

PART A

Application for Resource Consent



This application is made under Section 88 of the Resource Management Act 1991 (Form 9)

The purpose of this Part A form and the relevant Part B form(s) is to provide applications with guidance on information that is required under the Resource Management Act 1991. Please note that these forms are to act as a guide only, and Environment Southland reserves the right to request additional information.

To: Environment Southland
Private Bag 90116
Invercargill 9840

1. Applicant(s) Details

A resource consent can only be held by a legal organisation or fully named individual(s).

1.1. Applicant's name (full name of proposed consent holder). Please complete either (a) OR (b) to whom consent is to be issued

	First Name	Middle Name	Surname
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(a) Individual(s)

OR

(b) Registered
company name

Waikaka Gold Mines Limited

Company
number

1.2. Applicant's address [not consultant's address]

(a) Individual(s)

Postal Address 1616 Riversdale - Waikaia Road, Freshford, , GORE RD 7, New Zealand 9777

Email warren.batt@waikaiagold.co.nz

Phone Mobile +64 21 300873 Fax

(b) Company

Contact Person Warren Batt

Postal Address 1616 Riversdale - Waikaia Road, Freshford, , GORE RD 7, New Zealand 9777

Email warren.batt@waikaiagold.co.nz

Phone Mobile +64 21 300873 Fax

2. Consultant/ Agent details (if applicable)

Contact person Anita Collie

Company Town Planning Group

Postal Address Level 1, 100 Victoria Street, Christchurch

Email anita@townplanning.co.nz

Phone _____ Mobile 021 568 335 Fax _____

Note: All correspondence during the consent process will be directed to this contact person, unless instructed otherwise. Final decision documents will be sent to the applicant.

Are you the owner or occupier at the site?

☒

Yes

☐

No

If not, please complete the following information

Name of owner or occupier at the site (if different from 1.1.) _____

Address of the owner or occupier at the site (if different from 1.2.) _____

3. Site

Location of activity (including street/road name, number, and locality)

972 Waikaka Road, Catterton North, Southland

Map Co-ordinates (NZTM 2000)

_____ E _____ N(NZTM 2000)

Legal description of property at site of activity (refer to land title or rates notice) Please refer to AEE

Please attach a map or a coloured aerial photograph, showing at a minimum, the location of the proposed activities.

4. Consents required in relation to this proposal:

Please tick the box for the consent(s) you are applying for and complete the relevant Part B form(s) where available

Water

☒	Take and use surface water
☒	Take and use groundwater

☒	Divert water
☒	Dam water

Land Use

☒	Bore/ Well
☐	New or expanded dairy farming
☐	Intensive winter grazing
☐	Feed-pad, wintering pad, calving pad or silage pad
☒	Bridges and culverts

☐	Effluent storage
☐	Cultivation
☐	Gravel extraction
☒	Riverbed activity
☐	Tree planting

Discharge

☒	To air
☒	To Land

☒	To water
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Coastal

☐	Whitebait stand
☐	Removal of natural materials
☐	Discharge/deposit substances
☐	Reclaim/drain foreshore/seabed
☐	Other coastal activities

☐	Structures/occupation of space
☐	Disturb foreshore/seabed
☐	Commercial surface water activity
☐	Marine farming

What is the purpose of this application?

New resource consent

Renew resource consent

Variation of conditions according to S 127 RMA

Certificate of compliance

X

Are there any **current** or **expired** consents relating to this proposal?

☒

Yes

☐

No

If yes, please provide consent number(s) and description:

Please refer to AEE

Are any other consents required from Environment Southland or **other authorities**?

☒

Yes

☐

No

If yes, please state the relevant authority and the type of consent(s) required:

Please refer to AEE

For what **purpose** is this consent(s) required: (e.g. discharge of effluent, gravel extraction etc.)

The establishment and operation of a gold mine.

Pre application advise- Have you discussed this proposal with a council staff member?

☒

Yes

☐

No

If yes, please provide name of staff member if known

Any further comments you would like to advise us about this application?

Stephen West

5. Assessment of effects on the environment (AEE)

Please complete the applicable Part B form(s) for the proposed activities. For those activities where no Part B form is available, please attach a written statement that assesses the effects that your activities may have on the environment. An assessment of effects **must** include the following information:

- (a) *if it likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity;*
- (b) *an assessment of the actual or potential effect on the environment of the activity;*
- (c) *if the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment that are likely to arise from such use;*
- (d) *if the activity includes the discharge of any contaminant, a description of—*
 - (i) *the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and*
 - (ii) *any possible alternative methods of discharge, including discharge into any other receiving environment;*
- (e) *a description of the mitigation measures (safeguards and contingency plans where relevant) to be undertaken to help or prevent or reduce the actual or potential effect;*
- (f) *identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any persons consulted;*
- (g) *if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved;*
- (h) *if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).*

You should also include:

- (a) *an assessment of the activity against any relevant provisions of any relevant objectives, policies, or rules;*
- (b) *any information specified to be included in the application in accordance with the relevant regional plan;*
- (c) *for an application to replace an existing consent, an assessment of the value of the investment of the existing consent holder:*

An assessment of effects **must** address the following matters:

- (a) *any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects;*
- (b) *any physical effect on the locality, including any landscape and visual effects;*
- (c) *any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity;*
- (d) *any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations;*
- (e) *any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants;*
- (f) *any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.*

6. Affected Parties

Please attach written approval from parties who may be affected by your activity. *Written Approval of an Affected Party* forms are available on the Environment Southland website. During the processing of your application, Council may determine that additional approvals are required.

7. Site visit from the Consents Team

Consents staff are able to meet with you, visit your site and see what you are proposing to do. We find that this is beneficial to everyone involved. The cost of the visit will be included in the total cost of processing your consent. We find that applications that have an on-site visit are processed with less congestion and at a similar or lesser overall cost. We will contact you if we consider a site visit to be advantageous in processing your application.

8. How much will it cost to process my application?

Environment Southland's User Charges and Fees document is available at:

www.es.govt.nz/fees-and-charges

When the consent has been processed you will receive an invoice for an additional fee, or for a refund.

User Charges

Please note that additional Annual User Charges will apply to all consents.

How to pay

Environment Southland accepts payment in the forms of cash, Eftpos, or electronic transfer. All electronic transfers must include the applicant's name and "consent application" as a reference. Please make electronic payments to: Environment Southland, 01-0961-0018998-00 or online at www.es.govt.nz/online-services/online-payments.

9. Checklist: Have you included the following?

☐

Payment of the required deposit (*see fee schedule*)

*If you paid by electronic transfer payments – please advise **date** of payment and **reference** used:*

☐

Written approval from all potentially affected parties (*forms available from the Environment Southland website*)

☐

Site plan/location map/sketch of the proposed activity

☐

A copy of the Certificate of Incorporation (*where applicant is a company*)

☐

Part B form(s) specific to your activity and/or a separate assessment of environmental effects (AEE)

Notes:

(a) *If your application does not contain the necessary information and the appropriate fee, Environment Southland may return the application.*

(b) *Under S35 of the Resource Management Act 1991 your application will be publicly available information and subject to the relevant provisions of the Local Government Official Information and Meetings Act 1987.*

Signature of applicant

Anita Collie

I hereby certify that to the best of my knowledge and belief, the information given in this application is true and correct.

I undertake to pay all actual and reasonable application processing costs incurred by Environment Southland.

Name (block capitals) WARREN BATT

Signed Anita Collie **Date** 22/8/2024

(Signature of applicant or person authorised to sign on behalf of applicant)

Application to Construct a Bore (PART B)

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information.

To: Environment Southland
Private Bag 90116
Invercargill 9840

1 Location of the bores/wells:

Address: Please refer to AEE

Legal Description(s): _____

Map References (NZTM 2000): _____

2 Is this bore replacing an existing bore? ☐ Yes ☒ No

If so, what is the bore/well number? _____

Reason for replacement _____

3 Proposed method of construction:

☐ Rotary drilling ☐ Cable tool drilling ☒ Excavation

Will the bore/well be constructed to ensure that it does not allow access to more than one aquifer?

Yes / No NO

Will the bore/well be constructed to ensure that it does not allow leakage from the ground surface into groundwater?

Yes / No NO

Will the bore/well be drilled following the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock?

Yes / No NO

4 Construction Details Refer to AEE

Bore/well depth: _____ m Bore/well diameter: _____ mm

Name of driller: _____

Phone number of driller/contact person: _____

5 Purpose for which water is to be taken/used:

☐

Irrigation

☐

Municipal supply

☐

Dairy

☐

Industry

☐

Stock water

☐

Household/domestic

☐

Monitoring
bore/well

☐

Geotechnical/foundation
investigation

☐

Geological research

☒

Other – please describe:

Please refer to AEE

6 Is the proposed bore/well within: Please refer to AEE

- (a) 50 metres of a septic tank outfall
- (b) 150 metres of a water body (including wetlands)
- (c) 150 metres of an existing bore or well
- (d) 100 metres of mean high water springs (coastline)

Yes No

If “yes” to any of the above, please provide further details in an attachment to this form.

7 Please provide details of the proximity to: Please refer to AEE

Nearest bore not on this property: _____ metres

Number of nearest neighbouring bore: _____

Nearest surface water body: _____ metres

Name of surface water body: _____

Coastal water: _____ metres

8 Does your proposed bore construction and pump test have any associated wastewater discharges?

☒ Yes ☐ No

Please note that further consents to discharge contaminants may be required if the activity cannot meet the provisions of Rule 16 of the proposed Southland Water and Land Plan .

9 Please provide a description of any pump and/or aquifer testing that is relevant to this application:

Please refer to AEE

10 Please provide pump/aquifer test details: Please refer to AEE

Date to be undertaken: _____

Map References (NZTM2000): _____

Test details: Maximum pumping rate: _____ litres/second
 Duration of pump test: _____ hours
 Maximum volume extracted: _____ litres

Please also include a map or aerial photograph showing the following: Please refer to AEE

- The location(s) of any existing bores
- The location of proposed bores
- The total property area boundary
- Distances to any discharge activities
- Surface water bodies nearby (including wetlands)
- The location of any dairy sheds

IMPORTANT:

Environment Southland has a factsheet for more information on carrying out pump tests. However, when planning to carry out a test, the following points should be noted:

1. if the test is to support a future application for a water permit, you should ensure that the scale of the test is sufficient to support the rate of take proposed;
2. the test should not be carried out when another pumping activity may influence the outcome of the test.

If this application is for a large pump test (greater than 2 litres per second), the processing charge is likely to be greater than for a simple bore consent.

If the bore is to be used for investigation of contaminated land, additional consents may be required.

Records of all pumping and recovery tests including the rate and duration of pumping, water levels in the pumped well and any water level observation wells and the time measurements are taken must be provided to Environment Southland within one month of the completion of the test.

How much will it cost to process my application?

Environment Southland's User Charges and Fees document is available at:

www.es.govt.nz/fees-and-charges

Table 3 – Fixed Charge Bore (Individual, with pump tests <20,000 L/day) per bore **\$619** (GST Inclusive).

Table 3 – Initial Fixed Charge Bore (multiple and /or water takes for pump tests >20,000 L/day) **\$958** (GST Inclusive)

User Charges

Please note that additional Annual User Charges will apply to all consents.

How to pay

Environment Southland accepts payment in the forms of cash, Eftpos, or electronic transfer. All electronic transfers must include the applicant's name and "consent application" as a reference. Please make electronic payments to: Environment Southland, 01-0961-0018998-00 or online at www.es.govt.nz/online-services/online-payments.

END OF FORM

Application to Dam or Divert Water (PART B)

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information. **Please also refer to proposed Southland Water and Land Plan.**

1 What is the application for? Please refer to AEE

☒	To divert water	☐	The renewal of existing diversion consent number: AUTH-	_____
☒	To dam water	☐	The renewal of existing dam consent number: AUTH-	_____

Please note that if the diversion or dam requires the alteration of the bed or banks of a lake or watercourse, a Land Use Consent is also likely to be required. Please refer to the relevant Part B Form.

This form is not for water takes. Please refer to the relevant Part B Form to take surface water or groundwater.

2 For what purpose(s) will the water be dammed or diverted?

Please refer to AEE

3 What type of water body do you intend to dam or divert?

☒	River/stream	☐	Modified watercourse	☐	Lake
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4 What is the name of the water body of the proposed dam or diversion? If the water body is unnamed then please note this and state which water body it flows into.

