

Audit and Risk Committee

NOTICE IS GIVEN

that the next meeting of the **Audit and Risk Committee** will be held in **Mauao Rooms, Bay of Plenty Regional Council Building, 87 First Avenue, Tauranga** on:

Thursday, 1 March 2018 commencing at 9.30 am.

Mary-Anne Macleod
Chief Executive
22 February 2018



Audit and Risk Committee

Terms of Reference

The Audit and Risk Committee has a core function for the formulation, review and monitoring of audit and risk frameworks. It will also monitor the effectiveness of funding and financial policies and Council's performance monitoring framework. It will receive and review the draft Annual Report, and external Audit letter and management reports.

Delegated Function

To monitor the effectiveness of Council's funding and financial policies and frameworks.

To monitor the effectiveness of Council's performance monitoring framework.

To approve and review Council's audit and risk policies and frameworks.

Membership

Five councillors, one independent Council appointee, and the Chairman as ex-officio.

Quorum

In accordance with Council standing order 10.2, the quorum at a meeting of the committee is not fewer than three members of the committee.

Term of the Committee

For the period of the 2016-2019 Triennium unless discharged earlier by the Regional Council.

Meeting frequency

Quarterly.

Specific Responsibilities and Delegated Authority

The Audit and Risk Committee is delegated the power of authority to:

- Monitor the effectiveness of Council's funding and financial policies and Council's performance monitoring framework (financial and non-financial);
- Review Council's draft Annual Report prior to Council's adoption;
- Receive and review external audit letters and management reports;
- Approve and review the internal audit plan and review the annual programme report;
- Approve, review and monitor Council's risk framework and policy;
- Review the risk register;
- Monitor Council's legislative compliance and receive reporting on non-compliance matters as part of risk management reporting.

Note:

- The Audit and Risk Committee reports directly to the Regional Council.
- The Audit and Risk Committee is not delegated the power of authority to:
 - Develop, review or approve strategic policy and strategy.

Develop, review or approve Council's Financial Strategy, funding and financial policies and non-financial operational policies and plans.

Public Forum

1. A period of up to 15 minutes may be set aside near the beginning of the meeting to enable members of the public to make statements about any matter on the agenda of that meeting which is open to the public, but excluding any matter on which comment could prejudice any specified statutory process the council is required to follow.
2. The time allowed for each speaker will normally be up to 5 minutes but will be up to the discretion of the chair. A maximum of 3 public participants will be allowed per meeting.
3. No statements by public participants to the Council shall be allowed unless a written, electronic or oral application has been received by the Chief Executive (Governance Team) by 12.00 noon of the working day prior to the meeting and the Chair's approval has subsequently been obtained. The application shall include the following:
 - name of participant;
 - organisation represented (if any);
 - meeting at which they wish to participate; and matter on the agenda to be addressed.
4. Members of the meeting may put questions to any public participants, relevant to the matter being raised through the chair. Any questions must be asked and answered within the time period given to a public participant. The chair shall determine the number of questions.

Membership

Chairperson:	J Cronin
Deputy Chairperson:	D Love
Councillors:	S Crosby, A Tahana, A von Dadelszen
Ex Officio:	Chairman D Leeder
Appointees:	B Robertson
Committee Advisor:	R Garrett

Recommendations in reports are not to be construed as Council policy until adopted by Council.

Agenda

- 1 Apologies**
- 2 Public Forum**
- 3 Acceptance of Late Items**
- 4 General Business**
- 5 Confidential Business to be transferred into the open**
- 6 Declarations of Conflicts of Interests**
- 7 Previous Minutes**
- 7.1 Audit and Risk Committee minutes - 19 December 2017** **11**
- 8 Reports**
- 8.1 Committee Chairperson's Report** **19**
 - APPENDIX 1 - Audit and Risk Work Programme March 2018 to November 2018 21
 - APPENDIX 2 - Audit and Risk Work Programme March 2017 to September 2017 25
- 8.2 External Audit: Management Report on the Long Term Plan 2018-2028 Consultation Document**
 - This item will be circulated under separate cover.

8.3 Internal Audit Status Update 2017/18	29
8.4 Kopeopeo Canal Remediation Project Update 17	33
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Resolution to exclude the public

THAT the public be excluded from the following parts of the proceedings of this meeting.

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General Subject of Matter to be Considered	Reason for passing this resolution in relation to this matter	Grounds under Section 48(1) LGOIMA 1987 for passing this resolution
9.1 Public Excluded Audit and Risk Committee minutes - 19 December 2017.	Please refer to the relevant clause in the meeting minutes.	Good reason for withholding exists under Section 48(1)(a).
9.2 Key Risk Register Quarterly Update - December 2017 to February 2018.	To protect information where the making available of the information would be likely otherwise to damage the public interest.	Good reason for withholding exists under Section 48(1)(a).

9.1 Public Excluded Audit and Risk Committee minutes - 19 December 2017	63
9.2 Key Risk Register Quarterly Update - December 2017 to February 2018	67
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10 Confidential Business to be transferred into the open

11 Readmit the Public

12 Consideration of General Business

Previous Minutes

Minutes of the Audit and Risk Committee Meeting held in Mauao Rooms, Bay of Plenty Regional Council Building, 87 First Avenue, Tauranga on Tuesday, 19 December 2017 commencing at 9.30 a.m.

Present:

Chairman: J Cronin

Deputy Chairman: D Love

Councillors: S Crosby, A von Dadelszen

Ex Officio: Chairman D Leeder

In Attendance: Councillor J Nees, M Macleod (Chief Executive), M Taylor (General Manager Corporate Performance), C Ingle (General Manager Integrated Catchments), E Grogan (General Manager Regulatory Services), S Hey (Manager Chief Executive's Office), A Dixon (Management Accountant Team Leader), A Chappell (Property Manager), I Morton (Strategy & Science Manager), S Slack (Principal Internal Auditor), C Gordon (Internal Auditor), B Love (Contractor Project Manager for Kopeopeo Canal), R Garrett (Committee Advisor), J Durham (Committee Advisor).

External presenters: B Halford and A Labuschagne, Audit New Zealand.

Apologies: A Tahana, B Robertson

1 Apologies

Resolved

That the Audit and Risk Committee:

- 1 Accepts the apologies tendered from Councillor Tahana and appointed member B Robertson.

Cronin/von Dadelszen
CARRIED

2 Public Forum

Nil

3 Acceptance of Late Items

Nil

4 **General Business**

Nil

5 **Declaration of conflicts of interest**

Councillor Love noted his membership of the Ōpōtiki District Council Audit and Risk Committee.

6 **Previous Minutes**

6.1 **Audit and Risk Committee minutes - 19 September 2017**

Resolved

That the Audit and Risk Committee:

- 1 **Confirms the minutes of the Audit and Risk Committee meeting held 19 September 2017 as a true and correct record;**
- 2 **Removes the apology recorded from P Thompson as Councillor Thompson is not a member of the Audit and Risk Committee.**

Leeder/Crosby
CARRIED

7 **Reports**

7.1 **Committee Chairperson's Report**

General Manager Corporate Performance Mat Taylor updated members on Audit and Risk Committee activities, and noted that Council's delegation to the Committee for monitoring implementation of the Cullen Report on the Rangitāiki River Scheme review recommendations had now been incorporated into the Committee's work programme.

Resolved

That the Audit and Risk Committee:

- 1 **Receives the report, Committee Chairperson's Report ;**
- 2 **Notes the Committee's completed and forward looking work programme.**

Cronin/von Dadelszen
CARRIED

7.2 **Audit Engagement Letter: Audit of the consultation document and Long-Term Plan for the period commencing 1 July 2018**

General Manager Corporate Performance Mat Taylor introduced external auditors Ben Halford and Anton Labuschagne from Audit New Zealand (Audit NZ). Mr Halford outlined the terms and scope of the Audit NZ audit of the consultation document and the Long Term Plan for the period commencing 1 July 2018, noted the anticipated costs and timeframe and highlighted three key Audit NZ areas of focus: infrastructure strategy and its alignment with financial strategy; assumptions; and quality of asset

related forecasting information. Mr Halford noted that there were also various Regional Council specific matters to be included in the audit, including passenger transport, revenue and finance policy, emergency management funding and third party infrastructure funding.

Attendance

Chairman Leeder left the meeting at 9.40 am and rejoined at 9.45 am.

In response to a member's question, Mr Halford clarified that the public transport specific area of interest would be reviewed both on underlying assumptions used as well as delivery. It was noted that much of the passenger transport area is reliant on the actions of the territorial authorities.

Resolved

That the Audit and Risk Committee:

- 1 Receives the report, Audit Engagement Letter: Audit of the consultation document and Long-Term Plan for the period commencing 1 July 2018.**

**Cronin/Love
CARRIED**

7.3 External Audit Management Report for the year ended 30 June 2017

General Manager Corporate Performance Mat Taylor presented the Audit New Zealand Management Report for the year ended 30 June 2017 to members to receive, and drew members' attention to no report recommendations being classified as urgent or beneficial and that the three necessary recommendations had been or would be actioned.

