

Council Members

Chair Allan Birchfield
Cr Stuart Challenger (Deputy)
Cr Brett Cummings
Cr Peter Ewen

Cr Debra Magner
Cr Laura Coll McLaughlin
Cr John Hill



PUBLIC COPY

Meeting of Council
(Te Huinga Tu)

Tuesday, 9 August 2022

Ngāti Waewae Arahura Marae, 1 Old Christchurch Road, Arahura
and

Live Streamed via Council's Facebook Page:

<https://www.facebook.com/WestCoastRegionalCouncil>

Following the completion of the Resource Management Committee Meeting

COUNCIL MEETING

AGENDA *(Rarangi Take)*

1. Welcome *(Haere mai)*
2. Apologies *(Ngā Pa Pouri)*
3. Declarations of Interest
4. Public Forum, Petitions and Deputations *(He Huinga tuku korero)*
5. Confirmation of Minutes *(Whakau korero)*
 - 5.1 Council Meeting 12 July 2022
Matters Arising
6. **Chairman's Report**
7. **Chief Executive's Report**
 - 7.1 Monthly Report
 - 7.2 Risk & Assurance Meeting Minutes 24 May 2022
 - 7.3 IGC Draft Terms of Reference
8. **Reports**
 - 8.1 Operations Group Report
 - 8.2 Office of Auditor General Report
 - 8.3 Geotechnical Report – Blackball Quarry
9. **General Business**
10. **Public Excluded Items**
 - 10.1 Confirmation of Confidential Minutes – Council meeting 12 July 2022.
 - 10.2 Confidential Risk & Assurance Meeting minutes 24 May 2022
 - 10.3 Contractual Matters Quarry 1
 - 10.4 Contractual Matters Quarry 2
 - 10.5 RSHL SOI
 - 10.6 RSHL Transition
 - 10.7 IRIS Next Generation Partnership

H. Mabin

Chief Executive

Purpose of Local Government

The reports contained in this agenda address the requirements of the Local Government Act 2002 in relation to decision making. Unless otherwise stated, the recommended option promotes the social, economic, environmental and cultural well-being of communities in the present and for the future.

Health and Safety Emergency Procedure

In the event of an emergency, please exit through the emergency door in the Council Chambers. If you require assistance to exit, please see a staff member. Once you reach the bottom of the stairs make your way to the assembly point at the grassed area at the front of the building. Staff will guide you to an alternative route if necessary.

Please note that due to Covid restrictions there are limits to the number of people permitted within the Council Chambers.

THE WEST COAST REGIONAL COUNCIL

**MINUTES OF THE MEETING OF THE COUNCIL HELD ON 12 JULY 2022,
AT THE OFFICES OF THE WEST COAST REGIONAL COUNCIL, 388 MAIN SOUTH ROAD, GREYMOUTH,
COMMENCING AT 12:15 P.M**

PRESENT:

A. Birchfield (Chair), S Challenger, J. Hill, P. Ewen, D. Magner, B. Cummings, L. Coll McLaughlin (via zoom).

IN ATTENDANCE:

H Mabin (Chief Executive) (via zoom), N Costley (Manager Strategy & Communications), M Schumacher (IT Support) (via zoom), M Ferguson (Corporate Services Manager)

Also present: Journalist.

1. WELCOME

Cr Birchfield read the prayer.

2. APOLOGIES

The Chair called for apologies. There were no apologies.

3. DECLARATION OF INTEREST

The Chair called for declarations of interest. No declarations were made.

4. PUBLIC FORUM

There was no public forum.

PRESENTATION

There was no presentation.

5. CONFIRMATION OF MINUTES

5.1 Council Meeting 14 June 2022

The Chair asked the meeting if there were any changes to the public minutes of the previous Council meeting held on 14 June 2022.

Moved (Hill/Challenger) *that the minutes of the Council meeting dated 14 June 2022 be confirmed as correct.*

Carried

Matters arising

There were no matters arising.

5.2 Council Extraordinary Meeting 28 June 2022

The Chair asked the meeting if there were any changes to the minutes of the Council extraordinary meeting held on 28 June 2022. There were no changes.

Moved (Magner/Cummings) *that the minutes of the Extraordinary Council meeting dated 28 June 2022 be confirmed as correct.*

Carried

Matters arising

Cr Coll McLaughlin sought an update from H Mabin regarding the quarry report, as to whether a geotechnical report had been obtained and any discussions held with Grey District Council. H Mabin confirmed she had initiated discussions with P Morris, Grey District Council CEO and Mark Davies from the Department of Conservation about the Blackball quarry, and the operational managers involved are now progressing the matter. K Harrison, consultant to the Council, is also involved in organising for a geotechnical assessment to be undertaken, under urgency. Management of issues relating to Kiwi Point quarry will then be advanced.

REPORTS

6. CHAIRMAN'S REPORT

The Chair took his report as read.

Moved (Challenger/Cummings) *That this report is received.*

Carried

7. CHIEF EXECUTIVE'S REPORTS

7.1 Monthly Report

H Mabin took her report as read. Cr Ewen asked about the reason for the Westpac banking arrangements being 12 months. H Mabin advised that they wait for the audited Annual Report, which was late, and then certification is rolled over every 12 months.

In response to a query from Cr Coll McLaughlin, H Mabin confirmed that the quarry tenders are two separate tenders. She advised that tendering of Okuru would be undertaken next.

Moved (Magner/Ewen) *That this report is received.*

Carried

8. REPORTS

8.1 Operations Group Report

N Costley advised the meeting that R Vaughan, the Acting Planning and Resource Science Manager, had had to leave the meeting in order to attend a civil defence briefing and was unable to present the Operations Group report. She had therefore asked that the report be taken as read, and N Costley would refer any questions to R Vaughan for a response.

Cr Coll McLaughlin raised a matter from the last meeting, asking whether there was any stopgap option if the overflow work was not finished and a significant weather event occurred that would affect the Buller River. R Vaughan was going to speak to engineers on that matter, so Cr Coll McLaughlin noted she would follow that up via email.

Cr Ewen noted on page 27 that the quarry for Kiwi Point refers to a slippage there as a rockfall. It should be clarified that this was not a rockfall but was a slippage. The Chair agreed with this point. Cr Ewen also said that he felt it was good to see progress on the IRG projects, given the workload the staff have had, and that its good to see that these appear to be in hand.

Cr Coll McLaughlin asked for an update on the Hokitika Seawall and tabled this question to be subsequently responded to by staff. Regarding the Okuru cut, she asked whether any works and an ongoing budget for the works would need to be consulted on with the rating district. H Mabin advised that she and staff and advisors have visited the site and met with representatives of the rating district, to look at the sandbar and options for protection at the site. Westland District Council roading staff were also present, regarding works that would protect the road. Initial agreement was reached that an agreement with a contractor could be developed which provided for the opening of the sandbar prior to forecasted severe weather events. This is to be further explored with the rating district including systems for permissions, and funding arrangements. Cr Ewen said that he thought there may already be an existing arrangement for this site and other named rivers that could be opened in emergency situations. N Costley will follow this up to confirm whether there is such an arrangement for this site.

Cr Coll McLaughlin noted that landowners in Granity had contacted her about coastal erosion there, and a rating district. She will touch base with P Birchfield and R Vaughan about investigating that.

Moved (Ewen/Challenger) *that Council receive the report.*

Carried

9. GENERAL BUSINESS

There was no general business.

10. PUBLIC EXCLUDED ITEMS

Moved (Ewen/Cummings) *that the public be excluded from the following parts of the proceedings of the meeting, namely, -*

- *Item 10.1 – 10.4 inclusive*

Item No.	General Subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under section 7 of LGOIMA for the passing of this resolution
10.1	<i>Confirmation of Confidential Minutes – Public excluded Meeting minutes of General Council Meeting 14 June 2022</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.2	<i>Confirmation of Confidential Minutes – Public excluded Meeting minutes of General Council Meeting 28 June 2022</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.3	<i>Confirmation of Confidential Minutes – Extraordinary Council meeting 30 May 2022</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.4	<i>Quarry tender documents</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>

Also moved that:

- *H Mabin, K Harrison (consultant), M Ferguson and N Costley be permitted to remain at this meeting after the public has been excluded, because of their knowledge on these subjects. This knowledge will be of assistance in relation to the matters to be discussed; and*
- *The Minutes Clerk also be permitted to remain at the meeting.*

Carried

The meeting moved into a public-excluded session at 12:34pm.

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Chair

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Date

Report to: Council	Meeting Date: 9 August 2022
Title of Item: Chair's Report	
Report by: Chairman Allan Birchfield	
Reviewed by:	
Public excluded? No	

Purpose

For Council to be kept informed of meetings and to provide an overview of current matters.

Summary

This is the Chairman's Report for the period: 5 July – 29 July 2022.

As Chair, I attended the following meetings:

- 5 July 2022 West Coast CDEM Joint Committee, Extraordinary Meeting.
- 12 July 2022 Resource Management Committee Meeting.
- 12 July 2022 West Coast Regional Council Meeting.
- 28 July 2022 Risk & Assurance Committee Meeting.
- 29 July 2022 West Coast Regional Council, Emergency Meeting.

Recommendation

It is recommended that Council resolve to:

1. *Receive this report.*

Attachments

None.

Report to: Council	Meeting Date: 9 August 2022
Title of Item: CEO's report	
Report by: Heather Mabin, Chief Executive	
Reviewed by:	
Public excluded? No	

Report Purpose

The purpose of this paper is to provide Council with a summary of activities undertaken by the Chief Executive.

Report Summary

This paper details the interactions, appointments, significant contracts executed, and meetings attended by the Chief Executive for the month of July 2022.

Draft Recommendations

It is recommended that Council resolve to:

1. *Receive this report.*

Activities Undertaken

Activities undertaken during July 2022 by Heather Mabin were:

- July 5
 - Signed the Submission on the Emissions Reduction Plan.
- July 6
 - Attended Extraordinary meeting of CDEM Joint Committee at Grey District Council.
- July 11
 - Signed the Submission on NPSFM and NESF Exposure Draft changes.
- July 13
 - Signed the Submission on Conservation management and processes document
 - Contracted Gary Williams to Peer Review Franz Josef Stage 1 design.
- July 14
 - Attended West Coast CDEM CEG meeting
 - Contracted Terra Firma to perform Geotech review of Blackball quarry.
- July 15
 - Contracted Hutch Consulting Ltd to future provide assistance for the Westport Business case, if required.
- July 18 – 22 July Annual leave
- July 27
 - Signed the Joint Submission on National Policy Statement for Indigenous Biodiversity exposure draft.

Considerations

Implications/Risks

Transparency around the activities undertaken by the Chief Executive is intended to mitigate risks associated with Council's reputation.

Significance and Engagement Policy Assessment

There are no issues within this report which trigger matters in this policy.

Report to: Council	Meeting Date: 8 March 2022
Title of Item: Risk & Assurance Committee - Minutes	
Report by: Heather Mabin, Chief Executive	
Reviewed by:	
Public excluded? No	

Report Purpose

The purpose of this paper is to table to Council a copy of the Risk & Assurance Committee's meeting minutes.

Report Summary

On 10 February 2022 the Audit & Risk Committee meeting was held at Council.

Draft Recommendations

It is recommended that Council resolve to:

Receive for noting the Minutes of the meeting of the Risk & Assurance Committee, held on 10 February 2022.

Attachment

Attachment 1: Unconfirmed Minutes of the meeting of the Risk & Assurance Committee, held on 10 February 2022.

THE WEST COAST REGIONAL COUNCIL

**MINUTES OF THE MEETING OF THE RISK & ASSURANCE COMMITTEE,
HELD ON 24 MAY 2022 AT THE OFFICES OF THE WEST COAST REGIONAL COUNCIL,
388 MAIN SOUTH ROAD, GREYMOUTH, COMMENCING 10.38 AM**

PRESENT:

D. Magner (Chairperson), A. Birchfield, S Challenger, J. Hill, P. Ewen, B. Cummings, L. Coll McLaughlin.

IN ATTENDANCE:

H. Mabin (Chief Executive), N Costley (Strategy & Communications Manager) via zoom, Daniel Jackson (IT Manager) via zoom, Marc Ferguson (Corporate Services Manager), Neil Selman (consultant) via zoom, Rachel Vaughan (Acting Planning and Resource Science Manager) via zoom, R Vaughan (from 2:30pm).

Also in attendance: Tom Philips and Bruce Robertson, JB Were.

1. WELCOME

Cr Magner welcomed everyone to the meeting.

2. APOLOGIES

There were no apologies.

3. DECLARATIONS OF INTEREST

There were no declarations of interest.

4. MINUTES

The Chair asked the meeting if there were any changes to the minutes of the previous meeting.

Moved (Coll McLaughlin /Challenger)

That the minutes of the meeting held on 10 February 2022 be confirmed as correct.

Carried

Matters Arising

Cr Coll McLaughlin asked for a workshop or paper on what works can be claimed during a CDEM event, and how the costs system works. Cr Coll McLaughlin asked about the Wanganui River and the NEMA claim. H Mabin updated the Committee that Brendon Russ had been contracted back to Council to complete that claim and he had met with NEMA last week. R Vaughan also attended. H Mabin said that Rob Rouse clarified what costs could and couldn't be claimed, it had to be like for like in terms of assets that Council owned, and Council had to prove

that they were damaged during the event. H Mabin thought that approximately \$300,000 had been spent during the February event, and advised that B Russ was now doing the claim. She said that the final detail and outcome would be reported back to the Committee.

H Mabin also advised the Committee that P Birchfield was working with NEMA on works at Karamea and a possible claim for those.

5. NOTIFICATION OF EXTRAORDINARY AND URGENT BUSINESS

There was none.

6. QUESTIONS

There were no questions.

7. CHAIRPERSON'S REPORT (VERBAL)

Chair Magner advised that she had not had any formal meetings in her role as Committee Chair since the last meeting.

Moved (Coll McLaughlin/Challenger) *That this report is received.*

Carried

8. REPORTS

8.1 ANNUAL REPORT 2020/21

H Mabin advised that Neil Selman, Council's consultant, would speak to this report. Audit Manager from Audit NZ Chantelle Gernetzky joined the meeting via zoom to speak to the Committee. N Selman took his report as read, and noted the delays with the Annual Report as being due to resourcing constraints at Audit NZ. He said there had been a number of changes to the Annual Report as a result of the audit process since Council had last seen the draft in October, although it was not substantively different.

Cr Coll McLaughlin asked for clarification on commercial property rental and why nothing was budgeted for it. N Selman responded that disclosures for matters such as this are now being undertaken, but if she had specific questions then Cr Coll McLaughlin could email him directly for a response. Cr Coll McLaughlin said she would do this.