Waikaka Stream & Shepherds Creek

5 What are the GPS co-ordinates of the point(s) you propose to dam/divert water?

Please refer to AEE

Point 1: NZTM 2000 _____ E _____ N

Point 2: NZTM 2000 _____ E _____ N

6 Please describe your proposed method to dam or divert water:

Please refer to AEE

If you answered *river, stream, or modified watercourse* above, please answer the following:

7 Please refer to AEE

(a) What is the average channel width nearest to the proposed dam/diversion? _____ metres

(b) What is the channel depth nearest to the proposed dam/diversion? _____ metres

(c) What is the minimum flow – determined as per Appendix K of the proposed Southland Water and Land Plan? _____ l/sec

8 If you answered *lake* above, please answer the following:

(a) What is the surface area of the lake? _____

(b) What is the average depth of the lake? _____

(c) What is the main source of water that fills the lake?

☐

Rainfall

☐

Groundwater/springs

☐

Streams/rivers

- 9 Does your proposed damming or diversion of water have any associated wastewater discharges?
If yes, please describe below:

☐ Yes ☐ No

Please note that a discharge into the environment may require a resource consent application to be made specifically for the discharge (please refer to the relevant Part B form).

Please refer to AEE

Existing Environment

- 10 Are any of the following features found within the existing environment of the proposed activity?
Describe these features in the space below, along with details of the assessment undertaken to determine the presence of these features.

	Yes	No
(a) Signs of instream life (e.g. fish, eels, bullies, crayfish, native birds, frogs)?		
(b) Areas where food is gathered from a water body (e.g. watercress, eels, wildfowl)?		
(c) Wetlands, wildlife habitats or bird nesting habitats (e.g. swamp areas)?		
(d) Other activities occurring in the area (e.g. commercial activity, fishing, swimming, boating)?		
(e) Areas of particular aesthetic, cultural, heritage or scientific value (e.g. archaeological sites)?		
(f) Waste discharges, water takes and/or monitoring sites?		

Please refer to AEE

Please also include a map or aerial photograph showing the following details:

- the location(s) of the proposed activities
- the location of any structures
- the location of any existing points of take for other water users
- the total property area boundary
- distances to any discharge activities
- other surface water bodies nearby (including wetlands) and the distance to them

Assessment of Effects

11 Will the damming or diversion have any effects on the following:

- (a) Water quality, including temperature
- (b) Water availability and reliability to other users
- (c) River and stream flows
- (d) Water levels in any other water body (including wetlands)

Yes No

*For those answered **No** above, please describe why there will be no effect.*

*For those answered **Yes**, please describe how these effects may occur.*

Please refer to AEE

- 12 Based on the assessment of minimum flow, as per Appendix K of the proposed Southland Water and Land Plan (pSWLP), please assess the following:
- (a) In situations where the total volume of surface water allocation is between 10 and 30 percent of the Q95 at any downstream point in the catchment as determined by the Southland Regional Council, please include an assessment of effects using **Method 1 - Assessment using Generalised Habitat Models**, as per Appendix K of the pSWLP; or
 - (b) In situations where the total volume of surface water allocation will breach 30 percent of the Q95 at any downstream point in the catchment as determined by the Southland Regional Council, please include an assessment of effects using **Method 2 - Assessment using Instream Habitat Flow Incremental Methodology**, as per Appendix K of the pSWLP.

Please refer to AEE

- 13 How will the proposed activity affect the overall environment in the short term? For example, how does the establishment of your proposed activity (including any construction and watercourse or waterbody disturbance) affect the environment, particularly in terms of land disturbance and waterbody behaviour (i.e. where does any disturbed water and soil end up?)**

Please refer to AEE

- 14 Please consider the long term effects that your proposed diversion or damming of water may have on the surrounding environment.**

Please refer to AEE

- 15 Are there any structures near to the proposed activity? If yes, will the proposed activity have any effect on these structures? Please provide specific details including the type of structure, owner of the structure, distance from the proposed activity, and what effects the proposed activity will have on the stability/function of the structure.**

Please refer to AEE

- 16 Pursuant to Schedule 4 of the Resource Management Act, 1991, there are a number of matters that must be addressed by an assessment of environmental effects. Please discuss what effects the proposed activity will have on the following:**

- (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

Please refer to AEE

(b) any physical effect on the locality, including any landscape and visual effects

Please refer to AEE

(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

Please refer to AEE

(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

Please refer to AEE

(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

Please refer to AEE

- (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

Please refer to AEE

- 17 Please include a description of the monitoring or mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help avoid, reduce, remedy or mitigate the actual or potential effects on environmental features and values.**

Please refer to AEE

- 18 Please include a description of any possible alternative locations or methods for undertaking the activity and why these alternatives have not been selected.**

Please refer to AEE

- 19 Please include evidence of any consultation undertaken for this application. This may include (but not be limited to) consultation with adjoining landowners, other consent holders in the immediate area, iwi (e.g. Te Rūnanga O Ngāi Tahu, Te Ao Marama Inc.), government departments/ministries (e.g. DOC), territorial authorities and recreational associations.

Please note that in accordance with Schedule 4 of the RMA, you must provide an assessment of whether or not the proposed activity is contrary to any of the relevant provisions of the following documents:

- (a) [proposed Southland Water and Land Plan \(operative in part\)](#) (and any proposed/subsequent versions)
- (b) [Resource Management \(National Environmental Standards for Freshwater\) Regulations 2020](#)
- (c) [National Policy Statement for Freshwater Management, 2020](#)
- (d) [Southland Regional Policy Statement, 2017](#) (and any proposed/subsequent versions)
- (e) [Resource Management \(National Environmental Standards for Sources of Human Drinking Water\) Regulations, 2007](#)

Staff are able to advise whether the document is relevant, as it is dependant on the location, scale and complexity of your proposal. We invite you to come in for a pre-application meeting with Environment Southland consents staff to discuss this. The first half hour of assistance on any application or proposal is free of charge, with subsequent assistance being charged according to the Environment Southland Fees and Charges schedule.

END OF FORM

Application for a Water Permit (PART B) To Take and Use Groundwater

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information. **Please also refer to Appendix A of the Regional Water Plan for Southland, 2010 AND Appendix L of the proposed Southland Water and Land Plan.**

How much will it cost to process my application?

Environment Southland's User Charges and Fees document is available at:

www.es.govt.nz/fees-and-charges

User Charges

Please note that additional Annual User Charges will apply to all consents.

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To: Environment Southland
Private Bag 90116
Invercargill 9840

1 What is this application for?

☒ a new groundwater take ☐ the renewal of existing consent no: _____

2 What duration of resource consent is sought? 20 _____ years

3 For what purpose(s) will the water be used?

☐ Stock water and/or dairy shed use ☐ Irrigation ☐ Community supply ☐ Commercial/industrial
☒ Others

If others, please describe:

Please refer to AEE

- 4 Please provide details of the bore(s) from which you wish to take water. If you do not have an existing bore, you will need to apply for a consent to construct a bore before you apply to take groundwater. Please refer to the relevant Part B form.**

Please refer to AEE

Bore 1: NZTM 2000 _____ E _____ N Bore number: _____
Bore 2: NZTM 2000 _____ E _____ N Bore number: _____

	Bore depth (m)	Screen depth (m)	Diameter (mm)	Pump type	Pump capacity (l/s)
Bore 1					
Bore 2					

- 5 How much water do you propose to take and at what rate will it be taken?**

Maximum rate of take _____ litres per second
Maximum daily volume _____ cubic metres per day
Maximum weekly volume _____ cubic metres per week
Maximum monthly volume _____ cubic metres per month
Maximum annual volume _____ cubic metres per year

- 6 What is the frequency of the proposed water take?**

How many hours per day (maximum)? _____
How many days per week (maximum)? _____
How days per month (maximum)? _____

- 7 Please state the name of the aquifer that you propose to take water from.**

8 Do you intend to store your water before subsequent use?

If yes, what/how much storage will be provided? _____ m³

What type of storage facilities are proposed? _____

You may need a building permit and/or additional resource consents for the construction of storage facilities.

9 What type of water metering system is installed or proposed to be installed? Environment Southland prefers all takes for 5 l/s or more to be fitted with telemetry to report in line with the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010.

☐ Water meter ☐ Data logger ☐ Telemetry

10 If you propose to use water for stock and/or dairy shed use – please answer the following:

(a) What type of animal and numbers of stock will be supplied with water for drinking?

☐	Sheep	Number: _____	Water required: _____	litres/head/day
☐	Beef cattle	Number: _____	Water required: _____	litres/head/day
☐	Dairy cows	Number: _____	Water required: _____	litres/head/day
☐	Other	Number: _____	Water required: _____	litres/head/day

(b) How much water do you require for your dairy shed? _____ litres/head/day

11 If you propose to use water to irrigate land – please answer the following:

(a) How many hectares of land will be irrigated? _____

(b) What is the soil type(s) of the land being irrigated _____

(c) What will you be irrigating (i.e. crop, pasture etc)? _____

(d) What type of irrigation system will be used? _____

(e) What is the target application rate (mm/day and mm/year)? _____

(f) How have you calculated the amount of water you need? (attach separate pages if required)

12 If you propose to use water for industrial use – please answer the following:

(a) What type of industry will be using the water and how will the water be used?

(b) How have you calculated the amount of water you need? (attach separate pages if required)

13 If you propose to use water for commercial/domestic supply – please answer the following:

(a) What type of establishment will use the water?

☐	Households – number of households to be supplied:	
☐	Camping grounds – maximum number of visitors and staff per year:	
☐	Schools – maximum number of students and staff per year:	
☐	Motel units – number and expected occupancy:	
☒	Other: Please refer to AEE	

(b) How have you calculated the amount of water you need? (attach separate pages if required)

14 If you propose to use water for any other purpose, please describe the amount of water you will need and how this has been calculated (please attach a separate sheet to this application, if necessary).

Please refer to AEE

- 15 Please describe any other sources of water available for the property. Describe how much water is available and what it is used for.**

Please refer to AEE

- 16 Please also describe any measures you are proposing to minimise wastage of water and maximise its efficient use:**

Please refer to AEE

- 17 Does your proposed water take have any associated discharges? If yes, please describe.**

☒ Yes

☐ No

Please note that a discharge into the environment may require a resource consent application to be made specifically for the discharge (please refer to the relevant Part B form).

Please refer to AEE

Existing Environment

- 18 Are any of the following features found within the existing environment of the proposed activity? Describe these features in the space below, along with details of the assessment undertaken to determine the presence of these features.**

	Yes	No
(a) Signs of instream life (e.g. fish, eels, bullies, crayfish, native birds, frogs)?		
(b) Areas where food is gathered from a water body (e.g. watercress, eels, wildfowl)?		
(c) Wetlands, wildlife habitats or bird nesting habitats (e.g. swamp areas)?		
(d) Other activities occurring in the area (e.g. commercial activity, fishing, swimming, boating)?		
(e) Areas of particular aesthetic, cultural, heritage or scientific value (e.g. archaeological sites)?		
(f) Waste discharges and/or monitoring sites?		
(g) Other water takes?		
(h) Surface water bodies? Natural springs?		

Please refer to AEE

Please also include a map or aerial photograph showing the following:

- the location(s) of the existing points of take;
- the location of proposed points of take(s);
- the location of water measuring device(s);
- the total property area boundary;
- the area(s) to be irrigated (if relevant);
- the area(s) of community supply (if relevant);
- distances to any discharge activities;
- other surface water bodies and wetlands nearby and the distance from the point of take(s) to them;
- the coastline and the distance to it (if relevant);
- the location of any dairy sheds (if relevant).