External auditor Mr Halford outlined the main areas audited and the key findings of the report, and noted the co-operation and assistance of Council staff during the audit process. Mr Halford clarified for members that only one instance of concern regarding documentation around sensitive expenditure was found during sample testing of the process.

Resolved

That the Audit and Risk Committee:

- 1 Receives the report, External Audit Management Report for the year ended 30 June 2017;**

**Cronin/Love
CARRIED**

7.4 Kopeopeo Canal Remediation Project Update 16

General Manager Integrated Catchments Chris Ingle updated members on progress with the Kopeopeo Canal Remediation project. Mr Ingle noted current key risks included: unforeseen operating costs; the ongoing high level of public emotion associated with a contaminated site and the demands this placed on project staff; site

flood management in an adverse weather event and possible further migration west of contaminated sediment.

Mr Ingle clarified for members that, while the level of public interest around the project seemed reasonably high, it was mainly created by a small number of complaints; and the associated risk was related to the management effort required from key staff.

Members discussed risks associated with possible flood scenarios and available mitigation actions. A robust flood management plan was in place for the project, with the risk of overtopping at various levels of flood event considered; and it was noted that dioxin was not water-soluble and only migrates if attached to sediment; therefore any overflow water from the site would be contaminant-free.

Resolved

That the Audit and Risk Committee:

- 1 Receives the report, Kopeopeo Canal Remediation Project Update 16**

**Leeder/von Dadelszen
CARRIED**

7.5 Internal Audit Status Update 2017/18

Attendance

Chairman Leeder left the meeting at 10.05 am and returned at 10.10 am.

Manager Chief Executive's Office Shelley Hey, Principal Internal Auditor Steve Slack and Internal Auditor Claire Gordon updated members regarding progress made on the Internal Audit 2017/18 work programme. Mr Slack outlined the status of current internal audit reviews and internal audit recommendations and advised that two reviews had been completed over the last three months, reviews to take place in quarters three and four had been scoped, and that audit report recommendations were being actively managed with regular meetings being held with action-holding managers. Mr Slack noted that the internal audit team was regularly providing real time assurance advice to the Chief Executive in addition to their regular work programme; and advised members that Council's internal audit function was advanced compared to other councils, based on a recent internal audit insight session held by KPMG for Bay of Plenty councils.

Resolved

That the Audit and Risk Committee:

- 1 Receives the report, Internal Audit Status Update 2017/18;**
- 2 Notes that it has received the executive summary of two completed internal audit reviews - Accounts Receivables (confidential Appendix 1) and Payroll (confidential Appendix 2).**

**Cronin/Love
CARRIED**

8 Public Excluded Section

Resolved

Resolution to exclude the public

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General Subject of Matter to be Considered	Reason for passing this resolution in relation to this matter	Grounds under Section 48(1) LGOIMA 1987 for passing this resolution
8.1 Public Excluded Audit and Risk Committee minutes - 19 September 2017	Good reason for withholding exists under Section 48(1)(a).	To prevent the disclosure or use of official information for improper gain or improper advantage.
8.2 Confidential Appendix 1 - Internal Audit Executive Summary - Accounts Receivable	Good reason for withholding exists under Section 48(1)(a).	To prevent the disclosure or use of official information for improper gain or improper advantage.
8.3 Confidential Appendix 2 - Internal Audit Executive Summary - Payroll	Good reason for withholding exists under Section 48(1)(a).	To prevent the disclosure or use of official information for improper gain or improper advantage.
8.4 Quarterly Key Risk Register Update - October to December 2017	Good reason for withholding exists under Section 48(1)(a).	To maintain legal professional privilege.

**Cronin/Crosby
CARRIED**

9 Continuation of Agenda Item 7.4: Kopeopeo Canal Remediation Project Update 16

Refer PowerPoint Objective ID: A2776661

Kopeopeo Canal Project Manager Brendon Love provided a further update on progress with the remediation project. Mr Love responded to members' questions raised in the earlier discussion around Agenda Item 7.4, and clarified that the key issue for project flood management was containment of contaminant-bound sediment within the retention basin. Mr Love explained the various controls in place for differing rainfalls and noted that three different flood scenarios had been modelled, of which only the most severe involved any risk of overtopping. Project flood management was designed not to allow any floodwaters in or out of the project site.

Mr Love also advised that Phase 1 was scheduled for completion in September/October 2018; that a project open day was scheduled for early February 2018 with Councillor tours and a possible Ministerial visit; and that the Kopeopeo

Extension West funding deed had been signed by Council and the Ministry for the Environment.

Resolved

That the Audit and Risk Committee:

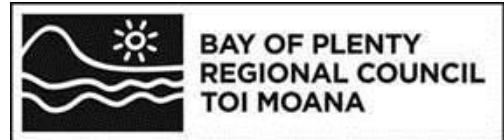
- 1 Receives the further verbal report and presentation on the Kopeopeo Canal Remediation Project.**

**Cronin/Love
CARRIED**

The Chair thanked members and staff for the year's work and wished them well for Christmas and the holiday season.

The meeting closed at 11.15 am.

Reports



Receives Only – No Decisions

Report To: Audit and Risk Committee

Meeting Date: 01 March 2018

Report From: Mat Taylor, General Manager, Corporate Performance

Committee Chairperson's Report

Executive Summary

This report provides the Committee with an update on Audit and Risk Committee activities.

Recommendations

That the Audit and Risk Committee under its delegated authority:

- 1 **Receives the report, Committee Chairperson's Report ;**
- 2 **Notes the Committee's completed and forward looking work programme.**

1 Council Performance Monitoring Report – Detailed Briefings for Councillors

The following monthly financial monitoring meetings (detailed financial briefings) have been arranged with Councillors invited to attend:

Tuesday 19 th September 2017	Months 1 to 2
Thursday 26 th October 2017	Months 1 to 3
Tuesday 19 th December 2017	Months 1 to 4
Friday 9 th February 2018	Months 1 to 6

2 Audit and Risk Work Programme

Appendix 1 shows the Audit and Risk work programme for the period March 2018 to November 2018.

3 Audit and Risk Completed Work Programme

Appendix 2 shows the Audit and Risk completed work programme for the period March 2017 to September 2017.

4 Council's Accountability Framework

4.1 Community Outcomes

This work directly contributes to all Community Outcomes in the council's Long Term Plan 2018-2028.

4.2 Long Term Plan Alignment

This work is planned under the Governance Activity in the Long Term Plan 2018-2028.

Current Budget Implications

This work is being undertaken within the current budget for the Governance Activity in the Annual Plan 2017/18.

Future Budget Implications

Future work is provided for in Council's Long Term Plan 2015-2025

Mat Taylor
General Manager, Corporate Performance

21 February 2018

APPENDIX 1

Audit and Risk Work Programme March 2018 to November

Audit and Risk Committee Programme

March 2018 to November 2018

March 2018 Thursday 1 st March	June 2018 Tuesday 12 th June	September 2018 Tuesday 11 th September	November 2018 Wednesday 28 th November
<ul style="list-style-type: none"> External Audit Management Report on the LTP 2018-2028 Consultation Document 	<ul style="list-style-type: none"> External Audit Arrangements Letter for the Audit to 30 June 2018 External Audit Interim Management Report for the Year Ended 30 June 2018 	<ul style="list-style-type: none"> External Audit Management Report for the Annual Report Year Ended 30 June 2018 External Audit Management Report for the Long Term Plan 2018-2028 	<ul style="list-style-type: none"> External Audit Management Report for the Year Ended 30 June 2018 (If not completed in September)
<ul style="list-style-type: none"> Internal Audit Status Update 	<ul style="list-style-type: none"> Internal Audit Status Update Internal Audit Work Plan 	<ul style="list-style-type: none"> Internal Audit Annual Report 	<ul style="list-style-type: none"> Internal Audit Progress Report
<ul style="list-style-type: none"> Key Risk Register – Quarterly Update Kopeopeo Canal Contamination Remediation Project Cost & Risk Update 	<ul style="list-style-type: none"> Key Risk Register – Quarterly Update Kopeopeo Canal Contamination Remediation Project Cost & Risk Update 	<ul style="list-style-type: none"> Key Risk Register – Quarterly Update Kopeopeo Canal Contamination Remediation Project Cost & Risk Update 	<ul style="list-style-type: none"> Key Risk Register – Quarterly Update Kopeopeo Canal Contamination Remediation Project Cost & Risk Update
<ul style="list-style-type: none"> Chairperson’s Report (including Work Programme) Rangitāiki River Scheme Review Implementation update 	<ul style="list-style-type: none"> Chairperson’s Report (including Work Programme) Rangitāiki River Scheme Review Implementation update 	<ul style="list-style-type: none"> Chairperson’s Report (including Work Programme) Council Chairman’s Discretionary Fund – Annual Report Legislative Compliance Review Annual Report Review 2017/18 Rangitāiki River Scheme Review Implementation update 	<ul style="list-style-type: none"> Chairperson’s Report (including Work Programme) Rangitāiki River Scheme Review Implementation update

External Audit	Internal Audit	Risk	Other
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APPENDIX 2

