



Whakatāne-Tauranga Rivers Scheme Advisory Group

**Wednesday 17 March 2021
10am**

Mātaatua Room, Bay of Plenty
Regional Council Office

5 Quay Street
Whakatane

Whakatāne-Tauranga Rivers Scheme Advisory Group

- 1 **Welcome and Introduction**
- 2 **Apologies**
- 3 **Notes of previous meeting held 16 September 2020**
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- 5 **Engineering update**
- 6 **Gravel Management**
- 7 **Operations update**
- 8 **April 2017 Flood Repair Project update**
- 9 **Finance Report**
- 10 **River scheme planning (AMP & LTP)**
- 11 **Co-governance/community group updates**
- 12 **Whakatāne Boat Harbour update from Project Management Phil Wardale**
- 13 **General business**
 - a. Infrastructure insurance review
 - b. Flood protection and drainage bylaws 2020
 - c. Asset encroachments
- 14 **Public Forum**
- 15 **Meeting closure**

Notes of the Whakatāne-Tauranga Rivers Scheme Advisory Group meeting held at CMR1, 5 Quay Street, Whakatane, on Wednesday, 16 September 2020, commencing at 10am

- Chair:** Councillor Bill Clark
- Advisory Group:** Boots McNaught, Brian Power, Fraser McGougan, Scottie McLeod
- BOPRC Staff:** Kirsty Brown (Rivers and Drainage Assets Manager), Lynne Hind (Asset Management Coordinator), Bruce Crabbe (Rivers and Drainage Operations Manager), Geoff Stone (Area Engineer), Tony Dunlop (Flood Repair Project Engineer), Chris Ingle (General Manager Integrated Catchments), Mark Townsend (Engineering Manager), Hemi Barsdell (Asset Management Specialist), Paula Chapman (Project Manager), Charles Harley (Team Leader Eastern Catchments), Kay Boreham (Communications Partner)
- Public:** Richard Holmes
- Apologies:** Councillor Toi Kai Rākau Iti, Geoff Mercer
- Absent:** Andrew Iles, Bernie Clark, Jim Finlay (replaced by Glenn Cooper), Andy Dixon (replaced by Claire Gordon), Tom Pyatt had noted he would not be attending.
-

1 **Welcome**

Councillor Clark welcomed everyone to the meeting and Hemi Barsdell opened the meeting with a karakia.

Two new items were added to General Business – the Rock Procurement Strategy and Kopeopeo West Clean Up.

Kirsty Brown introduced Lynne Hind as the Acting Asset Management Coordinator who will be filling in for Jo Heath, whilst Jo is on secondment until the end of the year.

2 **Apologies**

Apologies received as recorded above.

3 **Notes of previous meeting held 18 March 2020**

Resolved

That the Whakatāne-Tauranga Rivers Scheme Advisory Group:

- 1 Confirm the notes of the meeting held 18 March 2020 as a true and correct record.**

**McNaught/Power
CARRIED**

4 Matters arising from previous meeting

- Query around action for interest rate. Kirsty confirmed this had been emailed to the Advisory Group and was 4% last year and 3% this year.

5 Central Government Funded Projects

Chris Ingle presented an overview of the Central Government Funding provided to Bay of Plenty Regional Council.

Key points included:

- 75% funding for all infrastructure projects funded by the Crown, including the Whakatāne scheme's stopbanks upgrade – approximately \$3 million funding.
- Kia Kaha Whakatāne – funds must be spent by 30 November 2020, \$2.1 million for region-wide projects including track clearance, pest control, coast-care enhancement work and removing problem trees alongside waterways. Over 70 jobs created short-term, focus on those unemployed due to Covid-19.
- DoC Jobs for Nature – announced 15 September 2020. Significant new DoC funding for Raukumaras and Kaimais.

Discussion:

- Discussion around money targeting small areas, was it better to do work across larger areas? Confirmation this wouldn't see a benefit if spread too thinly. Focus Catchments are the priority for the next three years.
- Questions around pest control product and cost for those who want to do it themselves - could Regional Council source a large amount and offer it to the public at a reduced rate? May be a question for DOC as they have a predator control focus and could possibly buy in bulk and make it available to volunteer groups.
- Is there a cheaper way to get trees to plant on private land, are there enough trees around? One Billion Trees funding can subsidise some of our trees.

Attendance: Paula Chapman arrived.

6 Engineering Update

Key points included:

- Mark spoke to his report and gave the Engineering presentation.
- Capacity Review – estimated finish date is end of 2020.
- Whakatāne Urban Stopbank Raising and Seepage Control – working with Whakatāne District Council and Te Rūnanga o Ngāti Awa.
- Diagram shown of seepage illustrating the three stages that can occur to a stopbank in a flood event – 1) water seeps slowly out onto the ground surface, 2) pressure domes can be created where the top soil lifts off the silt and forms a blister on the ground surface; water seeps through the lifted grass layer, 3) concentrated seepage points that 'boil' sand out with them, the washing out of sand from the stopbank foundations can lead to stopbank failure.

- Possible project solutions:
 - Sheet piles driven into the stopbank to lengthen the seepage path in areas with problems
 - Raising the stopbanks
 - Upstream detention
 - Moving the floodwalls to the landward side and raising them between 650-850 mm in all areas which currently have floodwalls
 - Increasing height of the existing stopbank in areas without floodwalls, e.g. Mataatua Reserve
- Flood hydrograph – climate change is predicting increased flood flows in the river.
- Mark went through River Scheme Sustainability Project Plan for the Whakatāne-Tauranga scheme.

Discussion:

- Discussion around levels of service and how 1% AEP is formulated. Mark described 1% AEP definition to the group.
- Mark proposed high level concepts for future flood management. Interested in Advisory Group feedback on retaining water on farm land for longer. Philosophy is that during a major flood if water is ponding on land for more than three days and killing the grass, does it matter if it has ponded for four or five days? Holding water back will reduce the peak flow downstream and therefore reduce the need to undertake expensive upgrades to infrastructure downstream. Feedback should be sent to Mark/Lynne with an update to be given at the March 2021 meeting.

7 Gravel Management

Mark Townsend and Paula Chapman spoke to the Gravel Extraction report, which was taken as read.

Key points included:

- River health looked at as a whole, extractions allocated for the Whakatane and Tauranga rivers in the past two years were for river management purposes.
- Central Freight Lines Ltd (CFL) applied for consent to extract up to 20,000m³ pa from the Whakatāne River. Submissions closed 28 August with five submissions received. Early November will be the hearing date. All submitters have been notified directly, and publicly notified via Whakatane Beacon, BOPRC Councillors website and emails to the Advisory Group members.

Discussion:

- Richard Holmes was impressed with NERMN (Natural Environmental Regional Monitoring Network) findings at beginning of gravel management report. Mark Townsend offered to send copy of information relating to NERMN report to Richard.

ACTION:

Mark to send information to Richard Holmes relating to NERMN report recommendations for gravel management.

8 Operations Update

Bruce Crabbe spoke to the Operations report and Geoff Stone gave a presentation.