H Mabin advised that the Annual Report with the auditor's report included will be tabled at the June Council meeting, for adoption.

The Chair asked whether C Gernetzky had any comments. C Gernetzky said the audit opinion included a paragraph about the audit being late, and emphasised that this was not anything to do with the Council but was due to the auditor shortage and Covid. The other paragraph she drew attention to was the qualification around the Council's associate from the prior year, which was a required carry-over from the previous audit qualification. There were no questions. The Chair thanked Ms Gernetzky who left the meeting.

N Selman left the meeting.

Moved (Hill / Cummings)

That the committee receive and note the respective draft reports.

Carried

8.2 QUARTERLY FINANCIAL REPORT

M Ferguson spoke to this report and took it as read. The two main areas for difference from budget were the timing and delay for IRG projects and devaluation of the investment portfolio.

The Chair noted that the variances in Table 2 on page 97 were the wrong way round in the table, which was confusing, and asked if it could be made easier to read. She also asked for commentary on the variances in future reports. M Ferguson noted the feedback.

Cr Coll McLaughlin updated the Committee on matters she had sought responses to from staff. There was some discussion on cash and investments. Cr Birchfield asked about the cost so far for the Te Tai Poutini Combined Plan process and what Council is going to borrow. H Mabin responded that by the end of the year it was going to have cost approximately \$998,000, and Council will be looking at borrowing \$1m. Cr Coll McLaughlin noted that this stage of developing the TTPP was cash-hungry but the cost was projected long term to be within the LTP figures. Cr Birchfield wanted to know what the TTPP would cost in total, to run the process. H Mabin will bring those figures to the June Council meeting.

The Chair noted that some of the budget items had significant variances. H Mabin advised that there was going to be a much better lens on this in future, and PWC had designed a cash prediction model that would take in to account all Council's contracts. H Mabin said that this was an area of focus for her. The Chair noted it would be helpful for the Committee to have a cashflow projection in future and to understand that better. H Mabin advised that the managers would now be undertaking monthly re-forecasting of their predictions.

The Chair asked for the Committee's thoughts on meeting more regularly than four times per year, if they were considering financial information. A workshop on how to manage this better would be held in the next few weeks.

Moved (Challenger / Cummings)

That the Committee receive the balance sheet and financial operating results to 31 March 2022.

Carried

8.3 INVESTMENT PORTFOLIO

H Mabin spoke to her report and took it as read. The Chair invited Tom Phillips and Bruce Robertson to talk to the Committee. Mr Phillips and Mr Robertson took the Committee through a copy of performance results and investment information, and a discussion of the economic environment. The Chair thanked them for their attendance and presentation. Mr Phillips and Mr Robertson left the meeting.

Moved (Cummings / Birchfield)

That the Committee receive the report and note the attachments.

Carried

8.4 QUARTERLY SERVICE PERFORMANCE REPORT

M Ferguson spoke to this report and took it as read, and invited any questions. Cr Coll McLaughlin asked about the CDEM measures, noting that the lack of local CDEM controllers was not included in the measures. H Mabin said that a KPI for this could be put in to the 2022/23 Annual Plan. Cr Coll McLaughlin felt that everyone should be commended for meeting their targets in the current environment, particularly the consents and compliance team, for achieving their targets.

Moved (Birchfield/Cummings)

That the Committee note the attached Service Performance Measures Report for the quarter to 31 March 2022.

Carried

8.5 LOCAL GOVERNMENT OFFICIAL INFORMATION (LGOIMA) REQUESTS REPORT

H Mabin spoke to this report which was taken as read.

Moved (Challenger / Hill)

That the committee note the requests received under the Local Government Official Information and Meetings Act 1987.

Carried

8.6 RISK REGISTER

H Mabin advised the Committee that Philip Jones had provided this update report for tabling, to show progress to date on the risk register.

Moved (Cummings / Challenger)

That the Committee:

- 1. Receive the risk update report; and*
- 2. note the progress on the development of a risk register.*

Carried

8.7 REPORT ON IT PROGRESS AND BUDGET

D Jackson spoke to this report and took it as read. Cr Cummings asked whether the Authority project costs were ongoing. D Jackson confirmed that they were, and costs are showing as low at this stage because it is based on project delivery costs with final payment to be made in July this year.

Moved (Cummings/Ewen)

That the Committee receive the report.

Carried

8.8 NZTA PROCUREMENT STRATEGY

N Costley spoke to this report and took it as read. This is largely a process matter that the procurement strategy was due to be updated. There were no questions.

Moved (Coll McLaughlin/Ewen)

That the Committee receive the report.

Carried

9. GENERAL BUSINESS

In respect of the earlier LGOIMA report, Cr Birchfield asked whether the SNA maps were on the website. R Vaughan responded that this LGOIMA request was from a national organisation to all Councils, and was in the nature of a general stocktake rather than a particular question about the TTPP. Cr Birchfield asked whether the SNA maps were going to be on the website, as he felt that people needed to see whether their property was affected. R Vaughan said she understood that the TTPP was not at the stage of mapping SNAs and that the only SNAs that had been identified were in the Grey District Plan, but she could provide Cr Birchfield with more information following the meeting.

Cr Cummings asked whether wetlands had been mapped. R Vaughan confirmed they had not. R Vaughan advised that they would be developing a process around wetland mapping, following consultation with landowners, but that this would be some time off. Cr Ewen noted that there was already a timeline around completing the plan, but the identification and proofing process would be a lengthy one. R Vaughan clarified that the wetland process was in the regional plan and was a directive of the government, but the SNA process was in the TTPP. She agreed the wetland identification would be a lengthy and costly process for the regional plan.

Cr Birchfield said that the wetlands had already been mapped and wondered if it was necessary to go through that process again. He said there had been a desktop analysis of SNAs, with 25,000ha mapped. Cr Coll McLaughlin said that they had to be cautious with that as it had a lot of caveats with it and it had not been ground truthed. There could be some really perverse consequences from putting out information that is not ready. Cr Birchfield agreed but noted he did not want a situation where landowners were not notified of areas on their properties.

10. ITEMS TO BE CONSIDERED IN PUBLIC EXCLUDED SESSION

Moved (Cummings / Ewen)

1. That the public be excluded from the following parts of the proceedings of this meeting, namely, -
 - Items 10.1 – 10.12 (inclusive)

Item No.	General Subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under section 7 of LGOIMA for the passing of this resolution
10.1	Confirmation of Confidential Minutes – R&A C meeting 10 February 2022	The item contains information relating to commercial, privacy and security matters	To protect commercial and private information and to prevent disclosure of information for improper gain or advantage (s 7(2)(a), s7(2)(b) and s7(2)(j)).
10.2	Health & Safety report	The item contains information relating to privacy and security matters	To protect private information and to prevent disclosure of information for improper gain or advantage (s 7(2)(a) and 7(2)(j)).
10.3	Cybersecurity report	The item contains information relating to security matters	To prevent disclosure of information for improper gain or advantage (s7(2)(j)).
10.4	RSHL Statement of Intent	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.5	Taxation	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.6	Audit Engagement Letter	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.7	Contractual matters	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.8	Capital Expenditure report	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.9	Report on Ombudsman matters	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.10	Westport Business Case Framework (verbal report)	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.11	VCS Tenders report	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).
10.12	VCS report	The item contains information relating to commercial matters	To protect commercial information (s 7(2)(b)).

And

2. *That Heather Mabin, Kim Hibbs, Daniel Jackson, Neil Selman, Nichola Costley and Marc Ferguson be permitted to remain at this meeting after the public has been excluded, because of their knowledge on these subjects. This knowledge will be of assistance in relation to the matter to be discussed; and*
3. *The Minutes Clerk also be permitted to remain at the meeting.*

Carried

The public session of the meeting concluded at 12:00 p.m. and the meeting was adjourned for a lunch break.

The meeting resumed in a public-excluded session at 12.24 p.m.

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Chair

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Date

Report to: Council	Meeting Date: 9 August 2022
Title of Item: Draft Terms of Reference – Infrastructure Governance Committee	
Report by: Heather Mabin, Chief Executive	
Reviewed by:	
Public excluded? No	

Report Purpose

The purpose of this paper is to table the draft Terms of Reference for the Council’s Infrastructure Governance Committee for their consideration and approval.

Report Summary

Committee Members and Management have completed a process of drafting the Terms of Reference for the Infrastructure Governance Committee. This paper now tables them to Council for adoption.

Recommendations

It is recommended that Council resolve to:

1. *Approve the Infrastructure Governance Committee’s draft Terms of Reference.*

Issues and Discussion

Background

As a result of an independent review undertaken by Mike Beagle in May 2022 of Council’s progress to date on completing its significant infrastructure projects, it was decided that an Infrastructure Governance Committee (IGC) of Councillors be established to oversee this area of Council. At an Extraordinary meeting of 30 May 2022, Councillors formally resolved to appoint Councillors Coll McLaughlin, Challenger and Cummings to the Infrastructure Governance Committee.

Current situation

The designated members of the Committee met with the Chief Executive and Scott Hoare, appointed Programme Manager of WCRC Infrastructure Projects, to draft a terms of reference for the Committee.

At this meeting it was the preference of the members that no delegated authority for approving contracts be given to them. It was their preference that the awarding of contracts over and above the Chief Executive’s delegation remain with Council.

These draft Terms of Reference are tabled to Council for their consideration.

Considerations

Implications/Risks

The establishment of the Committee at Governance level will create greater oversight of Management’s progress to date in this area and help mitigate any reputational risk of non-performance and the risk of external funding being withdrawn.

Significance and Engagement Policy Assessment

There are no issues within this report which trigger matters in this policy.

Tangata whenua views

Not applicable

Financial implications

Current budget

Nil

Legal implications

This is in line with the requirements of the Local Government Act 2002.

Attachments

Attachment 1: Draft terms of reference

DRAFT INFRASTRUCTURE GOVERNANCE COMMITTEE TERMS OF REFERENCE

PURPOSE

The Infrastructure Governance Committee (IGC) is the governance oversight body for the West Coast Regional Council's Climate Resilience Programme of Works (Programme of Works) and other significant infrastructure projects as listed in Schedule A. Its purpose is to provide guidance, recommendations, long-term vision, policy, project prioritisation and review.

The IGC's role and responsibilities reflect the mandate given to it by the West Coast Regional Council (WCRC).

The Standing Orders of the West Coast Regional Council will apply to meetings of the Committee except where inconsistent with these Terms of Reference, in which case the provisions of these Terms of Reference shall apply.

MEMBERSHIP

The IGC will consist of a maximum of 5 members, ideally 3, to function effectively.

The IGC will have sufficient collective financial, technical and cultural skills and experience, knowledge of the requirements of the local community and the ability to communicate with the West Coast community sufficient to ensure that it can discharge its responsibilities.

All representatives are current councillors of the WCRC.

Members will be invited to join the IGC based on their individual capacity, outstanding skills and contribution that they will bring to the programme of work.

CHAIRPERSONSHIP

The IGC shall select a Chairperson among its members. The role of a chair is to:

- Lead meetings so that agendas are followed, and meetings adjourn on-time;
- Allow all members to be heard during discussions;
- Moderate discussions between members with differing points of view; and
- Be a sounding board for the Chief Executive, and through the Chief Executive the Programme Manager, in the preparation of agendas and how to best involve the full Committee in work plan tasks.

ROLES AND RESPONSIBILITIES

Monitoring the delivery of the of the Projects within the Programme of Works and developing the Programme of Works, as required. This includes:

- Approving of Memoranda
- Oversight of the Project Budgets
- Input into the Programme Budget (Non-Project Costs)
- Monitoring the Programme Schedule
- Monitoring Risks and Issues as listed in the IGC Risk Register

DRAFT INFRASTRUCTURE GOVERNANCE COMMITTEE TERMS OF REFERENCE

- Providing advice
- Acting as an advocate for initiatives and projects across the wider organization
- Prioritising and reprioritising project deliverables
- Developing policies and governance procedures
- Advocating for the region and community

All media communications will be in line with existing Council processes and protocols.

DECISION-MAKING

The key method of decision making will be via unanimous approval of memoranda where the Programme Manager will seek approvals from the IGC. Where there is not a unanimous decision, memoranda will be tabled at an Extraordinary meeting of Council at the discretion of the Programme Manager.

Decision making memoranda will require the signature of each of the IGC members.

ATTENDANCE

Participation of all Committee members in meetings is important, and members should make every effort to attend each meeting. If Committee members cannot attend, they should inform the Programme Manager before the meeting is conducted.

ALTERNATES

There may be circumstances when regular members cannot attend or be available to sign off memoranda. The IGC will identify an alternate who will represent an absent member at any meeting for which attendance cannot be met.

An IGC alternate can make a binding decision or vote on any issue at a meeting in which they preside as an IGC representative.

QUORUM

The quorum for a meeting of the Committee shall be two members present either at an online or in person, one of whom must be the Chair.