Appendix 2 - Audit and Risk Work Programme March 2017 to September 2017

***Audit and Risk Completed Work Programme
March 2017 to September 2017***

Meeting date	Report title	Purpose of report
2 March 2017 Committee Meeting	• Committee Chairperson's Report	To provide the Committee with an update on Audit and Risk activities
	• Audit and Risk Committee – Work Programme	To provide the work programme for the new triennium
	• Key Risk Register – Quarterly Update September 2016 to February 2017	Periodic review
	• Accela Implementation Cost and Risk Update 8 (Confidential)	To review the Project Status and associated risks
	• Updated Councillor Expenditure Report July 2015 to June 2016	To update councillor expenditure for the 2015-2016 financial year.
	• Internal Audit Status Update	To provide the Committee with an update on the status of internal audit activities
	• Kopeopeo Canal Remediation Project Update 13	Receive Update
	• External Audit Management Report for the Year Ended 30 June 2016	Consider external audit management recommendations
• Ōpōtiki Harbour Project Update 2	To review the Project Status and associated risks	

13 June 2017 Committee Meeting	• Committee Chairperson's Report	To provide the Committee with an update on Audit and Risk activities
	• Key Risk Register – Quarterly Update February 2017 to May 2017	Periodic review
	• Accela Implementation Cost and Risk Update 9 (Confidential)	To review the Project Status and associated risks
	• Accela Consents and Compliance Module Internal Audit Review Action Plan (Confidential)	To review Action Plan from External Audit Recommendations
	• Internal Audit Status Update and Proposed Internal Audit Work Plan 2017/18 to 2019/20	To provide the Committee with an update on the status of internal audit activities and Propose Work plan
	• Kopeopeo Canal Remediation Project Update 14	Receive Update
	• Fees and Charges Review – Internal Audit Report (May 2017) Proposed Actions and Response (Regulatory Compliance)	To discuss the audit recommendations and proposed actions from the internal audit report
	• Awatarariki Fanhead Risk and Liability (Confidential)	To review and provide direction on the risks and liability to Bay of Plenty Regional Council in reducing the natural hazard risk in the Awatarariki Fanhead, for reporting back to full Council.
• Rates Setting Review	To review the format of the annual rates setting process	

***Audit and Risk Completed Work Programme
March 2017 to September 2017***

19 September 2017 Committee Meeting	<ul style="list-style-type: none"> External Audit Arrangements Letter for the Audit to 30 June 2017 	To receive Audit New Zealand's audit arrangements letter for audit of the Regional Council's Annual Report for the year ending 30 June 2017
	<ul style="list-style-type: none"> External Audit Interim Audit Management Report for the year ended 30 June 2017 	to receive the Audit New Zealand Interim Management Report for the year ended 30 June 2017
	<ul style="list-style-type: none"> Internal Audit Annual Report 2016/17 and Internal Status Update 2017/18 	Presents the results of internal audit work on Bay of Plenty Regional Council's system of internal control undertaken by the Internal Auditor and external audit specialists KPMG. The recently completed review is reported and a status update provided on the start of the 2017/2017 year.
	<ul style="list-style-type: none"> Quarterly Key Risk Report to September 2017 	Periodic Review
	<ul style="list-style-type: none"> Accela Implementation Project Cost and Risk Update 10 	To review the Project Status and associated risks
	<ul style="list-style-type: none"> Kopeopeo Canal Contamination Remediation Project Update 15 	To review the project status and associated risks
	<ul style="list-style-type: none"> 2016/17 Draft Annual Report Review 	To provide the draft 2016/17 Annual Report and Summary to the Audit and Risk Committee.
	<ul style="list-style-type: none"> Chairman's Discretionary Fund 2016/17 	To provide a report on the Chairman's Discretionary Fund expenditure in 2016/17
	<ul style="list-style-type: none"> Regional Council Rates Update 	To review the scope of section 53 of the Local Government (Rating) Act and how Regional Councils work with TA's including agreeing updated agreements, formalising approval processes for rates assessments, penalties and remissions.
<ul style="list-style-type: none"> Legislative Compliance Review 	This Legislative Compliance Review identified actions to strengthen the organisation's legislative compliance. Management actions have been progressed during 2016/17 and this report has been prepared to address concerns of the Audit and Risk Committee raised at the 13 June 2017 meeting	

19 December 2017 Committee Meeting	<ul style="list-style-type: none"> Committee Chairperson's Report 	To provide the Committee with an update on Audit and Risk activities
	<ul style="list-style-type: none"> Audit Engagement Letter: Audit of the consultation document and Long-Term Plan for the period commencing 1 July 2018 	The purpose of the report is outline the terms of the Audit New Zealand audit of the consultation document and Long Term Plan for the period commencing 1 July 2018
	<ul style="list-style-type: none"> External Audit Management Report for the year ended 30 June 2017 	The purpose of this report is for the Audit and Risk Committee to receive the Audit New Zealand Management Report for the year ended 30 June 2017
	<ul style="list-style-type: none"> Kopeopeo Canal Remediation Project Update 16 	The purpose of the report is to provide an update on the Kopeopeo Canal Remediation project
	<ul style="list-style-type: none"> Internal Audit Status Update 2017/18 	To provide an update of the Internal Audit work program for 2017/18
	<ul style="list-style-type: none"> Quarterly Key Risk Register Update – October to December 2017 	The purpose of this report is to update the Committee on key risks across the organisation



Receives Only – No Decisions

Report To: Audit and Risk Committee

Meeting Date: 01 March 2018

Report From: Shelley Hey, Manager Chief Executive's Office

Internal Audit Status Update 2017/18

Executive Summary

This report provides an update on the status of year to date internal audit activities and includes:

- The status of internal audit reviews in the current year;
- The status of follow up of internal audit recommendations and management actions to 31 December 2017.

A full process has been undertaken to follow up with management on open actions resulting from previous reviews. At the start of the 1 October 2017 quarter there were 36 open management actions with ten actions added from the reviews completed on Accounts Receivables and Payroll. At the end of the quarter, 31 December 2017, 16 had been closed leaving 30 open actions.

The Internal Audit function is now fully resourced which has enabled the progressing of the work plan for 2017/18, conducting Chief Executive responsive work and developing future work plans.

Recommendations

That the Audit and Risk Committee under its delegated authority:

- 1 Receives the report, Internal Audit Status Update 2017/18.**

1 Introduction and Context

This report provides the quarterly update on internal audit activity undertaken by Internal Audit staff and external internal audit specialists, KPMG, as part of Bay of Plenty Regional Council's co-sourced internal audit approach. It includes:

- The status of internal audit reviews in the current year;

- The status of follow up of internal audit recommendations and management actions to 31 December 2017.

The focus in the last quarter has been on progressing the 2017/18 work plan, internally and with our outsourced internal audit partner KPMG.

2 Internal Audit Work Plan 2017/18 Status

On 13 June 2017, the Audit and Risk Committee approved the Internal Audit Work Plan for the three years to 2019/20, including the detailed internal audit work plan for 2017/18.

Since that meeting, two internal audit reviews have been completed. They are Accounts Receivables and Payroll (reported to the Audit and Risk Committee on 19 December 2017).

Scoping is completed and fieldwork commenced on the Grants and Health and Safety reviews in the third quarter in accordance with the work plan.

The Asset Management Review, initially delayed as a result of the April 2017 flood event, is on hold awaiting the completion of the LTP deliberations process. The review is therefore expected to commence in the first quarter of 2018/19.

The following table summarises the status of all internal audit reviews for 2017/18.

Review	Field work	GM Sponsor	Status	Status of Internal Audit					
				Planning / Draft Scope	Final Scope	Fieldwork	Draft Report	Mgmt Actions	Final Report
Accounts Receivables	BOPRC	Corporate Performance	Complete	Complete	Complete	Complete	Complete	Complete	Complete
Payroll	BOPRC	Corporate Solutions	Complete	Complete	Complete	Complete	Complete	Complete	Complete
Health & Safety	KPMG	Regulatory Services	In progress	Complete	Complete	In progress	Q3	Q3/4	Q4
Asset Management Planning	KPMG	Corporate Performance	On Hold	Complete	Complete	On Hold	On Hold	On Hold	On Hold
Grants	BOPRC	Integrated Catchments	In progress	Complete	Complete	In progress	Q3	Q3/4	Q4

Given the progress of the 2017/18 work plan, in conjunction with the additional internal audit resource available, internal audit is looking to bring forward a small number of internal audits that were on the approved 2018/19 audit plan into the current year. Consultation is being held with General Manager sponsors and process owners to determine which reviews could be brought forward.

3 Internal Audit Follow Up

Internal Audit has reviewed all open management actions as part of the follow up work in the 2017/18 work plan. At the start of the quarter (1 October 2017) there were 36 open management actions.