Key points included:

- Geotech and stopbank investigations in the area discussed.
- Whitebait habitat construction and native planting in coastal estuarine environment.
- Orini Floodgate Structure – Beca to do an engineering report for Contech to repair concrete and steel reinforcing.
- Channel cut and erosion repairs – Tauranga River.
- Stopbank repairs at Te Rahu Canal to reinstate stopbank and remove trees.
- Tree removal on stopbanks at Trident High School – no allowance in this year’s budget, but being looked at long-term.
- Bruce Crabbe spoke about the wilding tree removal funded by the Kia Kaha Whakatāne Project. There has been tree clearing at Walter Reid Reserve. Whakatāne District Council have agreed to do ongoing maintenance, following initial knock-down.
- Inanga video played – Bruce Crabbe filmed discussing the new inanga habitat created above the bridge on the Whakatāne River berm. Wherever Rivers and Drainage do maintenance today they look for opportunities to create native fish habitats.

Discussion:

- Discussion around how we are making our waterways fish friendly.
- Advisory Group members keen to help land management team and Estuary Group around clean up and weeds. Could there be a Coordinator for the Catchment Group? Charles and Fraser to look into this idea with Bay of Plenty Regional Council funding.

ACTION:

To investigate providing funding to take on a Catchment Care Coordinator for the Whakatane River Catchment.

McGougan/McNaught CARRIED

9 April 2017 Flood Repair Project Update

Paula Chapman spoke to the report provided in the agenda pack and delivered a presentation showing progress with the April 2017 Flood Repair Project.

Key points included:

- In Year Four of the flood repair project.
- As at 31 August 2020, 77 sites have been completed or are no longer required for the Whakatāne-Tauranga Rivers Scheme.
- 31 sites remain.
- There was an original works estimate of just over \$11.5 million. This is now estimated to be less, at \$9.95 million.

- Expenditure to date has been \$6.15 million with \$2.82 million in recoveries.
- Looking at low priority sites to see if they still need to be done, or have they self-healed.
- Expected progress in the next six months is to complete 90% of the Whakatane-Tauranga Rivers Scheme works including Reach 1 - river mouth to Valley Road recorder, Reach 2 - Valley Road recorder to Pekatahi Bridge, Reach 3 - Pekatahi Bridge to Ruatoki Bridge, Reach 5 - Tauranga River; and possibly Reach 4 works.
- It is also envisaged that NEMA Claim 13 will be drafted and the material damage claim will be concluded (pump stations).

Discussion:

- Advisory Group discussed concerns around rock supply. Paula went through Rock Procurement Plan - comprehensive Procurement Plan ready to be signed off in October/November 2020. Will be talking to many rock suppliers and testing the Procurement Plan with them.

10 River Scheme Planning (AMP and LTP)

Hemi Barsdell presented the River Scheme Planning update.

Key dates:

| | |
|----------------------------|---|
| 6 October 2020 | Council review of draft Long Term Plan (LTP) 2021-2031 and AMP budgets |
| 10-11 November 2020 | Second Council review of draft Long Term Plan (LTP) 2021-2031 budgets and AMP documents |
| December 2020 | AMPs and draft LTP 2021-2031 documents adopted by Council for review by Audit NZ |
| February – May 2021 | LTP consultation, submissions, hearings |
| March 2021 | Advisory Group meeting |
| June 2021 | LTP approved |

Key points included:

- Audit NZ will be doing an audit in December 2020.
- Baseline maintenance and operations budgets will increase due mostly to an increase in the number of assets.
- The capital budget shared during the Long Term Plan (LTP) workshop with the Whakatāne-Tauranga Rivers Scheme Advisory Group on 21 August 2020, is the same.

Discussion:

- Insurance and depreciation were deemed two of the bigger costs, leading to a budget increase.
- More assets means more insurance costs. Need to have a strategic look at what is required and what communities can afford.

11 Finance Report

Kirsty Brown spoke to the finance report for the 12 months ending 30 June 2020:

- Higher revenue and lower operational expenditure has resulted in a favourable operational position of \$1.4 million.
- Capital revenue was higher than budget due to additional recoveries received for the April 2017 Flood Repair project (insurance and NEMA claims).
- Lower capital expenditure due to COVID-19 lockdown and lack of available rock.
- Total reserve funds available of \$3.4 million.
- Internal loan balance of \$7.4 million.
- Annual 2020 valuation is currently underway.

12 Co-governance / community group updates

- Discussion with Charles Harley around idea for a Catchment Care Coordinator. Recommends Advisory Group consider what they want the outcome to be and what they would like to achieve from it.

13 General business

13.1 Infrastructure insurance

Kirsty presented an overview of the infrastructure insurance. Central government pays up to 60% of the repair costs for essential infrastructure to local authorities, conditional on us showing we can meet the remaining 40% through other means.

On 30 July 2020 a workshop was held between Council staff and Aon representatives. Aon will now be carrying out a frequency loss assessment for us and in turn we have created a video to show how the Bay of Plenty river and drainage area has been hit with recent disasters and what systems we have in place to prepare for this. As part of the loss assessment, Aon will identify and analyse the loss exposures for rivers and drainage assets and examine the feasibility of self-insurance as a cost-effective option. Other ways to manage risk will also be examined, e.g. capacity to borrow to fund any loss or damage.

As our insurance is obtained on the London market it was noted that due to the impact of Covid-19 on this market, our insurance premiums may go up by 15 percent.

The Whakatāne-Tauranga scheme's infrastructure premium for this year was \$134,000.

A video has been created by Bay of Plenty Regional Council to show what systems we have in place within Rivers and Drainage and how prepared we are for flood protection, as part of the information package for Aon. The video was shown to the Advisory Group.

13.2 Review of the Floodway and Drainage Bylaw

The Flood Protection and Drainage Bylaws are regulations that safeguard flood protection and land drainage assets from third party damage or misuse. The bylaws are reviewed to ensure they are still fit-for-purpose and informed by the latest science and flood information.

Due to Covid-19, deliberation and adoption timeframes were postponed until the following dates:

- Hearings – 26 August 2020
- Deliberations – 30 September 2020
- Adoption – 29 October 2020

Submissions closed 28 April 2020 with a total of 43 submissions received. Fifteen organisations and individuals advised they would like to be heard at the hearing.

Further information on the proposed Flood Protection and Drainage Bylaws 2020 can be found on our website at <https://www.boprc.govt.nz/our-projects/flood-protection-and-drainage-bylaw-review>

13.3 **Advisory group membership – September 2020 to September 2023**

The first three-year term for Advisory Group membership was due to finish this month (September 2020). Tom Pyatt resigned from the Whakatane-Tauranga Advisory Group, however as he was one of three urban representatives and only two were required; no new vacancy was created by his resignation.

13.4 **Other general business**

- Bruce Crabbe gave an overview of the Kopeopeo Canal contamination situation in the section west (upstream) of SH30. Regional Council had no plans to undertake remediation works at this time, but monitoring was continuing and insitu treatment options were being investigated. Rating of the wetted canal area was raised by Brian Power. Bruce Crabbe is following up on this.
- The Rock Procurement Strategy had already been covered by Paula Chapman in the Flood Repair section of this meeting.

Hemi Barsdell closed the meeting with a karakia.