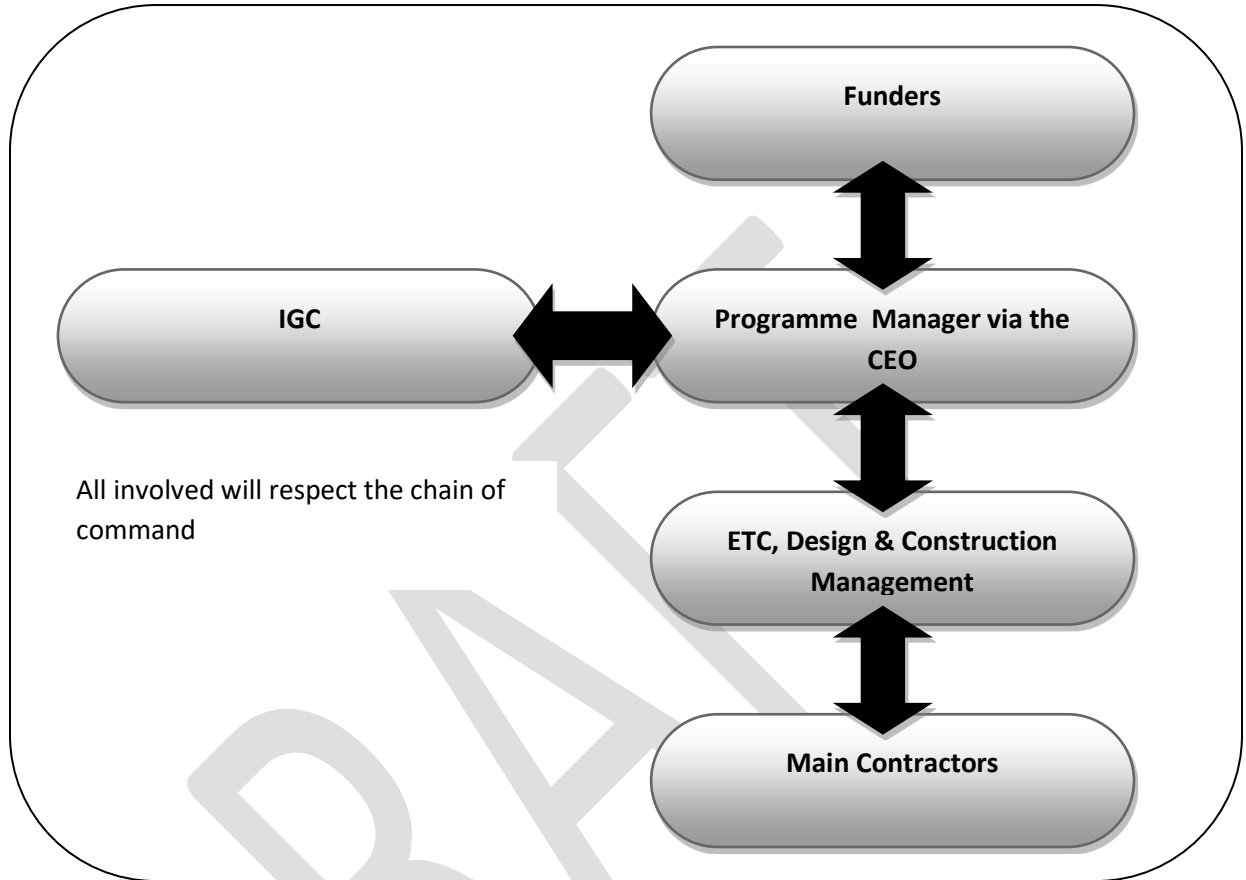
ACCOUNTABILITY

The Programme Manager of the Programme Delivery Team is accountable to the IGC through the CEO and will bring forward recommendations to them.

The Council has delegated the authority to the IGC in line with their responsibilities listed above and for expenditure within approved Council budget of the Chief Executive.

DRAFT INFRASTRUCTURE GOVERNANCE COMMITTEE TERMS OF REFERENCE

COMMUNICATIONS PATHWAY



MEETINGS

The full Programme of works will be reviewed by the IGC bi-monthly, a week prior to the monthly Council meeting.

Meetings will be conducted either remotely (via Teams or Zoom or similar) or in-person meetings. The IGC will also have the liberty to call for meetings based on needs and availability of resources.

DRAFT INFRASTRUCTURE GOVERNANCE COMMITTEE TERMS OF REFERENCE

SCHEDULE A: PROGRAMME OF WORKS

The Programme of Works consists of:

- Franz Josef IRG Project
 - Stage 1
 - Stage 2
- Hokitika IRG Project
 - Hokitika Seawall
 - Hokitika Riverwall
- Greymouth IRG Project
- Westport IRG Project
- Westport Flood Protection Scheme
 - Immediate urgent maintenance works
 - Organs Island
 - Buller River scour near O'Connor Home
 - Ring embankment and Carter's Beach floodwall
- Investigation into the Wanganui River

Report to: Council	Meeting Date: 9 th August 2022
Title of Item: Operations Monthly Works Report	
Report by: James Bell – Engineering Officer, Paulette Birchfield – Area Engineer, Lillian Crozier - BSO	
Reviewed by: Rachel Vaughan, Planning and Science Manager	
Public excluded? No	

Purpose

The purpose of this report is to provide Council with an overview of the works undertaken during the months of July 2022, as well as an update on the IRG projects and the Westport Flood Protection Project. Also presented in this report will be the production and sale of rock from the council owned quarries during the months of June 2022.

Report Summary

Council Engineers have undertaken River Protection works on behalf of the Wanganui and Franz Josef Rating District.

Recommendation

It is recommended that council resolve to:

1. *Receive this report.*

Issues and Discussion

Current Situation:

Monthly Works Report – July 2022

Wanganui Rating District

A section of stopbank along the true right of the Wanganui River was severely damaged during a weather event in the early hours of the 19th of July 2022. This left Council's downstream assets in the Wanganui Rating District vulnerable to erosion in future weather events if left unrepaired. Loss of additional farmland is also a risk. The section of bank that is still intact will also be subject to erosion with out rock armouring.

The site has been assessed by council staff and a river engineer from WSP, Council's Programme Manager Scott Hoare was also on site. WSP are still to provide feedback from this site visit. A site meeting has also been organised for the 11th of August between Council staff, Councillors and Rating District members to discuss these occurring erosion issues.

The initial estimation of costs to reinstate the stopbank and add rock armouring is approxiamtely \$120,000.00.



Image 1: Aerial footage taken on the 28th of May 2022. Note the erosion occurring between the spurs. This erosion had been repaired by the landowner before the stopbank failure.

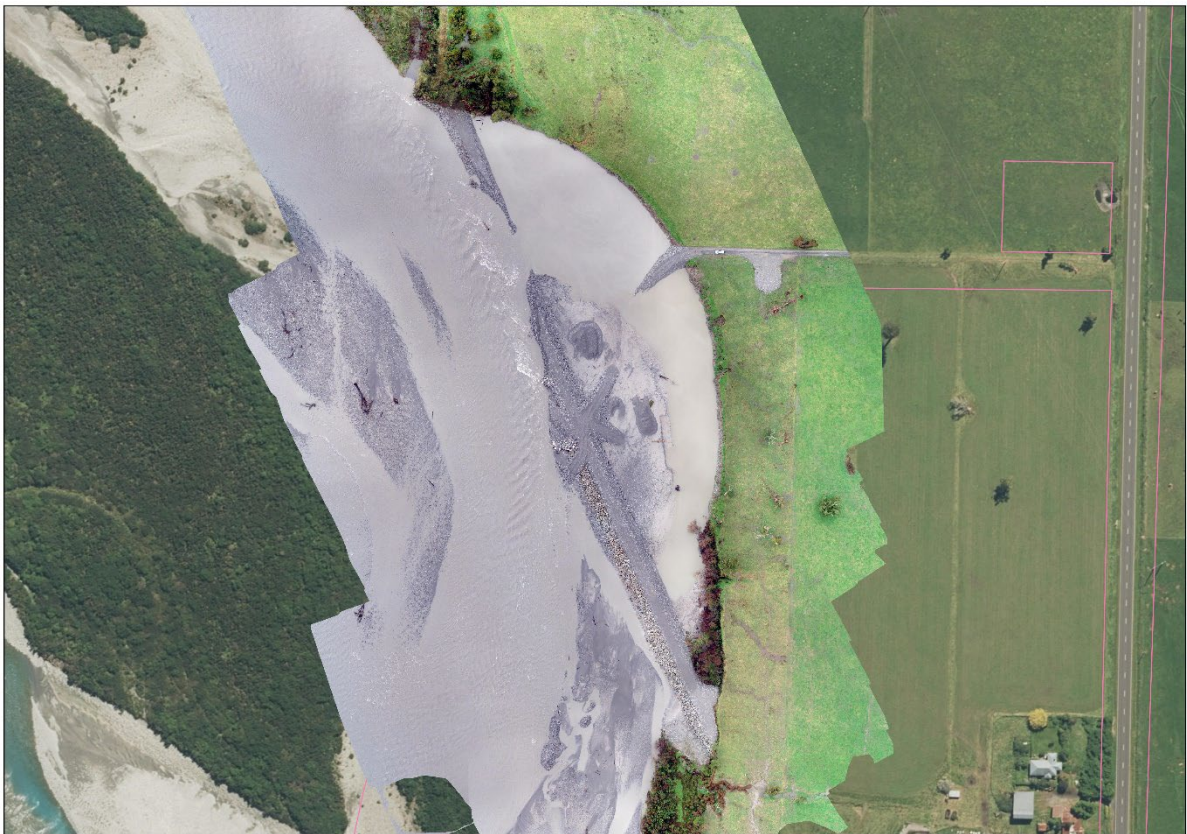


Image 2: Aerial footage taken on 19th of July 2022, showing the area of stopbank failure. Note that the armoured sections of the stopbank are still intact.



Image 3: Looking upstream along the damaged stopbank

Franz Josef Rating District

On the 26th of July 2022, WCRC staff along the Programme Manager and WSP, Engineer to the Contract for the Franz Josef Stage 1 Project, inspected the both the North and South banks of the Waiho River. This included looking at issues at the end of the Milton and Others stop bank and erosion that is occurring on the bank between Canavans Knob and Rata Knoll.



Image 4: Looking downstream towards Rata Knoll and the Waiho Loop. There is potential for more erosion to occur on this bank. The longer it is left untreated the more it is going to costs to repair and armour the area.

Quarry Rock Movements for the period of June 2022
(Excluding Royalty Arrangements)

Quarry		Opening Stockpile Balance	Rock Sold	Rock Produced	Closing Stockpile Balance
Camelback	Large	18970.52	0	0	18970.52
Blackball		0	0	0	0
Inchbonnie		0	0	0	0
Kiwi		0	0	0	0
Miedema		0	0	0	0
Okuru		450	0	0	450
Whitehorse		0	0	0	0
Totals		19,420.52	0	0	19,420.52

Other Sales

No other sales

IRG Projects:

In May Council 2022 approved the establishment of a Project Delivery Team to oversee the IRG Projects, Westport Flood Protection scheme and any other significant infrastructure spend during the next two or three years.

Hokitika River – Raising of Stop Banks

- Geophysical survey has been carried out by Davis Ogilvie.
- Engagement of Consultants required to perform interpretation of survey, complete Construction drawings and preparation of Resource Consent application is required to progress further.

Franz Josef Stage 1

The Construction Contract for the works between WCRC and MBD Contracting was signed and executed on 2 May 2022. The commencement of these works on site has been delayed due to the issuing of the Resource Consent; this is currently subject to completion and resolution of Affected Parties consultation which is in progress.

Subject to the outcome of the consultation and issuing of the Resource Consent, the confirmed start and completion for the contract will be able to be confirmed.

MBD have started stockpiling rock in their Whataroa quarry in preparation for these works.

Westport Flood Protection

South Bank Raking– Contract works are progressing well, and engineering inspections are being carried out. Completion is expected early August however predicted heavy rainfall may delay this.

Organs Island Training Wall – 5 Tenders were received, and clarifications were sought from the lowest tenderer. Upon resolution of these clarifications it was recommended to appoint Avery Bros Ltd. Council moved to accept this recommendation at an Emergency Council meeting 29 July 2022. A prestart meeting is planned with the contractor 3 August 2022 and the works are due for completion end of October 2022.

O’Conor Home Erosion Protection Works – Preparation of Tender Package underway. Due to site location additional work is required around access, Health & Safety, and methodology expectations to and how the contractor will address these within the tender. The tender will likely be a weighted tender rather than lowest price conforming. We anticipate the tender package to be complete and issued to contractors early September.

Report to: West Coast Regional Council	Meeting Date: 9 August 2022
Title of Item: Matters arising from the Office of the Auditor General’s audits of all Councils’ 2021-31 long-term plans	
Report by: Marc Ferguson – Acting Corporate Services Manager	
Reviewed by: Heather Mabin – Chief Executive Officer	
Public excluded? No	

Report Purpose

To provide the Council with the matters arising from the Office of the Auditor General’s (OAG) audits of all Councils’ 2021-31 long term plans.

Background

Councils’ long-term plans are the main way for them to describe the services they plan to provide, the community outcomes they plan to contribute to, and the forecast cost of those services. The OAG audit these long-term plans to help give assurance to communities that the underlying information and assumptions that the long-term plan is based on is reasonable and supportable. Their report sets out the main findings and observations from their audits of councils’ 2021-31 long-term plans.

Most councils produced realistic long-term plans based on the best information available. This is a significant achievement given the challenging environment in which the plans were produced. The OAG saw that councils were:

- making tangible progress in collecting better condition and performance information about their critical assets;
- setting rates higher than they may have previously to fund the increasing costs they expect to pay;
- providing more discussion about the impact of climate change on their communities; and
- discussing the uncertainty created by the current reforms.

Long-term plans include councils’ infrastructure and financial strategies. The infrastructure strategy presents a strategic picture of the challenges councils face in managing their assets, and their response. The financial strategy sets out the council’s strategy to funding that response. Both strategies are important because most of councils’ spending is on significant infrastructure, such as roads and footpaths, and pipes. The OAG found that councils need to do more to:

- produce integrated infrastructure and financial strategies that are realistic and clear about identifying and managing risks (particularly for critical assets);
- understand the state of their infrastructure and the ongoing investment needed; and
- understand the impact of climate change on assets and communities.

Their report also includes a summary of the audit reports they issued on councils’ 2021-31 long-term plans. They issued two adverse audit opinions and nine qualified audit opinions. Adverse and qualified audit opinions are normally rare in their audits of long-term plans. In the case of the adverse opinions, the OAG don’t believe those LTPs are fit for purpose. In the case of the nine qualifications, the qualification was limited to a disagreement or a limitation in scope about an aspect of the underlying information that the long-term plan was based on.

Recommendations

It is recommended that Council resolve to:

1. *Receive the report and attachment*

Attachment

Attachment 1: Summary Report

Attachment 2: Detailed Report to be sent separately



Summary

Matters arising from our audits of the 2021-31 long-term plans

Every three years, councils are required to prepare a 10-year long-term plan. The long-term plan is the main way for councils to describe the services they plan to provide, the community outcomes they plan to contribute to, and the forecast cost of those services.

We audit these long-term plans to help give assurance to communities that the underlying information and assumptions that the long-term plan is based on is reasonable and supportable. Our report sets out the main findings and observations from our audits of councils' 2021-31 long-term plans.

What we found

Most councils produced realistic long-term plans based on the best information available. This is no mean feat given the challenging environment in which the plans were produced. In the 2021-31 long-term plans, we saw that councils were:

- moving to address historical underinvestment in infrastructure;
- making tangible progress in collecting better condition and performance information about their critical assets;
- setting rates higher than they may have previously to fund the increasing costs they expect to pay;

- providing more discussion about the impact of climate change on their communities, what they are going to do to adapt, and manage the risks; and
- discussing the uncertainty created by the current reforms.