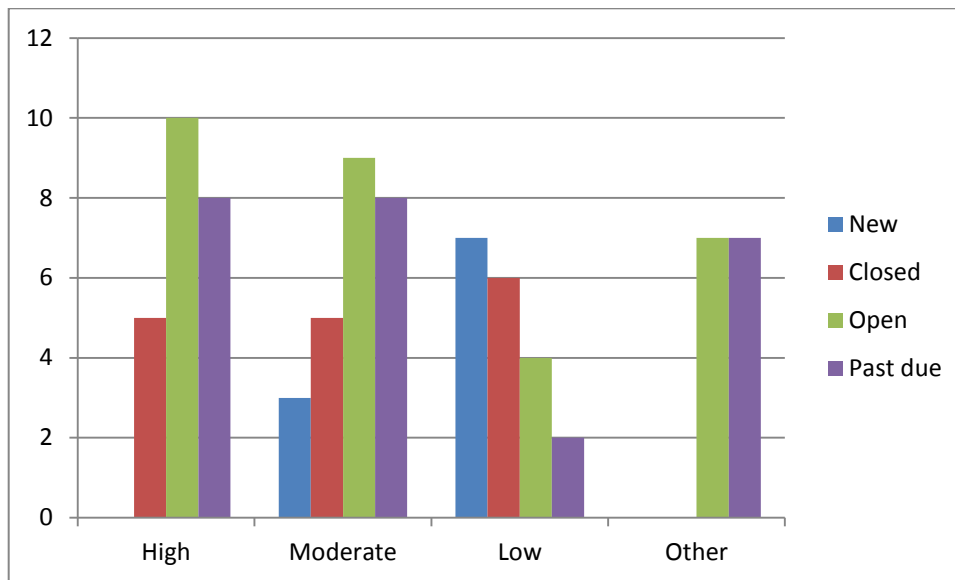
During the quarter ten new actions were added from the Accounts Receivables and Payroll reviews that were completed.

Sixteen actions have been completed/closed during the quarter. These actions relate to the reviews of Accounts Receivable (six), Accela Phase One (four), Fees and

Charges (three), Legislative Compliance (one), Payroll (one) and Procurement and Contracts Management (one).

At 31 December 2017, 30 actions remained open. The majority of these relate to findings in Legislative Compliance Framework (nine), Accela Phase One (nine) and Enterprise Risk Management (seven).

The following graph illustrates the management actions by risk ranking – new, closed, open and the number of open actions which are past due.



The majority (25 out of 30) of all open actions are past their original due date.

The overdue actions relate predominately to three reviews – Legislative Compliance Framework (nine), Accela Phase One (eight) and Enterprise Risk Management (seven).

Recruiting is underway for an additional FTE to assist the In-house Legal Counsel which will increase the capacity to fully address the Legislative Compliance Framework actions.

Accela Phase One actions, initially due to be completed on 31 December 2017, are being addressed via a dedicated project team. Many of the tasks have become larger than initially anticipated and Internal Audit is comfortable these actions are being actively addressed with significant progress being made. Internal Audit will continue to monitor progress towards fully implementing these actions.

Enterprise Risk Management actions are well in progress with a risk assessment having been completed for the water management outcome. KPMG ran a strategic risk assessment workshop with the Leadership Team and staff in February 2018 to start to establish the risks in relation to the other three community outcomes.

4 Council's Accountability Framework

4.1 Community Outcomes

This work directly contributes to the Regional Collaboration & Leadership Community Outcome in the Council's Long Term Plan 2015-2025.

4.2 Long Term Plan Alignment

This work is planned under the Governance Services activity in the Long Term Plan and Annual Plan 2017/18.

Current Budget Implications

The Governance Services Activity in the Annual Plan 2017/18 provides budget for internal audit activity. The increase in internal audit capacity and capability in 2017/18 is not wholly provided for in this budget. Due to the timing of recruitment in internal audit, and the wider Chief Executive's Office, any over-expenditure is expected to be minimal.

Future Budget Implications

The budget for internal audit going forward was reviewed as part of the Long Term Plan 2018-2028 development process. A small increase on the 2017/18 budget has been included.

Steven Slack
Principal Internal Auditor

for Manager Chief Executive's Office

21 February 2018



Receives Only – No Decisions

Report To: Audit and Risk Committee

Meeting Date: 01 March 2018

Report From: Chris Ingle, General Manager, Integrated Catchments

Koepoepeo Canal Remediation Project Update 17

Executive Summary

This paper provides an update on the Koepoepeo Canal Remediation Project (KCRP) highlighting progress since the last report to the Audit and Risk Committee on 19 December 2017.

Key project progress includes the successful completion of flood control structures, removing and euthanising eel from the project section of canal, and starting to dredge contaminated sediment from the canal and pump it into contained geobags at Containment Site 1. The commencement of dredging marks a significant milestone in the project.

The first stage of the Koepoepeo Canal Remediation Project will be complete once contaminated sediment has been removed and the canal verified to have achieved the prescribed target for contaminated sediment removal.

The next stage is to undertake bioremediation to biodegrade the contaminated sediment contained within the bags, restoring the health and *mauri* to the land. The bioremediation process will commence in the next few months, with the injection of a wood pellet sludge into the geobags along with the contaminated sediment preparing the sediment for future biodegradation. Budget for bioremediation has been included in the draft Long Term Plan. The background, process and community expectations around bioremediation are described in this paper.

A presentation illustrating project progress and proposed bioremediation will be available to present to the Audit and Risk Committee.

Recommendations

That the Audit and Risk Committee under its delegated authority:

- 1 Receives the report, Koepoepeo Canal Remediation Project Update 17.**

1 Background

The purpose of the \$15.5 million Kopeopeo Canal Remediation Project (KCRP) currently underway is to safely remove elevated levels of dioxin-contaminated sediment from the 5.1km of the Kopeopeo Canal at its eastern extremity (Figure 1). The project consists of physical works to safely remove and securely contain contaminated sediment from the canal in two containment sites followed by bioremediation for up to 15 years. In addition to addressing the human health risks, clean-up of the canal will allow normal canal drainage maintenance practices to be implemented in future, ensuring the canal can maintain its capacity to drain parts of the Rangitāiki Plains.



Figure 1. Kopeopeo Canal Remediation Project site.

The Kopeopeo Canal Remediation Project is jointly funded by Bay of Plenty Regional Council and the Ministry for the Environment through their Contaminated Site Remediation Fund (CSRF). The Kopeopeo Project is currently ranked number 1 on the CSRF priority list.

2 Kopeopeo Issues and Risks

A Kopeopeo risk and issues register is maintained for the project. This register is rolled into a single Kopeopeo Project risk item in the corporate risk register. The top 10 risks on the Kopeopeo risk register are included in Appendix 1. New risks added to the project risk register since the last report to the Audit and Risk Committee, together with mitigation actions to address these risks, are as follows:

- Risk of dust exceedances and perception of dust coming from project site. Mitigated through operational procedures to reduce dust (water cart) and slow traffic on access ways through site. Proactive communications with the community have also helped to address this risk.
- Risk of release of turbid water past the compliance point resulting in consent non-compliance. Mitigated through installation of the flood control structures and turbidity monitors with associated close monitoring of canal turbidity along its length within the project site and at the compliance point downstream of the site.

- Risk of rupture to main Whakatāne sewer at eastern end of project through construction of flood control structure at that location. Mitigated by close monitoring and implementation of design changes to reduce risk.
- Risk of cross contamination during dredging and transfer of contaminated sediment to geobags. Mitigated by setting up separate work areas clearly laid out as "hot", "warm" and "cold" areas. Procedures put in place to wash down and remove Personal Protective Equipment (PPE) when moving from out of "hot" area. Importance reinforced at daily toolbox meetings.

3 KCRP Progress

3.1 Flood Control Structures

Earthen bund flood control structures have been constructed at both the Western and Eastern ends of project site (refer to Figure 1), effectively containing the dredge area so it can be managed during the dredging process. The control structures comprise a combined earthen dam and sheetpile structure. A culvert with controllable floodgates is located through each structure (refer to figures 2 and 3) and overflow is allowed in extreme events over the concrete spillway with an emergency relief sand plug on the spillway.

Control is achieved by allowing water to flow into the site through the floodgates to maintain optimum dredge levels. Water is allowed to flow out of the site only if turbidity is within the consent allowed levels to ensure no migration of contaminated material out of the site. The emergency spillway is activated as a last resort flood relief when dwellings and urban areas are in danger of flooding or there is risk of rural stopbanks overtopping.

Challenges encountered during the construction of the flood control structures, included addressing piping and collapse of the canal banks and the risk of rupturing the Whakatāne main sewer line. These challenges were overcome by adapting the design to adopt a combined sheetpile and earthen dam structural approach with a kink in the sheetpile to direct it away from the sewer line (refer to Figure 3).



Figure 2. Kopeoepo flood control structures showing culvert, emergency spillway and sand plug.



Figure 3. Kopeopeo Flood Control Structure – East under construction showing sheetpile installation with kink to avoid Whakatāne main sewer pipeline.

3.2 Eel and Fish Removal

Removal and euthanizing of eel and any other fish species in the canal was a consent requirement to be undertaken prior to the commencement of dredging. This was undertaken in late December 2017 and early January 2018.

Baited fyke nets were set over a period of 13 nights. Captured species were gathered in the nets, removed and euthanised according to the eel removal plan. The process included putting the catch on ice to keep the eels in a relaxed state prior to euthanasia in an AQUI-S solution. Freshwater Solutions Ltd. was responsible for the removal and euthanizing of the fish. The process was closely observed by the Independent Monitor who provided oversight for the community and the Cultural Monitor who provided oversight for Te Rūnanga o Ngāti Awa.

