Main			\$500
88				
89				
90	Reach 4 Rangitāiki			
91	Waiohau Valley			
92	Riverbank Weed spraying	\$1,201		
93	Waikokopu Stream Regen			\$1,500
94	Wilson's Rock works		Various	\$1,000
95	Willow Maintenance	\$13,009		
96	Waikokopu Stream Mulching			\$8,000
97	Carters Lease, 200m		RB 52.5	\$3,000
98	Wilson's 100m Top, Layer, Pole Plant, Fence		RB46.1	\$4,000
99	Wilson's 100m Top/Layer		RB 47.6	\$2,000
100				
101	Planting	\$8,812		
102	Waikokopu Stream Riparian Plan			\$5,000
103				
104	Rock	\$22,282		
105				
106	Reach 5 Rangitāiki			
107	Aniwhenua to Murupara			
108	Riverbank Weed spraying	\$3,072		\$3,000
109				
110	Willow Maintenance - Clearing/Layering/planting	\$22,394		
111	Ngatimanawa 800m Mulching Fence line		RB 91.0	\$5,000
112	Nivans Willow Topping 500m		RB 81.1	\$4,000
113	Healys TW 40m		LB 71.3	\$3,000
114	Chynoweth Top Willows/Layer 200m		RB 71.4	\$3,000
115	Chynoweth Top Willows 200m		RB71.9	\$3,000
116	Bridgemans Top Willows 400m		LB 74.9	\$5,000
117	Bridgemans Top Willows 300m		LB 75.1	\$4,000
118	Bridgemans Top Willows 200m		LB 75.7	\$3,000
119	Bridgemans TopWillows 200m		LB 76.0	\$3,000
120	Magee Top/Layer Willows 200m		RB76.5	\$2,500
121	Magee Top/Layer Willows 150m		RB 77.1	\$2,500
122	Silcock Top Willows 300m		RB 85.7	\$5,000
123	Ngatimanawa Top Willows 900m, TW 20m		LB87.5	\$12,000
124				
125	Planting	\$15,170		
126				
127	Fencing			\$500
128				
129	Burning			
130	Healys ,Old Piles		LB	\$1,000
131				
132	Rock Replenishment	\$1,020		
133	Niven 10m on end of old rock job		RB 79.7	\$2,000
134				
135	Reach 6 Galatea	Channel / Beach Alignment		
136				
137	Horomanga, Ohutu, etc			
138	Channel/riverbank Weed Spraying	\$11,000		
139	Horomanga, Ohutu Etc		Various	\$10,000
140				
141	Willow Maintenance	\$23,300		
142	Horomanga Layer Willows			\$6,000
143	Planting Horomanga Galatea School			\$3,000
144				
145	Rock Replenishment	\$3,450		
146	Reach 7 Whirinaki			
147	Channel/riverbank Weed Spraying	\$3,611		\$3,000
148				
149	Willow Maintenance	\$8,792		
150	Browns 80m TW		RB 2.3	\$8,000
151	Ngatimanawa 80m		LB 0.5	\$8,000
152				
153	Planting	\$5,965		
154				
155	Reach 8 Tarawera			
156	Mouth to SH 30			
157	Riverbank Weed spraying	\$4,227		
158	Various F/Damage Repairs[Goarse, Willow ,B/Berry		L&RB	\$2,000
159	POA spraying hard corners, Various[Jetboat]		L&RB	\$3,000
160	S/Bank, Gorse, Pampass, B/Berry		L&RB	\$3,000
161	Planting	\$742		
162				
163	Pest Control			

164		Various		L&RB	\$1,500
165					
166		Willow Maintenance/River Bank	\$1,096		
167		Burts Wattles		LB 2.2	\$3,000
168		Van Beeks Willows 400m		RB 3.5	\$4,000
169		Verbicas Willows 500m		LB 8.7	\$6,000
170		Helyar Willows 1000m		RB 16.6	\$12,000
171		Wilson's 300m		LB 16.9	\$3,600
172		Rock Replenishment	\$21,756		
173		Fencing	\$808		
174					\$700
175		Minor floodgates Inspection/ Maint	\$780		
176		Various F/Damage Repairs[Goarse, Willow , B/Berry		L&RB	\$1,500
177					
178		Stop Bank Maintenance	\$2,250		
179		Fertilise Lease Areas.			\$1,500
180		Reach 9 Tarawera			
181		Riverbank Weed spraying	\$2,495		\$1,800
182		Upstream SH 30			
183		Willow Maintenance	\$13,094		
184		SH 30 Bridge - Mulching			\$6,000
185		Planting	\$8,872		
186					
187		Rock	\$11,579		
188		Fencing	\$304		\$1,000
189		Reach 10			
190		Old Rangitaiki Channel			
191		ORC			
192		Pump Inspection/Maintenance	\$8,642		\$8,500
193					
194		Floodgates	\$3,764		\$4,000
195					
196		Electricity	\$1,402		\$1,500
197					
198		Awaiti Floodgates	\$5,828		\$5,000
199					
200					
201		Stopbanks			\$2,000
202					
203		Riverbank Weed spraying	\$1,733		
204		Rock/Rubble			
205		Stop Bank Misc Maintenance	\$3,255		
206		Section 109 Access			\$5,000
207					
208					
209		Minor floodgates Inspection/Maint	\$1,512		\$1,000
210					
211					
212					
213		Total Estimated costs	\$472,633		\$472,600
214					
215		Annual Flood Repair Allowance	\$180,000		
216		Flood Damage			
217		G Monks Reids Central		LB 0.1	\$50,000
218		Chase 80m		LB 21.4	\$50,000
219		Above Rail Bridge 80m		LB 6.1	\$35,000
220		Van Den Topp Lease		LB 1.5 to 2.0	\$25,000
221		Niven 2004 F/Damage Repairs		RB 81.4	\$20,000
222		Tarawera SH 30 - 20 m		LB 6.1	\$10,000
223		Ngatimanwa 80m TW		LB 88.6	\$28,000
224					
225		Total Estimated costs including Routine Maintenance and Flood Damage.	\$652,633		\$690,600