What councils need to do more on

Although there have been improvements, councils need to do more with their financial strategy and infrastructure strategy. These strategies need to be better integrated and clear about the risks councils face as well as their risk appetite and how they are planning to mitigate or manage risks and the associated cost. These two strategies provide the strategic direction and the underpinning context for the long-term plan. Therefore, they need to be realistic and clear.

Councils are forecasting to invest more in their assets than in previous long-term plans. Assuming councils can substantially deliver this planned investment, this is a positive change. However, councils' forecast renewals remain lower than forecast depreciation for the period of the long-term plan. This indicates that councils are still not reinvesting enough in their assets.



Each council's borrowing practices need to reflect its risk profile. With a significant increase in infrastructure investment being forecast, debt throughout the local government sector is also forecast to be the highest it has ever been.

Councils also need to address the inherent risks in the long-term operation of their infrastructure. It is critical that councils understand the state of their infrastructure and the ongoing investment that they need, including responding to the effects of increasingly severe weather events as a result of climate change.

Most councils disclosed that they needed to improve the information that they hold about their assets to support prioritised investment decisions. Councils should continue focusing on asset management practices generally. It is important that councils implement the improvement plans they have for collecting and maintaining asset condition information.

We continue to highlight that improved information about the condition and performance of councils' assets is needed for three waters assets. Holding suitable information will be important for ongoing service delivery to the country, regardless of any changes to the role councils have in managing these assets.

The audit opinions we issued

Our auditors issued two adverse audit opinions and nine qualified audit opinions on the 2021-31 long-term plans. Adverse and qualified audit opinions are normally rare in our audits of long-term plans.

In most instances, the qualification was limited to a disagreement or a limitation in scope about an aspect of the underlying information that the long-term plan was based on. For example, a council may not have had enough information about the condition and performance of its assets to suitably inform the council's renewal strategies and forecasts.

Our audit reports on the 2021-31 long-term plans also included more emphasis of matter paragraphs than in the past. An emphasis of matter paragraph does not mean that the auditor has found anything wrong. However, there were some important matters that we wanted to draw readers' attention to. In most instances, the emphasis of matter paragraphs reflected the significant uncertainties councils faced in preparing their long-term plans.

Report to: West Coast Regional Council	Meeting Date: 9 August 2022
Title of Item: Geotechnical assessment – Risk mitigation for Blackball Quarry	
Report by: Keri Harrison, Tui Creek Consulting	
Reviewed by: Marc Ferguson – Acting Corporate Services Manager	
Public excluded? No	

Report Purpose

To provide the Council with the outcome of the Geotechnical assessment undertaken at the Blackball Quarry.

Report Summary

In 2018 Council was advised of the need to rehabilitate the Blackball Quarry. Alteration of the public road adjacent to the quarry by Grey District Council (GDC) on behalf of Department of Conservation (DOC) has further exacerbated this situation.

This paper informs Council of the decisions made by Management to address this situation.

Draft Recommendations

It is recommended that Council resolve to:

1. Receive the report and note the attachments

Issues and Discussion

Background

Geotechnical issues have been identified at the Blackball Quarry and in 2018 Keri Harrison, Tui Creek Consulting, completed a Rehabilitation Report for Council, see Attachment 1.

Subsequent to this the Department of Conservation (DOC) asked Grey District Council (GDC) to undertake work on the public road adjacent to Council's access to Blackball Quarry.

Current situation

A site inspection by Keri Harrison on 27 June 2022, identified a hazardous area posing a risk to the surrounding environment and at the July 2022 Council meeting, the Council confirmed that a geotechnical assessment be undertaken of the area in question. This was completed by TerraFirma Engineering Ltd on 19 July 2022 (Attachment 2).

Attachment 3 outlines the issues facing Council and the proposed actions to mitigate risk. These are:

- Remove the rocks forming the top row of the Bund,
- Extend the bund across the old access roadway and
- Remove the overhanging Prow.

Management have approved this course of action.

As the road is now inaccessible by vehicles, GDC has agreed in principle to assist with some works to enable access to the site.

There are ongoing discussions with the DOC about their involvement going forward. Mark Davies, DOC, has acknowledged that DOC did ask GDC to undertake the work that has compromised Council's access to the quarry.

Considerations

Implications/Risks

The urgent risk to be addressed by this paper is the potential health and Safety risk of rock in the quarry falling onto the public road below. This has occurred through the inaction of Council to date to address the rehabilitation proposed for Blackball quarry combined with the alteration of the public road adjacent to the area.

Significance and Engagement Policy Assessment

There are no issues within this report which trigger matters in this policy.

Tangata whenua views

Not applicable

Views of affected parties

Discussions have been had with both the Department of Conservation and Grey District Council as the affected parties in this situation.

Financial implications

Current budget

Council had set aside a term deposit of \$50,000 for the purposes of quarry rehabilitation. This amount will be liquidated to pay for the remediation

Future implications

Not applicable

Legal implications

The actions outlined in this paper address Council's legislated requirements under the Health & Safety at Work Act 2015 and the Mining and Quarrying Regulations 2016-2022.

Attachment

Attachment 1: Keri Harrison, Tui Creek Consulting, *West Coast Regional Council Quarry Rehabilitation and Restoration*, 22 October 2018

Attachment 2: Request for Professional Services to TerraFirma Engineering Ltd

Attachment 3: TerraFirma Engineering Ltd, *Rockfall assessment and Mitigation Options - Blackball Quarry*, dated 25 July 2022

Attachment 4: Keri Harrison, Tui Creek Consulting, *Quarry Status Report – Blackball Quarry*, 3 August 2022



WEST COAST REGIONAL COUNCIL

Quarry Rehabilitation and Restoration



Keri Harrison
Tui Creek Consulting
22 October 2018

Prepared by

Keri Harrison, Tui Creek Consulting (owner/operator)
Certificate number B grade CoC: Cert Number: 961, Expiry Date:3/11/21
The writer confirms their independence and relationship with the WCRC

These are cost estimates only and are suitable for inclusion in the WCRC financial statements and that these figures present the value of future restoration costs. The writer confirms that these details can be used by auditors in financial statements and for audit evidence.

These costs have been provided with reference to several documents (refer to list of references). Site visits were carried out on 10 and 11 October 2018.

Experience: restoration projects at the Selwyn District Council, long term planning with gravel reserve management at the Selwyn District Council, undertaking risk assessments for the purposes of gravel reserve restoration in the Canterbury region (Selwyn) and quarry rehabilitation.

This documentation is for the West Coast Regional Council (WCRC) purposes only.

References

John Ellis, West Coast Regional Council Quarry final termination rehabilitation/restoration costs
Quarry Management Plans 2015
TerraFirma Engineering Ltd (3 April 2018) letter regarding Kiwi Quarry
Restoration/Rehabilitation Strategy: for all quarries updated September 2007
Maps of the various sites supplied by WCRC
Rehabilitation Cost Estimation Tool NSW June 2017
Quarry Restoration Guide Christchurch City Council August 2018

Acknowledgements

John Ellis, Quarry Manager, WCRC
Louise Dando, Business Analyst, WCRC

Disclaimer

The information in this report is accurate to the best of the knowledge and belief of Tui Creek Consulting. Whilst Tui Creek Consulting has exercised all reasonable skill and care in the preparation of information in this report, Tui Creek Consulting does not accept any liability in contract, tort, or otherwise for any loss, damage, injury or expense, whether direct, indirect, or consequential, arising out of the provision of information in this report.

Please note: The information provided does not replace or alter the laws of New Zealand or any other official guidelines or requirements.

Introduction

The purpose of the service was to provide for the following. *Peer Review of WCRC Future Quarry Restoration Costings*, for the following sites:

- Blackball
- Inchbonnie
- Kiwi Point (between Greymouth & Stillwater)
- Camelback (Kowhitirangi)
- Whataroa

The consultant was not required to visit Okuru (near Haast), Waiho and Karamea (Miedema Rock Deposit).

Site Visits

Site visits were undertaken on Wednesday 10 October and Thursday 11 October 2018. Keri Harrison accompanied John Ellis, Quarry Manager, to each of the five quarry sites. A summary of these sites visits, with supporting photographs, is contained in this report. In addition, cost analysis was undertaken as a result of these site visits.

Summary of Costings:

The summary of costings is very close to that of the report compiled by John Ellis. It is difficult to quantify the area for rehabilitation reflecting that these sites are demand driven and the volumes for extraction are not known each year. In addition, several of the sites are now restricted in terms of quarrying but are still classified as open (dormant at this time, being Blackball and Kiwi Quarry).

The square metres for rehabilitation, at the termination of the mining permit/RC, was considered important in the cost analysis and this was provided by John Ellis's with his analysis of the sites. In some cases, where the site is still under extraction, the final bench area for rehabilitation for possible planting was assumed, until such time, that a formal survey is carried out to verify the area.

All sites were visited to confirm the rationale for this assessment. This information was transferred to a template whereby the items requiring remediation were costed against today's machinery hire requirements and the supply of goods and services. In addition, new items relating to gravel pit rehabilitation were identified. These line items are not physical works for each site. The writer believes it is necessary to have a thorough and concise rehabilitation plan in place for each of the five quarry sites before proceeding with physical works. An update to the 2007 strategy is suggested¹.

The cost for each site includes a 3-year maintenance programme for plant maintenance. It is assumed that 1/3 of the planting may require replacing however this will be unique to each of the sites and it is dependent upon the geological and topography of the quarry. In any event, before planting the site, a landscape architect should be engaged to provide such advice.

¹ Restoration/Rehabilitation Strategy: for all quarries updated September 2007

Table 1 Overall Summary of Costings

West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)				
Quarry Name	Year	m²*	Per m² cost	Cost
Blackball	30	1200	\$ 39.92	\$ 47,900.00
Kiwi	15	1500	\$ 92.04	\$ 138,060.00
Inchbonnie	50	3500	\$ 28.13	\$ 98,460.00
Camelback	30	2750	\$ 40.84	\$ 112,320.00
Whataroa	25	3000	\$ 48.66	\$ 145,980.00
Total Cost for 5 sites				\$ 542,720.00
Notes:				
Year = year for remediation as per J Ellis report				
m ² = as per J Ellis report to WCRC				
Please refer to individual summary sheets				
The cost for each site includes a 3 year maintenance programme				

1. Blackball Quarry

Blackball Quarry is sited at Blackball/Roa Road. This quarry has been in a dormant state for at least five years. While there is road access to this site, the access is very challenging, in particular from Roa Road into the main quarry area. There is still a large amount of rock available for transportation from the lower benches, some of which has been quarried and is ready for transport.

Site visit observations (10 October 2018):

- It is suggested that this site is prepared for deactivation based on limited demand and Inchbonnie providing a better resource.
- Tidy up the old benches and push up material to safely batter.
- DoC require a fence at the top of the site for kiwi. This has not been priced as part of this scope of works and will require further discussion with DoC as to their requirements.
- A study on plant regeneration may be appropriate as the site lends itself to regeneration. This has not been priced as part of this scope of works.
- Perhaps suitable for a community accessible site upon completion of rehabilitation.
- After deactivation, close the site to vehicles (heavy) but for the purposes of maintenance rehabilitation consider light vehicle access only.
- There is a noticeable fracture to an area of rock (located to the left of the internal access road). Suggest specialist help with how to manage this for rehabilitation purposes and for safety reasons.
- There is a large amount of gorse however the writer now understands this is seen as a “nurse” plant.



Figure 1 Requires regular monitoring for possible movement

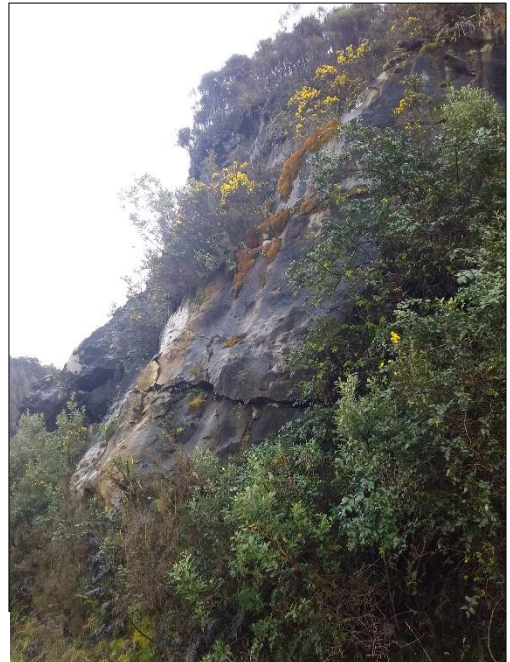


Figure 2 Fractured rock to the left of the access road



Figure 3 Active face with material available for removal



Figure 4 Some benching in place

Costings:

Table 2: Blackball Quarry Summary Table

Quarry Name	Year	m²*	Per m² cost	Cost
Blackball	30	1200	\$ 39.92	\$ 47,900.00

Refer to Table 3 for the detailed assessment of the rehabilitation works.