Overall, 1000kg of fish of including seven different species were removed, with short fin eel being the most abundant species. The species removed included long fin eel, short fin eel, giant bully, inanga, banded kokopu, common smelt, common bully and a single turtle. All the eel and fish removed from the canal have been frozen and will be minced and introduced into the geobags along with contaminated sediment.



Figure 4. Eel and fish capture and removal.

3.3 Dredging

Dredging of the first reach of canal started on 22 January 2018 and is progressing well with approximately 270m of canal dredged up to the first private bridge crossing. There was a deliberate slow start making sure all systems were checked and working properly. Dredging has continued since then including dredging 6 days a week except over public holidays.

The commencement of dredging marks a significant milestone in the project. After many years of planning and hard work by many, including the tireless efforts of the late Joe Harawira, removal of contaminated sediment is finally under way.

Contaminated sediment has been transferred through the water treatment area and distributed into five geobags, each partially full. Sediment is being distributed across several bags at the same time to distribute the load in the containment area as the bags are filled.

Validation of the dredged section of the canal has been undertaken according to the Environmental Monitoring and Validation Plan. Once successful removal of contaminated sediment to the prescribed targets is achieved, the dredge will be crane lifted past the first bridge crossing so that dredging in the next section of the canal can continue.



Figure 5. Dredging using auger cutter suction dredge head.



Figure 6. Contaminated sediment comes onto shakers, through the water treatment area and into the geobags.

4 Bioremediation

4.1 Bioremediation background including SWAP and Ngāti Awa's role

Bioremediation stemmed from early efforts by the late Joe Harawira, Sawmill Workers Against Poisons (SWAP) and Ngāti Awa to seek solutions to clean up dioxin-impacted sites, restore *mauri* and bring attention to the human health issues contamination has

caused. As *kaitiaki*, SWAP and Ngāti Awa wanted to find ways for people to help Papatūānuku heal herself and restore *mauri*. SWAP inspired Te Ohu Mō Papatūānuku, a collaborative project that tested whether natural resources such as plants and fungi could decontaminate sites, soils and sediments through bioremediation. The Kopeopeo Bioremediation Trials Project: Te Ohu Mō Papatūānuku was completed in 2011 and demonstrated the ability of bioremediation to degrade dioxin in sediment from the Kopeopeo Canal in small-scale trials.

4.2 Bioremediation process

Bioremediation is proposed using a combination of mycoremediation (fungi) and phytoremediation (plants). It involves inoculation of the dredged sediment with fungi and the planting of trees within the dredged sediment contained in geobags. The combination of these two treatments results in 'enhanced natural degradation'. Following inoculation, the degradation process is monitored through sediment sampling and analysis. This treatment process takes time and it may be up to 15 years before significant results are seen.

4.3 Risks and commitment to bioremediation

The Kopeopeo Canal Remediation Project was granted funding by MfE and BOPRC to undertake the removal and safe containment of contaminated sediment from within the canal. During 2016, variations to the consents were granted to alter the methodology to remove and contain sediment. Methodology changes included the use of dredging and pumping to enclosed geobags within an impervious HDPE lined containment area. The investment in containment measures diminishes the emphasis on the need for a treatment phase to minimise any residual health risks. In addition, the new dredge method has been proven through trials to result in homogenising the sediment, which reduces potential spikes in contaminant concentration, potentially achieving levels below nationally acceptable standards without bioremediation.

The commitment to bioremediation has been instrumental to maintaining ongoing support from Ngāti Awa for the overall KCRP project. Having a natural treatment process to 'heal the land' has been the vision that Ngāti Awa has had for the project from the very outset, and they were instrumental in getting the bioremediation trials described above underway. Ngāti Awa representatives, in collaboration with Massey and Waikato Universities have undertaken research projects on bioremediation, and continue to search for ways to address other wood waste contaminated sites in the Whakatāne District using natural methods. Formal support to the project was given by the Rūnanga but was conditional on the implementation of bioremediation. This resulted in various conditions being included within the resource consents which would require a variation if a containment only approach was adopted.

While treatment of the sediment may no longer be technically necessary to adequately manage any residual human health and environmental risks, a deviation from this previously agreed approach is likely to result in a significant impact on a key stakeholder (Ngāti Awa) relationship and fall short of community expectations.

The preparatory phase of bioremediation is underway with a wood pellet sludge to be added to the contaminated sediment to provide a medium that will facilitate the fungi growth when it is introduced to the geobags at a later stage.

5 Statutory Documents

The National Environmental Standard for Assessing and Managing Contaminants in

Soil to Protect Human Health (NESCS) places statutory and regulatory responsibility on Regional Council as a local authority and land owner to ensure the clean-up of contaminated sites. This applies to the Kopeopeo Canal owned and operated by Regional Council.

6 Māori Implications

A Cultural Monitor has been appointed to the project to provide input to the Project Team and Contractor in relation to cultural considerations and requirements to be adopted throughout the project. A Cultural Monitoring Plan has been developed to identify the requirements in the event of any *koiwi* or *taonga* being found. The Project Team and Contractor continue to work closely with cultural representatives to ensure that cultural matters are addressed.

The discovery protocol has been tested several times through the finding of bones as material passing across the shakers is observed by the Cultural Monitor. To date all of these finds have turned out to be bones of non-human mammals and not *koiwi*.

7 Council's Accountability Framework

7.1 Community Outcomes

This project directly contributes to the Environmental Protection, Resilience and Safety, and Water Quality and Quantity - Community Outcomes in the council's Long Term Plan 2015-2025.

Environmental Protection is contributed to by addressing legacy environmental contamination from a former sawmill site. Clean up of the canal will allow normal canal drainage maintenance practices to be implemented in future, ensuring the canal can maintain its capacity to drain parts of the Rangitāiki Plains. Water Quality is addressed by remediating sediment and water quality in the canal to the point where the canal can be used for recreational purposes and to gather *kai moana*.

7.2 Long Term Plan Alignment

This work is being undertaken under the Flood Protection and Control Group of Activities in the Long Term Plan 2015-2025. The Kopeopeo Canal Remediation Project is listed as a key project under Rivers and Drainage non-scheme works.

Current Budget Implications

The KCRP project (together with the Kopeopeo Extension West project and preliminary bioremediation work) is being undertaken within the 2017/18 capital expenditure budget for Kopeopeo of \$9.22 million. Due to wet weather related delays and the extension of time for the physical works contract, approximately \$3.0 million of this funding has been requested to be deferred to the 2018/19 financial year in the draft LTP.

A claim has been made to the Ministry for the Environment (MfE) for \$1.79 million, for their share of costs for milestones completed by December 2017. Further claims are expected to be made to MfE in August 2018 for the 2017/18 share of costs.

Future Budget Implications

As described above, \$3.0 million of project funding has been requested to be deferred to 2018/19. This has been included in year 1 of the draft 2018/28 Long Term Plan. Budget for longer term bioremediation monitoring and testing has been included in the draft LTP from year three onwards. The Ministry for the Environment is unlikely to be receptive to a request for long-term funding to contribute towards the bioremediation programme.

An investigation to determine the volume and distribution of contaminated sediment to the west of the current project has been initiated (Kopeopeo Extension West), co-funded by MfE. Only the investigation phase has been budgeted. Funding will need to be sought from both Regional Council and MfE for future remediation, depending on the outcome of the investigation and determination of the best remedial option.

Bruce Crabbe
Rivers and Drainage Operations Manager
for General Manager, Integrated Catchments

21 February 2018

APPENDIX 1

Kopeopeo Risk Register - Top 10 risks

Koapeo Canal Contamination Remediation Project Risk Register - Top 10 Risks

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
	-1	-2	-3	-4	-5
Frequent (5)	5	10	15	20	25
Often (4)	4	8	12	16	20
Likely (3)	3	6	9	12	15
Possible (2)	2	4	6	8	10
Rare (1)	1	2	3	4	5