Rangitāiki - Tarawera Scheme: Flood Damage Project 2012 - 2015

	Reach No	Site	Left or Right	Location	Length	Actual	Damage Description	Present Asset	Repairs	Priority	Actuals 2011-12	Estimate 2012-13	Actuals 2012-13	Priority Est. 2013-14	Actuals 2013-14	Estimate Outside TYP Project Budgets	Status
1	1	Riverslea Wall	Left	10.4 km	100	130	Rock deterioration, Slumping	SU, VA, SB, VS	RF	0.77	\$35,442						completed
2	1	Laws/West Bank	Left	3.5 km	100	450	Undercut, Slumping, Some raw bank	VS, SR, WDC Rd, NB	RL + B	0.71	\$383,352						completed
3	1	Checkkeys	left	4.1km	60	80	Undercut, Slumping, raw bank	SU, VA, SB, VS	RF	0.71	\$55,000						completed
4	1	Reynolds/Byfords	Right	4.6 km	200	600	Undercutting,slumping	VA,SR,FL,RL,NB	RL+B	0.74	\$838,000						completed
5	1	Laws Corner 04	Left	5.6km	200	80	Undercut, Slumping, raw bank	SU, VA, SB, VS	RF	0.71	\$50,000						completed
6	2	TrustPower	Right	12.6 km	150	160	Undercut, Slumping, raw bank	SR, SB, VS, Commercial	RF	0.77	\$151,551						completed
7	2	BOPRC Lease	Right	12.1 km	200	450	Undercut, Slumping, raw bank	SU, SB, VA, Urban area	RF	0.77	\$233,760						completed
8	2	Blacks	Left	12.3 km	200	220	Rock slumping, Replenishment	SU, MB, Commercial, Urban area	RF	0.77	\$101,488						completed
9	2	Sullivans/Lawerence	Right	13.3 km	50	400	Slumping, Undercut	SR, MB, VA, FL	RF	0.71	\$6,896						completed
10	2	Kōkōhinau /Putuaki Corner	Left	15.9 km	50	360	2004 rock slumping, Undercut	SR, FL, FB, VS, NB	RL + B	0.71	\$206,254						completed
11	2	Putuaki Trust	Left	14.6 km	100	220	Slumping, Undercut	SR, MB, VA, FL, FB	RF	0.71	\$221,010						completed
12	2	Erueras (04)	Left	15.2 km	200	515	2004 rock slumping	SR, MB, FL, FB, VA	RF+Replenish	0.71	\$82,224						completed
13	2	Te Teko School	Left	23.5 km	100	150	Slumping, Undercut, Willows slumping	SB, VA, School grounds	RL + B	0.51	\$73,273						completed
14	3	Gas Line	Right	24.6 km	300	250	Slumping, Channel distort, Raw bank	Gas line, FL, VA	RL + B	0.60	\$325,000						Completed
15	3	Te Teko Hotel/Neweys	Left	23.8/24.2 km	400	400	2004 rock damage, Slumping, Undercut	SR, SB, FB, Township	RL + B (Partial)	0.54	\$330,021						completed
16	3	Neweys	Left	24.9 km	200	250	Slumping, Channel distort, Raw bank	FL, VA	RL + B (Partial)	0.49	\$88,021						completed
17	3	Gas Line	Left				Slumping, Raw bank, Willow slumping, Channel distort										
18	4	Wilson	Right	46.7 km	50	150	Raw bank, Undercut, Channel distort	CU, FL, VS	RF	0.49	\$100,750						completed
19	4	Wilson	Right	49.3 km	100	400	Raw bank, Slumping, Channel distort	VA, FL, CA, Grass-VS	RL	0.34	\$22,110						completed
20	5	Niven	Right	81.1 km	80	80	Willow slumping, Undercut, Channel distort	VA, CA, FL	TG & PT	0.37	\$7,028						completed
21	6	Holmes	Right	1.0 km	80	60	Bank erosion, Channel distort, Raw bank	VS, CU, FL	RF	0.31	\$8,400						completed
22	8	James	Left	3.0 km	20	65	Bank erosion, Raw bank	SR, SB, VS, FL, CU	RW	0.63	\$13,024						Completed
23	8	Mexted	Left	5.2 km	20	20	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63	\$13,024						Completed
24	8	Wetland	Left	2.7 km	30	30	Bank erosion, Raw bank	SR, SB, VS, FL, CU	RW	0.63							Completed
25	8	Mexted	Left	3.6 km	30	130	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63	\$26,048						Completed
26	8	Watkins	Right	5.8 km	30	30	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63	\$6,011						Completed
27	8	Mexted	Left	3.8 km	40	20	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63							Completed
28	8	Mexted	Left	3.4 km	40	25	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63							Completed
29	8	Watkins	Right	5.5 km	40	30	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63	\$6,011						Completed
30	8	ERF & G	Left	5.8 km	50	65	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63	\$13,024						Completed
31	1	Greigs Road	Left	3.8 km	160	100	Undercut, Slumping, raw bank	VS, Wall on SR, NB, RL	RL + B	0.71	\$151,462						completed
32	1	Thornton Beach Rd	Right	0.5 km	110	230	Bank Erosion	SR, MB, VS, FL	RL+B	0.71		\$155,000	\$154,400				completed
33	1	Creigs RD Wall	Left	4.0km	100	153	Undercut, Slumping, raw bank	VS, Wall on SR, NB, RL	RL+B	0.71		\$170,000	\$147,419				completed
34	1	Checkkeys	Left	4.9 km	100	182	Undercut, Slumping, raw bank	SR, VS, SB, FL	RF	0.63		\$150,000	\$229,071				completed
35	1	Checkkeys	Left	4.1km	101		Undercut, Slumping, raw bank	SR, VS, SB, FL	RF	0.63		\$150,000	\$18,372				completed
36	1	Jones	Right	7.1 km	100	121	Undercut, Slumping, raw bank	SR, FL, FB, UD, SB, Orchard	RF	0.63		\$75,000	\$106,244				completed
37	1	Martins/Langdon	Right	5.1 km	60		Slumping, Raw bank	SR, SB, FL	RF	0.63		\$50,000	\$70,347				completed
38	2	Warbricks/Fraser	Right	14.7km	350	365	Slumping, Willows slumping, Undercut	SR, VA, FL, NB	RL + B	0.77		\$210,000	\$312,620				completed
39	2	Pryors	Left	17.9km	100	200	Slumping	SR, LB, VA, FL, FB	RP-Replenish	0.77		\$80,000	\$106,120				Completed
40	2	Waiari	Left	17.6 km	100	231	Slumping, Willows slumping, Undercut	SR, LB, VA, FL, FB	TC + RL	0.77		\$100,000	\$106,120				Completed
41	2	Mapuo Marae	Right	22.8 km	350	577	Willows slumping, Semi raw bank, Undercut	No stop bank, VA, Marae buildings	RF	0.71		\$320,000	\$279,114				Completed
42	2	Lamonts/Putauaki	Right	18.9km	500	420	2004 rock slumping, Undercut	SR, SB, VS, FL	RF+Replenish	0.71		\$280,000	\$305,371				Completed
43	2	Zincs	Right	17.0 km	250	349	Trees slumping, Undercut	SR, SB, VA, FL	RF-Partial berm	0.71		\$160,000	\$96,788				completed
44	2	Hunias	Left	19.9 km	150	291	Willow trees slumping, Undercut, Raw bank	SR, MB, VA, FL	RF-Tree clearing	0.66		\$120,000	\$292,760				completed
45	2	Fraser	Right	14.5 km	200	165	Rock slumping, Undercut	SR, MB, FL, VA, Floodway	RF	0.66		\$150,000					completed
46	2	Hunia/Collier	Left	20.2 km	120	100	Slumping, Willows slumping, Undercut, Raw banks	SR, VS, FL, NB	RL + B	0.37							completed
47	3	Newdick 04	Right	28.3 km	100		2004 rock damage, Channel distort, Undercut	Rock - RL, FL	RW, PT + B, Replenish	0.43		\$75,000					completed in 2013/14
48	3	Newdick 04	Right	28.8 km	100		2004 rock, Willow tree slumping, Raw bank, Undercut	RL, VS, FL	PT + B, Clear willows, Replenish	0.43		\$75,000					completed in 2013/14
49	3	Penitito	Right	28.7-28.9 km	400	527	Willow slumping, Raw bank, Undercut, Channel distort	VA, CU	RW	0.43	\$14,932	\$160,000	\$237,233				Feb/Mar

	Reach No	Site	Left or Right	Location	Length	Actual	Damage Description	Present Asset	Repairs	Priority	Actuals 2011-12	Estimate 2012-13	Actuals 2012-13	Priority Est. 2013- 14	Actuals 2013-14	Estimate Outside TYP Project Budgets	Status
50	5	Magee	Right	77.0km	30	40	Rock slumping, Undercut, Channel distort	FL, CA, VS	RL	0.43		\$6,000	\$6,696				completed
51	5	Magee	Right	78.1 km	150	100	Willow slumping, Undercut, Channel distort	FL, CA, VS	TG & PT	0.43		\$14,000	\$13,044				completed
52	5	Magee	Right	77.6 km	50	50	Willow slumping, Undercut, Channel distort	VA, OS, CA	TG & PT	0.43		\$20,000	\$20,430				completed
53	5	Magee	Right	75.8km	50	30	Willow slumping, Undercut, Channel distort	VA, OS, CA	RL	0.43		\$13,000	\$12,885				completed
54	5	Pemberth/Brown	Right	84.0 km	150	120	Rock slumping, Undercut, Channel distort	RL, CU, FL	RF	0.43		\$15,000	\$14,458				completed
55	5	Ashby	Right	85.0 km	80	80	Rock - RF, Slumping, Undercut	RF, CU	RL	0.43		\$41,000	\$40,522				completed
56	5	Silcox	Right	87.2 km	50	30	Rock slumping, Undercut	RF, CA, FL	Replenish - RF	0.43		\$20,000	\$19,700				completed
57	5	Van den Brook	Right	73.2 km	80	80	Rock	RL, FL, CU	RL	0.43		\$18,000	\$17,834				completed
58	5	Van den Brook	Right	73.7 km	80	80	Rock slumping, Undercut	RL, FL, CU	RF	0.43		\$18,000	\$17,834				completed
59	8	Virbickas	Right	7.5 & 7.7km	40	98	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$12,000	\$631,280				completed
60	8	Virbickas	Right	8.2 km	70	79	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$18,000	Note 1				completed
61	8	Murray	Right	9.3 km	50	75	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$13,000	Note 1				completed
62	8	Green	Right	9.5 km	150	183	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$38,000	Note 1				completed
63	8	Green	Right	9.7 km	200	above	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$50,000	Note 1				completed
64	8	Virbickas	Right	10.1 km	50	90	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$13,000	Note 1				completed
65	8	Virbickas	Right	10.4 km	50	50	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$13,000	Note 1				completed
66	8	Beeler	Right	10.9km	70	125	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$18,000	Note 1				completed
67	8	Beeler	Right	11.1 km	40	50	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$13,000	Note 1				completed
68	8	Beeler	Right	11.6 km	30	20	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$9,000	Note 1				
69	8	Beeler	Right	11.5km	20	156	Bank erosion, Raw bank	SR, MB, VS, FL	RW	0.63		\$6,000	Note 1				completed
70	8	Beeler	Right	12.3 km	20	31	Bank erosion, Raw bank	SR, MB, VS, FL	RW	0.63		\$6,000	Note 1				completed
71	8	Beeler	Right	12.6 km	120	252	Bank erosion, Raw bank	SR, MB, VS, FL	RW	0.63		\$36,000	Note 1				completed
72	8	Beeler	Right	12.1 km	50	60	Bank erosion, Raw bank	SR, MB, VS, FL	RW	0.63		\$15,000	Note 1				completed
73	8	Beeler	Right	13 km	40	20	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$9,000	Note 1				completed
74	8	Beeler	Right	13.1 km	80	43	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$20,000	Note 1				completed
75	8	Byrne	Right	13.7 km	100	53	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$25,000	Note 1				completed
76	8	Byrne	Right	14.0 km	40	46	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$6,000	Note 1				completed
77	8	Richardson	Right	13.3 km	40	40	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$12,000	Note 1				completed
78	8	Virbricks	Right	7.1 km	30	48	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$9,000	Note 1				completed
79	8	Robertson	Right	16 km	50	50	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$15,000	Note 1				completed
80	8	Lindsay	Right	16.4 km	60	60	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$18,000	Note 1				completed
81	8	Helyar	Right	16.6 km	20	25	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$6,000	Note 1				completed
82	8	Helyar	Right	16.8 km	20	20	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$6,000	Note 1				completed
83		Beeler	Right	12.9km	20	20	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$4,400	Note 1				completed
84		Beeler	Right	13.8km	50	55	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$11,000	Note 1				completed
85		Lang	Right	14.5km	160	232	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$17,600	Note 1				completed
86		Martin	Right	14.8 km	50	55	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$11,000	Note 1				completed
87		Martin	Right	15.1km	30	40	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$6,600	Note 1				completed
88		D/s SH Bridge	Right	18.1 km	30	30	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$6,000	Note 1				completed
89	8	Virbickas	Left	8.8 km	60		Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$15,000	Note 1				completed
90	8	Turei	Left	9.1 km	120	60	Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$36,000	Note 1				completed
91	8	Turei	Left	9.8 km	60	80	Bank erosion, Slumping	SR, MB, VS, FL, CU	RW	0.63		\$18,000	Note 1				completed
92	8	McHardy	Left	6.1 km	50		Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$13,000	\$33,516				completed
93	8	Brownless	Left	7.2 km	100		Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63		\$30,000	Note 1				completed
94	8	Wood	Left	16.8 km	20		Bank erosion, Raw bank	SR, MB, VS, FL	RW	0.63			Note 1				completed
95	8	Johnston	Left	16.4 km	20		Bank erosion, Raw bank	SR, MB, VS, FL, CU	RW	0.63			Note 1				completed
96	1	Magee	Left	2.4 km	150		Existing Rock slumping, Undercutting	RL, SB, SR	RF	0.54		\$100,000		\$105,000	\$118,727		completed
97	1	Laws	Right	8.9 & 8.9 km	180		Slumping	SR, FL, FB, SB, VS	RF	0.60				\$120,000			
98	1	Van den Topp	Right	1.8 km	480		Vegetative bank Slumping, Tidal Influence	VA, MB, SR	RF	0.43				\$120,000	\$351,783		
99	1	Fonterra	Right	10.7 km	120		Slumping, Willows slumping, Undercut	SR, MB, VA, Commercial	RF	0.43				\$80,000	\$117,899		in progress
100	1	Nicholas Farms	Right	9.3 km	80		Slumping	SR, MB, VS	RF	0.43				\$60,000	\$230,245		
101	1	Otten	Left	8.1 km	200		Undercut, Slumping, raw bank	SR, FL, SB, VA, FB	RW	0.40				\$140,000			works not required
102	1	Leaming	Left	6.9 km	250		Slumping, Undercutting	SR, SB, FL, VA	RF	0.37				\$175,000			
103	1	Ruiter	Left	7.3 km	150		Undercut, Slumping, raw face	SR, FL, SB, VA	RW	0.37				\$90,000	\$124,438		
104	1	Domain	Left	8.6 km	200		Undercut, Slumping, raw bank	SR, FL, LB, VA, OS	RW	0.37				\$120,000	\$184,216		
105	1	East Pak	Right	10.2 km	200		Slumping, Undercut, Raw bank, Channel distortion	SR, LB, VS, Commercial	RW	0.37				\$105,000			
106	1	Langdons	Right	6.2 km	50		Slumping, Undercutting	SR, MB, VS, FL	RF	0.31						\$40,000	
107	1	BOPRC/Blacks	Left	11.1 km	80		Rubble/rock slumping, Undercut	SU, LB, VA, Urban area	RF	0.31						\$56,000	Willow mulching /lowering
108	1	Fonterra Farms	Right	9.8 km	80		Slumping, Undercut, Willow trees falling	SR, MB, VA, FL, FB	RW	0.31						\$56,000	Willow mulching /lowering/R.Fill