Assessment of Effects

19 Will the take and use of groundwater have any effects on the following:

(a) Aquifer storage volumes

(b) Existing bore or well yields

(c) River and stream flows, including minimum flows and allocation levels

(d) Wetland and lake water levels

(e) Groundwater quality

Yes No

*For those answered **No** above, please describe why there will be no effects. For those answered **Yes**, please describe how these effects may occur.*

Please refer to AEE

20 Pursuant to Schedule 4 of the Resource Management Act, 1991, there are a number of matters that must be addressed by an assessment of environmental effects. Please discuss what effects the proposed activity will have on the following:

- (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

Please refer to AEE

- (b) any physical effect on the locality, including any landscape and visual effects

Please refer to AEE

- (c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

Please refer to AEE

- (d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

Please refer to AEE

- (e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

Please refer to AEE

- (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

Please refer to AEE

- 21 Please include a description of the monitoring or mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help avoid, reduce, remedy or mitigate the actual or potential effects on environmental features and values.**

Please refer to AEE

- 22 Please include a description of any possible alternative locations or methods for undertaking the activity and why these alternatives have not been selected.**

Please refer to AEE

- 23 Please include evidence of any consultation undertaken for this application. This may include (but not be limited to) consultation with adjoining landowners, other consent holders in the immediate area, iwi (e.g. Te Rūnanga O Ngāi Tahu, Te Ao Marama Inc.), government departments/ministries (e.g. DOC), territorial authorities and recreational associations.**
- 24 Appendix A of the Regional Water Plan for Southland, 2010, details the level of further assessment required as part of your application. This may include the following assessments (please attach as a separate report):**
- interference effects/drawdown;
 - radius of influence;
 - stream depletion effects;
 - an assessment of the dynamic aquifer response to abstraction.
- 25 Appendix L of the proposed Southland Water and Land Plan details the level of further assessment required as part of your application. This may include the following assessments (please attach as a separate report):**
- aquifer test requirements;
 - stream depletion effects;
 - interference effects;
 - calculation of seasonal groundwater allocation;
 - establishing allocation volumes for confined aquifers.

Please note that in accordance with Schedule 4 of the RMA, you must provide an assessment of whether or not the proposed activity is contrary to any of the relevant provisions of the following documents.

- (a) [Regional Water Plan for Southland, 2010](#) (and any proposed/subsequent versions)
- (b) [proposed Southland Water and Land Plan \(operative in part\)](#) (and any proposed/subsequent versions)
- (c) [Resource Management \(National Environmental Standards for Freshwater\) Regulations 2020](#)
- (d) [National Policy Statement for Freshwater Management, 2020](#)
- (e) [Southland Regional Policy Statement, 2017](#) (and any proposed/subsequent versions)
- (f) [Resource Management \(National Environmental Standards for Sources of Human Drinking Water\) Regulations, 2007](#)
- (g) [Resource Management \(Measurement and Reporting of Water Takes\) Regulations 2010](#)

The assessment required must be sufficient for your proposal's location, scale and complexity. We invite you to come in for a pre-application meeting with Environment Southland consents staff to discuss this. The assistance on any application or proposal is free for up to an hour, with subsequent assistance being charged according to the Environment Southland Fees and Charges schedule.

END OF FORM

Application for a Water Permit (PART B) To Take and Use Surface Water

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information. **Please also refer to Appendix K of the proposed Southland Water and Land Plan.**

How much will it cost to process my application?

Environment Southland's User Charges and Fees document is available at:

www.es.govt.nz/fees-and-charges

When the consent has been processed you will receive an invoice for an additional fee, or for a refund.

User Charges

Please note that additional Annual User Charges will apply to all consents.

How to pay

Environment Southland accepts payment in the forms of cash, Eftpos, or electronic transfer. All electronic transfers must include the applicant's name and "consent application" as a reference. Please make electronic payments to: Environment Southland, 01-0961-0018998-00 or online at www.es.govt.nz/online-services/online-payments.

To: Environment Southland
Private Bag 90116
Invercargill 9840

1 What is this application for?

☒

a new surface water take

☐

the renewal of existing consent no: _____

2 What duration of resource consent is sought?

_____ years

3 For what purpose(s) will the water be used?

☐

Stock water and/or
dairy shed use

☐

Irrigation

☐

Community supply

☐

Commercial/industrial

☒

Other

If other, please
describe:

Please refer to AEE

4 What type of water body(s) do you intend to take water from?

☒

River/stream/creek

☐

Spring

☐

Pond

☐

Lake

Please refer to the Southland Regional Water Plan for definitions of these terms.

5 What is the name of the water body(s) of the proposed take(s)? *Note: if the water body is unnamed then please note this and state which water body it flows into.*

Waikaka Stream & Shepherds Creek

6 What are the GPS co-ordinates of the point(s) you propose to take water from?

Please refer to AEE

Point 1: NZTM 2000 _____ E _____ N

Point 2: NZTM 2000 _____ E _____ N

7 Please describe your proposed method to take and use the surface water: *e.g. pumped take or gravity reticulation, what sort of intake structure, irrigation method etc.*

Please refer to AEE

8 Please state the maximum capacity of the pump/the maximum flow capacity of the intake structure:

Please refer to AEE _____ l/s

9 How much water do you propose to take and at what rate will it be taken? Please refer to AEE

Maximum rate of take	_____	litres per second
Maximum daily volume	_____	cubic metres per day
Maximum weekly volume	_____	cubic metres per week
Maximum monthly volume	_____	cubic metres per month
Maximum annual volume	_____	cubic metres per year

10 What is the frequency of the proposed water take? Please refer to AEE

How many hours per day (maximum)?	_____
How many days per week (maximum)?	_____
How days per month (maximum)?	_____

11 Do you intend to store your water before subsequent use? Please refer to AEE

If yes, what/how much storage will be provided?	_____ m ³
---	----------------------

What type of storage facilities are proposed? _____

You may need a building permit and/or additional resource consents for the construction of storage facilities.

12 What type of water metering system is installed or proposed to be installed? Please refer to AEE

Environment Southland prefers all takes for 5 L/s or more to be fitted with telemetry to report in line with the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010.

☐ Water meter	☐ Data logger	☐ Telemetry
--------------------------------------	--------------------------------------	------------------------------------

13 If the take is from a river, stream, creek or modified watercourse, please answer the following:

What is the minimum flow – determined as per Appendix K of the proposed Southland Water and Land Plan (pSWLP)?

Please refer to AEE	_____ l/s
---------------------	-----------

14 If the take is from a lake or pond, please answer the following: Please refer to AEE

(a) What is the minimum flow – determined as per Appendix K of the pSWLP? _____ l/s

(b) What is the main source of water that fills the lake/pond?

☐
☐

Rainfall

Streams/rivers

☐
☐

Springs

Groundwater

☐
☐

Runoff from surrounding land

Other

15 If you propose to use water for stock and/or dairy shed use – please answer the following:

(a) What type of animal and numbers of stock will be supplied with water for drinking?

☐
☐
☐
☐

Sheep

Number:

Water required:

litres/head/day

Beef cattle

Number:

Water required:

litres/head/day

Dairy cows

Number:

Water required:

litres/head/day

Other

Number:

Water required:

litres/head/day

(b) How much water do you require for your dairy shed? _____ litres/head/day

16 If you propose to use water to irrigate land – please answer the following:

(a) How many hectares of land will be irrigated? _____

(b) What is the soil type(s) of the land being irrigated? _____

(c) What will you be irrigating (i.e. crop, pasture etc)? _____

(d) What type of irrigation system will be used? _____

(e) What is the target application rate (mm/day and mm/year)? _____

(f) How have you calculated the amount of water you need? (attach separate pages if required)

17 If you propose to use water for industrial use – please answer the following:

(a) What type of industry will be using the water and how will the water be used?

(b) How have you calculated the amount of water you need? (attach separate pages if required)

18 If you propose to use water for commercial/domestic supply – please answer the following:

(a) What type of establishment will use the water?

☐	Households – number of households to be supplied: _____
--------------------------	---

☐	Camping grounds – maximum number of visitors and staff per year: _____
--------------------------	--

☐	Schools – maximum number of students and staff per year: _____
--------------------------	--

☐	Motel units – number and expected occupancy: _____
--------------------------	--

☒	Other: <u>Please refer to AEE</u>
-------------------------------------	-----------------------------------

(b) How have you calculated the amount of water you need? (attach separate pages if required)

19 If you propose to use water for any other purpose, please describe the amount of water you will need and how this has been calculated (please attach a separate sheet to this application, if necessary).

Please refer to AEE

- 20 Please describe any other sources of water available for the property. Describe how much water is available and what it is used for.**

Please refer to AEE

- 21 Please also describe any measures you are proposing to minimise wastage of water and maximise its efficient use:**

Please refer to AEE

- 22 Does your proposed water take have any associated discharges? If yes, please describe.**

☒

Yes

☐

No

Please note that a discharge into the environment may require a resource consent application to be made specifically for the discharge (please refer to the relevant Part B form).

Please refer to AEE

Existing Environment

- 23 Are any of the following features found within the existing environment of the proposed activity? Describe these features in the space below, along with details of the assessment undertaken to determine the presence of these features.**

	Yes	No
(a) Signs of instream life (e.g. fish, eels, bullies, crayfish, native birds, frogs)?		
(b) Areas where food is gathered from a water body (e.g. watercress, eels, wildfowl)?		
(c) Wetlands, wildlife habitats or bird nesting habitats (e.g. swamp areas)?		
(d) Other activities occurring in the area (e.g. commercial activity, fishing, swimming, boating)?		
(e) Areas of particular aesthetic, cultural, heritage or scientific value (e.g. archaeological sites)?		
(f) Waste discharges and/or monitoring sites?		
(g) Other water takes?		

Please refer to AEE

Please also include a map or aerial photograph showing the following details:

- the location(s) of the existing points of take
- the location(s) of the proposed points of take
- the location of water measuring device(s) or system(s)
- the total property area boundary
- the area(s) to be irrigated (if relevant)
- the area(s) of community supply (if relevant)
- distances to any discharge activities
- other surface water bodies and wetlands nearby and the distance from the point of take(s) to them
- the coastline and the distance to it (if relevant)

- the location of any dairy sheds

Assessment of Effects

24 Will the take and use of surface water have any effects on the following:

- (a) Water quality, including temperature
- (b) Water availability and reliability to other users
- (c) River and stream flows, and wetland/lake/pond water levels

Yes	No

*For those answered **No** above, please describe why there will be no effects. For those answered **Yes**, please describe how these effects may occur.*

Please refer to AEE

25 Based on the assessment of minimum flow, as per Appendix K of the proposed Southland Water and Land Plan, please assess the following:

- (a) In situations where the total volume of surface water allocation is between 10 and 30 percent of the Q95 at any downstream point in the catchment as determined by the Southland Regional Council, please include an assessment of effects using **Method 1 - Assessment using Generalised Habitat Models**, as per Appendix K of the pSWLP; or
- (b) In situations where the total volume of surface water allocation will breach 30 percent of the Q95 at any downstream point in the catchment as determined by the Southland Regional Council, please include an assessment of effects using **Method 2 - Assessment using Instream Habitat Flow Incremental Methodology**, as per Appendix K of the pSWLP.

Please refer to AEE

26 Pursuant to Schedule 4 of the Resource Management Act, 1991, there are a number of matters that must be addressed by an assessment of environmental effects. Please discuss what effects the proposed activity will have on the following:

- (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

Please refer to AEE

- (b) any physical effect on the locality, including any landscape and visual effects

Please refer to AEE

- (c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

Please refer to AEE

- (d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

Please refer to AEE

- (e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

Please refer to AEE

- (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

Please refer to AEE

- 27 Please include a description of the monitoring or mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help avoid, reduce, remedy or mitigate the actual or potential effects on environmental features and values. This must include:**
- fish screening on the intake structure;
 - measures for when minimum flow restrictions are in place;
 - management of the take in accordance with flow sharing restrictions.

Please refer to AEE

- 28 Please include a description of any possible alternative locations or methods for undertaking the activity and why these alternatives have not been selected.

Please refer to AEE

- 29 Please include evidence of any consultation undertaken for this application. This may include (but not be limited to) consultation with adjoining landowners, other consent holders in the immediate area, iwi (e.g. Te Rūnanga O Ngāi Tahu, Te Ao Marama Inc.), government departments/ministries (e.g. DOC), territorial authorities and recreational associations.

Please note that in accordance with Schedule 4 of the RMA, you must provide an assessment of whether or not the proposed activity is contrary to any of the relevant provisions of the following documents:

- (a) [proposed Southland Water and Land Plan \(operative in part\)](#) (and any proposed/subsequent versions)
- (b) [Resource Management \(National Environmental Standards for Freshwater\) Regulations 2020](#)
- (c) [National Policy Statement for Freshwater Management, 2020](#)
- (d) [Southland Regional Policy Statement, 2017](#) (and any proposed/subsequent versions)
- (e) [Resource Management \(National Environmental Standards for Sources of Human Drinking Water\) Regulations, 2007](#)
- (f) [Resource Management \(Measurement and Reporting of Water Takes\) Regulations 2010](#)

The assessment required must be sufficient for your proposal's location, scale and complexity. We invite you to come in for a pre-application meeting with Environment Southland consents staff to discuss this. The assistance on any application or proposal is free for up to an hour, with subsequent assistance being charged according to the Environment Southland Fees and Charges schedule.