Last updated 25-01-2018

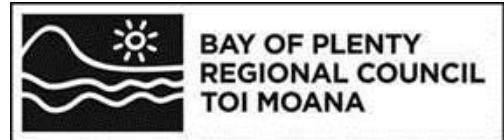
Row No.	Risk No.	Date raised	Risk description	Type of risk	Impact	Inherent Risk			Mitigating actions completed	Current Risk			Future mitigating actions	Status	Who	When	Forecast		
						Likelihood	Impact	Total		Likelihood	Impact	Total					Likelihood	Impact	Total
1	96	May-17	Slippage on project schedule due to weather events and shortage in resources results in increased HSE risk.	Health and Safety	New staff and equipment required on project due to lack of resources or contractors being over committed leads to injury, death, or environmental incident.	4	5	20	Ensure that contractor H&S systems are in place	4	5	20	Audit contractor H&S systems with emphasis on training of new staff adequately prior to site works. Reinforce importance of HSE at Principal/Contractor meetings. Consider modifications to schedule to ensure adequately trained and experienced staff are engaged on project.	Open	Bruce Crabbe Ken Tarboton Brendon Love	ongoing until end of project	2	5	10
2	97	Sep-17	Extended period of heavy rainfall events and flooding leads to earthworks postponement.	Financial	Rescheduling works incurs variation requests for additional work, re-work, and extended overhead costs resulting in project increases. Contractors divert resources onto other projects and seek extension to contract duration. Change request needed to be approved. Project milestones to be updated in Project Management Plan.	5	5	25	Hold discussions with head contractor to identify ways of reducing cost increase, and risk of losing sub-contractors and equipment resources.	5	3	15	Identify alternative cost saving measures to meet project budget. Changes to control structure design, local procurement for elements of project that increased above provisional sums.	Open	Bruce Crabbe Ken Tarboton Brendon Love	ongoing until end of project	5	2	10
3	89	Sep-16	Geotechnical investigations reveal seismic risk.	Financial	May result in cost increase to project that exceeds budget.	5	5	25	Undertake site specific detailed geotechnical investigations.	3	5	15	Consider ground improvement options against project risks. Insure containment sites against environmental pollution due to natural disaster. Consider alternative containment sites.	Open	Brendon Love	ongoing until construction	2	3	6
4	37	Aug-13	Not securing funding partner for Stage 2 project.	Financial	Higher funding required by Regional Council.	3	5	15	None.	3	5	15	Develop detailed ten year costing and identify potential funding partners. Reevaluate full lifecycle costs of all treatment methods. Appoint peer reviewer and develop closure strategy for containment sites so future monitoring and closure data requirements are understood and can be incorporated into long term forecasts. Ongoing communication with project funding parties during Stage 1 to seek future commitment. Seek out collaborative research opportunities that share project benefits and ongoing monitoring costs.	Open	Brendon Love		1	3	3
5	94	May-17	Fabrication or use of new equipment (dredge head, software, etc) that fails.	Process/ Reputational	Delays in project schedule. Increase in project costs.	5	3	15	Use of best practice guidance and available expertise in formulating design. Using dredge engineer guidance to assist with design.	4	3	12	Undertake dry and wet trials prior to commencing physical works to ensure that equipment is suitable. Have crucial spare parts and spare equipment items on hand as a contingency in case of failure.	Open	Brendon Love Ken Tarboton	Until project completion	2	3	6

Koapeo Canal Contamination Remediation Project Risk Register - Top 10 Risks

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
	-1	-2	-3	-4	-5
Frequent (5)	5	10	15	20	25
Often (4)	4	8	12	16	20
Likely (3)	3	6	9	12	15
Possible (2)	2	4	6	8	10
Rare (1)	1	2	3	4	5

Last updated 25-01-2018

Row No.	Risk No.	Date raised	Risk description	Type of risk	Impact	Inherent Risk			Mitigating actions completed	Current Risk			Future mitigating actions	Status	Who	When	Forecast		
						Likelihood	Impact	Total		Likelihood	Impact	Total					Likelihood	Impact	Total
6	95	May-17	Increases in dioxins in sediment in Kopeo Canal West has potential to migrate further west due to flood management methods employed during main project	Financial Reputational	More widespread contamination on privately owned land to the west increases future clean up costs. Discharge of contaminated sediment/stormwater to the Rangitāiki isn't authorised under current consent.	4	4	16	Discussions with adjoining and private land owners confirming commitment to investigate issue further.	4	3	12	Undertake further analysis of contaminant distribution (vertical profiling and PSD) within western reach of canal to determine potential for migration. Consider modifications to flood management approach on the basis of the investigations. Implement additional controls to minimise contaminant migration risk. Vertical profiling indicates contamination is in a deeper layer and unlikely to become mobilised during current project.	Open	Brendon Love Ken Tarboton	Ongoing until KEW sediment contamination addressed	2	3	6
7	87	Feb-16	Members of the public seek to defame project team and disrupt project	Financial Health and Safety	Results in delays to the project and increased project costs. Staff or members of the public verbally or physically threatened. Threats made to discredit township as holiday destination, and highlight food safety risk to trading partners.	4	5	20	Development of alternative method to reduce risk and increase community confidence in project. Sharing information about the project via trials, Community Liaison Group, and website to reduce concerns. Documenting concerns/threats made by members of the public so appropriate responses/actions can be developed/implemented.	3	4	12	Sharing threats with appropriate staff, team members, and community if warranted. Informing police if required. Being vigilant. Avoiding confrontation with aggravated members of the public. Seeking feedback from MPI and other agencies to ensure food safety risk perceptions can be addressed quickly.	Open	Brendon Love		2	3	6
8	77	Jun-14	No guarantee between bioremediation experts and project funding partners associated with degradation of contaminants other than trial results.	Financial Reputational	If bioremediation does not work there will be a significant increase in overall project costs and the residual materials may have to be removed to a registered landfill site or be managed long term depending on if the containment site is owned or leased. If bioremediation does not work there will be significant damage to the reputation of all project partners. This will be highlighted by negative media coverage and criticism from the community that the project was not well planned and that it was a waste of money.	5	4	20	Trial reports indicate treatment solution is robust however reproduction of laboratory conditions in pilot or full scale not tested. Bioremediation methodology and scope document reviewed. Meeting proposed to discuss options. Trial reports indicate treatment solution is robust however reproduction of laboratory conditions in full scale not tested. Bioremediation methodology and scope document reviewed. Meeting proposed to discuss options.	3	4	12	Undertake further studies to determine methodology required to provide optimal degradation. Complete independent peer review of treatment method. Discuss alternative approaches to delivery of this aspect of project such as partnering with commercial entity which is prepared to provide performance guarantees. Discuss alternative approaches to delivery of this aspect of project such as partnering with commercial entity which is prepared to provide performance guarantees. Dredge trial geotubes are currently being used to assess treatment method success in geotubes. This small scale trial replicates full scale system. Detailed data collection over time will ensure treatment method is likely to achieve desired project outcomes and gain community support. If results prove unsuccessful further trials or treatment evaluation is required however new geotube/containment site design provides additional containment measures.	Open	Brendon Love	ongoing until treatment trial results are provided	2	2	4
9	52	Feb-14	Containment site or canal discharge monitoring indicates contaminants at unacceptable levels.	Financial Reputational Process	Increased cost associated with delays and/or enhancement of treatment systems. Unconsented discharges from the project would be negatively received by the community and media. Delays or halt to project. Enhancement of treatment systems.	5	4	20	Discharge modelling completed. Calculation of dioxin/turbidity proxy underway to ensure real time management strategies can be developed. Alternative method trialed with good monitoring results received. New method provides additional containment and improved treatment options.	3	4	12	Peer review of design and control measures recommended by physical works contractors. Calculate dioxin/turbidity proxy. Consider methodology variations that address this risk. Collect and analyse field data that supports proxy.	Open	Brendon Love	Ongoing until project completion	0	4	0
10	93	May-17	Concerns around removal of bin from trial site affect confidence in Kopeo Canal Project.	Reputational	Loss in community confidence in project management.	4	3	12	Implemented inclusion of Independent Monitor and Compliance officer in decision out of scope of project and improve compliant resolution process.	3	3	9	Mitigate containment issues at trial compound with retaining structure and soil cover, or disestablish trial, or return contaminated sediment to canal.	Open	Brendon Love Ken Tarboton	October 2018 when Trial consent expires	3	2	6



Receives Only – No Decisions

Report To: Audit and Risk Committee

Meeting Date: 01 March 2018

Report From: Chris Ingle, General Manager, Integrated Catchments

Rangitāiki River Scheme Review: Implementation update

Executive Summary

This paper provides an update on progress Council is making to implement the recommendations contained in the Rangitāiki River Scheme Review. This is the first report and is intended to update progress across the range of work underway. Progress is also cross-referenced, by recommendation, in an Appendix.

An internal working group has been established to oversee implementation of the recommendations and to ensure linkages are made between different work-streams and between short and longer term actions.

Council is making good progress implementing short term actions and starting to address the longer term recommendations. Work is well underway with Whakatāne District Council and Civil Defence agencies on the development of river level triggers for evacuation planning. Steps to strengthen the monitoring network in the catchment have begun with the installation of new sites imminent. Initial meetings have taken place with Trustpower around reviewing the Lake Matahina Flood Management Plan, in line with the Review recommendations. The technical recommendations from the Review have been included in reconstruction work and in the planned upgrades to the Reid's Floodway infrastructure. Staff have begun to look at the longer term implications of the Review across the region.

In the next period: new monitoring sites will be installed in the catchment, modelling of Reid's Floodway upgrade options will be complete and community engagement underway, further work with Trustpower on the Flood Management Plan will take place, and a multi-agency group will consider draft river trigger levels and response actions as part of the Flood Response Plan.

Recommendations

That the Audit and Risk Committee under its delegated authority:

- 1 Receives the report, Rangitāiki River Scheme Review: Implementation update;**
- 2 Notes the work underway, to ensure an integrated response across Council and the progress that is being made to respond to the recommendations.**

1 Background

The Rangitāiki River Scheme Review ('the Review') was received by Council in October 2017 and released to the public. It contains a number of recommended actions, across multiple work-streams, which operate across both short term and long term horizons.