	Reach No	Site	Left or Right	Location	Length	Actual	Damage Description	Present Asset	Repairs	Priority	Actuals 2011-12	Estimate 2012-13	Actuals 2012-13	Priority Est. 2013- 14	Actuals 2013-14	Estimate Outside TYP Project Budgets	Status
109	1	East Pak	Right	10.5 km	120		Slumping, Undercut, Raw bank, Channel distortion	SR, LB, VS, Commercial	RW	0.31						\$84,000	Willow mulching /lowering /R.Fill
110	2	Omataroa	Right	20.4 km	200		Slumping, Raw banks, Undercut	No stop bank, LB, FL	RW	0.34				\$110,000	\$95,581		completed.
111	2	Ririnui	Right	22.2 km	100		Raw bank (high), Channel distort	NB, FL, CD	RL + B,Partial berm	0.34				\$70,000	\$47,470		completed
112	2	Karaka	Left	22	100		2004 rock deterioration, Channel distort	No stop bank, OS, RL	RP Replenish	0.34				\$50,000	\$22,279		completed
113	2	Power	Left	23.0 km	150		Raw bank, Undercut	SR, LB, VS, FL, RM	RF	0.34				\$105,000	\$45,263		completed
114	2	Ruaihona M (04)	Left	23.3 km	100		2004 rock damage, Undercut	RL, MB, Marae buildings	RF, Replenish	0.34				\$50,000	\$75,961		completed
115	2	Chase	Left	21.3 km	80		Slumping willows, Raw stop bank, Channel distort, 2004 rock deterioration	No stop bank, CD, OS, RF	RF-Partial berm-Replenish	0.26						\$88,000	Needs Attention Annual FD
116	2	Maniapoto	Left	21 km	80		2004 rock deterioration	No stop bank, FL, VA	RP, Replenish	0.29						\$60,000	Rock Replenishment Maintenance 2014-15
117	2	BOPRC/Lease	Right	11.5 km	100		Rubble/rock slumping, Undercut	SU, LB, VA, Urban area	RF	0.31						\$70,000	No work required
118	2	Woods	Right	12.8km	100		Slumping, Undercut, Raw bank, Channel distortion	SR, LB, VS, Commercial	RW	0.31						\$70,000	Monitor/Maintenance.
119	2	Powers	Right	23.7 km	30		Slumping, Channel distort	SR, CD, LB, VS	RF	0.31						\$21,000	Monitor/Maintenance
120	3	Newdick 04	Right	28.3 km	60	100	2004 rock damage, Channel distort, Undercut	Rock - RL, FL	RW, PT + B, Replenish	0.43				\$94,000	\$95,039		Completed.
121	3	Carters/Newdicks	Right	27.3 km	80		2004 rock at risk, Raw bank, Channel distort, Undercut	RL, VA, FL, NB	RL + B (Partial)	0.40			\$1,580	\$60,000	\$54,577		Completed
122	3	Carters	Right	27.0 km	300		2004 rock damage, Slumping, Undercut	RL, SB, FL	RP, Replenish	0.34				\$195,000	\$275,881		Completed
123	3	McCauley	Right	26.7 km	200		Willow slumping, Undercut, Channel distort	VA, FL, RL	RL + B (Partial)	0.37				\$90,000	included above		Completed
124	3	Poananga/Demitroff	Right	26.0 km	150		2004 rock at risk,Slumping, Undercut, Channel distort	VA, FL	RF	0.37				\$80,000	included below		Completed
125	3	Poananga 04	Right	25.7 km	300		2004 rock damage, Slumping, Undercut	RL, FL	RL, Replenish	0.37				\$150,000	\$129,336		Completed
126	3	Carter/Coates lease	Left	27.7 km	150		Willow trees slumping, Raw bank, Channel distort	VA, FL	RW, PT + B	0.34				\$120,000	\$162,930		Completed
127	3	Eivers	Left	25.3 km	300		Bank erosion, Slumping, Tree slumping, Channel distort	VS, FL	PT + B	0.34				\$25,000	\$18,601		Completed
128	3	Coates	Left	27.9 km	100		Raw high bank, Channel distort	No vegetation, FL	RW, PT + B (Partial)	0.26						\$110,000	Monitor/Maintenance
129	3	McLoed	Right	25.3 km	140		Bank erosion, Slumping, Tree slumping, Channel distort	VS, FL	PT + B	0.26						\$60,000	Annual Flood Damage Maintenance 2013-14
130	3	McEwans 04	Right	30.5 km	60		2004 rock damage, Undercut, Slumping	RL	Replenish	0.29						\$45,000	No work required/Monitor.
131	3	Omataroa	Right	29.7 km	100		Willow slumping, Undercut, Channel distort	VA, CU, FL	PT + B	0.29						\$20,000	Monitor /Maintenance
132	4	Whites	Left	49.5 km	200		Raw bank, Slumping, Rock slumping, Channel distort	RL, VS, FL CD	RF	0.34						\$40,000	Monitor /Maintenance
133	4	Whites	Left	48.5 km	80		Raw bank, Slumping, Channel distort	VS, FL, CA	RF	0.29						\$48,000	Monitor /Maintenance
134	4	Whites	Left	45.8 km	100		Willow tree slumping, Raw bank, Undercut	FL, VS, CU	RF	0.29						\$35,000	Monitor /Maintenance
135	4	Wilsons	Right	48.6 km	100		Rock slumping, Undercut, Channel distort	RL, CA	Replenish - RF	0.29							Monitor /Maintenance
136	4	Wilsons	Right	47.9 km	80		Rock, Slumping, Undercut	RL, FL, CA	RF, Replenish	0.29						\$48,000	Monitor /Maintenance
137	4	White	Left	47.5 km	150		Raw bank, Slumping, Channel distort	FL, VS, CU	RF	0.29						\$45,000	Monitor /Maintenance
138	4	White	Left	47.7 km	300		Raw bank, Undercut, Channel distort	CU, FL, VS	RF	0.29						\$90,000	Monitor /Maintenance
139	4	Wilsons	Right	47.8 km	100		Raw bank, Willow trees slumping, Undercut, Channel distort	VA, FL, CU, RL		0.34						\$40,000	Monitor /Maintenance
140	4	Whites	Left	48.1 km	30		Raw bank, Willow trees , Grasses, Undercut, Channel distort	FL, VA, CU	RF	0.29						\$18,000	Monitor /Maintenance
141	4	Whites	Left	49.2 km	100		Raw bank, Channel distort, Undercut	VS, FL, CA	RF	0.29						\$60,000	Monitor /Maintenance
142	5	Ngatimanawa	Left	88.6 km	80		Willow damage, Slumping, Undercut	VA, CA, FL	TG & PT	0.26						\$11,000	Monitor /Maintenance
143	5	Ngatimanawa	Left	87.3 km	50		Willow damage, Slumping, Undercut	VA, CA, FL	TG & PT	0.26						\$7,000	Monitor /Maintenance
144	5	Van den Brook	Right	72.8 km	100		Raw bank, Willows, Undercut, Channel distort	FL, VA, CU	TG & PT	0.31						\$13,000	Monitor /Maintenance
145	5	Niven	Right	79.7 km	100		Willow slumping, Undercut, Channel distort	OS, CA	TG & PT	0.31						\$13,000	Annual Flood Damage \$13,000
146	5	Ngatimanawa	Left	84.7 km	100		Willow trees, Slumping, Undercut	VA, CA	TG & PT	0.31						\$13,000	Monitor /Maintenance
147	5	Hopkinson	Left	77.8km	100		Rock slumping, Undercut, Channel distort	FL, CA, VS	TW	0.43		\$13,000				\$13,000	Monitor /Maintenance
148	5	Bridgemans	Left	73.7 km	120		Raw bank, Trees slumping, Undercut, Channel distort	FL, VA, CU	RL	0.31	\$792					\$16,000	Monitor /Maintenance
149	6	Mills	Left	6.1 km	80		Bank erosion, Channel distort	VA, CU, FL	RF	0.26						\$32,000	Monitor/ Willow Maintenance