West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)

Table 3: Blackball Quarry Costings

Blackball Quarry West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)						
Item	Description	Unit	Quantity	Rate	Total	Justification
Road and Tracks						
1.01	Unsealed haulage road, vehicle park up areas - minor works to tidy up, removal of loose rocks from road	Hr	15	\$ 180.00	\$ 2,700.00	Minimal works required, haulage road in driveable condition, minor footprint
1.02	Meeting any site environmental controls such as control of water run off	Hr	0	\$ 180.00	\$ -	No known water issues at this site (excavator)
Rehabilitation						
2.01	Remove loose rock from above all benches and faces and position in agreed on site location	Hr	15	\$ 180.00	\$ 2,700.00	All benches to be rehabilitated using an excavator
2.02	Source and cart topsoil along all benches prior to planting	Hr	300	\$ 45.00	\$ 13,500.00	(J Ellis) area of 300 metres using an excavator
2.03	Direct seeding (tree or native grass species)	Each	500	\$ 10.00	\$ 5,000.00	Benches will be planted and not regenerated by nature, 1 m spacing over 300 metres
2.04	Slow release tab and labour and materials (possible plant protectors)	Each	500	\$ 15.00	\$ 7,500.00	\$1.50 per tab (purchase in bulk) and \$8.00 per stem labour and other materials
2.04	Update the signage to the site including warning signs	Each	4	\$ 200.00	\$ 800.00	1x rehabilitation site, 3x warning signs including erecting
2.05	Fencing - replacement or new - perimeter fencing	Metres	0	\$ -	\$ -	No new fencing required
2.06	Security fence around the top of the high wall for DoC	Metres	0	\$ -	\$ -	Funded outside of this plan
2.07	Termination of any existing services such as water, power, buildings etc.	Each	0	\$ 2,000.00	\$ -	No services are on site
2.08	Mobilisation and demobilisation of heavy machinery to the site	Each	6	\$ 200.00	\$ 1,200.00	Transporter with pilot vehicle, excavator
2.09	Create cut through channels to establish natural water courses and drainage channels	Hr	0	\$ 180.00	\$ -	No known water issues at this site
2.10	Quarry Rehabilitation Plan developed with finished land contour objective defined and realistic timeframes	Each	1	\$ 1,000.00	\$ 1,000.00	Update to current plan with additional rehab section
2.11	Review fractured rock (near to access rd) for remediation	Each	1	\$ 2,000.00	\$ 2,000.00	May require specialist assistance to ascertain remedial works
Sub Total for Rehabilitation					\$ 36,400.00	
3.01	Contingency	Each	1	\$ 3,640.00	\$ 3,640.00	10% of the full rehabilitation costs
Total for Rehabilitation					\$ 40,040.00	
Maintenance of Rehabilitated Areas						
				Yearly	3 yearly	
4.01	Pest management on non disturbed and rehabilitated areas	Yearly	3	\$ 500.00	\$ 1,500.00	Control of animal pests is required
4.02	Release spraying and cutting 3 years replanting programme	Yearly	3	\$ 1,400.00	\$ 4,200.00	3 year plan - based on \$12500 for new plants/3 survival rate over 3 years
4.03	Site security / compliance checks	Yearly	3	\$ 220.00	\$ 660.00	3 year plan for monitoring of the plan and compliance
4.04	Minor rehabilitation works - repair works to rehabilitated areas due to weather or other influences	Yearly	3	\$ 500.00	\$ 1,500.00	3 year plan - replacement of soil or removal of rocks
Total for Maintenance					\$ 2,620.00	\$ 7,860.00
Total for Blackball Quarry					\$ 47,900.00	
Sundry						
5.01	Land ownership transfers etc	Each	1	\$ -	\$ -	Unknown at this stage whether site is for disposal (legal costs TBC) etc, land use change
5.02	Public access agreement or change of status to a community site (consultation project)	Each	1	\$ -	\$ -	If required, a consultation document may be necessary, assume no at this stage
Total for Sundry items					\$ -	\$ -
Notes:						
Based on no further extraction other than the material on site being removed from the lower benches						
Costs can be reduced if the site is allowed to revegetate without input of soil and plantings						
The fencing of the site as per DoC requirements has not been factored into this costing						
Floor to remain status quo with some minor material to be shifted as required						
No survey data was available therefore the costings have been prepared on 1200m2 at year 30 (J Ellis)						
Due to uncertainty about the volumes for extraction, the rehabilitation costs have been prepared on the basis of square metres with the bench area determined by mapping only						
Hours are based on the average of 10 hours per day						



2. Kiwi Quarry

Kiwi Quarry is sited near Stillwater. This quarry has been subject to a closure notice due to safety concerns (WorkSafe). This relates to the major hazards with face instability that could cause harm to operatives in the quarry site, rock fall affecting SH7 or the Midland railway line and natural rockfall hazards. A report was commissioned by WCRC to TerraFirma Engineering Ltd with outcomes indicating safety issues need to be addressed before it can be reactivated.

Site visit observations (10 October 2018):

- It is suggested that this site is prepared for deactivation based on limited demand and Inchbonnie providing a better resource. In addition, blasting may cause displacement of material (see figure 6) and cause harm to the area below.
- Tidy up the old benches and push up material to safely batter. Some material has already been positioned at the toe of the old face (to the right of the face)
- Regeneration has naturally occurred in a slip area (naturally)
- After deactivation, close the site to vehicles (heavy) but for the purposes of maintenance rehabilitation, light vehicle access may still be necessary.
- Stability to the face near to SH7 and Midland Railway Line. Suggest specialist help with how to manage this for rehabilitation. Pull down loose areas and re-design the bench.



Figure 5 Current active face

Figure 6 Unstable area identified by J Ellis and TerraFirma



Costings:


Table 4 Kiwi Quarry Summary

Quarry Name	Year	m ² *	Per m ² cost	Cost
Kiwi	15	1500	\$ 92.04	\$ 138,060.00

Refer to Table 5 for the detailed assessment of the rehabilitation works.

West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)

Table 5 Kiwi Quarry Costings

Kiwi Quarry								
West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)								
Item	Description	Unit	Quantity	Rate	Total	Justification		
Road and Tracks								
1.01	Unsealed haulage road, vehicle park up areas - minor works to tidy up, removal of loose rocks from road, buttressing of existing over steeped faces	Hr	90	\$ 180.00	\$ 16,200.00	Status quo with no change and 6m width haul road (excavator). Does not include roading realignment cost.		
1.02	Realignment of the driving lane of the access road away from the outcrop at the lowest hairpin bend	Hr	80	\$ 180.00	\$ 14,400.00	As per 3 April 2018 letter from TerraFirma (excavator/dozer), includes using local material for construction		
1.02	Meeting any site environmental controls such as control of water run off	Hr	30	\$ 180.00	\$ 5,400.00	This is for the entire site (if consent conditions required) - separate line item for drainage channel		
Rehabilitation								
2.01	Remove loose rock from above all benches and faces and position in agreed on site location	Hr	100	\$ 180.00	\$ 18,000.00	All benches to be rehabilitated using an excavator - currently two benches, suggest three benches		
2.02	Source and cart topsoil along all benches prior to planting	Metres	600	\$ 45.00	\$ 27,000.00	300 metres on northern face and 300 metres on western face at current extraction		
2.03	Direct seeding (tree or native grass species)	Each	800	\$ 10.00	\$ 8,000.00	Benches will be planted and not regenerated by nature, assuming 1 metre planting TBC		
2.04	Slow release tab and labour and materials (possible plant protectors)	Each	800	\$ 15.00	\$ 12,000.00	\$1.50 per tab (purchase in bulk) and \$8.00 per stem labour and other materials		
2.04	Update the signage to the site including warning signs	Each	4	\$ 200.00	\$ 800.00	1x rehabilitation site, 3x warning signs including erecting		
2.05	Fencing - replacement or new - perimeter fencing	Metres	0	\$ -	\$ -	No new fencing required		
2.06	Security fence around the top of the high wall for DoC	Metres	0	\$ -	\$ -	Not applicable		
2.07	Termination of any existing services such as water, power, buildings etc.	Each	1	\$ 2,000.00	\$ -	No services are on site		
2.08	Mobilisation and demobilisation of heavy machinery to the site	Each	6	\$ 200.00	\$ 1,200.00	Transporter with pilot vehicle, excavator (dozer would be extra)		
2.09	Create cut through channels to establish natural water courses and drainage channels	Hr	30	\$ 180.00	\$ 5,400.00	Minor works required to existing drainage channel		
2.10	Quarry Rehabilitation Plan (termination plan) developed with finished land contour objective defined and re	Each	1	\$ 2,000.00	\$ 2,000.00	Update to current plan with additional rehab section. Input from TerraFirma suggested.		
2.11	Buttressing of existing over steepened rock face using waste material	Each	20	\$ 180.00	\$ 3,600.00	No blasting here only excavator use		
Sub total for Rehabilitation					\$ 114,000.00			
3.01	Contingency	Each	1	\$ 11,400.00	\$ 11,400.00	10% of the rehabilitation costs		
Total for Rehabilitation					\$ 125,400.00			
Maintenance of Rehabilitated Areas								
				Yearly	3 yearly			
4.01	Pest management on non disturbed and rehabilitated areas	Yearly	3	\$ 1,000.00	\$ 3,000.00	Control of animal pests		
4.02	Release spraying and cutting 3 years replanting programme	Yearly	3	\$ 2,000.00	\$ 6,000.00	3 year plan - based on \$20,000 for new plants/3 survival rate over 3 years ave.		
4.03	Site security / compliance checks	Yearly	3	\$ 220.00	\$ 660.00	3 year plan for monitoring of the plan and compliance		
4.04	Minor rehabilitation works - repair works to rehabilitated areas due to weather or other influences	Yearly	3	\$ 1,000.00	\$ 3,000.00	3 year plan - replacement of soil or removal of rocks		
Total for Maintenance					\$ 4,220.00	\$ 12,660.00		
Total for Kiwi Quarry					\$ 138,060.00			
Sundry								
5.01	Land ownership transfers etc	Each	1	\$ -	\$ -	Unknown at this stage whether site is for disposal (legal costs TBC) etc		
5.02	Public access agreement or change of status to a community site (consultation project)	Each	1	\$ 5,000.00	\$ 5,000.00			
Total for Sundry items					\$ 5,000.00	\$ 5,000.00		
Notes:								
The site is currently dormant but may reopen with safety issues addressed								
Based on material on site being removed from the lower benches that is already exposed and stockpiling loading out only								
Costs can be reduced if the site is allowed to revegetate without input of soil and plantings								
Floor to remain status quo with some minor material to be shifted as required								
No survey data was available therefore the costings have been prepared on 1500 m2 at year 15 (J Ellis)								
Due to uncertainty about the volumes for extraction, the rehabilitation costs have been prepared on an average bench assumption								
Overhang to be considered for removal if opening for the community or a roading realignment could occur								
This site lends itself to full regeneration without planting (as per the section below the pit (near to the railway line) that has regenerated								
Hours are based on the average of 10 hours per day								

3. Inchbonnie Quarry

Inchbonnie Quarry is located in Inchbonnie which is 66.6 km inland of Greymouth at the end of McArthur Road. This quarry is managed by MBD Contracting.

This is the most active of the quarry sites and produces large size armour grade protection rock. This quarry site has a 50-year life.

Site visit observations (10 October 2018):

- This site is in good condition with a highly skilled and competent contractor working the site. Based on current good practice, the site lends itself to easy rehabilitation.
- Access is via a road that is used by the public as well. This was in good tidy condition.



Figure 7 Active face



Figure 8 Loading out of armour rock (2Ton)



Figure 9 Plenty of resource is available

Costings:

Table 6 Inchbonnie Quarry Summary

Quarry Name	Year	m²*	Per m² cost	Cost
Inchbonnie	50	3500	\$ 28.13	\$ 98,460.00

Refer to Table 7 for the detailed assessment of the rehabilitation works.

West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)

Table 7 Inchbonnie Quarry Costings

Inchbonnie Quarry						
West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)						
Item	Description	Unit	Quantity	Rate	Total	Justification
Road and Tracks						
1.01	Unsealed haulage road, vehicle park up area minimal, minor works to tidy up, removal of loose rocks from rd	Hr	40	\$ 180.00	\$ 7,200.00	Entrance to the site is a local road. Internal road work minimal. Floor work minimal but footprint will be larger*
1.02	Meeting any site environmental controls such as control of water run off	Hr	30	\$ 180.00	\$ 5,400.00	Minimal water issues here, unsure of consent conditions for compliance for water management
Rehabilitation						
2.01	Remove loose rock from above all benches and faces and position in agreed on site location	Hr	50	\$ 180.00	\$ 9,000.00	All benches to be rehabilitated using an excavator - currently one bench, 3 benches possible at completion
2.02	Source and cart topsoil along all benches prior to planting	Metres	600	\$ 45.00	\$ 27,000.00	No survey data available therefore assumed area for rehabilitation
2.03	Direct seeding (tree or native grass species)	Each	800	\$ 10.00	\$ 8,000.00	Benches will be planted and not regenerated by nature, assuming 1 metre planting TBC
2.04	Slow release tab and labour and materials (possible plant protectors)	Each	800	\$ 15.00	\$ 12,000.00	\$1.50 per tab (purchase in bulk) and \$8.00 per stem labour and other materials
2.04	Update the signage to the site including warning signs	Each	4	\$ 200.00	\$ 800.00	1x rehabilitation site, 3x warning signs including erecting
2.05	Fencing - replacement or new - perimeter fencing	Metres	0	\$ -	\$ -	No new fencing required
2.06	Security fence around the top of the high wall for DoC	Metres	0	\$ -	\$ -	Not applicable
2.07	Termination of any existing services such as water, power, buildings etc.	Each	1	\$ 2,000.00	\$ -	No services are on site
2.08	Mobilisation and demobilisation of heavy machinery to the site	Each	6	\$ 200.00	\$ 1,200.00	Transporter with pilot vehicle, excavator, dozer
2.09	Create cut through channels to reestablish natural water courses and drainage channels	Hr	30	\$ 180.00	\$ 5,400.00	Uncertain if this is required, assume yes
2.10	Quarry Rehabilitation Plan (termination plan) developed with finished land contour objective defined and realistic timeframes	Each	1	\$ 2,000.00	\$ 2,000.00	Update to current plan with additional rehab section. Input from MDA Contracting.
2.11	Safety consideration to northern pit face and new bench/toe material at the bottom	Each	0	\$ 180.00	\$ -	Not applicable
Sub total for Rehabilitation					\$ 78,000.00	
3.01	Contingency	Each	1	\$ 7,800.00	\$ 7,800.00	10% of the rehabilitation costs
Total for Rehabilitation					\$ 85,800.00	
Maintenance of Rehabilitated Areas						
				Yearly	3 yearly	
4.01	Pest management on non disturbed and rehabilitated areas	Yearly	3	\$ 1,000.00	\$ 3,000.00	Control of animal pests
4.02	Release spraying and cutting 3 years replanting programme	Yearly	3	\$ 2,000.00	\$ 6,000.00	3 year plan - based on \$20,000 for new plants/3 survival rate over 3 years ave.
4.03	Site security / compliance checks	Yearly	3	\$ 220.00	\$ 660.00	3 year plan for monitoring of the plan and compliance
4.04	Minor rehabilitation works - repair works to rehabilitated areas due to weather or other influences	Yearly	3	\$ 1,000.00	\$ 3,000.00	3 year plan - replacement of soil or removal of rocks
Total for Maintenance					\$ 4,220.00	\$ 12,660.00
Total for Inchbonnie Quarry					\$ 98,460.00	
Sundry						
5.01	Land ownership transfers etc	Each	1	\$ -	\$ -	Unknown at this stage whether site is for disposal (legal costs TBC) etc - see comment below
5.02	Possibility of crusher feed stock Limeworks Company consideration	Each	1	\$ -	\$ -	Unknown at this stage therefore assume no
Total for Sundry items					\$ -	\$ -
Notes:						
Based on the current status of an active quarry site with sufficient extraction and source of material taking place						
Based on one active face with further extension						
Costs can be reduced if the site is allowed to revegetate without input of soil and plantings						
The floor has minimal rehabilitation requirements.						
No survey data was available therefore the costings have been prepared on 3500m2 at year 50 (J Ellis)						
Due to uncertainty about the volumes for extraction, the rehabilitation costs have been prepared on an average bench assumption						
Hours are based on the average of 10 hours per day						
Site is well managed and will make rehabilitation easier if the benches are designed and material quarried efficiently*						

4. Camelback Quarry

Camelback Quarry is situated in the north eastern slope of Mt Camelback, approximately 1 km south west of the Kowhitirangi Township at the junction of Ford Road and McArthur Road.