END OF FORM

Application to Discharge Contaminants to Air (PART B)

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information.

To: Environment Southland
Private Bag 90116
Invercargill 9840

1 What is this application for

☐	Combustion process
☐	Quarries/gravel extraction
☐	Wood/pulp/fibreboard processing industries
☐	Chemical manufacturing blending processes/electroplating
☐	Abrasive blasting
☐	Wool scourers and tanneries
☐	Concrete manufacturing plants
☐	Foundries
☐	Rendering/processing of carcasses
☐	Asphalt production
☐	Wastewater treatment plant
☒	Others please describe: <u>Please refer to AEE</u>

2 What duration of resource consent is sought? 20 years

3 Please describe the following elements of the proposed discharge of contaminants to air:

- (a) the process (identify all process stages during which contaminants are released into the air);
- (b) the type and amount of raw materials used in the activity (including type and quality of fuel used);
- (c) the product made from the activity;
- (d) the equipment used in the process;
- (e) the contaminants discharged to the atmosphere;
- (f) concentration of contaminants in the discharge (ppm);
- (g) number of discharge points;
- (h) location of each discharge point;
- (i) height of each discharge point (chimney/vent);
- (j) the discharge chimney/vent fitting, including the diameter of the fitting and any associated treatment infrastructure, such as bag houses; and
- (k) the velocity of discharge.

Please refer to AEE

- 4 **What is the proposed frequency and seasonality of the discharge (e.g. usual duration of the discharge and days and hours of operation)? Please describe any variations, where appropriate.**

Please refer to AEE

- 5 **Has there been any discharge monitoring carried out in relation to this proposal, or do you have access to any background monitoring? If yes, please describe and attach results as appropriate.**

Please refer to AEE

- 6 **Has any meteorological data relevant to the site been obtained? If yes, please describe.**

Please refer to AEE

7 The following table provides additional specific information requirements for industry groups. Please include information on separate paper if required.

Combustion processes	- Describe combustion processes and details of boiler or heat unit. - Heat release rate (kilowatts, megawatts). - Condition of boiler or heat unit, chimney and details of last service.
Quarries	- Describe quarrying process. - Type of rock being mined. - Open cast extraction capacity (tonnes/hour). - Size reduction and screening capacity (tonnes/hour). - Storage capacity (tonnes/hour). - Quarry management plan.
Wood processing industries	- Particulate emission test (to determine dust concentration and mass emission levels discharged from the stack, measured over three runs, with all wood sanding equipment working at same time).
Abrasive blasting	- Describe details of blasting chamber, blasting media used. - Particulate emission tests (to determine dust concentration and mass emission levels discharged from the vent, measured over three runs).
Wool scourers and tanneries	- Describe paint and solvents used (provide MSDS where available). - Paint and solvent usage rates.
Concrete manufacturing plants	- Give details of raw material capacity (tonnes/hour).
Rendering process	- Describe the high/low temperature and drying of the rendering process. - Describe combustion process (if applicable, i.e., type of combustion process, fuel used, fuel combustion rate, concentration).

Please refer to AEE

Existing Environment

- 8 Are any of the following features found within the existing environment of your proposed discharge to air? If so, describe these features in the space below. Please also describe any additional features of the surrounding environment where your proposed discharge will take place (for example existing vegetation, man-made features, wildlife, water features and topographical features).

	Yes	No
(a) Residential and/or community areas?		
(b) Production land (e.g. crops, dairy farming)?		
(c) Recreational activities carried out (e.g., sports grounds, parks etc.)?		
(d) Sources of similar or other discharges to air?		
(e) Areas of particular aesthetic, scientific value (e.g. scenic views)?		
(f) Areas of significance to iwi?		
(g) Commercial activities (e.g. office blocks)?		

Please refer to AEE

Please also include a map or site plan (and photographs if necessary) showing the site boundary, the location of roads and property boundaries, wetlands and other wildlife habitats, buildings and residential properties, location of processes and discharge points, and the location of any sensitive sites (e.g. historic places, sites of importance to iwi etc.) in proximity to your site.

Assessment of Effects

- 9 Please describe any possible odour, dust, smoke or haze that may result from your proposed discharge to air.**

Please refer to AEE

- 10 Please describe any possible long term or short term effects the discharge may have on the quality of the receiving air, persons living or working in the area and local biota (plant and animal life).**

Please refer to AEE

- 11 If hazardous substances and installations are involved, describe any risks to the environment which are likely to arise from their storage and/or use.**

Please refer to AEE

- 12 Pursuant to Schedule 4 of the Resource Management Act, 1991, there are a number of matters that must be addressed by an assessment of environmental effects. Please discuss what effects the proposed activity will have on the following:**

- (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

Please refer to AEE

(b) any physical effect on the locality, including any landscape and visual effects

Please refer to AEE

(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

Please refer to AEE

(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

Please refer to AEE

(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

Please refer to AEE

- (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

Please refer to AEE

13 Please include a description of the monitoring or mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help avoid, reduce, remedy or mitigate the actual or potential effects on environmental features and values. For example, if relevant, please include the following:

- (a) a description of the monitoring system to be used for checking and recording the discharge and its effects. Please include how and when the monitoring will occur, and by whom;
- (b) contingency planning – describe how the equipment controlling the discharge will be operated and maintained to prevent equipment failure, and what measures will be implemented to ensure that the effects of the malfunction are remedied; and
- (c) a description of pollution control equipment or any other mitigation measures.

Please refer to AEE

- 14 Please justify the scale of discharge and the term of consent sought with regard to any effects on the environment.

Please refer to AEE

- 15 Please include a description of any possible alternative locations or methods for undertaking the activity and why these alternatives have not been selected.

Please refer to AEE

- 16 Please include evidence of any consultation undertaken for this application. This may include (but not be limited to) consultation with adjoining landowners, other consent holders in the immediate area, iwi (e.g. Te Rūnanga O Ngāi Tahu, Te Ao Marama Inc), government departments/ministries (e.g. DOC), territorial authorities and recreational associations.

Please note that in accordance with Schedule 4 of the RMA, you must provide an assessment of whether or not the proposed activity is contrary to any of the relevant provisions of the following documents.

- (a) [*Resource Management \(National Environmental Standards for Air Quality\) Regulations, 2004*](#)
- (b) [*Southland Regional Policy Statement, 2017*](#) (and any proposed/subsequent versions)
- (c) [*Southland Regional Air Plan, 2016*](#) (and any proposed/subsequent versions)

The assessment required must be sufficient for your proposal's location, scale and complexity. We invite you to come in for a pre-application meeting with Environment Southland consents staff to discuss this. The assistance on any application or proposal is free for up to an hour, with subsequent assistance being charged according to the Environment Southland Fees and Charges schedule.

END OF FORM

Application to Discharge to Land (PART B) (non-dairy activity)

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information. **Please also refer to the proposed Southland Water and Land Plan.**

To: Environment Southland
Private Bag 90116
Invercargill 9840

1 What is this application for?

- | | |
|---|--|
| X | The discharge of contaminants to land where it may enter water |
| X | The discharge of contaminants to land |

2 What duration of resource consent is sought? 20 years

3 Please describe the proposed activity:

Please refer to AEE

4 Please describe the following elements of the proposed discharge to land:

(a) The chemical content (including heavy metals or toxic substances, nitrates, ammonia and dissolved reactive phosphorous)

Please refer to AEE

(b) Number of discharge points

(c) Location/area of each discharge point

(d) Maximum rate/thickness of application

(e) If the proposed discharge is continuous or intermittent _____

- 5 What is the proposed frequency and seasonality of discharge (e.g. hours, days, weeks and months that the discharge will occur). Please describe any variations, where appropriate.

Please refer to AEE

- 6 Has there been any discharge monitoring carried out in relation to this proposal, or do you have access to any background monitoring? If yes, please describe and attach results.

Please refer to AEE

- 7 What is the depth to groundwater beneath the disposal area? Please also discuss seasonal variations in groundwater depth.

Please refer to AEE

- 8 Has a subsoil investigation been carried out?

☐ Yes

☐ No

Note: All bore holes and test pits should be drilled in the location of the proposed disposal field and/or reserve area and their location marked on the appended site plan. Generally a minimum of three bore holes or test pits are required for soil category assessment. A separate resource consent may be required for your investigative bore(s).

9 Please provide details of the investigation bore(s)/test pits.
Please refer to AEE

- ☐ Test pit (maximum depth) _____ m No of test pits _____
- ☐ Bore hole (maximum depth) _____ m No of bore holes _____
- ☐ Other (specify) _____
- ☐ N/A

10 Has percolation or soil infiltration testing been carried out and is the test report attached?

- ☐ No
- ☐ Yes, please specify method _____

K value: _____

11 What is the discharge site soil category (based on the dominant soil type in the first 1 m depth)?

Soil Category	Description	Tick
1	Gravels and sands	
2	Sandy loams	
3	Loams	
4	Clay loams	
5	Light clays	
6	Medium to heavy clays	

Please refer to AEE

Existing Environment

- 12 Are any of the following features found within the existing environment of the proposed activity? Describe these features in the space below, along with details of the assessment undertaken to determine the presence of these features.

	Yes	No
(a) Signs of marine life (e.g. fish, mammals, native birds, shellfish, invertebrates)?		
(b) Areas where food is gathered from (e.g. watercress, eels, wildfowl)?		
(c) Wetlands, wildlife habitats or bird nesting habitats (e.g. swamp areas)?		
(d) Other activities occurring in the area (e.g. commercial activity, fishing, swimming, boating)?		
(e) Areas of particular aesthetic, cultural, heritage or scientific value (e.g. archaeological sites)?		
(f) Waste discharges, water takes and/or monitoring sites?		

Please refer to AEE

Please also include a map or site plan (and photographs if necessary) showing the location of roads and property boundaries, water bodies, wetlands and other wildlife habitats, buildings and residential properties, location of discharge points, any registered drinking water takes, and the location of any sensitive sites (e.g. historic places, sites of importance to iwi, public gathering areas etc.) in proximity to the site.

Assessment of Effects

- 13** Please describe any possible long term or short term effects the discharge may have on the quality of the receiving environment and including effects on water bodies, biota (plant and animal life), soil quality, and odour and dust effects.

Please refer to AEE

- 14** Pursuant to Schedule 4 of the Resource Management Act, 1991, there are a number of matters that must be addressed by an assessment of environmental effects. Please discuss what effects the proposed activity will have on the following:
- (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

Please refer to AEE

(b) any physical effect on the locality, including any landscape and visual effects

Please refer to AEE

(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

Please refer to AEE

(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

Please refer to AEE

(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

Please refer to AEE

- (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

Please refer to AEE

15 Please include a description of the monitoring or mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help avoid, reduce, remedy or mitigate the actual or potential effects on environmental features and values. For example, if relevant, please include the following:

- (a) treatment of the contaminants prior to discharge;
- (b) buffer distances from water bodies, sloping land, site boundaries;
- (c) details of any storage to be provided to enable deferred irrigation;
- (d) a description of the monitoring system to be used for checking and recording the quality and quantity of the discharge. Please include how and when the monitoring will occur, and by whom; and
- (e) contingency planning – describe how the equipment controlling the discharge will be operated and maintained to prevent equipment failure, and what measures will be implemented to ensure that the effects of any malfunction are remedied.

Please refer to AEE

- 16 Please justify the term of consent sought with regard to any effects on the environment.

Please refer to AEE

- 17 Please include a description of any possible alternative locations or methods for undertaking the activity and why these alternatives have not been selected.

Please refer to AEE

- 18 Please include evidence of any consultation undertaken for this application. This may include (but not be limited to) consultation with adjoining landowners, other consent holders in the immediate area, iwi (e.g. Te Rūnanga O Ngāi Tahu, Te Ao Marama Inc), government departments/ministries (e.g. DOC), territorial authorities and recreational associations.

Please note that in accordance with Schedule 4 of the RMA, you must provide an assessment of whether or not the proposed activity is contrary to any of the relevant provisions of the following documents.