Meeting closed at 1:20 pm

Action Sheet

Whakatāne-Tauranga Rivers Scheme Advisory Group Meeting

16 September 2020

| Action | Person Responsible | Completed | Comment |
|--|-----------------------------|-----------|--|
| 1. Mark Townsend to send information to Richard Holmes relating to NERMN report recommendations for gravel management. | Mark Townsend | ✓ | |
| 2. To investigate providing funding to take on a Catchment Care Coordinator for the Whakatāne River Catchment. | Charles Harley/ Chris Ingle | ✓ | Charles Harley has put Janie Stevenson (NZ Landcare Trust) in touch with Fraser McGougan to see what is required to put a Catchment Group in place. There is also potentially additional funds being added to a community fund that would be available to support the establishment of Catchment Groups (subject to LTP approval). |

MEMORANDUM



To: Whakatāne-Tauranga Rivers Scheme
Advisory Group

From: Mark Townsend
Engineering Manager

Date: 3 March 2021

File Ref: A3734558

Subject: Engineering update

1 Projects – Whakatāne-Tauranga Rivers Scheme

1.1 Whakatāne River Capacity Review

Budget 2020/21 Modelling \$25,000

The purpose of the Whakatāne River capacity review is to complete a review for the existing Whakatāne River stopbanks from the Whakatāne River/Tauranga River confluence to the Whakatāne River mouth. The objective is to determine the required stopbank crest levels to meet the Whakatāne-Tauranga Rivers Scheme level of service.

This work continues from last financial year. Work to date has generated the data needed to undertake urban stop bank raising. NIWA (National Institute of Water and Atmospheric Research) were to finalise the appropriate river rating which references the April 2017 flood. River rating is used to benchmark the river flow and annual exceedance probability (AEP).

After inspection of the NIWA revised rating it was discovered it underestimates flows significantly and DHI have been commissioned to produce a 2-dimensional model of the gauging reach. This is a significant undertaking and challenging. It involves re-estimating most major floods back to 1964.

The work is necessary as an under-estimate of the flow in the very large 2017 flood will result in flood level predictions being exaggerated and significant upgrade costs to the scheme. The flood levels need to be accurately forecast. This work on the rating is very close to completion and then work on the scheme capacity review can recommence.

1.2 Whakatāne River – Project Future Proof (Town Centre Flood Defence Upgrade)

Budget 2020/21 Investigation design and construction \$1,010,000 (Stage 1)

This project brings together a number of work streams with the objective of providing agreed levels of service to protect the people, property and livelihoods of the Whakatāne urban community. The work streams include stopbank raising, seepage repairs and floodwall assessments. This project comprises three stages from Kakahoroa Drive through to the Whakatāne Boat Ramp. The work streams were planned to align with Whakatāne District Councils (WDC) town revitalisation project.

This project has attracted Crown Infrastructure Partners funding of up to \$3,000,000 which will support Stage One seepage control and flood level work.

WDC as part of its town revitalisation project has undertaken significant consultation and is considering how best to reflect that alongside the BOPRC flood protection improvement works. The Councils will need to agree the flood wall location before the design work can begin. At this point the detailed design for Stage One has been delayed.

Investigation and assessment of the remaining river sections continues and progress is on track.



| No | Zone | Objective | Progress |
|----|--------------------------|-------------------------------|----------|
| 1 | Kakahoroa Drive | Seepage Control, Flood levels | Stage 1 |
| 2 | Quay Street 1 & 2 | Seepage Control, Flood levels | Stage 1 |
| 3 | Wairere Stream | Flood levels, slope stability | Stage 2 |
| 4 | Army Hall | Flood levels | Stage 2 |
| 5 | Townwharf & Fishing Club | Flood levels | Stage 2 |
| 6 | Mataatua Reserve | Flood levels | Stage 3 |
| 7 | Boat Ramp | Seepage Control, Flood levels | Stage 3 |

Figure 1: Proposed stopbank raising extent and stages

1.3 Te Rahu Pump Station discharge pipeline replacement

Budget 2020/21 Construction \$499,000 (pipe replacement)

During the April 2017 flood event, the Te Rahu pump station suffered damage to its surge chamber. While scoping the repair work it was discovered that the associated discharge pipeline to the river outlet was in poor condition and affecting the integrity of the canal stopbank. A dive inspection highlighted issues with the discharge outlet over its entire length from the pump station surge chamber to the Waioho Canal

A full replacement with a flexible welded polyethylene (PE) pipe installed using an open trench method has been accepted for the repair. This allows the stop bank core to be inspected and rebuilt as the new pipe is laid. Staff have been working with Drintech 2018 Ltd, a Whakatane contractor specialising in drainage and pipe laying. Through a process of open book negotiations the original quoted price has been reduced significantly.

This project is now underway and with an estimated 6 week construction period is expected to be completed in mid-April.

1.4 Awatapu Lagoon

Budget 2020/21 None

Awatapu Lagoon has a history of observed seepage in the form of discoloured water. This occurred again towards the end of 2019, and priority was given to further geotechnical investigations which are now complete.

A ground model has been produced to help facilitate the design of remedial work and GHD have been engaged to undertake further assessment and remediation design. The scope of that work is currently being finalised.

1.5 Landing Road Floodwall

Geotechnical and structural investigations have now been completed by Tonkin and Taylor. Staff are reviewing the report provided. This will confirm what remedial work will be required. In the meantime, with reference to the draft investigation report, joint repairs have been completed by the Rivers and Drainage Operations team on the existing expansion joints.



Photo 1: Expansion joint repair - Landing Road floodwall

Mark Townsend
Engineering Manager

MEMORANDUM



To: Whakatāne-Tauranga Rivers Scheme
Advisory Group

From: Mark Townsend
Engineering Manager

Date: 17 March 2021

File Ref: A3735006

Subject: Gravel Management Update

1 **General**

As reported previously in April 2018 Council made a decision that due to bed levels having declined in the top section of the reach above Ohotū Bridge (cross-sections 47 to 57) that gravel extraction in this section would only be undertaken for river management purposes until recovery has taken place and desired bed levels achieved. More recent technical analysis confirms this approach as the bed levels have not yet recovered.

When bed levels are too low, banks are high and have to take the full force of the flow during a flood. Banks can erode, and protection works are undermined.

The recommendation in the last published NERMN report (Natural Environmental Regional Monitoring Network – river and stream channel monitoring) was to also suspend any extraction within the active channel over the reach from about 1 kilometre upstream of the Tauranga confluence (cross-section 33) to the Ohotū Bridge (cross-section 47), until adequate recovery of the river bed is achieved.

From the most recent assessment of mean bed levels, it can be seen that bed levels appear to have recovered over the reach with the mean bed level now within or above the guideline envelope (with the exception of cross-section 40). Extractions should continue to be limited to locations where mean bed levels exceed the guideline envelope, particularly in the lower reach around Pekatahi Bridge up to cross-section 35.

The latest 2 yearly, cross-section surveys for these Whakatāne River sections is currently underway.



Photo 1: Cross section locations 29-47

2 Consent Applications

Central Freight Lines Ltd (CFL) owned by Paki Nikora has applied for consent to extract up to 20,000m³ pa from the Whakatāne River in two areas; firstly between cross-sections (XS) 45 and 49 and secondly between cross-section 49 and up to and beyond cross-section 57. Submissions closed Friday, 28 August and a hearing was scheduled for 25th November 2020 however this was adjourned at the request of the applicant. A new hearing date has yet to be confirmed.