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Reach No	Site	Left or Right	Location	Length	Actual	Damage Description	Present Asset	Repairs	Priority	Actuals 2011-12	Estimate 2012-13	Actuals 2012-13	Priority Est. 2013-14	Actuals 2013-14	Estimate Outside TYP Project Budgets	Status
6	Mills	Left	7.1 km	100		Bank erosion, Channel distort, Tree S/U	VA, CU, FL	RF	0.26						\$40,000	Monitor/ Willow Maintenance
6	Mills	Right	7.5 km	60		Bank erosion, Channel distort	OS, VA, CU	RF	0.26						\$10,000	Monitor/ Willow Maintenance
7	Merrimans	Right	6.5 km	80		Raw bank, Channel distort	CA	TG & PT	0.31						\$23,000	Monitor/ Willow Maintenance
7	Muris	Right	1.0 km	50		Rock damage, Slumping	RF, FL, CU	RF	0.26						\$23,000	Monitor/ Willow Maintenance
7	Ngatimanawa	Left	0.8 km	80		Willow damage, Channel distort	VS, CD, OS	RF	0.26						\$10,000	Monitor/ Willow Maintenance
7	Ngatimanawa	Left	1.1 km	80		Willow damage, Channel distort	VS, CD, OS	RF	0.26						\$10,000	Monitor/ Willow Maintenance
8	Wilson	Left	16.8 km	60		Bank erosion, Raw bank	SR, MB, VS, FL	RW	0.23						\$6,000	Monitor Maintenance
8	Sax	Right	2.3 km	100		Bank erosion, Raw bank	SR, SB, VS, FL, CU	RW	0.23						\$30,000	Monitor Maintenance
8	McLean	Left	18.2 km	20		Bank erosion, Raw bank	FL, VS, CU, RM	RL	0.23						\$5,000	Monitor Maintenance
8	R & S	Right	19.4 km	20		Bank erosion, Raw bank, Slumping	VS, FL, CU	RW & PT	0.23						\$5,000	Monitor - Willow mulching /planting
8	West	Left	19.7 km	30		Bank erosion, Raw bank, Slumping	VS, FL, CU	RW	0.23						\$8,000	Monitor - Willow mulching /planting
8	R & S	Right	20.9 km	40		Bank erosion, Raw bank, Slumping	VS, FL, CU	RW & PT	0.23						\$10,000	Monitor - Willow mulching /planting
8	Mangaone	Ri ght	22.2 km	40		Bank erosion, Raw bank, Slumping, Channel distort	VS, FL, CU	RF & P T	0.23						\$10,000	Monitor - Willow mulching /planting
8	Stewart	Left	19 km	40		Bank erosion, Raw bank, Damage to rock, Channel distort	VS, FL, CU	RF & B	0.23						\$10,000	Monitor - Willow mulching /planting
8	R & S		21.1 km	50		Bank erosion, Raw bank, Slumping	VS, FL, CU	RW & PH	0.23						\$12,000	Monitor - Willow mulching /planting
8	R & S	Right	20.2 km	50		Bank erosion, Raw bank, Slumping, Channel distort	VS, FL, CU	RF	0.23						\$12,000	Monitor - Willow mulching /planting
8	Mangaone	Right	22.7 km	50		Bank erosion, Raw bank, Slumping, Channel distort	VS, FL, CU	RF	0.23						\$12,000	Monitor - Willow mulching /planting
8	R & S	Right	19.1 km	200		Bank erosion, Raw bank, Channel distort	VS, FL, CU	RW & PT	0.23						\$46,000	Monitor - Willow mulching /planting
	Management											\$26,260	\$26,000			
	TOTALS						TOTALS			\$3,584,762	\$3,312,600	\$3,318,018	\$2,200,000	\$2,150,226	\$1,604,000	

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Note 1: Included in Verbickers Job Costs. (line 59)

Ten Year Plan Budgets =>	\$1,727,000	2012-2013	\$2,200,000	2013-2014	\$2,200,000	2014-2015	\$3,000,000
						less brought forward 2011/12	\$1,800,000
						less brought forward 2012/13	\$1,200,000
						available 2014-15	\$0
2011-12	Actual	\$3,584,762					
2012-13	Actual		\$3,318,018				
2013-14	Actual			\$2,150,226			
	Monitor and Maintenance Works					\$1,604,000	

Overall Estimate vs Project Budget:	
Total Ten Year Plan Budgets 2012 to 2015	\$9,127,000
Total Actual Flood Damage Project Costs	\$9,053,006
Actual vs Budget	-\$73,994 under budget

File Reference: 3.00135
Significance of Decision: Receives Only - No Decisions



Report To: Regional Direction and Delivery Committee
Meeting Date: 30 October 2014
Report From: Ken Tarboton, General Manager Technical Services

River Scheme Flood Damage Project Completion Report

Executive Summary

The major rivers and drainage schemes of the Bay of Plenty suffered severe riverbank damage as a result of the August 2010 and January 2011 floods.

An initial \$5.2m was approved in the 2011/12 Annual Plan to commence repairs across the schemes. Following an external risk based prioritisation analysis, an additional \$12.7m was included in the 2012-22 Ten Year Plan.

The project was in addition to day to day rivers and drainage maintenance activities and involved repairs at 323 separate sites. Works were completed in 3 years, 1 year ahead of schedule.

The total actual cost for the project was \$18.6m against a budget of \$18.0m (a difference of 3.6%).

All new works completed as part of this project have been included in the Rivers and Drainage Asset Management Plan to ensure ongoing monitoring, maintenance and insurances.

1 Recommendations

That the Regional Direction and Delivery Committee under its delegated authority:

- 1 Receives the report, River Scheme Flood Damage Project Completion.**

1 Background

The major rivers and drainage schemes of the Bay of Plenty suffered severe riverbank damage as a result of the August 2010 and January 2011 floods. Original estimates for damage repairs totalled \$19.5m with the Rangitāiki-Tarawera Rivers scheme alone estimated at \$11.2m.

A budget of \$5.194m was approved in the 2011/12 Annual Plan to commence repairs across the schemes and following an external risk based prioritisation

analysis, further funding of \$12.74m was included in the 2012-22 Ten Year Plan to complete the project.

2 Risk Based Prioritisation

A risk based prioritisation analysis was undertaken to schedule site works and to document ongoing risk at sites where no works were scheduled or were low priority.

Gary Williams, a consulting river engineer working with Rivers and Drainage team, was commissioned to undertake the prioritisation and risk assessment. This included ranking individual sites based on river reach location, operational ease, vulnerability and consequence.

Higher priority works tended to be concentrated along the lower reaches of the schemes rivers where there are stopbanks protecting urban areas or high value infrastructure.

3 Project Activities

The project was budgeted and planned to be completed over four years, 2011 to 2015, undertaking the highest priority works first but also taking into account the spread of works over different rivers schemes and river reaches.

Following Council approval, a number of factors allowed the works to be accelerated and completed one year earlier than planned. This included additional quarry becoming available to source rock, stable weather conditions and relatively dry winters.

In total 323 individual flood damage sites have had repairs undertaken.



Before – Flood damaged section of the Rangitāiki River



After – reformed, rock lined and restoration planting including mānuka and toetoe



Before – Flood damaged section of the Waioeka River (Lanauze site)



After – restored stopbank, and restoration planting

4 **Project Budget and Actual Costs**

Total actual costs for the project were \$18.578m against a budget of \$17.934m (3.6% variation).

Most of the additional costs occurred in the Whakatāne-Waimana and Kaituna Rivers Schemes. These schemes suffered additional damage during the January 2012 flood event which led to increased costs at sites that were awaiting repairs.

It is worth noting the 2012 event was significant event in the eastern catchments (2% Annual Exceedance Probability ('50 year') event in the Whakatāne River), that the river schemes held up very well during this event with minimal damages occurring in areas where works had been completed.