- (a) [proposed Southland Water and Land Plan \(operative in part\)](#) (and any proposed/subsequent versions)
- (b) [Regional Effluent Land Application Plan for Southland,1998](#) (and any proposed/subsequent versions)
- (c) [National Policy Statement for Freshwater Management, 2020](#)
- (d) [Southland Regional Policy Statement, 2017](#) (and any proposed/subsequent versions)
- (e) [Resource Management \(National Environmental Standards for Sources of Human Drinking Water\) Regulations, 2007](#)

The assessment required must be sufficient for your proposal's location, scale and complexity. We invite you to come in for a pre-application meeting with Environment Southland consents staff to discuss this. The assistance on any application or proposal is free for up to an hour, with subsequent assistance being charged according to the Environment Southland Fees and Charges schedule.

END OF FORM

Application to Discharge to Water (PART B) (non-dairy activity)

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information. **Please also refer to the proposed Southland Water and Land Plan.**

To: Environment Southland
Private Bag 90116
Invercargill 9840

1 What is this application for?

- | | |
|-------------------------------------|--|
| ☒ | The discharge of water to water |
| ☒ | The discharge of contaminants to water |

2 What duration of resource consent is sought? 20 years

3 Please describe the proposed activity. This should include the nature of the discharge and the name of the waterbody (if known):

Please refer to AEE

4 Please describe the following elements of the proposed discharge to water:

Please refer to AEE

(a) Maximum rate of discharge _____ litres per second

_____ cubic metres per day

_____ cubic metres per week

_____ cubic metres per year

(b) Temperature (°C) _____

(c) pH _____

(d) Suspended Solids(g/m³) _____

(e) Biochemical Oxygen Demand (BOD₅) (g/m³) _____

(f) *E.Coli* (cfu/100 ml) _____

(g) The chemical content (including heavy metals or toxic substances, oils, nitrates, ammonia and dissolved reactive phosphorous)

Please refer to AEE

(h) Number of discharge points _____

(i) Location of each discharge point _____

5 What is the proposed frequency and seasonality of discharge (e.g. hours, days, weeks and months that the discharge will occur). Please describe any variations, where appropriate.

Please refer to AEE

- 6 Has there been any discharge monitoring carried out in relation to this proposal, or do you have access to any background monitoring? If yes, please describe and attach results:

Please refer to AEE

Existing Environment

- 7** Are any of the following features found within the existing environment of the proposed activity? Describe these features in the space below, along with details of the assessment undertaken to determine the presence of these features.

	Yes	No
(a) Signs of marine life (e.g. fish, mammals, native birds, shellfish, invertebrates)?		
(b) Areas where food is gathered from (e.g. watercress, eels, wildfowl)?		
(c) Wetlands, wildlife habitats or bird nesting habitats (e.g. swamp areas)?		
(d) Other activities occurring in the area (e.g. commercial activity, fishing, swimming, boating)?		
(e) Areas of particular aesthetic, cultural, heritage or scientific value (e.g. archaeological sites)?		
(f) Waste discharges, water takes and/or monitoring sites?		

Please refer to AEE

Please also include a map or site plan (and photographs if necessary) showing the location of roads and property boundaries, wetlands and other wildlife habitats, buildings and residential properties, location of discharge points, any registered drinking water takes, and the location of any sensitive sites (e.g. historic places, sites of importance to iwi, public gathering areas etc.) in proximity to the site.

Assessment of Effects

- 8** Please describe the current water classification and any possible change in water quality (e.g. water discolouration, rise in water temperature) that may result from the proposed discharge.

Please refer to AEE

- 9** Please describe any possible long term or short term effects the discharge may have on the quality of the receiving environment and local biota (plant and animal life).

Please refer to AEE

10 Pursuant to Schedule 4 of the Resource Management Act, 1991, there are a number of matters that must be addressed by an assessment of environmental effects. Please discuss what effects the proposed activity will have on the following:

- (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

Please refer to AEE

- (b) any physical effect on the locality, including any landscape and visual effects

Please refer to AEE

- (c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

Please refer to AEE

- (d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

Please refer to AEE

- (e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

Please refer to AEE

- (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

Please refer to AEE

11 Please include a description of the monitoring or mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help avoid, reduce, remedy or mitigate the actual or potential effects on environmental features and values. For example, if relevant, please include the following:

- (a) a description of the monitoring system to be used for checking and recording the quality and quantity of the discharge. Please include how and when the monitoring will occur, and by whom; and
- (b) contingency planning – describe how the equipment controlling the discharge will be operated and maintained to prevent equipment failure, and what measures will be implemented to ensure that the effects of any malfunction are remedied.

Please refer to AEE

12 Please justify the term of consent sought with regard to any effects on the environment.

Please refer to AEE

- 13 Please include a description of any possible alternative locations or methods for undertaking the activity and why these alternatives have not been selected.

Please refer to AEE

- 14 Please include evidence of any consultation undertaken for this application. This may include (but not be limited to) consultation with adjoining landowners, other consent holders in the immediate area, iwi (e.g. Te Rūnanga O Ngāi Tahu, Te Ao Marama Inc.), government departments/ministries (e.g. DOC), territorial authorities and recreational associations.

Please note that in accordance with Schedule 4 of the RMA, you must provide an assessment of whether or not the proposed activity is contrary to any of the relevant provisions of the following documents.

- (a) [proposed Southland Water and Land Plan \(operative in part\)](#) (and any proposed/subsequent versions)
- (b) [Regional Effluent Land Application Plan for Southland, 1998](#) (and any proposed/subsequent versions)
- (c) [National Policy Statement for Freshwater Management, 2020](#)
- (d) [Southland Regional Policy Statement, 2017](#) (and any proposed/subsequent versions)
- (e) [Resource Management \(National Environmental Standards for Sources of Human Drinking Water\) Regulations, 2007](#)

The assessment required must be sufficient for your proposal's location, scale and complexity. We invite you to come in for a pre-application meeting with Environment Southland consents staff to discuss this. The assistance on any application or proposal is free for up to an hour, with subsequent assistance being charged according to the Environment Southland Fees and Charges schedule.

END OF FORM

Application for Land Use Consent for works in the beds or margins of watercourses or lakes (PART B)

This application is made under Section 88 of the Resource Management Act 1991



A complete Part A form needs to be provided with this Part B form. The purpose of this Part B form is to provide applicants with guidance on information that is required under the Resource Management Act 1991. These forms are to act as a guide only and Environment Southland reserves the right to request additional information. **Please also refer to Appendix A of the Regional Water Plan for Southland, 2010 and the proposed Southland Water and Land Plan.**

To: Environment Southland
Private Bag 90116
Invercargill 9840

1 What is this application for?

- | | |
|-------------------------------------|---|
| ☐ | Constructing a culvert |
| ☐ | Constructing a bridge or other crossing |
| ☐ | Use, reconstruct, alter, extend, remove or demolish any structure |
| ☐ | Disturbing the bed of a lake/watercourse e.g. works for diverting water |
| ☐ | Tree planting within 20 metres of a watercourse |
| ☐ | Deposit any substance e.g. rock, stockpiling |
| ☐ | Reclaiming or draining the bed of a lake/watercourse |
| ☐ | Removal or disturbance of vegetation e.g. willow clearing |
| ☐ | Floodbank works |
| ☒ | Other activities. Please specify <u>Please refer to AEE</u> |

2 What duration of resource consent is sought? 20 years

3 a. I confirm that the works are within the bed of a river or lake, as defined in the Resource Management Act.

Note: the bed of a river or lake is the space of land which the waters of the river or lake cover at its fullest flow or level without overtopping its banks

b. What is the name of the water body within which these works will take place?

Waikaka Stream & Shepherds Creek

- 4 Please describe how the works will be carried out. For structures, you must include engineering diagrams showing the dimensions of the structure, the position of the structure and the positions of associated groynes, gabions, and abutments etc.**

Please refer to AEE

- 5 Is any damming or diversion of water required as part of the proposed works? Please describe.**
Note that additional consents may be required for the damming/diversion activities.

Please refer to AEE

- 6 Please state the proposed date of commencement and completion of works, and describe the hours of operation.**

Please refer to AEE

Existing Environment

- 7 Are any of the following features found within the existing environment of the proposed activity? Describe these features in the space below, along with details of the assessment undertaken to determine the presence of these features.**

	Yes	No
(a) Signs of instream life (e.g. fish, eels, bullies, crayfish, native birds, frogs)?		
(b) Areas where food is gathered from a water body (e.g. watercress, eels, wildfowl)?		
(c) Wetlands, wildlife habitats or bird nesting habitats (e.g. swamp areas)?		
(d) Other activities occurring in the area (e.g. commercial activity, fishing, swimming, boating)?		
(e) Areas of particular aesthetic, cultural, heritage or scientific value (e.g. archaeological sites)?		
(f) Waste discharges, water takes and/or monitoring sites?		

Please refer to AEE

Please include relevant photographs of the proposed location, looking both upstream and downstream of the site. Please also include a map and/or site plan showing the above mentioned features and the following:

- roads, property boundaries and neighbouring properties, along with the names of adjacent landowners;
- buildings or any other structures;
- location of proposed works;
- rivers, streams, creeks, drains.

8 In addition to the above description of the existing environment, please provide details on the following:

- river form at the proposed location of works (e.g. braided, meandering or incised)?
- is gravel aggrading or degrading?
- are there any signs of riverbank erosion?
- has the river changed course since any other works have been carried out on this stretch of the river?

Please provide cross sections and any other supportive evidence as required.

Please refer to AEE

Assessment of Effects

9 How will the proposed works/structures alter river flows during flood or low flow events?

Please refer to AEE

- 10 How will the proposed works affect river form? How will the proposed works affect the overall river catchment? Please consider the downstream effects of the proposed works on the river form and behaviour.** For example, will the proposed works increase the risk of subsidence, erosion, inundation, aggradation and/or degradation effects? Please describe the effects and provide quantitative supportive evidence.

Please refer to AEE

- 11 Are there any structures in/over/next to the water body in the vicinity of the proposed works? If yes, will the works have any effect on these structures? Please provide specific details.**

Please refer to AEE

12 Pursuant to Schedule 4 of the Resource Management Act, 1991, there are a number of matters that must be addressed by an assessment of environmental effects. Please discuss what effects the proposed activity will have on the following:

- (a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects

Please refer to AEE

- (b) any physical effect on the locality, including any landscape and visual effects

Please refer to AEE

- (c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity

Please refer to AEE

- (d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations

Please refer to AEE

- (e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants

Please refer to AEE

- (f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations

Please refer to AEE

- 13 Please include a description of the monitoring or mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help avoid, reduce, remedy or mitigate the actual or potential effects on environmental features and values.**

Please refer to AEE

- 14 Please describe how you will minimise the release of silt, sediment, concrete and other contaminants into water.**

Please refer to AEE

- 15 Please include a description of any possible alternative locations or methods for undertaking the activity and why these alternatives have not been selected.**

Please refer to AEE

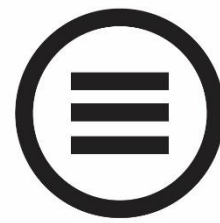
- 16 Please include evidence of any consultation undertaken for this application. This may include (but not be limited to) consultation with adjoining landowners, other consent holders in the immediate area, iwi (e.g. Te Rūnanga O Ngāi Tahu, Te Ao Marama Inc.), government departments/ministries (e.g. DOC), territorial authorities and recreational associations.**

Please note that in accordance with Schedule 4 of the RMA, you must provide an assessment of whether or not the proposed activity is contrary to any of the relevant provisions of the following documents.

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- (b) [proposed Southland Water and Land Plan \(operative in part\)](#) (and any proposed/subsequent versions)
- (c) [Resource Management \(National Environmental Standards for Freshwater\) Regulations 2020](#)
- (d) [National Policy Statement for Freshwater Management, 2020](#)
- (e) [Southland Regional Policy Statement, 2017](#) (and any proposed/subsequent versions)
- (f) [Resource Management \(National Environmental Standards for Sources of Human Drinking Water\) Regulations, 2007](#)

The assessment required must be sufficient for your proposal's location, scale and complexity. We invite you to come in for a pre-application meeting with Environment Southland consents staff to discuss this. The assistance on any application or proposal is free for up to an hour, with subsequent assistance being charged according to the Environment Southland Fees and Charges schedule.