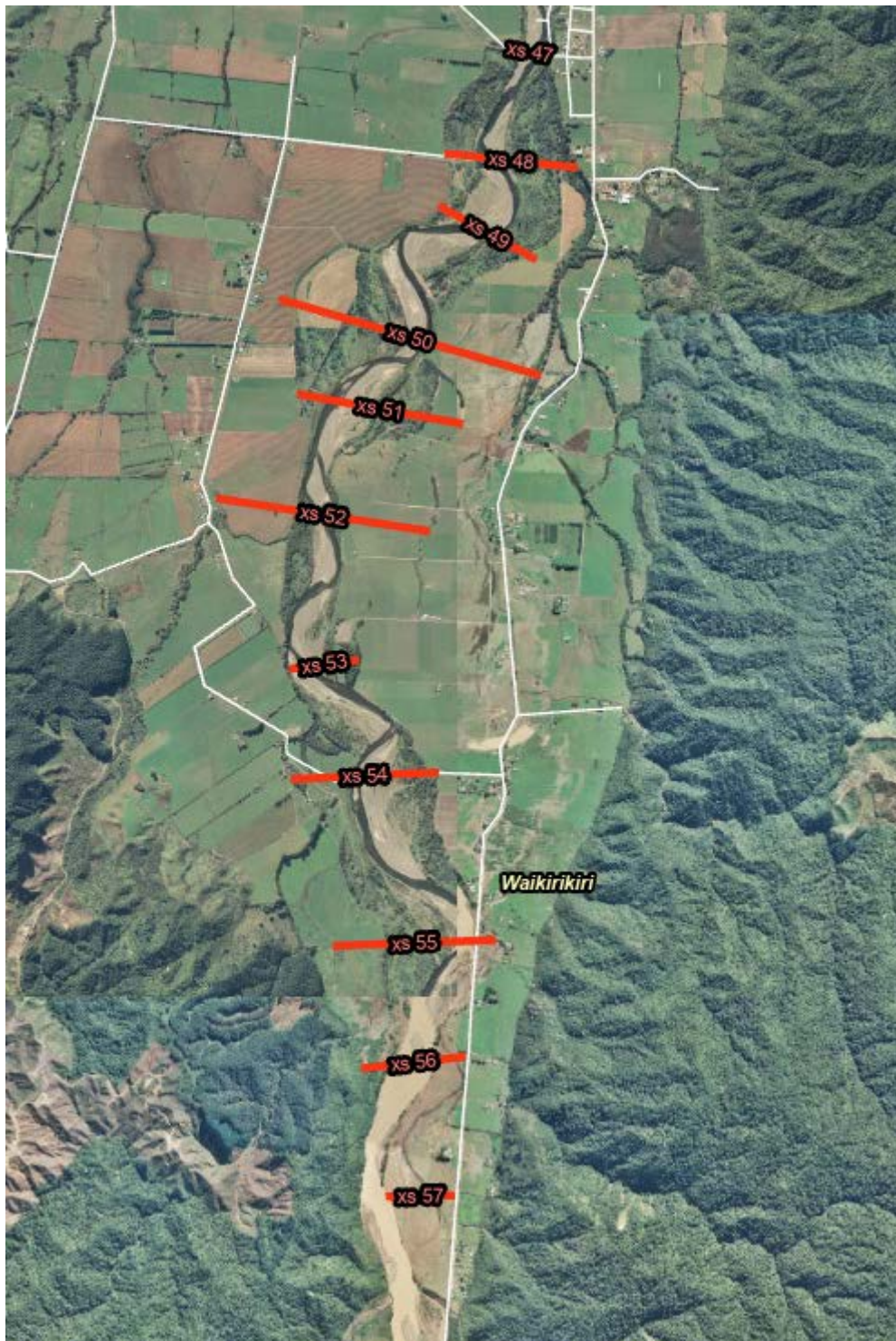


Photo 2: Cross section locations 47 -57

3 Extractions

Over the past two years the only extractions allocated for the Whakatāne and Tauranga rivers have been for river management purposes. Specifically where flood repair work is being carried out and overflow paths are recommended to relieve pressure on eroded banks or new works.

Land access issues have influenced potential extractions. There are concerns from local hapū about extraction activity in the Whakatāne River and this is apparent through contractor land access not being supported.

**Whakatāne-Tauranga Rivers Scheme - Gravel extraction summary
1 July 2018 – 30 June 2019**

| River | Site | Confirmed Quantity (m ³) |
|-----------------|---------------------|--------------------------------------|
| Tauranga River | Browns Pit XS 28-29 | 23,890 |
| Whakatāne River | Te Whetu Road | Nil |
| Total | | 23,890 |

**Whakatāne-Tauranga Rivers Scheme - Gravel extraction summary
1 July 2019 – 30 June 2020**

| River | Site | Allocation Quantity (m ³) | Confirmed Quantity (m ³) |
|----------------|-------------------------|---------------------------------------|--------------------------------------|
| Tauranga River | Chase Takao XS 31-32 | 15,838 | 6,260 |
| Total | | 15,838 | 6,260 |

**Whakatāne-Tauranga Rivers Scheme - Gravel extraction summary
1 July 2020 – YTD 30 June 2021**

| River | Site | Allocation Quantity (m ³) | Confirmed Quantity (m ³) |
|----------------|-------------------------------|---------------------------------------|--------------------------------------|
| Tauranga River | Wardlaw's Reach 6 LB XS 28 | 2,500 | 2,513 |
| Total | | 2,500 | 2,513 |

There is also allocation pending of 2000 m³ from the Rakuraku Site (Tauranga River XS 30-31), River Distance 25.1-25.4.