A breakdown of budget and actual costs by scheme and year are set out in Appendix 1.

5 **Ongoing Monitoring**

Riverbank inspections and monitoring are undertaken each year and following major flood events. Any damage is identified and repaired as soon as practicable. The Rivers and Drainage team work to repair even small issues in a timely manner as even small weaknesses can quickly develop into major repairs in subsequent flood events.

Each river scheme has a budget included to undertake these repairs on an as-needed basis.

All new works completed as part of this project are included in the Rivers and Drainage Asset Management Plan for scheduling of ongoing monitoring, maintenance, asset revaluations and insurances.

6 **Scheme Liaison**

Regular project progress reports and cost forecasts were provided to the scheme Liaison Groups throughout the duration of the project.

Completion of this major programme of work a year ahead of schedule, with overall expenditure only 3.6% higher than budgeted (despite a significant flood event midway through the project), is a significant achievement.

Roger Waugh
Programme Leader (Rivers and Drainage)

for General Manager Technical Services

21 October 2014

Overall Flood Repair Project Expenditure vs Budget Details												
	2011 - 2012		Budgets Updated via TYP	2012 - 2013		2013 - 2014		2014 - 2015		Project overall		
Scheme	Budget	Actual expenditure		Budget	Actual expenditure	Budget	Actual expenditure	Budget	Actual expenditure	Overall project budget	Overall project expenditure	Variance for whole project
Kaituna	1,025	1,431		700	977	1,139	600	0		2,864	3,009	145
Rangitaiki-Tarawera	1,727	3,585		3,400	3,318	2,200	2,150	1,800	0	9,127	9,053	-74
Whakatāne-Waimana	1,430	2,098		900	1,140	600	285	0		2,930	3,522	592
Waioeka-Otara	1,013	1,107		1,700	1,583	300	305	0		3,013	2,995	-18
Totals	5,195	8,213		6,700	7,018	4,239	3,340	1,800	0	17,934	18,578	644
Note: all figures \$000									Percentage Variance		+3.6%	

Bay of Plenty Regional Council

Report From: Stephen Mellor and Steve Pickles
Pollution Prevention Team Leaders

Date: 26 November 2014

File Reference: A1972620

Consent Monitoring – Rangitāiki-Tarawera River Scheme

1 Consent Monitoring and Compliance

The type of consent monitoring undertaken is determined by the conditions set on the consent. The frequency of monitoring is set out in the Compliance and Impact Monitoring Policy 2001 (Compliance Policy).

Compliance monitoring is limited solely to measuring and checking adherence by a holder to conditions of a consent, or standard conditions or criteria set out in the relevant plan (in the case of permitted activities).

Consent compliance takes several forms:

- (i) Self-monitoring: Conditions require the consent holder to submit returns on a regular schedule. The returns consist of monitoring data which is reviewed against the consent requirements by compliance staff (or relevant specialists). If the returns comply with the limits/requirements set in the consent the returns are approved. If not, any non-compliance is followed up as appropriate. For serious and/or on-going breaches of the consent, this may include enforcement action being taken.
- (ii) Monitoring: Staff undertake site inspections to check compliance against the consent conditions at the frequency set out in the Compliance Policy. They also check that the activity is consistent with that authorised by the consent. Site inspections provide compliance staff the opportunity to personally inspect structures and/or procedures that are essential and material to compliance with the consent conditions. It effectively tests the integrity of the monitoring data and returns that the consent holder has submitted to the council and picks up any maintenance or repair issues. The inspections are generally unannounced.
- (iii) Complaint response: On some occasions, a complaint made to Council by a member of the public, or by another section of Council, initiates the need for a reactive compliance response. These often involve the need for a site inspection.

Each site visit is entered into the compliance database and returns are checked in-house by the compliance team. Reporting is completed as required under Section 35 of the RMA and reports put before Council as specified by Council's Compliance Policy.

Additionally to the compliance monitoring detailed above, the Regional Council has a duty to gather information through the Natural Environment Regional Monitoring (NERM) programme. Occasionally this monitoring reveals issues of non-compliance, as well as

allowing for comparison against nationally set standards. This monitoring benchmarks our environmental performance against national and regional organisations and standards.

Enforcement action in its various forms, such as the issue of Abatement Notices, Infringement Notices and commencement of Prosecutions, is used when a significant non-compliance is identified.

2 Consent Information: Rangitāiki-Tarawera Catchment

The following table indicates the number of resource consents within the combined Rangitāiki-Tarawera river catchment that were active as at 11 November 2014. The inspection frequency for each consent type has also been included in the table. The frequencies are currently being assessed as part of a review of Council's Compliance Monitoring Policy.

Consent Type (with examples in brackets)	Number	Inspection Frequency
Damming Water (Hydro scheme)	8	Annually
Discharge to Land (Dairy Effluent)	241	1 – 3 yearly
Discharge Industrial (Landfill, Pulp & Paper, etc)	22	6 monthly - annually
Discharge Sewage (OSET and Community Sewage)	67	At installation for OSET, 6 monthly – annually for sewage sites
Discharge Stormwater	26	Annually
Discharge Other	15	Variable
Discharge Air	26	6 monthly - annually
Diversion (Stream/River)	9	5 yearly
Earthwork (Forestry, Quarries, etc)	54	As required
Surface water takes (irrigation and frost protection)	58	5 yearly
Surface water take industrial (Power generation, industrial cooling and municipal)	15	2 yearly
Geothermal take	6	3 yearly
Groundwater takes (irrigation and frost protection)	94	5 yearly
Groundwater take industrial (Power generation, industrial cooling and municipal)	16	2 yearly
Lake Structure (Boat ramp, Jetty, boat shed & Moorings)	305	3 yearly
Stream/River Structures (Bridge, Culverts, works, boat ramp, other structures)	105	10 yearly
Total consents	1067	

2.1 Summary information for Rangitāiki River catchment

In December 2012 a summary consent compliance report was presented to the Rangitāiki River Forum. Maps from that report have been updated and are appended to this report. The maps show the spread of consents for all active consents within the Rangitāiki River catchment, as well as show on separate maps the location of consents within three main consent categories (water takes, hydro related and quarry/gravel extraction).

3 **Trustpower Limited (Matahina): Consent 65750**

Information supplied to the Council revealed that on 27 occasions Trustpower Limited exceeded the ramping rate requirements of their consent (condition 28F), although there was differing opinions of how the hourly average flow figure was to be calculated. In August 2014 staff from both council and Trustpower met to discuss issues around how ramping rates for the Matahina are determined.

Although it was generally accepted that the reported non-compliances would not have resulted in any more than minor environmental effects, staff believe that it is important that this publically notified consent, which received widespread interest during the consenting process, is complied with fully by the consent holder.

Therefore on 24 October 2014 an abatement notice (notice 2014/A097) was issued to Trustpower Limited requiring the following:

You must cease contravening condition 28F of resource consent 65750, which states "The maximum decrease in generation discharge from the Matahina Power Station shall not exceed 30 cumecs per hour except during an under-frequency event and/or a flood event (where no maximum discharge decrease restrictions apply)."

The reasons for issuing the abatement notice, as stated in the notice, were:

In September 2013 consent 65750 (the consent) was granted to Trustpower Limited (the company) authorising the operating of a hydroelectric power generation scheme at the Matahina Dam on the Rangitaiki River. Condition 28F of the consent states:

The maximum decrease in generation discharge from the Matahina Power Station shall not exceed 30 cumecs per hour except during an under-frequency event and/or a flood event (where no maximum discharge decrease restrictions apply).