This site has been in operation for 45-50 years on a permit area of 10.749 ha of which is jointly owned by the Regional Council and T and C Elcock (2.24ha).

Site visit observations (11 October 2018):

- This site is visible to the road side but is secured through a locked gate.
- The site is appealing with its native forest immediately adjacent to the quarry site.
- This site lends itself to regeneration and this could align aesthetically with the surrounding environment.
- It is understood that the neighbouring farmer uses this land for stock grazing. This would need to discontinue if rehabilitation were to commence.



Figure 10 Active face



Figure 11 Benches are clearly visible



Figure 12 Resource is available

Costings:

Table 8 Camelback Quarry Summary

Quarry Name	Year	m²*	Per m² cost	Cost
Camelback	30	2750	\$ 40.84	\$ 112,320.00

Refer to Table 9 for the detailed assessment of the rehabilitation works.

West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)

Table 9 Camelback Quarry Costings

Camelback Quarry West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)						
Item	Description	Unit	Quantity	Rate	Total	Justification
Road and Tracks						
1.01	Unsealed haulage road, vehicle park up area minimal, minor works to tidy up, removal of loose rocks from road, buttressing of faces	Hr	80	\$ 180.00	\$ 14,400.00	Access road works minimal, footprint will be larger if extraction continues
1.02	Meeting any site environmental controls such as control of water run off	Hr	30	\$ 180.00	\$ 5,400.00	Unsure of consent conditions for compliance for water management
Rehabilitation						
2.01	Remove loose rock from above all benches and faces and position in agreed on site location	Hr	80	\$ 180.00	\$ 14,400.00	All benches to be rehabilitated using an excavator - currently one bench, 2 benches possible at completion
2.02	Source and cart topsoil along all benches prior to planting	Metres	600	\$ 45.00	\$ 27,000.00	No survey data available therefore assumed area for rehabilitation
2.03	Direct seeding (tree or native grass species)	Each	800	\$ 10.00	\$ 8,000.00	Benches will be planted and not regenerated by nature, assuming 1 metre planting TBC
2.04	Slow release tab and labour and materials (possible plant protectors)	Each	800	\$ 15.00	\$ 12,000.00	\$1.50 per tab (purchase in bulk) and \$8.00 per stem labour and other materials
2.04	Update the signage to the site including warning signs	Each	4	\$ 200.00	\$ 800.00	1x rehabilitation site, 3x warning signs including erecting
2.05	Fencing - replacement or new - perimeter fencing	Metres	0	\$ -	\$ -	No new fencing required
2.06	Security fence around the top of the high wall for DoC	Metres	0	\$ -	\$ -	Not applicable
2.07	Termination of any existing services such as water, power, buildings etc.	Each	1	\$ 2,000.00	\$ -	No services are on site
2.08	Mobilisation and demobilisation of heavy machinery to the site	Each	6	\$ 200.00	\$ 1,200.00	Transporter with pilot vehicle, excavator, dozer
2.09	Create cut through channels to establish natural water courses and drainage channels	Hr	30	\$ 180.00	\$ 5,400.00	Uncertain of water drainage requirements but suggest minimal
2.10	Quarry Rehabilitation Plan (termination plan) developed with finished land contour objective defined and realistic timeframes	Each	1	\$ 2,000.00	\$ 2,000.00	Update to current plan with additional rehab section. Input from MDA Contracting.
2.11	Safety consideration to northern pit face and new bench/toe material at the bottom	Each	0	\$ 180.00	\$ -	Not applicable
Sub total for Rehabilitation					\$ 90,600.00	
3.01	Contingency	Each	1	\$ 9,060.00	\$ 9,060.00	10% of the rehabilitation costs
Total for Rehabilitation					\$ 99,660.00	
Maintenance of Rehabilitated Areas						
				Yearly	3 yearly	
4.01	Pest management on non disturbed and rehabilitated areas	Yearly	3	\$ 1,000.00	\$ 3,000.00	Control of animal pests
4.02	Release spraying and cutting 3 years replanting programme	Yearly	3	\$ 2,000.00	\$ 6,000.00	3 year plan - based on \$20,000 for new plants/3 survival rate over 3 years ave.
4.03	Site security / compliance checks	Yearly	3	\$ 220.00	\$ 660.00	3 year plan for monitoring of the plan and compliance
4.04	Minor rehabilitation works - repair works to rehabilitated areas due to weather or other influences	Yearly	3	\$ 1,000.00	\$ 3,000.00	3 year plan - replacement of soil or removal of rocks
Total for Maintenance					\$ 4,220.00	\$ 12,660.00
Total for Camelback Quarry					\$ 112,320.00	
Sundry						
5.01	Land ownership transfers etc	Each	1	\$ -	\$ -	Unknown at this stage whether site is for disposal (legal costs TBC) etc, assume no
5.02	Public access agreement or change of status to a community site (consultation project)	Each	1	\$ -	\$ -	Uncertain if a community asset, assume no
Total for Sundry items					\$ -	\$ -
Notes:						
	Based on the current status of an active quarry site with sufficient extraction and source of material taking place					
	Based on one active face with further extension					
	Costs can be reduced if the site is allowed to revegetate without input of soil and plantings					
	The floor has minimal rehabilitation requirements.					
	No survey data was available therefore the costings have been prepared on 2750 m2 at year 30 (J Ellis)					
	Due to uncertainty about the volumes for extraction, the rehabilitation costs have been prepared on an average bench assumption					
	Hours are based on the average of 10 hours per day					

5. Whataroa Quarry

Whataroa Quarry is located in Whataroa, West Coast, on Bower Hill Road, approximately 2.2 km from the Whataroa Township.

This quarry has been in operation for approximately 40 years and is operated by the WCRC.

Site visit observations (11 October 2018):

- There are numerous waste dump areas located within the site. These areas could either be levelled in the future, or can remain as they do today for screening.
- Water is present through the active face and was flowing at the time of the inspection.
- There are other numerous hazards in this area being proximity to an occupied dwelling, electrical transmission lines and the other quarry operating in the local area.



Figure 13 Piles of stock and/or waste are throughout the quarry site



Figure 14 Benches are clearly visible with water entering through the face.



Figure 15 As per figure 13.

Costings:

Table 10 Whataroa Quarry Summary

Quarry Name	Year	m²*	Per m² cost	Cost
Whataroa	25	3000	\$ 48.66	\$ 145,980.00

Refer to Table 11 for the detailed assessment of the rehabilitation works.

West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)

Table 11 Whataroa Quarry Costings

Whataroa Quarry						
West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)						
Item	Description	Unit	Quantity	Rate	Total	Justification
Road and Tracks						
1.01	Unsealed haulage road, vehicle park up area minimal, minor works to tidy up, removal of loose rocks from road, buttressing of faces	Hr	100	\$ 180.00	\$ 18,000.00	Access road works minimal, larger footprint area with stock piling that needs remediation
1.02	Meeting any site environmental controls such as control of water run off	Hr	60	\$ 180.00	\$ 10,800.00	Unsure of consent conditions for compliance for water management over the site
Rehabilitation						
2.01	Remove loose rock from above all benches and faces and position in agreed on site location	Hr	80	\$ 180.00	\$ 14,400.00	All benches to be rehabilitated using an excavator - currently one bench, 2 benches possible at completion
2.02	Source and cart topsoil along all benches prior to planting	Metres	600	\$ 45.00	\$ 27,000.00	No survey data available therefore assumed area for rehabilitation
2.03	Direct seeding (tree or native grass species)	Each	800	\$ 10.00	\$ 8,000.00	Benches will be planted and not regenerated by nature, assuming 1 metre planting TBC
2.04	Slow release tab and labour and materials (possible plant protectors)	Each	800	\$ 15.00	\$ 12,000.00	\$1.50 per tab (purchase in bulk) and \$8.00 per stem labour and other materials
2.04	Update the signage to the site including warning signs	Each	4	\$ 200.00	\$ 800.00	1x rehabilitation site, 3x warning signs including erecting
2.05	Fencing - replacement or new - perimeter fencing	Metres	0	\$ -	\$ -	No new fencing required
2.06	Security fence around the top of the high wall for DoC	Metres	0	\$ -	\$ -	Not applicable
2.07	Termination of any existing services such as water, power, buildings etc.	Each	1	\$ 2,000.00	\$ -	No services are on site
2.08	Mobilisation and demobilisation of heavy machinery to the site	Each	6	\$ 200.00	\$ 1,200.00	Transporter with pilot vehicle, excavator, dozer
2.09	Create cut through channels to reestablish natural water courses and drainage channels	Hr	50	\$ 180.00	\$ 9,000.00	Uncertain of requirements. Water is present on site (at the face) therefore some works may be necessary.
2.10	Quarry Rehabilitation Plan (termination plan) developed with finished land contour objective defined and realistic timeframes	Each	1	\$ 2,000.00	\$ 2,000.00	Update to current plan with additional rehab section. Input from MDA Contracting.
2.11	Tidy up the entire footprint of the site (as at Oct 2018 piles of waste/good material) - provide good screening	Each	100	\$ 180.00	\$ 18,000.00	Leave in situ and rebatter and reshape (see notes *)
Sub total for Rehabilitation					\$ 121,200.00	
3.01	Contingency	Each	1	\$ 12,120.00	\$ 12,120.00	10% of the rehabilitation costs
Total for Rehabilitation					\$ 133,320.00	
Maintenance of Rehabilitated Areas						
4.01	Pest management on non disturbed and rehabilitated areas	Yearly	3	\$ 1,000.00	\$ 3,000.00	Control of animal pests
4.02	Release spraying and cutting 3 years replanting programme	Yearly	3	\$ 2,000.00	\$ 6,000.00	3 year plan - based on \$20,000 for new plants/3 survival rate over 3 years ave.
4.03	Site security / compliance checks	Yearly	3	\$ 220.00	\$ 660.00	3 year plan for monitoring of the plan and compliance
4.04	Minor rehabilitation works - repair works to rehabilitated areas due to weather or other influences	Yearly	3	\$ 1,000.00	\$ 3,000.00	3 year plan - replacement of soil or removal of rocks
Total for Maintenance					\$ 4,220.00	\$ 12,660.00
Total for Whataroa Quarry					\$ 145,980.00	
Sundry						
5.01	Land ownership transfers etc	Each	1	\$ -	\$ -	Unknown at this stage whether site is for disposal (legal costs TBC) etc, assume no
5.02	Public access agreement or change of status to a community site (consultation project)	Each	1	\$ -	\$ -	Uncertain if a community asset, assume no
Total for Sundry items					\$ -	\$ -
Notes:						
Based on the current status of an active quarry site with sufficient extraction and source of material taking place						
Based on one active face with further extension						
Costs can be reduced if the site is allowed to revegetate without input of soil and plantings						
The floor has minimal rehabilitation requirements.						
No survey data was available therefore the costings have been prepared on 3000 m2 at year 25 (J Ellis)						
Due to uncertainty about the volumes for extraction, the rehabilitation costs have been prepared on an average bench assumption						
Hours are based on the average of 10 hours per day						
Restoration/Rehabilitation Strategy: Whataroa: Updated Sept 07 page 2 - level, sow and rolled to a condition for the adjacent dairy farm to utilise*						

14 July 2022

Terra Firma Engineering Ltd
259 Seaton Valley Road
RD1
UPPER MOUTERE 7173

Attention: Email: andrew@tfel.co.nz

Dear Andrew,

Re: Blackball Quarry Geotechnical Assessment – WITH URGENCY - ENGAGEMENT FOR PROFESSIONAL SERVICES

As per my phone call on 12 July 2022 and our phone call this morning, this supporting letter provides for an urgent Geotechnical Assessment at Blackball Quarry.

Quotation:

Update: Refer to email dated 13 July 2022 – time and cost at approximately \$4,000.

Timeframe:

Update: Tuesday 19 July 2002 is the day of the preferred site visit. Please contact James Bell to confirm these arrangements. James can be contacted on 021349575 E: james.bell@wrc.govt.nz

Purpose of the Assessment

The purpose of the assessment is to assess and provide remediation for works to make safe an area of fractured rock, for the long term, adjacent to the Blackball Quarry access road. *A site visit to Blackball Quarry is required.*

Objectives:

To assess;

- The danger of face instability causing harm to people within the access road from the fractured rock that is adjacent to the access road;
- The potential rockfall hazard that could affect the GDC road below (*note: carry out rock fall trajectory analysis to assess this risk*); and
- To determine the stability of the access road, in the middle to bottom section, reflecting that a several metres has been removed from the area for GDC roading improvements.

Deliverables:

A report that provides for:

- Health and safety considerations to ensure that the access road and immediate face instability are managed appropriately, providing for the necessary works to make the area safe (*including any necessary discussions with Geotech personnel to support any type of recommendation for blasting*);

- This work will address all geotechnical hazards to the face stability within the access road as identified in the area shown in the letter;
- Proposed client actions with recommendations on how the work can be safely achieved; and
- Any proposed consultant actions.

Supporting documents:

Information from the 2018 Report (Tui Creek Consulting Ltd) named WCDC Quarry Final Termination Rehabilitation Restoration Costings (one page)

Quarry Current Status Report Blackball Quarry 29 June 2022 (TCC Ltd) (attached)

Short Form Agreement (Request for Professional Services) 14 July 2022 (two pages)

Contacts:

Contact for the site visit: James Bell, Engineering Officer, WCRC, 021349575

All other queries to:

Keri Harrison, Quarrying Consultant, 0273787787 E: tuicreekconsulting@outlook.com.

Please find attached to this letter a Short Form Agreement. This forms the Engagement for Professional Services. Health and safety documentation is also required and is attached for completion.

Please sign and return these documents prior to commencing the site visit.

Thank you.

Yours faithfully

A handwritten signature in blue ink that reads "Keri Harrison".

Keri Harrison

Tui Creek Consulting Ltd

Copy to: Heather Mabin, Chief Executive, WCRC
James Bell, Engineering Officer, WCRC
Chanelle van Rooyen, Health Safety & Wellbeing Advisor, WCRC

Filename: Tui Creek Consulting Ltd: 20220714 Request for Professional Services Blackball Quarry

West Coast Regional Council Quarries Rehabilitation and Restoration Cost Estimates (2018)

1. Blackball Quarry

Blackball Quarry is sited at Blackball/Roa Road. This quarry has been in a dormant state for at least five years. While there is road access to this site, the access is very challenging, in particular from Roa Road into the main quarry area. There is still a large amount of rock available for transportation from the lower benches, some of which has been quarried and is ready for transport.