Mark Townsend
Engineering Manager

| Whakatāne-Tauranga Rivers Scheme Maintenance Programme 2020 - 2021 | | | | | | | | Objective ID: A3585318 |
|--|--|-----------|---|---------------------|---------------|------------------|-------------|---|
| 25/02/2021 | Work Type | Reach | Site | Location | Annual Budget | Job Estimate | Status | Notes |
| 1 | General | | | | | | | |
| 2 | Annual Flood Damage (See separate 2017 Flood Damage priority list also) | | | | \$193,500 | | | |
| 3 | Tauranga River | R5 | K. Clarke | LB 15.1 | | \$1,000 | Completed | |
| 4 | Bank erosion slumping repair | R5 | B Osbourne | RB 18.4km | | \$13,000 | Completed | Healing itself with regrowth of willows and gravel movement |
| 5 | Barsdell erosion layering trench willow planting | R5 | H Barsdell | RB 28.9km | | \$13,000 | tbc | Healing itself with regrowth of willows. Monitor |
| 6 | Raroa Stream near confluence below bridge Kirkbride Rd erosion pole planting gravel management | R5 | Maandonks | RB 0.2km | | \$0 | | Review in May |
| 7 | Bank erosion slumping overflow cut and gravel management | R5 | B Osbourne | LB 20.4km | | \$6,000 | Completed | Completed |
| 8 | | | Subtotal | | | \$33,000 | | |
| 9 | | | | | | | | |
| 10 | Whakatāne River | R1 | Schleper Lease | LB 6.4km | | \$116,000 | Progressing | Rock stockpiled 2019-2020 due to start March |
| 11 | Erosion with dead trees | R3 | Rutledge/ Fowell | RB 19.5km | | \$10,000 | Completed | Layering & pole planting |
| 12 | Erosion with large trees pulling bank in | R4 | Richardson's | RB 27.8km to 27.6km | | \$20,000 | Completed | Layering, pole planting & training groyne |
| 13 | Erosion slumping | R4 | Rapana | LB21.8km | | \$4,000 | Completed | Layering option, pole planting, training groyne |
| 14 | Erosion - layer and trench willow | R4 | Black | LB 31.8km | | \$0 | tbc | On hold |
| 15 | | | Subtotal | | | \$150,000 | | |
| 16 | | | | | | | | |
| 17 | Fly tipping and rubbish collection/disposal | | All sites | | \$8,000 | \$4,000 | \$ 2,000 | Ongoing, especially an issue at Keepa Road sites |
| 18 | | | Subtotal | | | \$4,000 | | |
| 19 | | | | | | | | |
| 20 | Pest Control | | All sites | | \$8,000 | \$4,000 | \$ 4,562 | Ongoing rabbit control, Te Rahu Canal |
| 21 | | | Subtotal | | | \$4,000 | | |
| 22 | | | SUBTOTAL - GENERAL | | | \$191,000 | | |
| 23 | | | | | | | | |
| 24 | Whakatāne River | | | | | | | |
| 25 | Mouth to Lime works | | | | \$37,300 | | | |
| 26 | Including Tributaries | R7 | Downards Rd Drain/Catchwater drain | | | \$4,000 | Completed | Completed |
| 27 | Pole planting and native planting | R7 | Waioho Stream various | | | \$8,000 | Completed | Completed |
| 28 | Desilting (tributaries) | | | | \$58,460 | | | |
| 29 | Outlet desilting | R1 & 2 | Various Sites | RB and LB | | \$12,000 | Completed | Ongoing |
| 30 | Desilting & berm management | R7 | Waioho Canal | 1.1 km-4.3 km | | \$16,000 | Completed | Completed |
| 31 | | | Subtotal | | | \$40,000 | | |
| 32 | | | | | | | | |
| 33 | River Channel Weed Spraying | | Various (all reaches) | | \$11,816 | | | |
| 34 | Rūātōki Area | R4 | 33.2- 37.2 km | | | \$0 | tbc | On hold |
| 35 | Waioho Stream spray pampas | R7 | White Pine to Downards Rd | | | \$2,000 | | Due March |
| 36 | Waiherowhero Stream | R7 | Reid Road to Cross Road | | | \$2,000 | | Due March |
| 37 | Spray pampas on beaches | R3 to R6 | Various | | | \$15,000 | Progressing | Ongoing |
| 38 | | | Subtotal | | | \$19,000 | | |
| 39 | | | | | | | | |
| 40 | Tree Clearing, Mulching & Layering | | | | \$61,989 | | | |
| 41 | Tree layering mulching | R4 | Mitchell | 23.2 km RB | | \$6,000 | Completed | |
| 42 | Remove trees and repair stopbank | R1 | Board Mill she oaks | LB 4.5km - 4.7km | | \$30,000 | Progressing | Under investigation & geotech design. Trees removed |
| 43 | Remove trees and repair stopbank | R7 | Waioho Canal above Titoki Rd | RB & LB | | \$20,000 | Progressing | Under investigation geotech design rebuild tree removed |
| 44 | Remove trees and repair stopbank | R1 | Henderson St Norfolk pine | RB 4.8km | | \$40,000 | Progressing | Agreement with landowner to fell tree. BOPRC to remove roots and reinstate bank |
| 45 | Remove trees Riverside Drive | R1 | various sites | RB 5.5km - 6.9km | | \$30,000 | Progressing | Under investigation, trees removed |
| 46 | Remove trees and repair stopbank | R1 | Keepa Road | LB 2.1km - 2.9km | | \$10,000 | Completed | |
| 47 | Remove trees and repair stopbank | R1 | Trident High | RB 8.6km -9.2km | | \$0 | Completed | Under investigation, trees removed |
| 48 | Remove trees and repair stopbank | R1 | Ferry Road | RB 5.6km | | \$6,000 | Progressing | Under investigation, trees removed |
| 49 | | | Subtotal | | | \$142,000 | | |
| 50 | | | | | | | | |
| 51 | Planting | | | | \$32,036 | | | |
| 52 | Infill planting | R1 to R6 | Various sites all reaches | | | \$10,000 | Completed | Completed |
| 53 | Release spraying of native plants | R5, 6 & 7 | Various, Waikirikiri, McGougan & Sisam's | | | \$2,000 | Completed | Ongoing |
| 54 | Release spraying of native plants | R1 & 2 | Simpsons x 2, Martin's lease & Ferry Road whitebait ponds, memorial Keepa | | | \$2,000 | Completed | Completed |
| 55 | Shrub willow poles - Waioho/Ōwhakatoro | R7 | Johnson, Norris, Sisam | | | \$6,000 | Completed | Progressing |
| 56 | Planting restoration sites Awatapu & Ferry Road | R1 | Various | | | \$15,000 | Completed | Completed |
| 57 | | | Subtotal | | | \$35,000 | | |
| 58 | | | | | | | | |
| 59 | Rock/Rubble | | | | \$125,100 | | | |
| 60 | Rock replenishment | R1 | Below Rowing Club | Various RB | | \$0 | Completed | Completed |
| 61 | Rock replenishment | R1 | Keepa Road | LB 2.6km - 2.1km | | \$10,000 | tbc | On hold. Coordinating with WDC works |
| 62 | | | Subtotal | | | \$10,000 | | |
| 63 | | | | | | | | |
| 64 | Fencing | R1 | Fretwell & Martin's lease | RB&LB 3.4km- 9.9km | | \$10,000 | Completed | Completed |
| 65 | Stock water troughs new lease options | R1 | Martins Lease | RB 9.9km to 7km | | \$10,000 | Completed | Completed |
| 66 | Waioho Stream - edge fencing | R7 | Gavin Johnson, Bedford, etc | RB 2.1km - 3.7km | | \$10,000 | Completed | Completed |
| 67 | Awatapu wetland | R1 | Martin's lease | RB 7.9km | | \$10,000 | Completed | Completed |
| 68 | Drain outlets urban lease | R1 | Martin's lease | RB 9.9km -5.1km | | \$6,000 | Completed | Progressing |
| 69 | | | Subtotal | | | \$46,000 | | |
| 70 | | | | | | | | |
| 71 | Beach Shaping/Ripping | | | | \$20,080 | | | |
| 72 | Beach ripping | R3 & 4 | Various | RB and LB | | \$10,000 | tbc | |
| 73 | Over flow channel cuts | R3 | Various sites | RB and LB | | \$12,000 | tbc | |
| 74 | Overflow channel cuts - Ngāti Rangō | R4 | Various sites | RB and LB | | \$20,000 | tbc | |
| 75 | Remove Rail Iron from River Bed | R4, 5 & 6 | Waikirikiri to Pekatahi and Valley road | | | \$10,000 | Progressing | Upstream Rūātōki irons exposed in flood event |
| 76 | | | Subtotal | | | \$52,000 | | |
| 77 | | | SUBTOTAL - MOUTH TO LIME WORKS | | | \$344,000 | | |
| 78 | | | | | | | | |
| 79 | Stopbanks | | | | \$23,062 | | | |
| 80 | Stopbank Miscellaneous Maintenance | | | | | | | |
| 81 | Stopbank mowing (Rowing Club to Awatapu) | R1 | Urban area (various) | RB 4.3km to 9.6km | | \$7,000 | Completed | Ongoing |
| 82 | Stopbank repairs | R1 | 241 Rewatu Road (nuku) & various | LB 10.2km | | \$12,000 | Completed | Completed |
| 83 | Waioho Canal spraying pampas | R7 | Various | RB & LB | | \$5,000 | Progressing | |
| 84 | Stopbank mowing Board Mill | R1 | | LB 4.3km to 5.3km | | \$1,000 | Completed | Completed Nov 2020 |
| 85 | Houston's culvert replacement | R3 | | 13.9 km RB | | | tbc | Under investigation |
| 86 | All floodgate outlets - misc. repairs | all | Sykes, Houston's, Ingle's, Rewatu Rd and others | Various | | \$10,000 | Progressing | Ongoing |
| 87 | Stopbank repairs Waioho Canal | R7 | Ernest's | 3km | | \$5,000 | Completed | Progressing |
| 88 | Repairs, access & gravel extraction/desilt | R2 | Red Devon outlet | | | \$3,000 | Progressing | |
| 89 | Berm /floodwall and stoplog management, Waioho | R7 | Poroporo to Titoki Rd | Various | | \$2,000 | Completed | Ongoing. Floodwall repaired. Hydroseeding |
| 90 | Te Rahu Canal stopbank and Mangaroa Stream stopbank | C1 | Carters | LB 1.5km to 1.9km | | \$50,000 | Completed | Repair stopbank seepage |
| 91 | Hotspot 191 Rewatu Road | R1 | Rewatu Road | LB 9.6k to 9.7km | | | Progressing | Culvert cleaned of roots and sump installed |