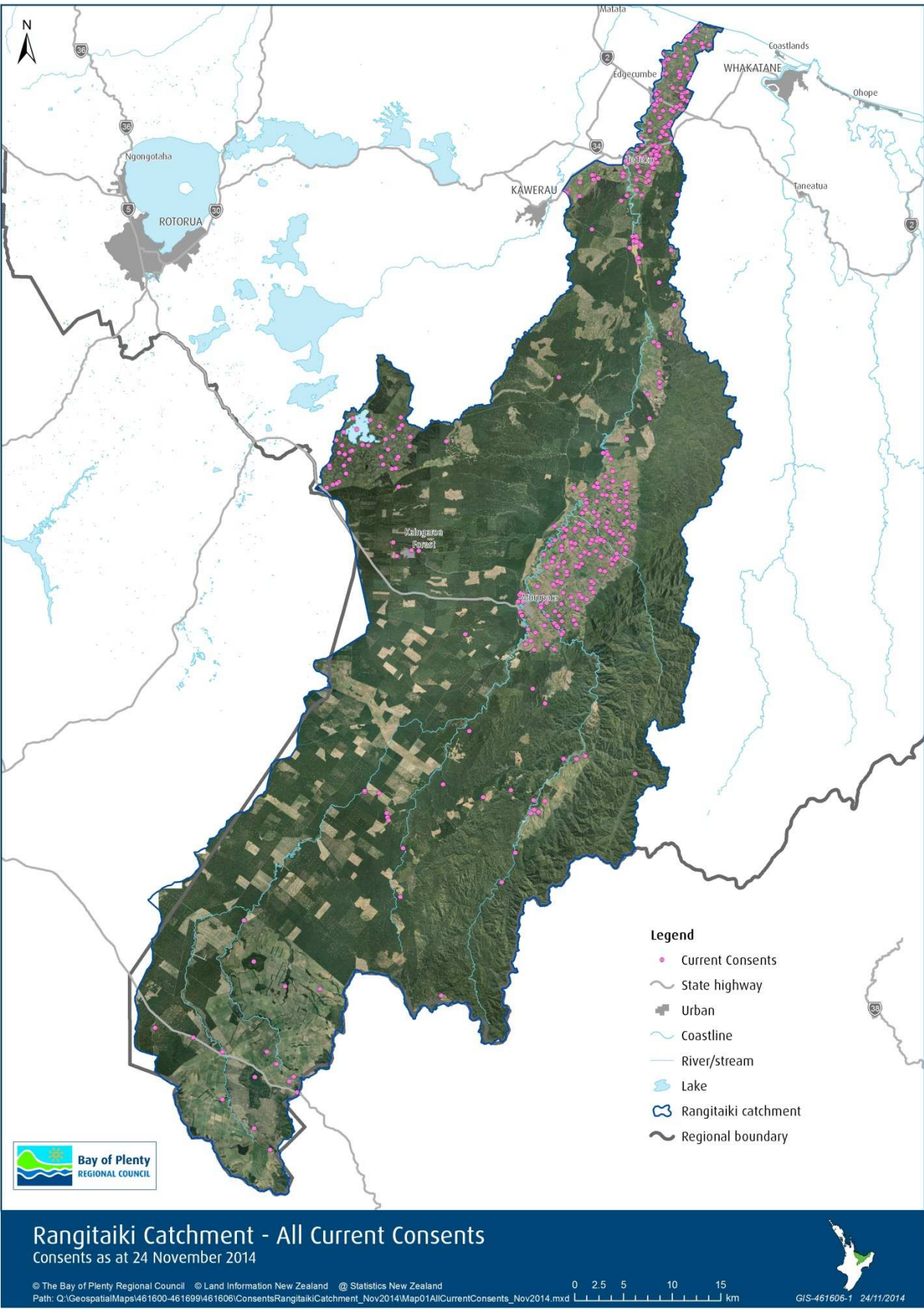
An Environmental Incident Report prepared on 20 August 2014 by Ryan Piddington, Lead Environmental Advisor for Trustpower, and forwarded to the Council confirmed that on 27 occasions between September 2013 and July 2014 the reducing ramp rate exceeded the 30 cumecs per hour consent limit. At the time of these occasions there were no under-frequency event and/or a flood event occurring.

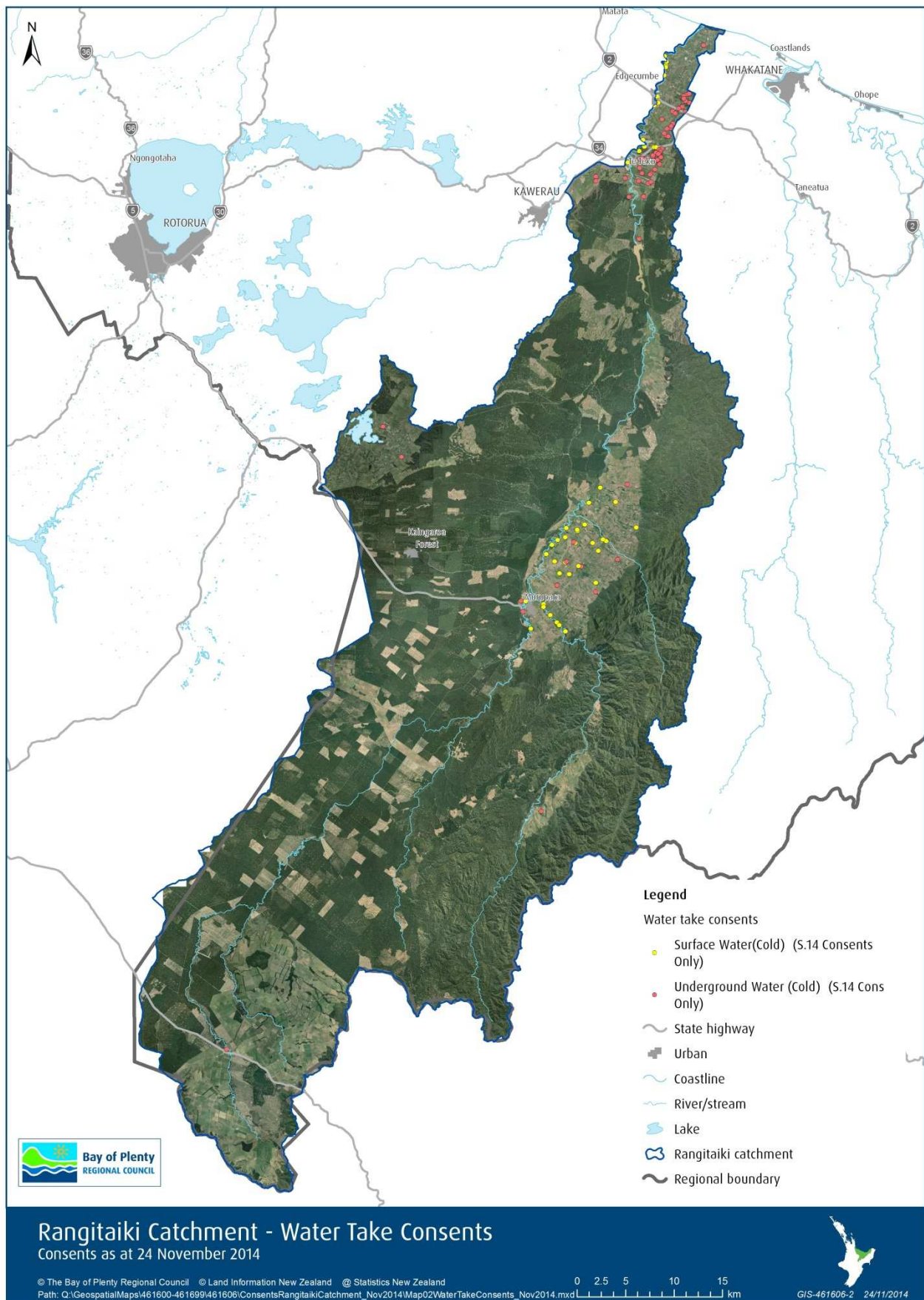
Therefore I have reasonable grounds to believe, and am of the opinion that, the company has contravened the consent by allowing the maximum decrease in generation discharge from the Matahina Power Station to exceed 30 cumecs per hour on 27 occasions between September 2013 and August 2014 while there was no under-frequency event and/or a flood event occurring.

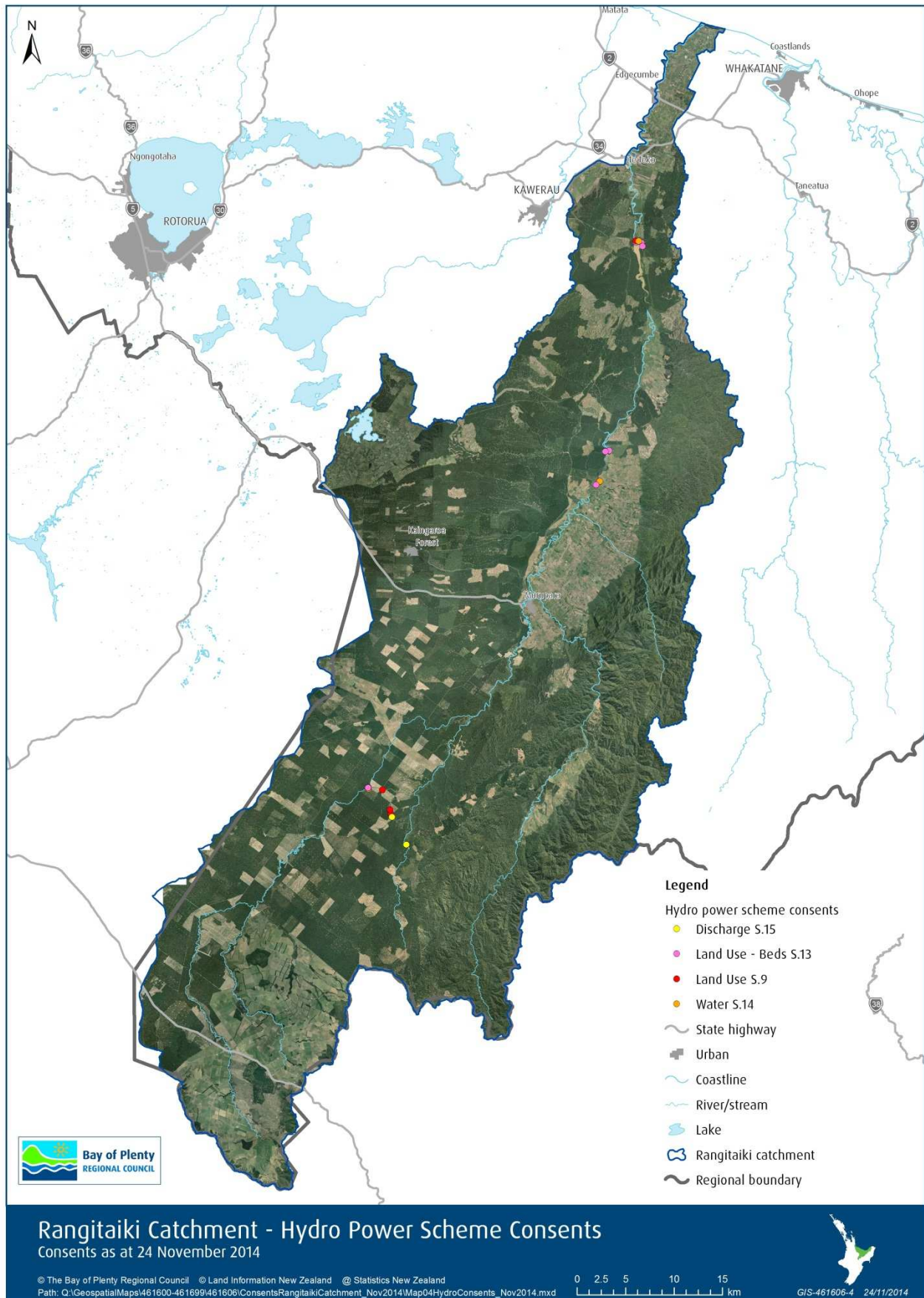
Staff are continuing to work through this issue with the company to ensure that they maintain compliance with all aspects of their consent.