An internal working group was established in November 2017 to coordinate Council response to the recommendations. The working group has been meeting monthly since establishment. Its purpose is to:

- Ensure that we cover all the work needed in response to the Review;
- Enable linkages between workstreams to be capitalised upon;
- Ensure we have a 'joined up' picture of our response;
- Enable clear communication with governors and partners on overall response progress;
- Ensure we are able to operate with both a short term and long term view;
- Ensure strategic alignment and impacts on wider work are understood.

On 14 December 2017, Council delegated the monitoring of Review implementation to the Audit and Risk Committee for a period of twelve months. Full Council remains the decision-making body when governance decisions are required as part of implementing the Review. Examples of this could include decisions on the preferred option for the upgrade to the Reid's Floodway.

This is the first report to the Committee and provides an update on progress Council is making implementing the Review recommendations. This first report provides an overview across the range of work Council is undertaking in response, rather than detail on any particular workstream. Updates are provided by various workstreams, which may address a number of Review recommendations. The report then cross-references this work, by recommendation, in an Appendix.

The internal working group is ensuring that links are made between implementing the Review recommendations and the wider work in the catchment (e.g. Freshwater Futures, Rangitāiki River Forum); however this paper does not provide an update on this wider work nor on wider flood repairs.

2 Implementation Progress

Work Council is doing to respond to the recommendations and co-ordinate response, is by way of a number of 'workstreams' which are detailed in this section. These may cut across and combine a number of different recommendations. For reference, progress is also tracked 'by recommendation' in an Appendix.

2.1 Evacuation Planning

The Review recommended that: evacuation plans are developed for Edgecumbe and that these consider the use of variable river level thresholds and also consider the state of scheme upgrades that may not be complete or operational.

Regional Council are currently developing a series of river level alert triggers and corresponding actions, which will be integrated into the Territorial Authority Flood Response Plan. These trigger thresholds will be reviewed on completion of the scheme repair and upgrades.

Most recently, a series of draft triggers and responses has been considered by a multi-agency Civil Defence group. Evacuation planning for Edgecumbe is being led by the Whakatāne District Council and supported by other Civil Defence Agencies.

2.2 Lake Management

The Review recommended Council work with Trustpower to review the Lake Matahina Flood Management Plan to improve communications in flood events and agree protocols for timing and lake level management during an event. It also recommended that Council work with Pioneer Energy around the potential use of Lake Aniwanuiwa to mitigate flood flows, and that consideration be given to the outcomes of the Cardno report into the effect of river ramping.

A small group of Council staff are working with Trustpower around amendments to the Flood Management Plan. The communications protocols and templates have been updated, strengthened, and confirmed as recommended. This action is now complete. Staff from both organisations are now working on the details of protocols to safely and feasibly lower the Lake earlier in an event. This includes the timing and the steps to lower the lake with consideration of factors such as forecasts, river flows, releases, and dam safety.

Working with Pioneer Energy is second priority behind Trustpower due to the lower potential flood attenuation in Lake Aniwanuiwa. This potential attenuation is being modelled and quantified this financial year. The Cardno report is due in the first quarter of the 2018 calendar year.

2.3 Monitoring Network

The Review recommended a review of the catchment monitoring network and in particular, that consideration be given to increased spatial coverage and building in redundancy. It also recommended that the flood hydrology of the Rangitāiki River is updated to include the April 2017 event and that monitoring devices are placed beside critical structures such as floodwalls.

Regional Council are reviewing the monitoring network in the catchment to ensure there is increased spatial coverage and redundancy, and making Long Term Plan provision for this activity. Three new monitoring sites have been identified and one of these is close to installation. The other two sites are in process and will be shared sites with the science team to provide a dual purpose. To build redundancy in the network, surrogate sites and/or modelling is proposed, to provide back-up if a site is lost in an extreme event.

The flood hydrology of the river is currently being updated post event and this will be externally reviewed when complete. New monitoring devices adjacent to critical structures to assist with public understanding will be added to work programmes.

2.4 College Road and Catchment Stopbanks

The Review made a number of technical recommendations around the College Road floodwall replacement and on future flood defence designs. It also recommended reviewing downstream floodwall conditions and impermeable barriers.

Council has incorporated the Panel's technical findings into the College Road reconstruction project. It has engaged with a community technical advisory panel on this work and furthermore, had the design reviewed by Panel geotechnical expert, Charlie Price. The College Road stopbank design has been approved and tenders have closed. This work is due to be completed this financial year.

Geotechnical analysis has been completed at six stopbank sites in the catchment and solutions developed for two of these sites. The remaining four sites are awaiting further analysis. This work is due to be completed in the next financial year.

2.5 Upgrades to Reid's Floodway Infrastructure

The Review made recommendations on the upgrades for the Reid's floodway infrastructure, including spillway and spill compartment components. This included recommendations on the design and implementation of preferred options.

Council are currently modelling future components, which include a number of spillway options, along with options for spill compartments. The options under development are in alignment with the Review recommendations. This modelling work is nearing completion, which will enable engagement and consideration of the components and various options in the next period.

An engagement plan is under development and engagement on potential options will include landowners, Iwi, and the wider community. A decision on the preferred option to upgrade this infrastructure is due to be made by Council this financial year.

Upgrades to the lower end of the floodway are progressing and this upgrade is due to be completed this financial year

2.6 Long Term Flood Risk Management

The Review recommended Council give high priority to developing and implementing long term flood risk management solutions in the Rangitāiki and that Council ensure there is a comprehensive region-wide flood risk management framework.

Across the region Council has two mechanisms for flood risk management. The River Scheme Sustainability Project, which covers the four river scheme catchments and the Regional Flood Risk Management Project, which covers the remaining 48 catchments.

The Regional Flood Risk Management Project involves Council working together with Tauranga City Council and Western Bay of Plenty District Council on three pilot studies to develop a Regional Flood Risk Management Framework, which would then be available to be applied over the 48 non-scheme catchments across the region. This would work with the intent to prioritise the mitigation effort in these catchments based on risk. Staff are assessing the progress and alignment between these two approaches.

2.7 Communications and Engagement

The Review recommended that Council engage the full community when considering future options for Reid's Floodway.

Regional Council are currently planning community engagement around the options for the upgrading of Reid's Infrastructure (refer section 2.5).

Staff are also planning communication that will update the wider community on flood repair works and progress on Review implementation. The Review found that parts of the community did not understand the flood risk that they live with. This education will need to be part of future activity.

3 Māori Implications

Eastern Bay of Plenty Iwi have a strong interest in the Review recommendations. Sir Michael Cullen verbally presented his report to the Rangitāiki River Forum on 10 November 2017.

There is alignment between the 'making room for rivers' concept and the consideration of climate change projections in the Review, and the desire for 'naturalness of the river' and the 100 year horizon for river management of the Te Ara Whanui O Rangitāiki – Pathways of the Rangitāiki.

The Rangitāiki River Forum has expressed a desire to be engaged in the Review implementation. Updates will be provided to the Forum in 2018, to enable them to be informed of Council progress and to ensure synergies with the work of the forum and the Pathways of the Rangitāiki. Council staff have met with staff from Ngāti Awa to discuss the Review recommendations.

4 Next Steps

Reporting to the Audit and Risk Committee will be quarterly throughout 2018. In the quarter before the next committee meeting in June, the key activity planned includes:

- A multi-agency group will consider draft river trigger levels and response actions as part of the Territorial Authority Flood Response Plan.
- Further work will be undertaken with Trustpower to progress the Lake Matahina Flood Management Plan recommendations on timing and lake level management in a flood event.
- The installation of a new additional monitoring site in the catchment will take place and progress made on two more new shared science monitoring sites.
- Communications actions will be undertaken to inform the community of flood repairs and progress implementing the Review recommendations.
- Completion of modelling for Reid's infrastructure options and progress with engagement of the community on the range of options.
- Further work will be undertaken to progress the region-wide flood risk management framework.

5 Council's Accountability Framework

5.1 Community Outcomes

This project directly contributes to the Community Outcomes in the Council's Long Term Plan 2015-2025, particularly the Resilience and Safety outcome.

5.2 Long Term Plan Alignment

This work is being undertaken under a number of activities in the Long Term Plan 2015-2025, including: Rivers and Drainage Schemes, Regional Flood Risk Coordination, Emergency Management, Engineering, and Data Services.

Current Budget Implications

Current implementation of the Review recommendations is being carried out under the Annual Plan 2017/2018.

Future Budget Implications

Future implementation of the Review recommendations are being considered as part of the development of the Long Term Plan 2018-2028.