MEMORANDUM



To: Whakatāne-Tauranga Rivers Scheme
Advisory Group

For period 1 August 2020 to 31 January 2021

From: Paula Chapman
Project Manager - Flood Recovery

Date: 3 March 2021

File Ref: A3732447

Subject: Status Report - April 2017 Flood Repair Project (1 August 2020 to 31 January 2021)

April 2017 flood event - background

In early April 2017, the Eastern Bay of Plenty was hit by ex-Tropical Cyclone Debbie. The cyclone brought with it prolonged torrential rain, resulting in rising river levels across all the rivers and waterways in the region. The cyclone dropped considerable rainfall over the entire Bay of Plenty region which produced record high river levels and flows. In the Rangitāiki, flows reaching the Matahina Dam were 20% higher than ever recorded. Flows in the Whakatāne River were captured as 34% higher than previously recorded.

The event resulted in significant damage to river and drainage networks and assets across the region, from the Kaituna in the west through to the Waioeka-Otara catchment in the east.

1 Programme Update

1.1 Programme update summary

- The flood recovery project is now in its last year of the estimated four year programme. Physical repair works have been steady across the programme as conditions and material availability have allowed. At this stage it is likely that there will be a small number of sites that will be carried over for completion into the 2021/22 year.
- As at 31 January 2021, 445 site repair works are complete (or have been assessed as no longer required) from the total programme of 520 sites. This work includes many of the highest priority works. In the case of the Whakatāne Tauranga River Scheme 83 sites from a total programme of 108 sites have been completed.
- Given the few remaining rock repair works the availability of suitable rock material across the programme is no longer a major concern.
- The process for claiming eligible costs from central government is well established. Current claims are for essential infrastructure repairs. Claim 13 was received in December and Claim 14 is currently being drafted. The total amount received from central government to date is over \$9.2 million.
- Three progress payments for Infrastructure Insurance have been approved totalling \$3,600,000.
- The Material Damage insurance claim for all pump damage is still to be finalised.

1.2 Environment and heritage

- Works comply with the Regional Natural Resources Plan, Bay of Plenty Regional Council policies and bylaws for the Rivers and Drainage activities.
- The project team is working with Coastal Catchments (Land Management) to identify opportunities to work together to increase inanga and tuna habitat.
- Repair works in the Whakatāne River upstream of the Ohotū Bridge are on hold pending information and decisions regarding engagement with Ngāi Tūhoe hapu and iwi. Staff met on Waikirikiri Marae with Ngāti Hāmua hapū recently to talk about how to bring together all interests in planning for Ōhinemataroa (Whakatāne River).
- 14 of the remaining sites are located in Reach 4 (Ohotū Bridge to end of Ruatoki Valley Rd), the repair works originally proposed included rock work, trench willow works and channel alignment with works priority varying from low to high. BOPRC has been unable to do any of the repairs at the direction of Te Uru Taumatua.
- This portion of work will need to be reviewed after the summer construction season to determine if it remains part of the overall repair project. All these sites will need re-inspecting and a drone flight is planned in the next couple of months.

1.3 Quality

- Sections of river are re-inspected prior to developing the detailed work scope for each site. Due to the passage of time more often than not high priority sites are showing increased levels of damage compared to initial assessments and estimates.
- The project team is currently reviewing all remaining sites to determine which are no longer required and can be removed from the programme. In the case of Whakatāne-Tauranga Rivers Scheme to date 14 sites have been identified where work is not required and those sites will be monitored until the end of the programme.

1.4 Communications, community and stakeholder engagement

- Council continues to input into the regular established newsletters, such as the Edgumbe Collective Newsletter and the Regional Council website to keep the community informed on work plans and progress. The project page is included on Council's website and interested people can follow the page to ensure they receive regular updates. <https://www.boprc.govt.nz/floodrepairs>

1.5 Procurement

- The total programme is made up of multiple smaller projects and these have been delivered utilising established Rivers and Drainage Panel Supplier contract agreements. The panel approval process ensures contractors are capable of the work and hold the necessary accreditations and insurance cover.
- Whakatāne Tauranga River Scheme rock work is supported by the Alan Rust Quarry (Te Mahoe) and Ywarri Quarry (Manawahe).

1.6 Programme Delivery

A total of 520 sites have been identified in the repair programme across the region, 108 are associated with the Whakatāne-Tauranga Rivers Scheme.

Across the programme 445 sites have been completed, 83 of these are in the Whakatāne-Tauranga Rivers Scheme.

110 sites are targeted for completion in the 2020/21 year, 26 of those are in the Whakatāne-Tauranga Rivers Scheme.

Total programme completion date remains at 30 June 2021, however there may be a small number of sites carried over to the following financial year.

1.6.1 Key sites completed during the last period include:

| Site reference | Comment |
|---|--|
| WH 102 Eivers Road, Warren Cole Walkway | Extensive area of rock slumping and asset damage |
| WH125 Fowell/Studer | Area of eroded bank with trench willow damage |



Photo 1: Eivers Road site – Warren Cole Walkway completed Dec 2020

1.6.2 Key sites underway or planned for the next six month period include:

| Site reference | Comment |
|-----------------------|----------------------------------|
| WH163 Dunstans | Slumping of rockwork |
| WH117 Deegans | Area of slumping repair underway |
| WH199 Waioho Poroporo | Eroded river bank |

1.7 Programme Risks and Issues

| Risk/Issue | Description | Action/management | Owner |
|------------------|--|--|--------------------------|
| Weather | Severe weather event may cause new damage | Review works programme against new works (annual flood damage) | BOPRC NEMA Insurer |
| Programme length | Some works unable to be completed as part of programme | Reassess and undertake works alongside annual maintenance. | BOPRC |

| | | | |
|------|---------------------|---|---------------------------------|
| Cost | Cost exceeds budget | Work closely with NEMA and insurers, maximise contributions from other stakeholders | BOPRC Aon NEMA Insurer |
|------|---------------------|---|---------------------------------|

2 Financial

Forecast costs - total programme

| | |
|--|-------------|
| Estimate total programme cost Whakatāne-Tauranga Rivers Scheme | \$9,560,000 |
| Estimated betterment value | \$3,740,000 |

| Year | Expenditure budget | Actual Costs for infrastructure works |
|--------------|--------------------|---------------------------------------|
| 2017/18 | \$2,850,000 | \$1,683,969 |
| 2018/19 | \$3,366,000 | \$1,668,824 |
| 2019/20 | \$3,127,200 | \$2,730,647 |
| 2020/21 | \$2,400,000 | Ytd 31 Jan \$429,448 |
| Total | 11,743,200 | Ytd \$6,512,888 |

3 Recoveries

- Staff are working with insurance specialists Aon to progress the insurance claims process to date. Recoveries to date total \$3,600,000.
- The project team are working with the central government National Emergency Management Agency (NEMA previously MCDEM) representatives and are comfortable with the process and speed of recoveries to date.
- Recoveries to date specifically related to Whakatāne-Tauranga Rivers Scheme flood repair works amount to \$2,986,583.