Site visit observations (10 October 2018):

- It is suggested that this site is prepared for deactivation based on limited demand and Inchbonnie providing a better resource.
- Tidy up the old benches and push up material to safely batter.
- DoC require a fence at the top of the site for kiwi. This has not been priced as part of this scope of works and will require further discussion with DoC as to their requirements.
- A study on plant regeneration may be appropriate as the site lends itself to regeneration. This has not been priced as part of this scope of works.
- Perhaps suitable for a community accessible site upon completion of rehabilitation.
- After deactivation, close the site to vehicles (heavy) but for the purposes of maintenance rehabilitation consider light vehicle access only.
- There is a noticeable fracture to an area of rock (located to the left of the internal access road). Suggest specialist help with how to manage this for rehabilitation purposes and for safety reasons.
- There is a large amount of gorse however the writer now understands this is seen as a “nurse” plant.



Figure 1 Requires regular monitoring for possible movement



Figure 2 Fractured rock to the left of the access road

Figure 1 Information from the 2018 Report (Tui Creek Consulting Ltd) named WCDC Quarry Final Termination Rehabilitation Restoration Costings



Figure 2 Entrance in 2009 when the site was in use. The area of rock identified as a risk is shown above. This photograph does not show the recent roading improvements that have been made to Roa Road.



Figure 3 2022 Access Road has been narrowed with the Roa Road improvements

Our Ref.: 22068
25 July, 2022

West Coast Regional Council
By email PDF to: tuicreekconsulting@outlook.com

Attention: Keri Harrison

Dear Keri

Rockfall Assessment and Mitigation Options, Blackball Quarry.

Background

In response to your request and as a variation to our existing agreement with the West Coast Regional Council (WCRC) dated 27 April 2012 we inspected the area above the access road at Blackball Quarry with James Bell of WCRC on 19 July 2022.

We assessed this area for WCRC in 2013 and made some preliminary recommendations¹. We understand that the quarry has now been formally abandoned and no further extraction is to take place. However the bluff face above the access road has recently become the subject of further concerns over its stability. Recent improvement and widening works completed on the District Council road below the quarry have combined to reduce the usable width of the access roadway.

Roa Road is a sealed public highway owned by Grey District Council. It serves Roa township, the Roa coal mine, Blackball Resource Centre and is also the access to the Paparoa Track, a Great Walk popular with trampers and mountain bikers. We have not reviewed proper traffic data, but from our experience working on site, a truck & trailer unit passes by about once every five minutes throughout the day.

Inspection and Assessment

The bluff consists of massive, fine to medium grained Island Sandstone, with shallow bedding dipping out of the face. It has been partially quarried in the past and some mitigation works were completed after our earlier inspection. There remain three main areas of concern. The plan positions of these are shown on the attached Figure 22068-01 and they are illustrated in the Appendix:

- 1) A small hanging Prow '**The Prow**', undercut by earlier removal of material. Prominent but widely spaced jointing evident in the face suggests that a line of weakness may exist between the overhang and the main body of the rock forming the bluff. There appears to be a kinematic possibility of detachment of the overhanging section at the top of the face. Below the overhanging section there appears to be a detached flake which is several metres long. Failure of this part of the face would result in rock dropping straight into the catch pit as intended and is not considered to be a risk area.

We have compared high quality photographs of the Prow taken in 2013 with those taken during our recent inspection. We have not observed any evidence of movement having

¹ TFEL letter report ref. 12023 dated 14 February 2013.

occurred in the intervening period. Small chockstones wedged into the main joints where movement might be expected have apparently not moved (*refer Plates 1 & 2 in Appendix*). However, enquiries with Council's former quarry inspector John Ellis suggest that in his opinion, ongoing movement is occurring in this location. Mr Ellis has been working in the WCRC quarries for a long time and is more familiar with this location than we are.

- 2) A high angle face '**Southeastern Face**' located at the southeastern end of the quarried bluff, directly above the old access roadway. This area is separated from the Prow area (1) by a spur of rock at a lower face angle with widely spaced joints (*Plates 3 & 4*) which is not currently of concern. A prominent sub horizontal joint crosses the base of the Southeastern Face. The rock mass above the joint slightly overhangs the face below. Again, our comparison of photographs taken in 2018 and 2022 does not provide strong evidence for movement occurring here (*Plates 5a and 5b*). However, John Ellis' opinion is that the rock in this area is definitely moving.
- 3) The mitigation works constructed after our inspection in 2013 consist of a substantial bund '**The Bund**' and catch pit arranged directly below the quarried face and overhanging Prow noted in (1) above. The Bund is around 20 m long. The bulk of the Bund has been constructed with waste quarry rock and fines and appears to be well bound together and placed at an appropriate face angle. However, on top of the Bund is a row of larger rocks and boulders that are simply stacked in place and are not embedded in the finer material. These are mainly in the size range 1-2 m across.

Previous Work

Our previous assessment concluded that there was a relatively low risk of failure from the overhanging Prow, however such a failure would threaten inundation of both the private accessway formation leading up to the quarry itself, and the public roadway below. We did not formally assess the Southeastern Face (2), and the Bund (3) had not yet been constructed. At the time, further extraction from the quarry was still under review and no firm decision had been made in terms of complete closure of the facility.

The construction of the Bund took place after our 2013 assessment and although the as-built geometry is in general accordance with our earlier recommendations, the method of construction does have some shortcomings.

Discussion

Opinions and recommendations in this report are based on a walkover survey only and comparison of recent data with earlier work. No subsurface investigations have been completed and there is a strong element of judgement and reliance on reasonable assumptions. Actual conditions could vary widely from the assumed model.

We remain of the opinion that the overhanging Prow (1) could become unstable in the longer term, particularly as a result of strong seismic shaking. If the Prow were to fail, rockfall could be expected to impact the Bund (3), either initiating instability in the boulders forming the top of the Bund itself, or clearing the Bund and rolling directly down the slope to the road below.

We consider that a rock mass failure arising from the Southeastern Face (2) is also possible on a similar timeframe.

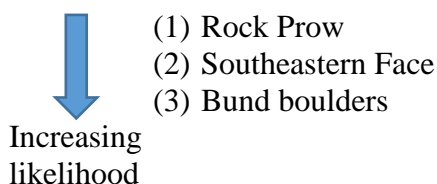
There is widespread evidence within a limited radius of this location for substantial natural overhang development in the Island Sandstone, particularly in the same bed as the overhanging Prow. We surmise that the weaker rock beneath is preferentially weathered and this leaves the more competent bed overhanging the face beneath. This is demonstrated in several locations a short distance to the north. It is reasonable to conclude that these natural overhangs have been in place for several thousand years. There is a lack of strong evidence for their spontaneous failing.

Causal failure mechanisms would likely be significant rainfall events and/or seismic shaking, both of which are relatively common in this locality. Seismic shaking is considered more likely to initiate instability, particularly in the boulders on top of the Bund (3). None of the risk areas has been well tested seismically since our initial inspection in 2013. Precedent behaviour observed in the 2010-2011 Canterbury Earthquake Sequence (CES) suggests that loose boulders in this location would be at risk of mobilisation at shaking levels somewhat less than a ULS event². Boulder roll observed on the Port Hills in Christchurch also provided ample evidence that vegetation of the type present below the bluff at Blackball is insufficient to stop boulders rolling downslope.

We have analysed possible rockfall trajectories from the Prow using proprietary software. The analysis suggests that in the event of failure, most of the rock would fall into the catch pit. However, due to the shape of the face immediately below the Prow, there is a risk that some material would bounce over the wall of the Bund.

Risk Assessment

Risk is a product of consequence and likelihood. We consider that the likelihood of failure of Areas (1), (2) or (3) under design level seismic shaking may be ranked as follows:



In assessing the societal risk posed by a rock instability hazard such as this, it is useful to assess whether the hazard actually presents a real and unacceptable risk to members of the public. An event may have a high probability of occurrence but be of little consequence, thus presenting a low risk to society at large. We have completed a high level quantitative risk assessment to assist with mitigation option selection.

Based on precedent behaviour observed in the CES, an earthquake with a peak ground acceleration (PGA) of 0.2g or above would be expected to initiate instability in the Bund boulders at this site. The site is located within earthquake Zone 3, the second highest earthquake

² The ULS (Ultimate Limit State) seismic event is defined as one with a 0.2% chance of annual exceedance.

risk zone³. The most recent estimations from GNS Science⁴ suggest that the likelihood of a magnitude 8+ earthquake occurring due to Alpine Fault rupture is 75% in the next 50 years (*annual probability of 0.015*) and it can be expected that such an event would cause ground shaking in excess of 0.2g PGA at this site.

In contrast to a small rockfall caused by rainfall, frost action or other local factors, which would affect a very short section of the road, rockfall caused by earthquake ground shaking may affect the entire 20 m long hazard footprint; i.e. all of the loose rock on the crest of the bund may be released during a large earthquake and cause widespread inundation on the road below. CES observations indicate that boulder roll direction is difficult to accurately predict but the area of road likely to be affected is much larger than the source area. Due to the size of the rocks present at the site, it might be expected that a person impacted would have a 10% chance of being killed by the falling debris.

The probability of loss of life as a result of rockfall⁵ may be defined as:

$$P_{(LOL)} = P_{(L)} \times P_{(T:L)} \times P_{(S:T)} \times V_{(D:T)}$$

Where:

$P_{(LOL)}$ is the annual probability that a person would be killed

$P_{(L)}$ is the annual probability of the rockfall occurring

$P_{(T:L)}$ is the probability of the falling debris reaching the road

$P_{(S:T)}$ is the spatio-temporal probability of the person at risk (*the proportion of a year that the person is in the path of the rockfall when it reaches the road*)

$V_{(D:T)}$ is the vulnerability of the person to the rockfall event (*the probability that the person will be killed if impacted by the rockfall*)

Table 1 overleaf shows parameters used to calculate $P_{(LOL)}$ due to a rockfall occurring as a result of earthquake ground shaking at the site.

³ Ref. NZS 3604:2011.

⁴ <https://af8.org.nz/alpine-fault-earthquake-likelihood-increases/>

⁵ Ref. Australian Geomechanics 2000

Table 1: Probability Calculations for Rockfall Affecting the Public Road

Input	$P_{(L)}$	$P_{(T,L)}$	$P_{(S,T)}$	$V_{(D,T)}$	$P_{(LOL)}$
Descriptor	Annual probability of earthquake generated rockfall: 75% in the next 50 years	Probability of the falling debris reaching the road: almost certain.	Spatio-temporal probability of the person at risk (two seconds per trip past the site)	Vulnerability of the person to the rockfall event (the probability that the person will be killed if impacted by the rockfall)	Product of the previous four factors
Value	0.015	1	6×10^{-8}	0.1	9×10^{-11}

From Table 1, we can provide $P_{(LOL)}$ for:

- an individual who passes the site once;
- the most exposed person (a worker who drives a truck past say ten times per working day⁶), and;
- for society at large, based on a nominal annual user base of 16,000 for the Paparoa Track⁷ and say 200 vehicles per day on the road.

$$P_{(LOL)} - (Individual) = 9 \times 10^{-11}$$

$$P_{(LOL)} - (Trucker) = 3 \times 10^{-8}$$

$$P_{(LOL)} - (Societal) = 8 \times 10^{-6}$$

These figures are based on a number of broad assumptions and must be seen as indicative only. They do however provide some insight into the actual level of risk generated by the existing situation. For context, current GNS Science guidance⁸ on tolerable risk from rockfalls suggests that: ‘The threshold of acceptable annual individual fatality risk is within the range from 3×10^{-5} to 1×10^{-3} per year, with an average of 1×10^{-4} annual individual risk of death. This is consistent with risk levels currently tolerated in New Zealand and with regulatory practice elsewhere.’

Our assessment of risk to individuals suggests a risk of death to road users at least two orders of magnitude lower than is tolerated by society at large. However, whilst the risk to life may be relatively low due largely to the remote nature of the site and low user numbers on the road below, it is essentially inevitable that rockfalls will occur from the site in the future and Council may wish to reduce this risk still further.

Risk Reduction Options

The following risk reduction options could help to reduce the risk of harm to road users. These are presented in decreasing order of effectiveness and each is discussed further below:

- 1) Remove the rocks forming the top row of the Bund;

⁶ The following assumptions have been used: a truck travels at 60 kph past the site and makes the journey ten times per working day (six days per week).

⁷ Ref. Department of Conservation 2022 estimate.

⁸ Ref. GNS Science CR2011/319 dated March 2012.

- 2) Extend the bund across the old access roadway, below the Southeastern Face;
 - 3) Remove the overhanging Prow.
- 1) **Bund Rocks** – It would be a relatively simple matter to remove the loose boulders along the top of the Bund. The road should be shut during this process, in case the contractor loses control of a rock as it is being shifted. The main body of the Bund should remain in place. The rocks should be removed from the area, not merely pushed into the catch pit.
 - 2) **Southeastern Face** – Now that the quarry is no longer considered a viable prospect for further extraction, there should be little objection to forming a permanent containment bund across the access track below the Southeastern Face. The bund could be quite large and extend across the track where it would meet an existing windrow of material on the outside edge of the roadway. This also could be built up to provide additional catch protection. Bunding should consist of well graded quarry waste rock (*i.e. a mixture of sizes*) and be placed on a benched subgrade (*i.e. not simply pushed onto the existing track*). Consideration should be given to providing an outlet for stormwater draining down the upper part of the track.

There is a good supply of waste rock on the quarry floor which would be suitable for reuse in the bund extension.

- 3) **Overhanging Prow** – The removal of the overhanging Prow would be expected to largely eliminate the rockfall hazard in this location. As stated earlier, our rockfall analysis⁹ shows that rocks falling from the face below the Prow would likely be trapped in the catch pit (*even with the topmost Bund rocks removed*) however, in certain scenarios, rock falling from the Prow itself could impact the face below and then bounce over the Bund wall. Removal of the Prow was considered in our earlier reporting. We recognised then that this would be a significant operation and Council should assure itself that the benefits outweigh the costs involved.