END OF FORM



TOWNPLANNING
GROUP

Application for Resource Consent to
Environment Southland and the Gore
District Council:

WAIKAKA GOLD MINES LIMITED

*Various resource consents relating to the
establishment and operation of a gold mine at
972 Waikaka Road, Chatton North, Southland*

26 August 2024

Document prepared by:

Town Planning Group (NZ) Limited

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Offices in Tāhuna and Ōtautahi



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Supporting Information

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- [H] Mine Methodology Report – WGML
- [I] Volunteered Conditions
- [J] Geotechnical Assessment – Tonkin + Taylor Ltd
- [K] Hydrogeology Report – Environmental Associates Limited
- [L] Aquatic Ecology and Surface Water Quality Assessment – Ross Dungey Consulting Limited
- [M] Preliminary Site Investigation – Geoscience Limited
- [N] River Engineering Report – R.J. Hall & Associates Ltd
- [O] Noise Assessment Report – Hegley Acoustic Consultants
- [P] Acid Mine Drainage Assessment Report – Mine Waste Management Limited
- [Q] Archaeological Reports – J. Hamel and Southern Archaeology Ltd
- [R] Landscape Assessment Report – Vivian+Espie
- [S] Objectives and Policies assessment details
- [T] Waikaka Water Settlement Report – W. N. Becker

Glossary and Abbreviations

Terms and abbreviations	Definition
AEP	Annual exceedance probability
AMD	Acid mine drainage
BCM	Bank cubic metre - a cubic metre of rock or material in situ before it is extracted.
Cyclone underflow	Coarser solids discharged as a slurry from the apex of the cone of the hydrocyclone.
DIN	Dissolved inorganic nitrogen
DoC	Department of Conservation
Dore bar	Rough or unrefined gold produced at the site of the mine.
Dredge mining	The mining of sediment deposited from flowing water, such as gravel, sand and rock.
Dredge tailings	Consist of gravel, sand and waste products from dredge mining.
ES	Environment Southland
Filter cake	A compressed solid formed from substances retained on the filter. The filter cake is estimated contain <15% water.
GDC	Gore District Council
GDP	Gore District Plan
GRP	Gold Recovery Plant
Haul road	Roads designed for heavy or bulk transfer of materials by haul trucks in the mining industry.
LINZ	Land Information New Zealand
Mine cell	The area of open mine pit at any one time.
MWM	Mine Waste Management Limited

NIWA	National Institute of Water and Atmospheric Research
NPS-FW	National Policy Statement for Freshwater Management 2020
NPS-IB	National Policy Statement for Indigenous Biodiversity 2022
NPS-HPL	National Policy Statement for Highly Productive Land 2022
Overburden	The rock or soil layer that needs to be removed in order to access the target geological layer for mining.
PAF materials	Potentially acid forming materials
PGDP	Proposed Gore District Plan
PSLWP	Proposed Southland Water and Land Plan
RAP	Southland Regional Air Plan
RELAP	Regional Effluent Land Application Plan
ROM	Run of Mine – the area where wash material is stockpiled prior to entering the GRP.
RWP	Southland Regional Water Plan
SIA	Site Infrastructure Area
Slimes	Clays, silts and some sand fractions of overburden mixed with water.
SP1	Stockpile 1
SRPS	Southland Regional Policy Statement 2017
STP	Slimes Treatment Plant
Tailings	By-product of mining. After the gold is extracted from the ore material the remaining material is known as the tailings.
Terminal void	The area of excavation that remains after mining is complete.
TARP	Trigger action response plan
Wash	Gold-bearing alluvial gravel layer which is the target of mining.
WGML	Waikaka Gold Mining Limited

1 Executive summary

Waikaka Gold Mines Limited (“**Applicant**” and “**WGML**”) applies jointly to Environment Southland (“**ES**”) and Gore District Council (“**GDC**”) for resource consents relating to the establishment and operation of a gold mine from a site located near 972 Waikaka Road, Chatton North, Southland (“**site**”). The Application Forms are appended as **Attachment [A]**.

Waikaka, and the project site in particular, has a long history of gold mining with extensive dredging of the area occurring in the early twentieth century and the most recent floating dredge gold recovery ceasing operation in 2002. Evidence of the sites long association with mining remains visible on site to the present day.

The site currently forms part of four working farms, and WGML have completed access agreements with these private landowners. The Waikaka Stream travels in a north-south direction through the project site area and a small part of Shepherd’s Creek also crosses the project site area before it joins the Waikaka Stream.

WGML has undertaken extensive exploration, feasibility studies and commissioned relevant technical investigations over a number of years in order to determine the commercial and environmental appropriateness of the project. Extensive pre-application consultation has been undertaken with landowners, neighbours, the two consent authorities, government and iwi organisations, and the local community. Feedback from the pre-application consultation has been incorporated into the overall project design and this application.

The Applicant proposes to:

- Mine gold bearing wash on the application site at depths between approximately 20m to 44m below ground level. The absolute maximum depth of excavation will be 50m below ground level. The mine pit will be dewatered to enable the operation of a dry, open-cut mine. Overburden will be stripped and progressively replaced in the mine void, creating a moving mine-cell up to a maximum area of 5ha, requiring movement of around 20.7 million bcm¹ of material. The total area of mining is approximately 85ha, which will occur over a period of seven to eight years. Ancillary activities will occupy a further 10ha of land. The overall application site area is approximately 95ha.
- Process 300,000 bcm of wash per year. The wash will be fed into a conventional land-based Gold Recovery Plant (“**GRP**”) located within the application site, with the operation further supported by on-site workshops, storage, office, staff amenities and other ancillary activities. The GRP and ancillary activities will form part of the overall Site Infrastructure Area (“**SIA**”).
- Stockpile approximately 446,000 bcm of overburden up to a maximum height of 10m above existing ground level on the site. A dedicated stockpile area will be

¹ A bank cubic metre (bcm) is a cubic metre of rock or material in situ before it is extracted.

created (“SP1”) and other smaller stockpiles may be created on a temporary basis on top of backfill or marginal to the mined area.

- Temporarily divert four sections of the Waikaka Stream and Shepherd’s Creek, with each diversion lasting approximately one year. The streams will be returned to their current alignment and the Applicant will undertake enhancements of the rehabilitated stream channels, including riparian plantings, a higher proportion of native species and cobble substrate with minimal sediment cover.
- Discharge treated water from the site to the Waikaka Stream.
- Undertake full rehabilitation of the site and return it to a similar or improved state.

The Applicant has in place formal access arrangements with the private landowners whose land is subject of this application. Discussions with the Department of Conservation (“DoC”) and Land Information New Zealand (“LINZ”) are underway in respect of access arrangements to the Crown Land comprising the bed and margins of the Waikaka Stream. The Applicant has applied for a mining permit (MPA 61164.01) in accordance with the Crown Minerals Act 1991.

This application is informed by various technical experts, including engineering, geotechnical, hydrogeology, hydrology, river engineering, ecology, noise, landscape and a number of other resource management areas. Expert reports provide assessment of the potential impacts of the proposal on the environment and people, and also practical mitigation measures that are reasonable and feasible to comply with.

In particular, it is noted that:

- The proposed mining operation is a temporary activity. The nature of mining operations means that the mine will have an obvious ‘presence’ in the Chatton North / Waikaka area during the project’s duration. However, the land rehabilitation programme which progressively follows the mining operation will leave the site retaining little long-term evidence of mining activity and will be returned to a productive agricultural use.
- The Applicant’s philosophy of environmental rehabilitation is to provide of the environment to at least the same environmental quality as currently exists, or better.
- The directors and management of the Applicant company WGML have a proven history of successful alluvial mining and land rehabilitation in Southland and Central Otago.
- Positive economic and social effects will arise as a result of the employment that the mine will create and the resultant expenditure and investment into the local community.

This proposal requires a number of resource consents from ES and GDC as detailed within **Table 1** below. Overall, this application is to be processed as a **Non-Complying Activity**.

Table 1 Summary of Resource Consent Requirements

Environment Southland			
Ref	Consent Type	Activities	Activity Status
1	Land use consent s9	Use land for the construction, use, maintenance and decommissioning of a bore or well.	Discretionary
2	Land use consent s13	The entry into or passage across the bed of a river by any wheeled or tracked vehicle or machine, and any associated bed disturbance and discharge.	Restricted Discretionary
		Placement / erection of a dam in, on or over the bed of a river, and any associated bed disturbance and use of the dam structure, for the purpose of diverting the entire flow of the Waikaka Stream and Shepherds Creek into temporary diversion channels.	Discretionary
		The excavation or disturbance of the bed of the Waikaka Stream and Shepherd's Creek for the purpose of rehabilitation of the channel.	
		The introduction or planting of any plant, or part of any plant, in the bed of the rehabilitated Waikaka Stream and Shepherd's Creek channels.	
4	Water permit	Damming of water in the Waikaka Stream and Shepherds Creek for the purpose of temporarily diverting the flow into a diversion channel.	Discretionary
		Take, diversion and use of surface water, relating to the diversion of the entire flow of the Waikaka Stream and Shepherds Creek and return of the flow to the same waterbody.	Non-complying
		Take and use of groundwater for the purpose of dewatering the mine pit, and use of groundwater for gold processing, dust suppression and site rehabilitation purposes.	

5	Discharge permit	Discharge of cleanfill overburden material into or onto land to backfill the mine pit, in circumstances where contaminants may enter water.	Restricted Discretionary
		Discharge of water and contaminants to the Waikaka Stream, via the treatment facilities within the site infrastructure area, from stormwater, gold processing return water, and dewatering.	Discretionary
		Discharge of the entire flow of the Waikaka Stream and Shepherds Creek and any resultant entrained sediment, via the temporary diversion channels, to re-join the existing Waikaka Stream.	
		Discharge of water and contaminants from settling ponds into the western drain and other unnamed drains.	
		Discharge of stormwater, gold processing return water, and dewatering water onto and into land where it may enter water, as part of the treatment processes through the settlement ponds.	
6	Discharge to air	Discharge to air from mineral extraction processes and associated overburden storage.	Discretionary
Gore District Council			
Ref	Consent Type	Activities	Activity Status
7	Land use	Breach of standards (light spill, signage, earthworks, landscaping in carparks, hazardous substance storage and use).	Restricted Discretionary
		Mining activity in the Rural Zone.	Discretionary
		Indigenous vegetation clearance and land disturbance (PGDP).	
8	Land use	NESCS – soil disturbance and change of land use.	Discretionary

The Applicant **requests public notification** and anticipates joint processing and hearing (if required) pursuant to section 102 of the RMA.

The proposal has been assessed against the relevant planning documents and provisions the RMA. The Applicant has proffered a series of draft conditions for the specific resource consents that will further assist to avoid, remedy and mitigate potential adverse effects on the environment. Overall, it is considered that the proposal can be advanced in a manner that accords with the sustainable management purpose of the RMA.

2 Site and surrounds

2.1 Site location

The site is located near 972 Waikaka Road, Chatton North, Southland, approximately 4km south-west of Waikaka township and 22km north of Gore, as shown in **Figure 1** and **Figure 2** below. The overall project site area is approximately 95ha.