4 Expected progress within the next six month period

- Complete 90% of the total Whakatāne-Tauranga Rivers Scheme sites.
- Review all remaining Whakatāne-Tauranga Rivers Scheme sites to determine sites that can be removed from the programme.
- Draft NEMA Claim 14.
- Receive Material Damage pump station repairs claim.

Paula Chapman
Project Manager Flood Recovery

Bay of Plenty Regional Council - Toi Moana - River Scheme Advisory Groups

Statement of revenue and expense: Whakatane-Tauranga Rivers Scheme

For the 6 months ending 31 December 2020

Whakatane-Tauranga Rivers Scheme

| Variance Indicators | | | | | |
|---------------------|--|----------------------|--|--------------|--|
| Low <10% | | Medium 10% to 30% | | High >30% | |

| 2020/2021 | | Variance | | Variance comments |
|-----------|--------|----------|--------------------|-------------------|
| Budget | Actual | \$ | Variance indicator | |
| \$000 | | | | |

Line Operating revenue by class

| | | | | | | | |
|---|--------------------------------------|--------------|--------------|----------|--------|--|-------------------------------|
| 1 | General rates | 88 | 88 | (0) | Lower | | |
| 2 | Targeted rates | 910 | 910 | 0 | - | | |
| 3 | External interest income | 6 | 0 | (6) | Lower | | |
| 4 | Other revenue | 30 | 45 | 15 | Higher | | Grazing licenses revenue |
| 5 | Revaluation and asset disposal gains | 0 | (7) | (7) | Lower | | Effect of 2020/21 revaluation |
| 6 | Investment income | 125 | 125 | 0 | - | | |
| 7 | Total revenue | 1,159 | 1,161 | 2 | Higher | | |

Operating expenditure by class

| | | | | | | | |
|----|--|------------|--------------|--------------|--------------|--|---|
| 8 | Administration expenses | 4 | 10 | (6) | Higher | | |
| 9 | Other expenses | 124 | 199 | (75) | Higher | | Material costs and insurance costs higher than budget |
| 10 | Consultancy fees | 0 | 8 | (8) | Higher | | Maintenance work spend is ahead of budget and at 52% of total year's budget |
| 11 | Contract work | 61 | 255 | (195) | Higher | | |
| 12 | Finance costs | 109 | 111 | (2) | Higher | | |
| 13 | Depreciation and asset disposal | 175 | 175 | 0 | - | | |
| 16 | Subtotal - expenditure | 473 | 758 | (285) | Higher | | |
| 17 | Net overhead charges and recoveries | 256 | 265 | (9) | Higher | | |
| 18 | Total operating expenditure | 729 | 1,023 | (294) | Higher | | |
| 19 | Total operating surplus (deficit) | 430 | 138 | (291) | Unfavourable | | |

Capital revenue by class

| | | | | | | | |
|----|------------------------------|------------|------------|--------------|-------|--|--|
| 20 | Capital funding | 550 | 279 | (271) | Lower | | Includes insurance recoveries and CIP funding for Whakatane stopbanks and floodwalls |
| 21 | Total capital revenue | 550 | 279 | (271) | Lower | | |

Bay of Plenty Regional Council - Toi Moana - River Scheme Advisory Groups

Statement of revenue and expense: Whakatane-Tauranga Rivers Scheme

For the 6 months ending 31 December 2020

Whakatane-Tauranga Rivers Scheme

| Variance Indicators | | | | | |
|---------------------|--|----------------------|--|--------------|--|
| Low <10% | | Medium 10% to 30% | | High >30% | |

| | 2020/2021 | | Variance | | Variance comments |
|-----------------------------------|------------|------------|--------------|--------------------|-------------------|
| | Budget | Actual | \$ | Variance indicator | |
| | \$000 | | | | |
| 22 Total surplus (deficit) | 980 | 418 | (562) | Unfavourable | |

Capital expenditure by project

| | | | | | | | |
|----|---|--------------|------------|------------|--------|--|---|
| 24 | Whakatane Tauranga Flood Damage Repairs | 1,000 | 297 | 703 | Lower | | 26 sites are programmed for repair in 2020/21 |
| 25 | Whakatane Tauranga culvert renewals | 52 | 0 | 52 | Lower | | |
| 26 | Whakatane River (modelling) | 12 | 4 | 8 | Lower | | |
| 27 | Whakatane River stopbanks | 94 | 286 | (192) | Higher | | |
| 28 | Te Rahu Pumpstation | 250 | 0 | 250 | Lower | | Carried forward from 2019/20. Works underway. |
| 29 | Whakatane Floodwalls | 95 | 0 | 95 | Lower | | |
| 30 | Total capital expenditure | 1,503 | 588 | 916 | Lower | | |

Reserves

| | Opening Balance \$000 | Movement \$000 | Closing Balance \$000 | |
|------------------------------|-----------------------|----------------|-----------------------|-----------------|
| 26 Flood Damage Reserve | (193) | (37) | (230) | Funds available |
| 27 Asset Replacement Reserve | 562 | 188 | 750 | |
| 28 Works Reserve | (835) | (291) | (1,125) | Funds available |
| 29 Total Reserves | (467) | (139) | (606) | Funds available |

Internal Loans




| | Opening Balance \$000 | Movement \$000 | Closing Balance \$000 |
|-----------------|-----------------------|----------------|-----------------------|
| 30 Loans | 7,370 | (119) | 7,252 |

| 1/07/2019 \$000 | Movement \$000 | 1/07/2020 \$000 |
|-----------------|----------------|-----------------|
|-----------------|----------------|-----------------|

Bay of Plenty Regional Council - Toi Moana - River Scheme Advisory Groups Statement of revenue and expense: Whakatane-Tauranga Rivers Scheme

For the 6 months ending 31 December 2020

Whakatane-Tauranga Rivers Scheme

| Variance Indicators | | | | | |
|---------------------|---|----------------------|---|--------------|---|
| Low <10% |  | Medium 10% to 30% |  | High >30% |  |

| 2020/2021 | | Variance | | Variance comments | |
|-----------|--------|----------|--------------------|-------------------|--|
| Budget | Actual | \$ | Variance indicator | | |
| \$000 | | | | | |

31 **Asset Revaluation**

78,685 3,832 82,517

MEMORANDUM



To: Whakatāne-Tarawera Rivers Scheme
Advisory Group Members

From: Kirsty Brown
Rivers and Drainage Assets Manager

Date: 17 February 2021

File Ref:

Subject: General Business Update

Following items are to be discussed under the General Business section:

1 **Infrastructure Insurance Review**

Council obtains its insurance through the Bay of Plenty Shared Services Ltd (BOPLASS) joint insurance procurement forum. This includes covering the 40% local authority share of infrastructure restoration costs resulting from a natural disaster.