Removal would require a sub-vertical split line being established perhaps 5 m back from the Prow itself (*i.e. a short distance further upslope than the existing face below the Prow*). This could be achieved by excavating a bench with a digger and then drilling a row of shot holes such that the bottom of the holes were slightly above the joint exposed at the base of the Prow. Detonation and subsequent clear-up would require a road closure. Safety would be paramount and workers and plant would likely require tethering to suitable anchors established further up the ridge.

With some clearance of gorse and a few boulders, easy machine access is available to an existing level bench area approximately 40 m up the ridge (*refer Figure 22068-01*). A competent contractor could operate from here down to a bench excavated in the overburden immediately above the Prow and drill and fire a round of shots to drop the Prow into the catch pit.

⁹ Preliminary rockfall trajectory analysis completed using Rocfall 4.0 software.

Access Considerations

All of the three options considered above will require re-establishment of vehicle access into the quarry area. This is currently compromised by the reduction in the access roadway width as a result of the recent widening work on Roa Road. The accessway formation has been reduced to around 3 m wide at a pinch point close to the bottom of the slope where it meets the public road (*refer Plate 6*).

Our assessment is that heavy equipment (*digger and a small dumper*) could still successfully and safely negotiate the accessway on a one-off basis if the following temporary works are completed:

- 1) Fill the existing water table on the upslope side of the accessway with some hardfill or quarry waste;
- 2) Buttress the slope between the public road and the accessway with hardfill or quarry waste over the very narrowest portion;
- 3) Remove the steel gate;
- 4) Mobilise the equipment on a one-off basis (*i.e. the works are not intended to permit regular movements*) at slow speed and with appropriate caution and traffic control;
- 5) The plant should remain on site until the works are completed, whereupon it should be removed and the accessway blocked off permanently at its lower end;
- 6) Remove the temporary filling (*i.e. water table and buttress fill*).

A risk assessment should be completed by the contractor in the usual manner.

Our assessment is that the outside edge of the accessway at the pinch point comprises good quality, well compacted angular and granular material and should withstand the short-term wheel loads without collapsing, provided the plant is driven slowly as close as possible to the upslope side of the accessway. A spotter should be employed. There is a significant increase in width a short distance upslope and from here on upwards, we do not anticipate significant stability issues associated with plant mobilisation. The work should proceed in dry conditions.

Summary

The following represents our summary of the situation:

- 1) The historic quarrying operation has resulted in some residual hazards;
- 2) There is in our view a lack of compelling evidence for recent movement at the Prow and Southeastern Face Areas, however this opinion is somewhat at odds with other workers familiar with the site. As far as we are aware, no comprehensive data exists to prove this point either way;
- 3) If left in their current state, we would expect failure of one or several of the risk areas in time, probably but not exclusively as a result of strong seismic shaking;
- 4) It is reasonably foreseeable that a failure in any of the three identified locations would result in rocks landing on the public road;
- 5) The risk of fatality as a result of such a failure is low and within normally acceptable limits;
- 6) The risk of disruption (*damage to infrastructure, disruption to road users*) is much higher;
- 7) Removal of the topmost Bund rocks should completely eliminate one hazard. This should be relatively straightforward;

- 8) Construction of a bund extension beneath the Southeastern Face should effectively mitigate one hazard. This should be relatively straightforward;
- 9) Removal of the Prow should eliminate one hazard. This will likely be difficult and costly;
- 10) Vehicle access to complete (7)-(9) above should be possible with limited temporary works.

Recommendations


Council may choose to complete none, one, two or all three suggested work items. As noted above, the Bund and Southeastern Face Areas should be relatively straightforward to deal with at reasonably low cost.

It may be beneficial to establish a monitoring programme to determine if movement is actually occurring at the Prow. This would be technically quite difficult and would involve ongoing costs. It would also necessarily delay final action which could in turn be hampered by a lack of access if the bund extension below the Southeastern Face has been completed in the meantime.

In order to achieve the highest level of confidence in future performance, we recommend that all three hazards be addressed in one work programme. If funds do not permit, we consider that it is reasonable from a risk management perspective to address the Bund and Southeastern Face Areas only and leave the Prow as it is. However, the residual hazard will remain and become more difficult (*but not impossible*) to address in time. Council should assess the cost/benefit ratio of properly dealing with the Prow as opposed to clearing/fixing the roadway in the future.

We will be happy to provide further clarification on any of the above. Please address any queries to Andrew Palmer on 027 278 9505.

Yours sincerely



Andrew Palmer CPEng
Principal

Reviewed by



Rob Hunter
Engineering Geologist

Attachment: Figure 22068-01 'Site Sketch Plan'
Appendix – Site Photographs

Cc: James Bell (WCRC)

Appendix – Site Photographs.



Plate 1: Overhanging Prow - 2013. Note chockstones (circled).



Plate 2: Overhanging Prow – 2022. Chockstones have not moved.



Plate 3: Spur area 2013. Note chockstones in joints.



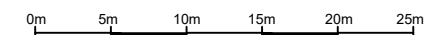
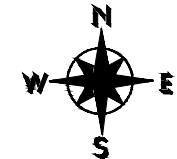
Plate 4: Spur area 2022. Chockstones have not moved.



Plate 5a and 5b: Southeastern Face. The prominent joint at the base of the face is the cause of concern here. We do not possess a 2013 photograph of this area, but have included views from 2018 (left) and 2022 (right).



Plate 6. Pinch point at intersection of accessway and public road. Usable width here is around 3 m if the water table on the left is temporarily infilled.



LEGEND

- Lot boundary
- Approx slope vector

- Notes:
- 1) Plan based on data from Grey District Council and approximate measurements taken on site.
 - 2) Dimensions in metres unless otherwise shown.

E:\Terra Firma\Dropbox\Data\Projects\22068 Blackball Quarry\05 CAD\TFEL Drawings\2022-07-23 22068 Blackball Quarry Figure 22068-01.dwg



	Date	Name
Designed:	22/07/22	ACDP
Printed:	23/07/22	
Checked:		

Terra Firma Engineering (2016) Ltd.
 259 Seaton Valley Road, RD1
 Upper Moutere 7173
 Andrew: 027 278 9505 Rob: 027 216 9467
 admin@tfel.co.nz

Project Ref: 22068	
Client: West Coast Regional Council	
ROCKFALL ASSESSMENT BLACKBALL QUARRY Site Sketch Plan	
Figure 22068-01	Rev. 0
Date: 25/07/22	Scale: ~1:500 at A3



Quarry Status Report Blackball Quarry

29 June 2022

Updated 03 August 2022

PREPARED by
Keri Harrison
Tui Creek Consulting Ltd

FOR
West Coast Regional Council



THE WEST COAST
REGIONAL COUNCIL

Prepared by

Keri Harrison, Tui Creek Consulting Ltd (owner/operator)
Certificate number B grade CoC: Cert Number: 961, Expiry
Date:3/11/26

Experience: restoration projects at the Selwyn District Council, long term planning with gravel reserve management at the Selwyn District Council, undertaking risk assessments for the purposes of gravel reserve restoration in the Canterbury region (Selwyn) and quarry rehabilitation, Selwyn District Council quarry consultant for extraction and quarry management.

References

Tui Creek Consulting Report, 28 October 2018, West Coast Regional Council Quarry final termination rehabilitation restoration costs

Acknowledgements

John Ellis, ex-Quarry Manager, WCRC, TerraFirma Engineering Ltd, Andrew Palmer

Disclaimer

The information in this report is accurate to the best of the knowledge and belief of Tui Creek Consulting. Whilst Tui Creek Consulting Ltd has exercised all reasonable skill and care in the preparation of information in this report, Tui Creek Consulting Ltd does not accept any liability in contract, tort, or otherwise for any loss, damage, injury, or expense, whether direct, indirect, or consequential, arising out of the provision of information in this report. Please note: The information provided does not replace or alter the laws of New Zealand or any other official guidelines or requirements.

Introduction

This report should be read in conjunction with the report named Quarry Rehabilitation and Restoration, dated 28 October 2018, and the Quarry Status Report dated 29 June 2022.

Background

In 2013 Blackball Quarry was assessed by TerraFirma Engineering Ltd with some preliminary geotechnical recommendations supplied, however this report was unable to be located.

In 2018 a site visit was conducted by Keri Harrison and John Ellis that identified geotechnical issues. However, subsequent to this report, no works were undertaken and with the quarry proposed to be deactivated, on 27 June 2022, John Ellis, James Bell, and Keri Harrison conducted a site visit.

The visit highlighted that the access way to the quarry was no longer available due to roading improvements to Roa Road by Grey District Council.

The visit identified several issues, and these are summarised below¹.

1. The track is no longer accessible to all types of vehicles. This was because of the roading works that have occurred in the last 12-24 months.
2. The swing arm gate required removal as it is now unsafe and sits over the edge of the road. Instead, secure and bund the area to prevent access, with rocks introduced from another site as it will be difficult to obtain this material from within the site using heavy machinery, or if a geotechnical report indicates blasting can occur, utilise this blasted material.
3. The internal and external signage needs to be improved.
4. The area has noticeable movement. Water is evident in this area and subsequent follow up visits from 2018 to 2021 by John Ellis, supports consideration for further geotechnical assistance to provide for remediation. The risk to the community and the road below the quarry from the rock face failing is significant. The roading works conducted outside of the quarry have now prevented all vehicle access to the site.

At the July 2022 Council meeting, the Council confirmed that a geotechnical report should be obtained for the hazardous area identified by the site inspection of 27 June 2022. Keri Harrison subsequently contacted TerraFirma Engineering Ltd (Andrew Palmer) and after receiving a quotation that was approved by the Council, provided a short form agreement with supporting correspondence detailing the nature of the assessment required (see Attachment One) to TerraFirma Engineering Ltd.

On 19 July 2022, the geotechnical assessment was conducted with James Bell, Engineering Officer in attendance. A report that detailed the findings and recommendations followed (see Attachment Two).

On 26 July 2022, Keri Harrison conducted a follow up visit, with Chanelle van Rooyen, Health and Safety Officer WCDC, and Dinesh Budhathoki and Brian Sutherland representing Grey District Council. The purpose of this visit was to address the issues identified at the quarry site inspection of 27 June 2022 and to relay the geotechnical assessment information.

¹ Quarry Status Report dated 29 June 2022

Current

Keri Harrison has considered the Geotechnical assessment report and recommendations. There is a minor dispute with the geotechnical assessment and with the Council's former quarry inspector John Ellis who suggests that ongoing movement is occurring in this location however, TerraFirma Engineering does acknowledge that *"Mr. Ellis has been working in the WCRC quarries for a long time and is more familiar with this location than we are."*

Keri Harrison has also attended several site visits with John Ellis and is also of the belief that there is indeed movement occurring in this location. Regardless of whether movement is occurring or not, there is still a risk to the community where rock could fall onto the Council road. A number of geotechnical works could be undertaken to assist with this.

Risk reduction options should help reduce the risk of harm to road users. The risk reduction options are summarised as follows, and are further explained in the report (see Attachment One):

- 1) Remove the rocks forming the top row of the Bund.

Removal of the rocks should completely eliminate one hazard and would be straightforward.

- 2) Extend the bund across the old access roadway, below the Southeastern Face.

This work should effectively eliminate one hazard and would be straightforward.

- 3) Remove the overhanging Prow.

This could be a costly and difficult exercise and with the establishment of a bund across the old accessway, the risk could be managed but not eliminated if the overhanging Prow were not removed. If the Prow was removed, it should eliminate this hazard.

The report noted that that *"we remain of the opinion that the overhanging Prow (1) could become unstable in the longer term, particularly as a result of strong seismic shaking. If the Prow were to fail, rockfall could be expected to impact the Bund (2), either initiating instability in the boulders forming the top of the Bund itself or clearing the Bund and rolling directly down the slope to the road below"*.

In addition to these works, and while this is not entirely geotechnical, the swing arm gate should be removed (or at least the steel arm removed with the steel beam left intact as it may be assisting with the stability of the gravel road boundary to Roa Road), with the addition of suitable signage. If the site is deactivated, it should not be accessible by any vehicle or person.

To enable the geotechnical works to occur, the re-establishment of the accessway into the quarry area is required. There is reduction in the width of the access roadway, and this would need improvement to allow safe vehicle access.

At the site meeting of 26 July 2022, Grey District Council agreed in principle to assist with some works to enable access to the site.

This will involve improving the existing water table on the upslope side of the access way with some hardfill or quarry waste which will in effect increase the width of the access way to allow equipment to be mobilized on site on a one-off basis.

There are risk factors to consider with allowing vehicles up the road and this would be a well-managed exercise by only engaging a skilled and competent mining and quarry operator who has fit for purpose machinery supported by the provision of traffic management controls. The access way should be bunded off at the completion of the works to prevent future access. In addition, the road below the access way should be swept of the loose rocks that have fallen down onto the road.

Recommendation

That the Council develop a RFI for the works in accordance with NZS3910:2013; and

That the Council consult with Grey District Council and the Department of Conservation when developing the RFI to ensure that all aspects are addressed; and

That the Council approach prequalified Council contractors to tender for the works in accordance with NZS3910:2013.



Keri Harrison



Attachments:

Attachment 1: Keri Harrison, Tui Creek Consulting, *West Coast Regional Council Quarry Rehabilitation and Restoration*, 22 October 2018

Attachment 2: Request for Professional Services to TerraFirma Engineering Ltd

Attachment 3: TerraFirma Engineering Ltd, *Rockfall assessment and Mitigation Options - Blackball Quarry*, dated 25 July 2022

Attachment 4: Keri Harrison, Tui Creek Consulting, *Quarry Status Report – Blackball Quarry*, 3 August 2022

THE WEST COAST REGIONAL COUNCIL

To: Chair, West Coast Regional Council

I move that the public be excluded from the following parts of the proceedings of this meeting, namely, -

- Item 10.1 – 10.7 inclusive

Item No.	General Subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under section 7 of LGOIMA for the passing of this resolution
10.1	<i>Confirmation of Confidential Minutes – Public excluded Meeting minutes of General Council Meeting 12 July 2022</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.2	<i>Confidential Risk & Assurance meeting minutes of 24 May 2022</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.3	<i>Contractual Matters</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.4	<i>Contractual Matters</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.5	<i>RSHL SOI</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.6	<i>RSHL Transition</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>
10.7	<i>IRIS Next Generation Partnership</i>	<i>The item contains information relating to commercial matters</i>	<i>To protect commercial information (s 7(2)(b)).</i>

I also move that:

- Heather Mabin, Marc Ferguson and Keri Harrison be permitted to remain at this meeting after the public has been excluded, because of their knowledge on these subjects. This knowledge will be of assistance in relation to the matters to be discussed; and
- The Minutes Clerk also be permitted to remain at the meeting.