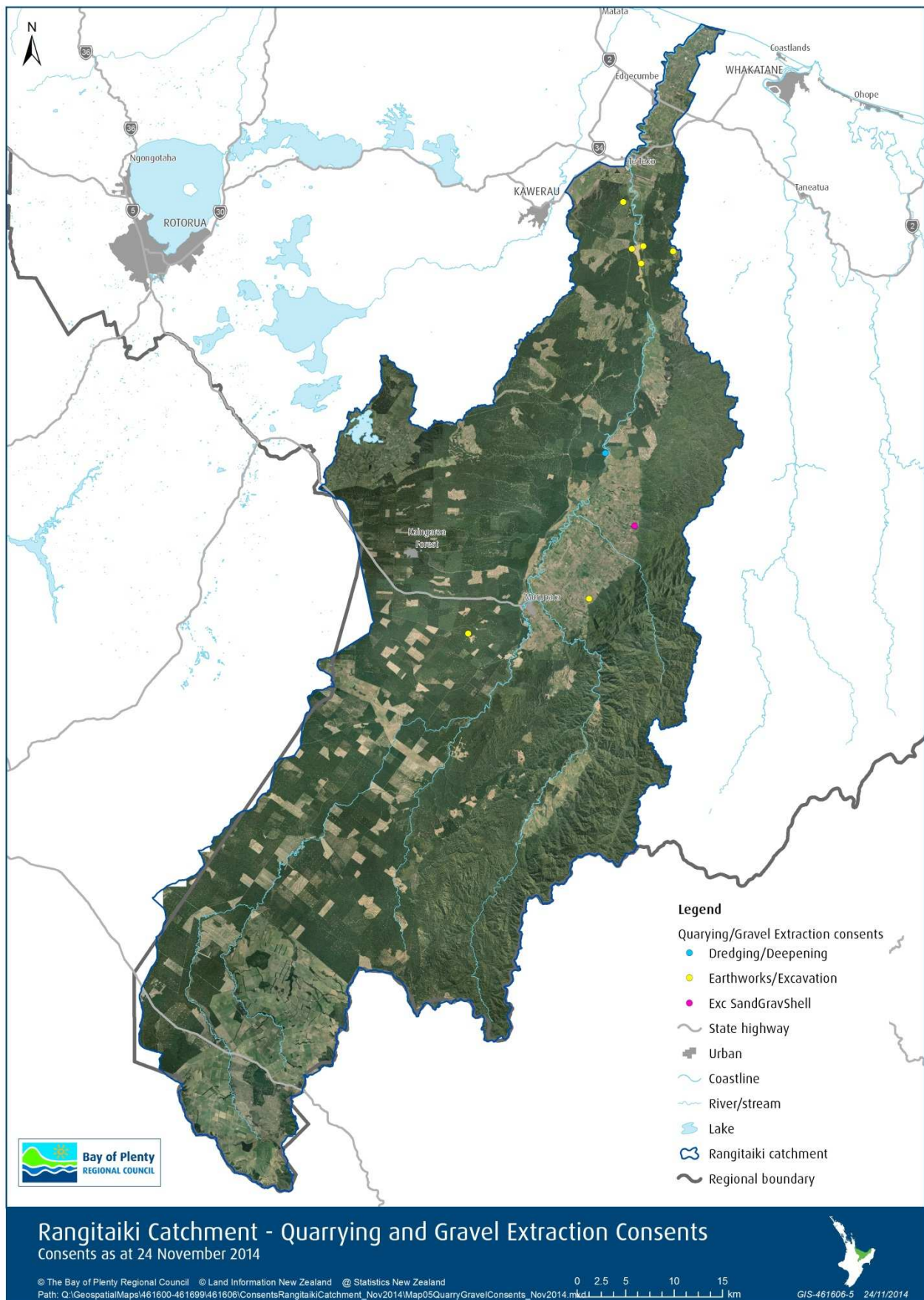
Stephen Mellor
Pollution Prevention Team Leader - Tauranga

Appendix 1: Consent location maps for the Rangitaiki Catchment









File Reference: 6.00045
Significance of Decision: Low



Report To: Regional Direction and Delivery Committee
Meeting Date: 30 October 2014
Report From: Ken Tarboton, General Manager Technical Services

Rangitaiki Floodway Project Update

Executive Summary

The Rangitāiki Floodway widening project is part of the Edgecumbe / Rangitāiki Flood Mitigation Project.

Significant progress on this project has been made since the last report to the Committee in February 2013. Floodway widening Stage 2A was completed and Stage 2B is currently under construction and the contract price is within the estimates. The Rangitāiki Floodway widening and bank reconstruction works are visible immediately upstream of Thornton Road.

The floodway widening project and controlled spillway parts of the project are on track for completion within the revised project budget.

Closely associated with this project is the need to raise the floodway stopbanks in areas where the floodway is not being widened. The future need for raising of Floodway stopbanks, outside the widened area, was recognised in the asset renewal programme and an allowance was included in the 2012-2022 LTP for 2018/2019. Preliminary modelling of flood levels has indicated that these stopbanks may need to be raised considerably more than originally estimated and/or other options will need to be investigated. This raises a risk for timely completion of the floodway mitigation project and risk around costs to raise these stopbanks. These risks will be added to the corporate risk register and placeholder cost estimates put into the LTP pending investigation of different options.

1 Recommendations

That the Regional Direction and Delivery Committee under its delegated authority:

- 1 Receives the report, Rangitaiki Floodway Project Update.**
- 2 Notes the successful completion of Stage 2A on time and within budget.**
- 3 Notes Stage 2B is currently underway and due for completion in June 2015**
- 4 Notes that the increased risks around stopbank raising and possible spillway changes be included in the organisational risk register.**

- 5 Notes that placeholder estimates will be included in the LTP to be revised after options analysis.
- 6 Confirms that the decision is within the Bay of Plenty Regional Council's strategic planning framework (Council's Ten Year Plan, and planning documents and processes under the Resource Management Act 1991, Biosecurity Act 1993, Land Transport Management Act 2003, Civil Defence and Emergency Management Act 2002, and Local Government Acts 1974 and 2002).

2 Background

The Rangitāiki Floodway widening project forms part of the wider Edgecumbe-Rangitāiki River Flood Mitigation Project, along with geotechnical strengthening of the stopbanks on the main river and construction of a spillway control structure to control flows down the floodway.

The main Rangitāiki River is unable to convey the agreed 1% Annual Exceedance Probability (100 year) flood flow due to limitations in the existing stopbank capacity through the Edgecumbe township and further downstream. Accordingly the scheme design incorporates a floodway that transports some of the river's floodwater down an alternative channel to the east of the main river channel (refer Appendix 1).



Following the 2004 breach of the stopbank at Sullivan's Bend, Central Government invited Council to look at options to make the flood protection system more robust.

The recommended option, supported by peer review and adopted by Council, involved widening of the lower reaches of the floodway and modifying the spillway, to allow the design flow down the floodway to be increased from 85 cubic meters per second (m^3/s) to 190 m^3/s . When complete, the floodway will reduce the flow down the main river channel, reducing seepage pressure on the main river channel. Note that seepage pressure was the cause of geotechnical failure that occurred at Sullivan's Bend in 2004.

The Department of Internal Affairs (DIA), committed to funding 33% of the project to the amount of \$3.367 million. DIA have advised they will consider an increase in their contribution once final costs are confirmed.

Until the Floodway Project is complete, the main Rangitāiki River channel is at risk of geotechnical failure of the stopbanks earlier than the design flood level (1% AEP flood). Completion of the floodway widening remains critical to achieving the community agreed level of service for the Rangitāiki River as committed to in the Rivers and Drainage Asset Management Plan.

3 Works to date

The major works involved addressing the three major lessons learnt through the 2004 flood:



1. Main stopbank strengthening. This involved rock work, geotechnical work, drains, overlays and several other large and small scale activities. These works were successfully completed during 2004-2013.

2. Floodway widening and spillway– these are the large scale works near Thornton Road. The major works to date have involved widening the lower reaches of the Rangitāiki Floodway. Stage 1 and Stage 2A, consisting of approximately 2,500 lineal metres of Floodway widening that have been completed within the agreed budget. Stage 2B is currently under construction. The last report to Council on this project was the detailed issues and options report presented to the 13 February 2013 Operations, Monitoring and Regulations Committee. Agreed budget is \$10.4million for the Floodway works and \$2.2million for the Spillway.



3. Floodway stopbank top-up has also been scheduled. A placeholder figure of \$1.3m was programmed in the 2012-2022 TYP for 2018/2019 as a renewal budget. However, further investigation work and hydraulic capacity modelling have indicated a number of additional works may be needed. Options are being investigated.

4 Revised modelling and new risk

In 2013, as part of the detailed design planning for the project, a new model of the flow through the floodway was completed.