Due to the steady increase in infrastructure insurance premiums over the years and the likelihood this pattern will continue, a review of how we insure our flood protection and drainage assets is currently underway. This review is being led by our insurance broker's Aon.

The main objectives of the review include:

- Quantifying the frequency and financial consequences of flood damage to flood protection assets and clean-up costs.
- Identifying flood protection assets most at risk of damage from flood to inform asset management, resilience strategies and risk financing.
- Ensuring cost-effective and sustainable flood risk financing by reviewing financial risk tolerance, flood risk retention and disaster reserving strategies.

In the meantime, staff have secured savings for the 2020/21 premiums by:

- Initiating a successful review of the BOPLASS allocation formula.
- Reducing the contingency sum built in for all assets.

Group members will be kept up-to-date as this project develops.

2 **Flood Protection and Drainage Bylaws 2020**

The Flood Protection and Drainage Bylaws are regulations that safeguards Council's flood protection and land drainage assets from damage and

misuse. The bylaws only apply to assets managed by Council as part of the region's flood protection and land drainage schemes.

Following a comprehensive review of the 2008 Bylaws, the 2020 Bylaws were formally adopted by Council on 17 December 2020 and became operative on 1 February 2021.

In summary, the key changes include:

- Strengthening clauses relating to stock access to drains.
- Extending the bylaw applicable areas (where a bylaw authority may be required) for earthworks in relation to defences against water (see appendix 1 attached).
- Additional clauses related to fencing, ploughing and land use intensification in areas with pumiceous soils e.g. lower reaches of the Kaituna, Tarawera and Rangitāiki.
- Identification of additional floodways.
- Additional clauses relating to written authority management plans for multiple bylaw authority applications e.g. routine maintenance, seasonal activities and cultural practices.

More information on the Bylaws 2020 can be found on our website at <https://www.boprc.govt.nz/our-projects/flood-protection-and-drainage-bylaws>, including the online form to find out whether a property is within the bylaw applicable area.

3 **Stopbank Integrity Investigations**

The Rivers and Drainage Asset Team has completed some major pieces of work to help support the integrity of community flood protection assets. This has included the development and adoption of the Flood Protection and Drainage Bylaws 2020, a performance review of Rivers and Drainage critical assets identified in the Rivers and Drainage Asset Management Plan and condition assessments of non-critical assets across the River Schemes.

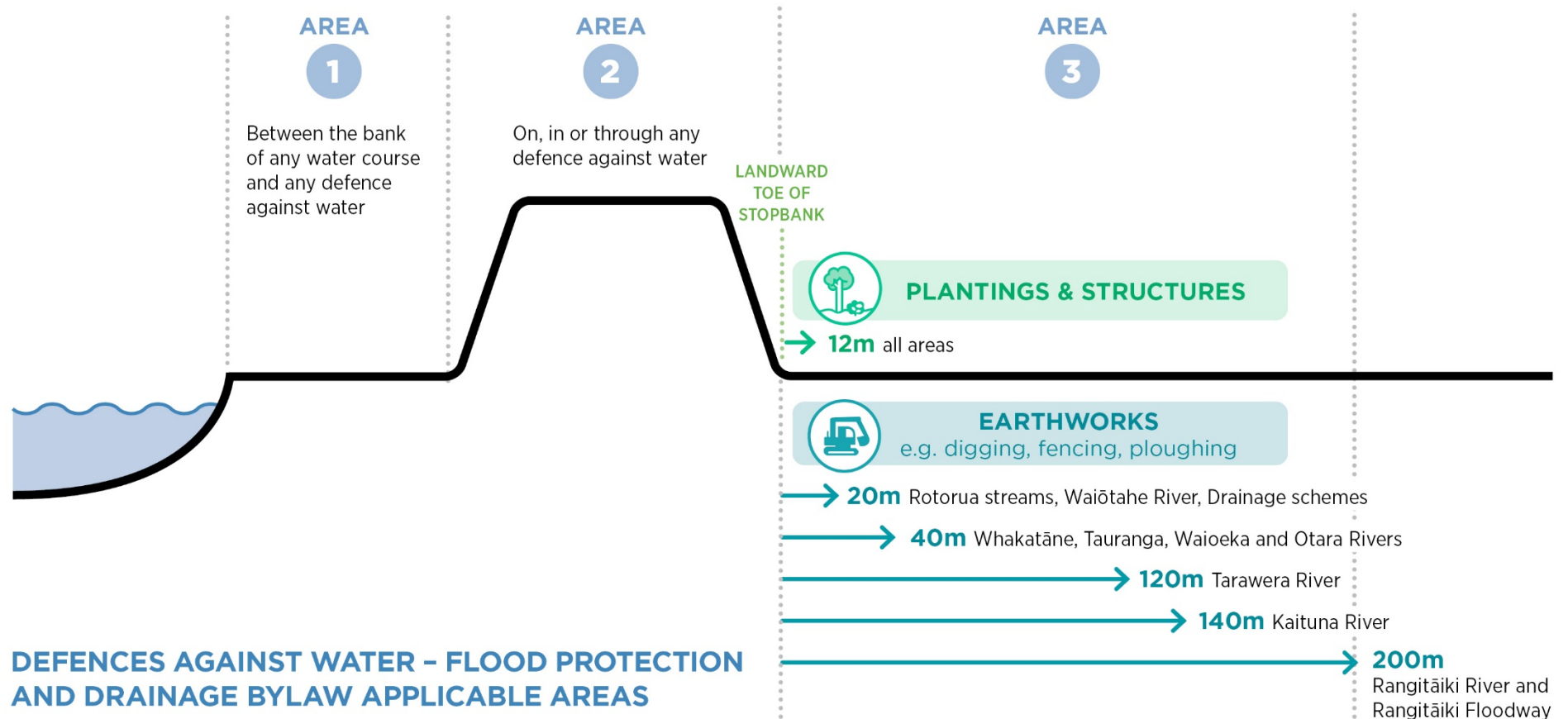
This combined work has highlighted a number of areas where adjacent land owner development (planting or structures) may impact Council flood protection assets. Examples of this might include large trees or structures very close or into the stopbank batter. With the foundation of 2020 Bylaw adoption and the supporting communications plan the Assets Team will be embarking on a project this year to inform and work with land owners where there may be encroachment concerns. The project will require a collaborative approach with the local authorities to ensure consistency of information and acknowledgment of community safety.

The first stage of the project is planned for the lower section of the Utuhina Stream in mid-2021.

A handwritten signature in black ink, appearing to read 'Kirsty Brown'. The signature is written in a cursive style with a large, looped initial 'K'.

Kirsty Brown
Rivers and Drainage Assets Manager

Appendix 1 - Bylaw applicable areas for defences against water (stopbanks, floodgates, pump station) and drains without stopbanks



Floodway and Drainage Bylaw applicable areas - drainage scheme drains without stopbanks