Nic Newman
Principal Advisor

for General Manager, Integrated Catchments

21 February 2018

APPENDIX 1

Appendix - RRSR: Implementation update

¹Appendix: Cross-reference of implementation by recommendation, as at February 2018

Summary of Recommendations		Implementation Progress
The legal and planning framework for flood hazard management		
a.	Efforts to complete the application of the hazard management framework and associated documents should be ramped up to ensure comprehensive cover of all of the region.	The region-wide framework is made up of the River Scheme Sustainability Project and Regional Flood Risk Management Project. Work is underway to assess the progress and the fit of these projects.
b.	Particular attention needs to be paid to areas with high vulnerability, such as small rural townships where resilience may be low.	<i>Part of recommendation a. above.</i> An imminent report from Riskscape on the April event and rural communities will help inform this.
The College Road floodwall		
c.	An automatic river water level monitoring device should be installed close to any critical structures, such as a floodwall, to enable accurate water levels to be recorded both for design purposes and for public record of flood levels.	The Survey and Data Services team are adding to their work programme, the installation of 'layman rulers' at critical sites.
d.	Passive pressure acting around the bottom edge of foundation slabs should not be included as resistance in the design of structures, and reference to this at the end of section A3 of the Bay of Plenty Regional Council Guideline 2014/01 "Stopbank Design and Construction Guidelines" should be removed.	This will be incorporated in the next Guidelines review.
e.	The Regional Council should review the design of, and reconsider any impermeable barriers that they have, or are intending to, put in place near to the landward side of any floodwall or stopbank.	Six sites have geotechnical assessment complete. <i>Relates to n.</i>
f.	The risk to flood defence structures from uncertainties around ground conditions should be minimised by carrying out comprehensive investigation, design, and construction supervision for all stopbanks and floodwalls. Investigations should be located so as to be representative of the ground on which the structure is to be placed.	This is best engineering practice that is already followed. Refer to Stopbank Guidelines 2014.

¹ This table provides a cross-reference only of progress by recommendation. Further detail and context is provided in the attached report.

g.	Flood defence structures should rely on simple and robust designs which minimise the potential impact of natural ground variability. Caution should be taken in the application of sophisticated analyses for stopbanks and floodwalls due to the high potential for natural variability in the ground conditions along their lengths.	This is best engineering practice that is already followed. Refer to Stopbank Guidelines 2014.
h.	Residual risk to flood protection structures from variability in ground conditions should be taken into account in land use planning and emergency planning, including alert and evacuation procedures.	Staff are working with TAs to ensure that flood hazard information is well understood and taken into account in district planning. Education of the wider public of flood risk is planned.
i.	Specifications drawn up for placement of fill for flood defence walls should recognise that a higher quality of fill is needed for floodwalls than for stopbanks, and should be subject to quality control.	This is best engineering practice that is already followed. Refer to Stopbank Guidelines 2014.
j.	Consideration should be given to the outcome of a study by Cardno that is currently underway into the effects of daily ramping of river levels on river bank stability as against damage from floods, and appropriate action taken to minimise these effects.	This report is due in the 1 st quarter of 2018.
k.	The College Road floodwall should not be replaced with another wall, but ways sought to enable a stopbank to be constructed in its place (noting that the properties closest to the breached wall have been acquired by the Regional Council).	The College Road stopbank reconstruction project has included these recommendations in the design, which has been reviewed by a Review panel technical expert, and approved.
l.	Floodwalls should not be used in areas characterised by variable and piping prone ground conditions unless specially engineered with extended cutoffs, or riverside blankets to control seepage.	This is best engineering practice that is already followed. Refer to Stopbank Guidelines 2014.
m.	The existing fill at the College Road floodwall and the remnants of the floodwall itself should be removed or thoroughly investigated before construction of a new flood defence structure/stopbank. Investigation and inspection of the fill carried out at that time should be used to provide further insight into its condition and significance to the failure.	This will be completed as part of the College Road stopbank replacement project.
n.	The condition of the foundations of the 'downstream' floodwall (89 to 101 College Rd) following the 2017 floods should be investigated.	This work is programmed. See e.

Operation of Matahina Dam		
o.	<p>Review the Lake Matahina Flood Management Plan with the aim of:</p> <p>discussing and agreeing a clear protocol around forecasts and timing that requires 70.0mRL as the target lake level. This should be particularly focused on achieving 71.6mRL earlier in an event so there is sufficient time to make the decision to give approval to go to 70.0mRL and to achieving that level without excessive spillway flows;</p> <p>developing a template for use in written communications during flood drawdown mode that includes specific details on the timing and rate of outflows required to achieve specified lake levels at specified times;</p> <p>reviewing the target maximum lake level for determining optimum outflow, with the possibility of using a level between maximum operating level and maximum flood level;</p> <p>requesting Trustpower to consider whether modifications can be made to improve dam safety when lake level drops below 71.6mRL including lengthening the debris boom so that it remains functional at 70.0mRL.</p>	<p>A small team are working with Trustpower on the Flood Management Plan and protocols around lake level management. Details around timing and steps to lower the lake safely and effectively are being worked through now.</p> <p>A template for use in communications during a flood event and communications protocols are complete.</p> <p>Dam safety is a consideration in the work underway around timing and steps to lower the lake, including any modifications.</p>
p.	Review monitoring and maintenance plans for the current rain and river gauge network and improve reliability of operation	<i>See response to q. below</i>
q.	Review number and location of upstream rain gauges to improve accuracy and confidence in flood forecasting. Consideration to be given to spatial coverage as well as redundancy to provide back-up if one or more gauges are non- operational during an event. The current coverage appears limited for the Upper Whirinaki and entire western side of the catchment in particular.	<p>Three new priority sites have been identified. One is close to installation and the remaining two are being progressed in conjunction with the science team.</p> <p>Surrogates or modelling is proposed to build redundancy into the network.</p>
r.	Consider additional/back-up river flow gauges to provide better information on upper catchment flows that will provide opportunities for improved optimisation of dam outflows and use of the upper range of Lake Matahina storage during flood events. This could be combined with an enhanced flood forecasting model that includes measured flow data assimilation up to the time of forecast.	<p><i>See response to q. above.</i></p> <p>Additional sites will contribute data to real-time flood forecast modelling.</p>
s.	Work with Pioneer Energy to investigate the possible use of storage in Lake Aniwanuiwa during large floods to further reduce downstream peak flows.	The potential attenuation provided by Lake Aniwanuiwa is being modelled. Working with Trustpower is the first priority.
t.	Work with Pioneer Energy to provide real- time Aniwanuiwa outflows and lake levels to the Regional Council during flood events.	<i>As in s. above.</i>

Reid's Floodway		
The recommendations for the completion of Reid's Floodway are provided in the section – Long-term strategy and design philosophies.		<i>See recommendations z and aa below.</i>
Evacuation Planning		
u.	Evacuation plans need to be developed to manage the risk of stopbank failures. This will require the evaluation of the "safe" capacity for both overtopping and geotechnical failure modes and planned evacuations for flood events which exceed the assessed "safe" capacity.	Emergency Management Bay of Plenty are working with Whakatane District Council and other Civil Defense agencies on a series of river trigger alert levels and corresponding actions for the Flood Response Plan.
v.	Consideration should be given to variable river level trigger thresholds where the residual risk of geotechnical failures is being managed through evacuation plans. This is in recognition of the importance of antecedent groundwater conditions as well as the duration of elevated river levels in the development of geotechnical failure mechanisms.	<i>As in u. above.</i>
w.	Specific consideration needs to be given where large capital works upgrades, such as Reid's Floodway and Spillway, are not yet completed and operational.	<i>As in u. above.</i> Trigger levels will be reviewed on completion of scheme upgrades.
x.	The development of an evacuation plan for Edgecumbe is something to be urgently completed by the Regional Council, Civil Defence and the Whakatane District Council working together.	<i>As in u. above.</i> The evacuation planning component is being led by Whakatane District Council and supported by the other Civil Defense agencies.
Long-term strategy and design philosophies		
y.	The Regional Council should give high priority to developing and implementing long term sustainable flood risk management solutions for the Rangitāiki Plains to manage the effects of climate change as well as providing ecological and cultural value to the wider community.	<i>Links back to recommendations a. and b.</i> Upgrades to the Reid's infrastructure will provide medium term flood risk management. This will provide time to develop longer term solutions.
z.	The stopbank raising for both banks of the upper reach of Reid's Floodway allowed for in the current (2015-25) long term plan would appear to be a poor option given the well-known geotechnical complexities of the underlying geology. It is also considered that stopbank raising is not aligned with the visions and objectives of the Rangitāiki River Document or generally accepted best practice.	Alternate options for upgrading the infrastructure are currently being modelled, including spillway and spill compartment options.
aa.	The work the Regional Council is currently undertaking to examine the feasibility of spill compartments and an additional outlet from Reid's Floodway as well as a lower fixed crest for Reid's Spillway should be pursued using all of the tools available including designations (s166-186, Resource Management Act, 1991), and if necessary, the Public Works Act 1981.	<i>As in z. above.</i>

bb.	The flood hydrology of the Rangitāiki River needs to be updated to include the April 2017 event. It is recommended that a “naturalised” annual maxima flood series is developed that uses estimated Matahina Lake inflows rather than flows at Te Teko as its basis.	Flood hydrology is currently being updated, including a review of the parameters. When complete this will be externally reviewed.
Community engagement		
cc.	Engagement of the full community (including Edgecumbe township) should be undertaken when considering further options for Reid’s Floodway. This should include full notification of any notices of requirement and/ or application for resource consent.	Planning for engagement is underway on future options for Reid’s infrastructure. This will include: landowners, Iwi, and the wider community.