The new hydraulic model combines within channel and overland flow components. This model more accurately represents the flow behaviour through contractions (eg. bridges and inner banks) in the floodway.

This provided the team with an opportunity to review the stopbank top-up works with the new model.

This new model indicates that the floodway stopbanks upstream of the floodway widening works will require significant topping-up to convey the flow through the floodway.

Options, that need to be analysed, as alternatives to reducing the extent of top ups of the floodway stopbanks include:

- Removing restrictions in the floodway eg. banks, bridges
- Looking for areas for preferential spilling and flooding

- Looking at options to reduce flood peak through upstream works (for example upstream storage)
- Changes to level of service.
- Other options as identified through the River Scheme Sustainability project.

5 Spillway Review

The upgrade to the floodway spillway was estimated at \$2.2million in the 2012/22 TYP.

The revised hydraulic modelling of the spillway has indicated that alternative designs may need to be considered to pass the design flow. This poses an additional risk as there is a possibility that a consent variation may be required. This risk will be incorporated into the organisational risk register.

Options that will be analysed to address alternatives to stopbank top-ups need to be linked to the final spillway design, which can only be operational once a solution for the stopbank top-ups is determined.

However, the spillway construction is the final stage of the floodway works and would need to be deferred until the stopbank top-ups (outlined above) were completed.

6 Summary of Costs

A summary of the status of the floodway project is provided in Table 1 below.

	Complete				
Stage	1	2A	2B	3	
Type	Widening	Widening	Widening	Widening	Spillway
Year	2011/12	2013/14	2014/15	2015/16	2018/19
Agreed budget	\$2.3M	\$3.1M	\$2.4M	\$2.7M	\$2.2M
Preliminary Estimate	\$2.2M	\$3.1M	\$2.4M	\$2.7M	\$1.7M
Confidence in estimate	100%	100%	90%	70%	70%
Status	complete	complete	Construction underway	Option review	Options review / consenting
Risks			Unforeseen conditions	Land ownership geotechnical	Resource consent Land ownership

Table 1: Floodway summary report

7 Financial Implications

Current Budget

In February 2013, the Operations, Monitoring and Regulations Committee approved a Floodway Widening Project budget of \$10.4million. In addition, the associated projects included in the 2012/22 LTP are the Spillway \$2.2million and Floodway stopbank top-ups \$1.3million.

Funding for floodway stopbank top-ups of \$1.3million is in the 2012-2022 LTP for 2018/2019. Preliminary modelling of flood levels has indicated that stopbanks may need to be raised considerably more than originally estimated or other options will need to be investigated.

Future Implications

More detailed investigations have identified new risks:

1. There may be a need for more significant Floodway stopbank top-ups than currently allowed for.
2. Changes to the spillway configuration and operation compared to that noted in the consent. Consent variation may be required.
3. Stage 3 of the widening works included in the LTP in 2015/16 may change as a result of options being analysed for the top up of Floodway stopbanks upstream. However they have been left in the LTP for 2015/16 pending investigation of different options

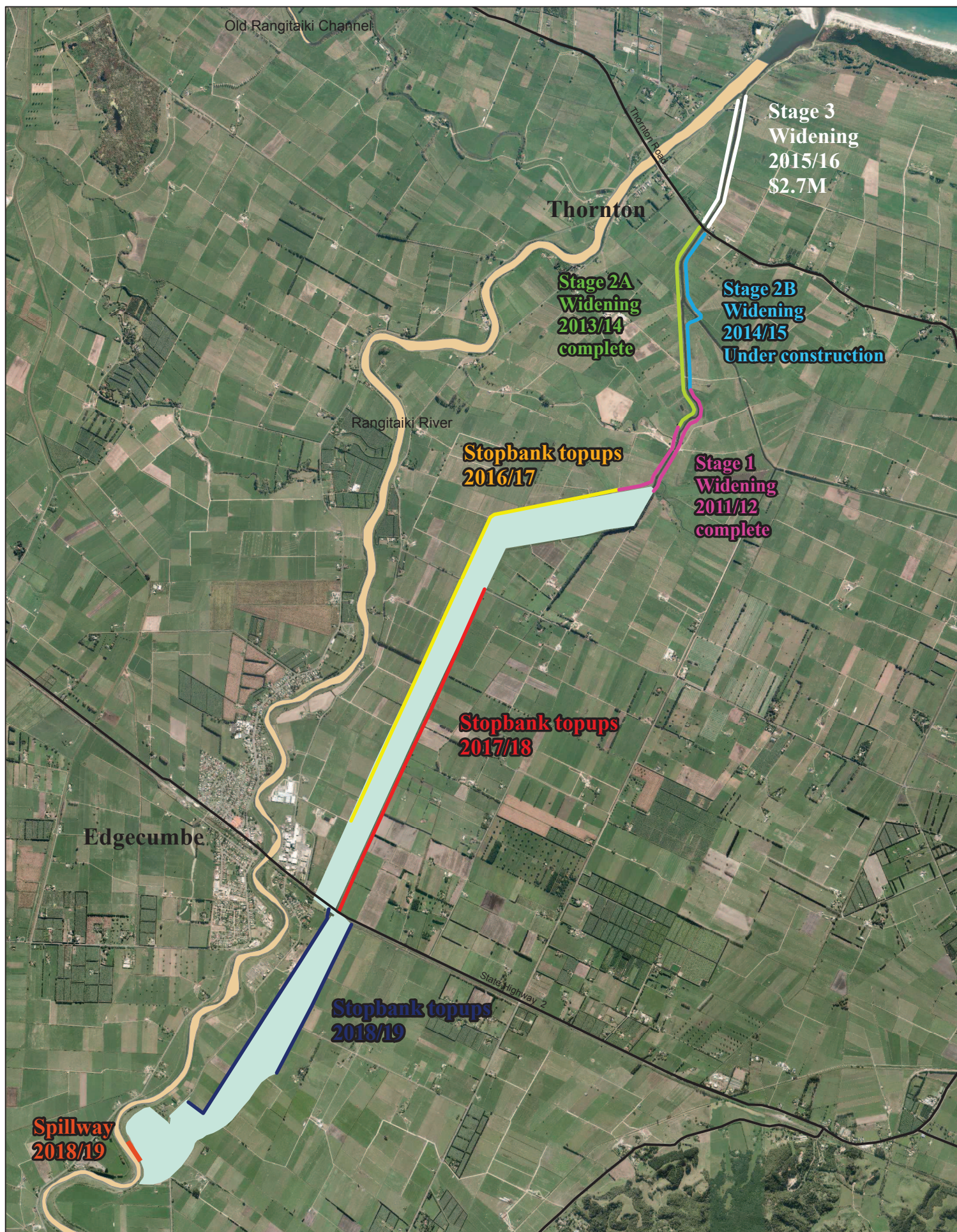
Placeholder cost estimates have been put into the LTP pending investigation of different options.

Future costs implications will be brought to Council when different options have been explored.

David Boothway
Engineering Manager

for General Manager Technical Services

22 October 2014



River Scheme Sustainability (RSS) Project – Progress Update October 2014

The purpose of this report is to provide an update on the progress of the RSS project since March 2014, at which time the last RSLG meetings took place. A new workstream has been initiated and added to the original workstreams. The new, Ownership and Governance workstream investigates and evaluates the current ownership and governance model relating to the 5 river and drainage schemes.

The 6 workstreams (Communication is spread across all workstreams)

1. **Economic Analysis** – In this workstream a cost benefit analysis is being carried out to compare the scheme running costs against the benefits they are delivering. An Economic Model was developed and draft results on the Waioeka-Otara were presented to the Project Team. Final results are due by the end of 2014.
2. **Flood Risk Gap Analysis** – A review of the status of Bay of Plenty Regional Council Floodplain Management Strategies was completed. In addition a new activity was added to create a programme to undertake the recommended actions contained within the strategies. Cost estimates and risk were assigned to each action. The report is currently under review and final report to be delivered in November 2014.
3. **Rating Assessment** – An investigation was carried out and the results were presented to the Council. This workstream is now closed.
4. **Climate and Weather Cycle Report** – Considers the impact of weather cycles and climate change on river schemes. The 2008 IPCC climate change recommendations have been investigated and the new projections need to be assessed. We are in the process of engaging NIWA to investigate the effects of large-scale climate cycles such as the ENSO (El Nino Southern Oscillation), IPO (Interdecadal Pacific Oscillation) and IOD (Indian Ocean Dipole) on flood risk in the Bay of Plenty. BOPRC requested NIWA to provide recommendation as to whether infrastructure planning for our river schemes should consider climate cycles, and in what manner. Results are to be delivered by April 2015.
5. **Optioneering** – Drives the development of catchment-wide alternative options for managing the rivers so that the existing River Schemes can be maintained or improved in a sustainable manner. Four Consultants were engaged to investigate high level flood mitigation options for the five main river and drainage catchments. The reports were presented in May to the project team. Ideas also elicited from Regional Council staff, key stakeholders, councillors and consultants during workshop sessions between March and June. The flood mitigation ideas will be incorporated into a Consolidated Optioneering Report due end of 2014. The optioneering and ecosystem services work will assist in developing catchment wide solutions for sustainable flood management.
6. **Ownership and Governance** – In this workstream a high level review was carried out which looked at the current O&G model, assessed the relevant legislation and investigated possible alternative models with recommendations. This report is complete and to be tabled at the 20th of November Council Meeting.

Project Management

Please direct all queries on the RSS project to Abby Tozer, Senior Communications Advisor, on abby.tozer@boprc.govt.nz or phone 0800 884 881 extn 9156.