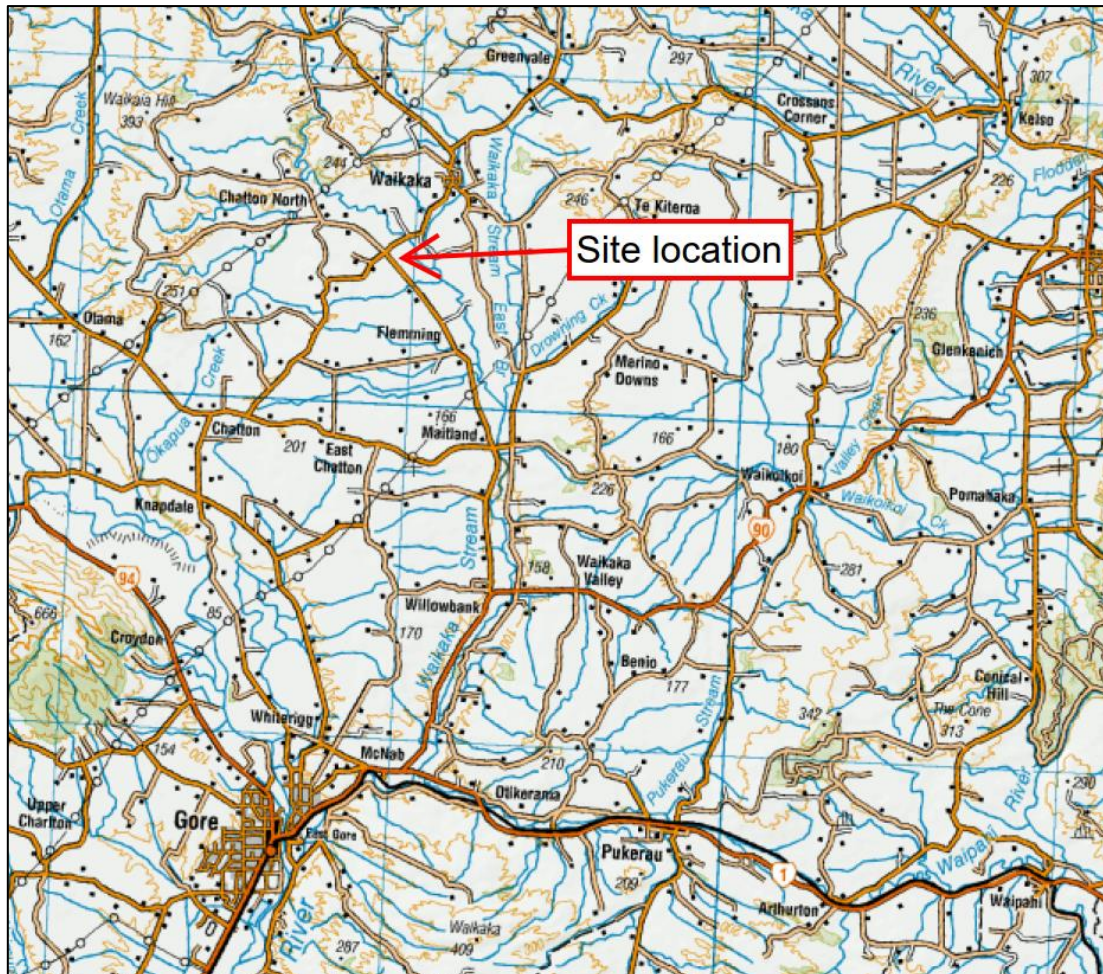


Figure 1 Site location

The land within the application site is under a combination of private and public ownership. A full summary of land parcels with the legal description, Record of Title and ownership details is provided within **Attachment [B]**. A copy of each Record of Title and any relevant instruments are appended as **Attachment [C]**. There are no relevant instruments that impede this proposal.

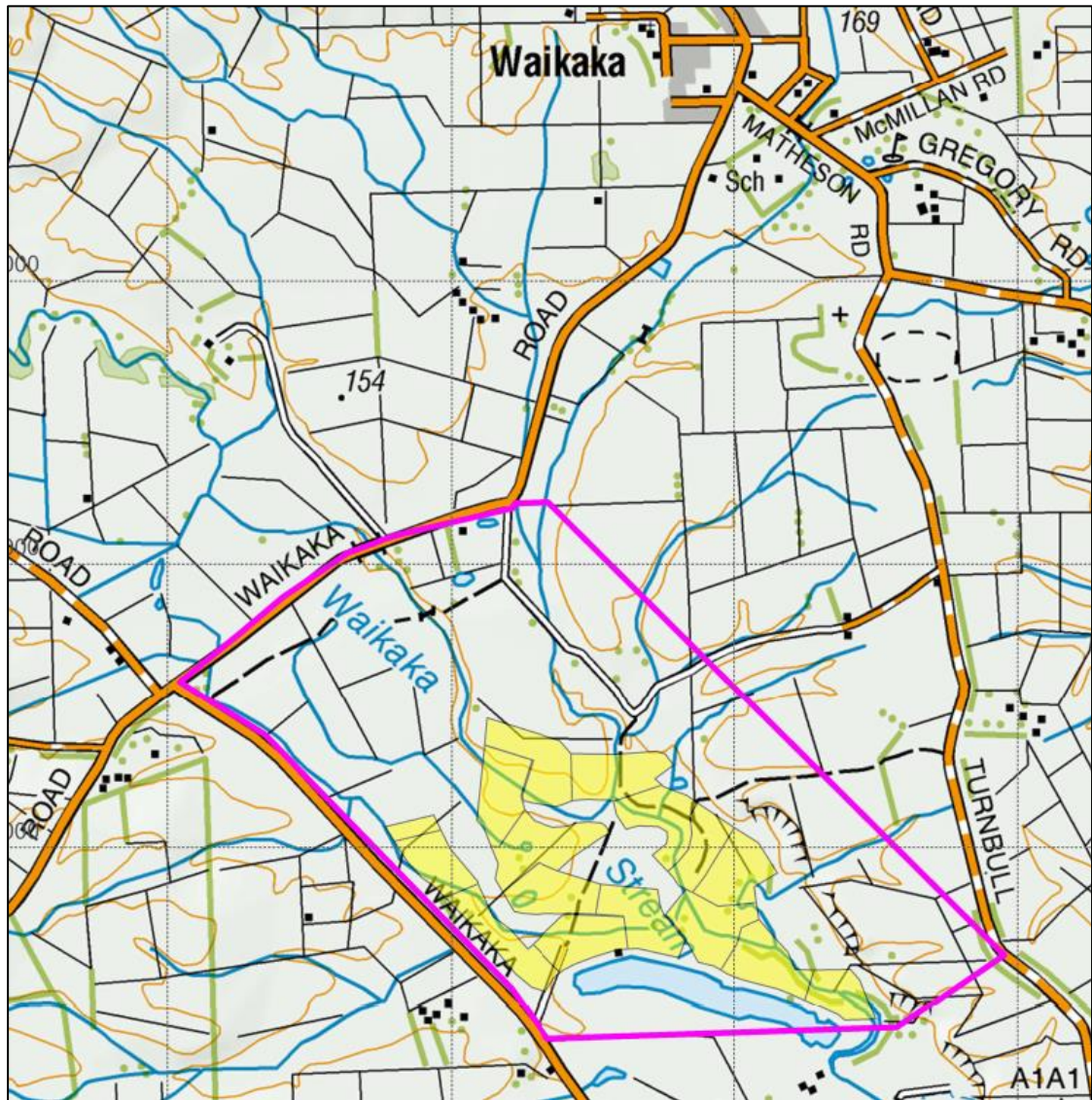


Figure 2 Site location plan (WGML). Mining Permit Boundary shown in pink outline. Mine path indicated by yellow shading.

The bed and margins of Waikaka Stream is Crown land administered by the Department of Conservation (**DOC**) and Land Information New Zealand (**LINZ**). A part of legal road (unformed) administered by GDC also falls within the project area. The Applicant has consulted with DOC, LINZ and GDC, and access approvals are being sought concurrently with this application. The Applicant has consulted with all private landowners within the application site area and has access agreements confirmed with these parties.

2.2 Site history and existing consents

The site is associated with a long history of mining, which has impacted the landscape and environment and remains evident in the present day.

The site was extensively dredged between 1902 and 1927, with dredges generally working up to 6m depth.²

In 2001 L&M Mining Ltd commenced mining the Waikaka Quartz Gravels at the southern end of the proposed mine area using a floating dredge. Mining ceased after 15 months having produced only 6,000 ounces of gold due to unforeseen technical difficulties at a time of very low gold prices.³ Resource consents have been granted in relation to the L&M activity on the application site as summarised below.

2.2.1 Environment Southland

Resource consent L002-018 was granted by ES on 5 April 2000 approved for a period of 15 years (expired on 5 April 2015). This consent authorised:

- Land use consent and water permit to:
 - disturb the bed of the Waikaka Stream during the construction of the diversion and subsequent reinstatement and to divert the Waikaka Stream.⁴
 - construct temporary bund(s) as defences against water.
- Water permit to:
 - take groundwater (to draw down the level of ground water in the mine pit).
 - use groundwater (for processing of gravels within the mine pit), up to 500 l/sec (43,200m³ / day).
- Discharge permit to:
 - discharge up to 500 l/sec (43,200m³ / day) of treated mine water and contaminated stormwater runoff to the Waikaka Stream.
 - discharge up to 500 l/sec (43,200m³ / day) of groundwater to the Waikaka Stream.
 - discharge untreated stormwater to the Waikaka Stream.
- Discharge permit to:
 - discharge contaminants to air when extracting minerals at a rate exceeding 100 tonnes per hour.

2.2.2 Gore District Council

Resource consent LU 114/99 was granted by GDC on 14 April 2000 for a period of 15 years (expiring 14 April 2015) This land use consent authorised earthworks during mining operations including:

² Attachment [H], Mine Methodology report, p.9

³ Ibid, p.10

⁴ Note that the permanent diversion of the Waikaka Stream by L&M Mining was never constructed.

- the diversion of the Waikaka Stream.
- stripping and stockpiling of non-gold bearing soils and gravels.
- processing of gold bearing gravels for gold recovery using physical rather than chemical processes.
- construction of temporary bunds of overburden upstream of the mine pit for flood protection purposes.
- replacement of mined and stripped materials.
- restoration of disturbed land.

Resource consent LU 2015/149 was granted by GDC on 18 June 2015 for a period of 10 years (expiring on 18 June 2025) (**Attachment [D]**). This land use consent authorises:

- storage of existing commercial mining equipment which consists of cross pit conveyor, a transfer wagon, parts of a bucket wheel, and three associated containers.
- earthworks associated with the removal of the existing commercial mining equipment including placing gravel on the site to create footings for cranes and other machinery and dismantling of the conveyor into transportable portions.

Most of the equipment authorised by LU 2015/149 is confined to an area of approximately 1.4ha (the L&M Storage Area) within the proposed mine area, although the 700t Cross-pit conveyor is dry-docked on the edge of the L&M pond.

GDC consent LU 2015/149 requires the removal of the L&M mining equipment presently on the site by 18 September 2025. Condition 5 of this resource consent provides for a bond that covers removal of the equipment and rehabilitation of the land.

2.3 Site description

2.3.1 Overview

The site is currently operated as four working farms with the Waikaka River traversing the site in a north-westerly to south-easterly direction. Shepherd's Creek flows in a southerly direction, joining the Waikaka Stream within the site.

The site is generally located within the Waikaka Stream valley floor, with rolling hills to the west and an escarpment to the east. There are no notations of landscape significance in the local area.

At the southern end of the site is the terminal pond remnant of a previous mining operation (known as the "**L&M pond**"). To the west and north of the site is Waikaka Road, and to the east of the site is farmland.

Immediately south of the L&M pond is a remnant soil stockpile, also from the previous L&M mining activities on the site. This stockpile has the appearance of a hill, though it

was formed around 20 years ago. It has established vegetation, predominantly grass, and measures approximately 1000m long by 300m wide by 10m high and is estimated to comprise approximately one million cubic metres of mined overburden.



Figure 3 General view of the site from near the proposed mine entrance looking northeast (photo taken October 2022).



Figure 4 Aerial view of the site looking southeast toward. L&M machinery and cross-pit stacker visible in approximate centre of image. Paddocks recently cultivated. (Photo taken October 2022).

2.3.2 Soil / geology

The Applicant has engaged Tonkin & Taylor Ltd to prepare a Geotechnical Assessment (the “**T+T report**”), appended as **Attachment [J]**. The site geology is described in detail

in section 4 of the T+T report⁵ and in section 2 of the Mining Methodology report.⁶ The alluvial gold deposit lies within the Waikaka Quartz Gravels (“**WQG**”), approximately 1-5m thick, at a depth of between 20-44m below ground level.

The overlying material (“**overburden**”) comprises interbedded clays, sands, gravel lenses and minor carbonaceous layers forming the Upper Waikaka Sequence (“**UWS**”). More recent alluvial material that has been historically dredged (“**dredge tailings**”) overlies the undisturbed sequence, then overlain by topsoil on the site surface.⁷ A representation of the site geology is shown in **Figure 5** below.

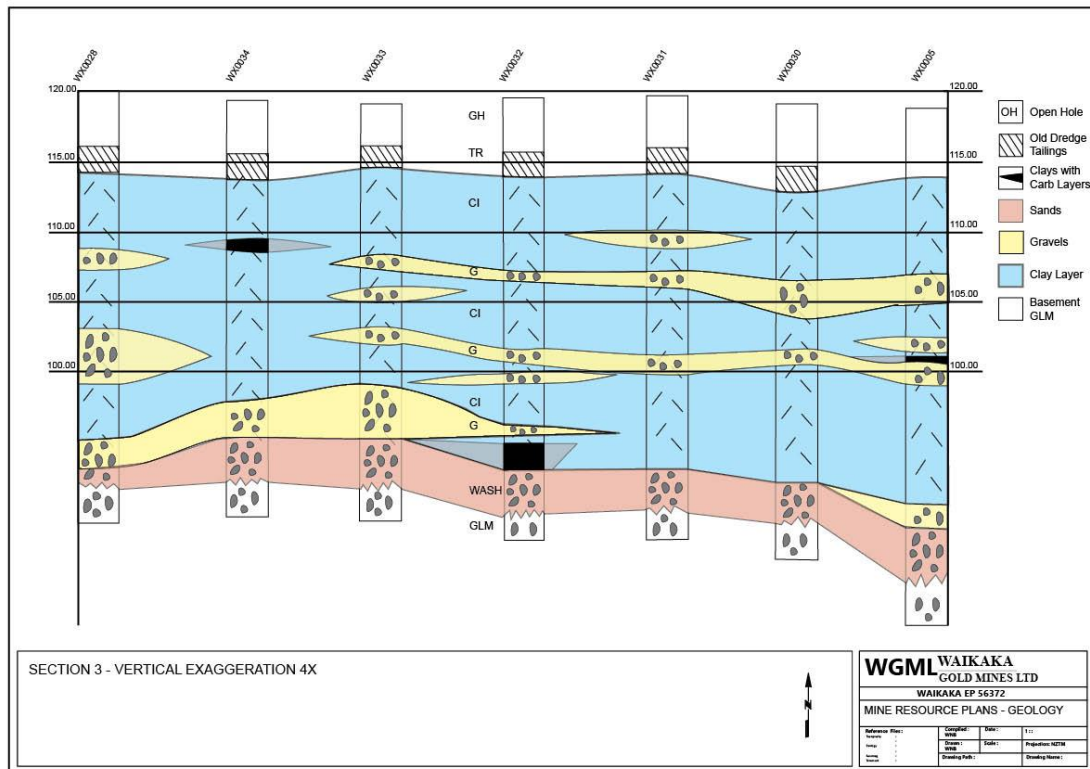


Figure 5 Typical cross-section through UWS and WQG showing gravel layers and discontinuous carbonaceous clay pockets (replication of Mining Method report, Figure 5)⁸

2.3.3 Hydrogeology

The Applicant has engaged Environmental Associates Ltd to provide a technical assessment of the proposed groundwater take and discharges (the “**Heller report**”), appended as **Attachment [K]**. The Heller report describes the site hydrogeology as:

“a low yielding fragmented and separated aquifer system, consisting of a thin water table aquifer, a thin and intermittently discontinuous intermediate confined aquifer and a moderately thick continuous deep confined aquifer.”⁹

⁵ Attachment [J], T+T report, p.10-13

⁶ Attachment [H], Mining Methodology report, p.7-11

⁷ Attachment [H], Mining Methodology report, p.8

⁸ Ibid., p.9

⁹ Attachment [K], Heller report, p.5

The extent of the confined aquifers is not known, and the aquifers are not identified within the regional plans within any groundwater management zones.

Piezometric data show groundwater flows generally from northeast to southwest, and it is likely that some groundwater within the surface unconfined aquifer discharges to the Waikaka Stream.¹⁰

Aquifer hydraulic parameters have been determined through analysis of aquifer test results, discussed in detail within section 3 of the Heller report. Overall, all three aquifers have low hydraulic capacity, and there is not expected to be any hydraulic connection between the three identified aquifers: the upper unconfined, intermediate confined and lower confined aquifers.

2.3.4 Waikaka Stream and Shepherd's Creek

The Waikaka Stream flows through the site in a north westerly to south-easterly direction. Shepherds Creek joins the Waikaka Stream midway through the site, though only a small part of Shepherds Creek lies within the project area.

An aquatic ecology and water quality study of surface water bodies within the project site area have been undertaken by Ross Dungey Consulting Limited (the '**Dungey report**'), appended as **Attachment [L]**. The results of the aquatic ecological survey and water quality testing are described in detail in the Dungey report, with the key characteristics summarised as follows:

- The Waikaka Stream features gravelly/cobble substrate and an extensive and well-vegetated riparian zone.¹¹
- The Waikaka Stream supports healthy populations of Longfin Eel, Brown Trout, and Upland Bully. Gollum galaxiids are present but in low numbers and limited distribution. The Stream supports considerable spawning for the Brown Trout and Bullies.
- There is a trend for decline downstream in various invertebrate indices (MCI) indicating effects of nutrient enrichment. Mean QMCI of the Waikaka Stream sampling sites was 5.5 ("Good") and mean SQMCI was 3.7 ("Poor").¹²
- Waikaka Stream spikes in E.coli immediately below the confluence with Shepherd's Creek but is otherwise within limits.
- Dissolved reactive phosphorus and dissolved inorganic nitrogen exceed the NPS-FW 2020 guidelines in the stream.
- The Waikaka Stream sampling sites do not comply with the lowland hard bed water quality standards in respect of visual clarity and SQMCI parameters. All

¹⁰ Attachment [K], Heller report, p.7

¹¹ Attachment [L], Dungey report, p.12

¹² Ibid, p.22



other measured parameters¹³ comply with the lowland hard bed water quality standards.¹⁴

- Critical habitat components on the Waikaka stream include shade from the extensive riparian zone, undercut banks for fish cover, and a coarse substrate for invertebrate and small fish habitat.¹⁵ Extensive shade cover almost certainly limits nuisance algal growths.¹⁶

Table 17 in the Dungey report presents a summary of water quality data, replicated below:¹⁷

Table 2 Summary of water quality parameters for survey sites (replication of Table 17, Dungey report).

Note: The location of monitoring sites is shown in the Dungey report Figure 1, p. 13. Wk refers to Waikaka Stream monitoring sites. Big pond is the L&M pond. Ponds 2-5 are various artificial ponds on the site. Ditch is the western farm drain. Shaded figures are from handheld device measurements, while unshaded figures are laboratory measurements.

mg/l	Wk 1	Wk3	Wk6	Big Pond	Pond 2	Pond 3	Pond 5	Ditch
Ammon N	0.07	0.03	0.02	0.11	4.7	1.6	1.4	0.07
NN	0.1	0.08	0.07	1.5	<.01	<.01	<.01	3
DIN	0.17	0.11	0.09	1.61	4.71	1.61	1.41	3.07
DRP	0.007	0.007	0.007	0.004	0.009	0.004	0.004	0.004
TP	0.06	0.05	0.06	0.05	0.2	0.19	0.14	0.03
TSS	4.2	2	2	4.6	21	40	19	2
E.coli	120	250	150	13	40	210	110	13
Conductivity	64.7	60.6	66.4	179.6	262.7	267	285.4	174.3
Cond/Temp	78.2	73.7	76.6	210.2	318.7	351.8	317.5	220.4
Sal	0	0	0	0.1	0.2	0.2	0.2	0.1
TDS	0.0509	0.0477	0.0498	0.1367	0.2068	0.2289	0.2065	0.1431
Temperature	15.9	15.4	18.1	17.4	15.8	12.4	19.8	13.8

Environment Southland monitors the Waikaka Stream flow at Willowbank, approximately 9km downstream of the project site. An estimate of the Waikaka Stream flow characteristics at the project site has been undertaken within the Heller report, as shown below:¹⁸

¹³ Note that chlorophyll a was not measured.

¹⁴ Attachment [L], Dungey report, p.27

¹⁵ Ibid, p.7

¹⁶ Ibid, p.33

¹⁷ Ibid, p.32

¹⁸ Attachment [K], Heller report, p.4

Table 3 Waikaka Stream Hydrological Statistics (replication of Table 2.1, Heller report)

Statistic	Waikaka Stream at Willowbank (L/s) and (L/s/km ²)	Waikaka Stream at WGL Mine Site (L/s) and (L/s/km ²)
Mean /S-Mean	3,345/10.5	2,016/11.2
Median /S-Median	1,783/5.6	1,070/5.9
7-Day MALF/SMALF	461/1.4	277/1.5
Catchment Area	318 km ²	180 km ²

2.3.5 L&M pond and other artificial waterbodies

A large artificial pond is located to the immediate south of the site, referred to as the L&M pond. This is the terminal void resulting from the previous L&M mining activities on the site. There are a number of other small ponds throughout the site, which are remnants of former dredging on the site.

There is a network of open farm drains in the area. The main drain, hereafter referred to as the 'Western drain,' is situated along the western side of the project site, running from the northwest boundary of the project area alongside the historic dredge tailings. It varies in proximity to the Waikaka Road as it extends northeast.

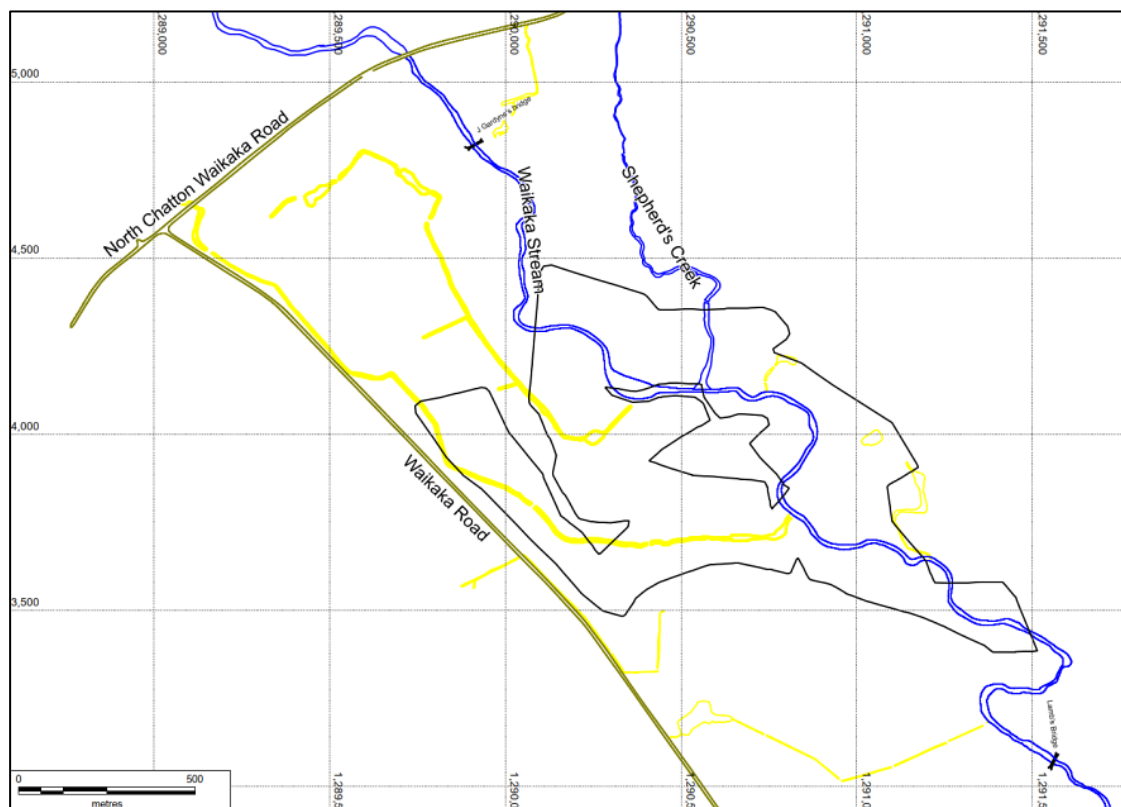


Figure 6 Pre-mining drainage on the site. Artificial drains shown in yellow and proposed mine extent shown in black outline. (Source: WGML)

The results of the aquatic ecological survey and water quality testing are described in detail in the Dungey report, with the key characteristics of these artificial waterbodies summarised as follows:

- Water quality is generally poorer in the ponds, with high sediment loads and low water visibility. The smaller ponds have high levels of Ammonia, nitrates and high conductivity reflecting dissolved nutrients/minerals.¹⁹
- Six of the eight small ponds support a significant short fin eel population. No other fish species were found in these ponds. Longfin eels, perch, brown trout and lobsters are reported by anglers to be in the L&M Pond.²⁰
- There are abundant weed beds and an algal bloom in the L&M pond.
- Mallard and teal ducks inhabit the ponds, and several ponds have maimais, Canada Geese, paradise shelduck and various species of wading birds were also noted on the ponds.²¹
- The ditches are fed by tile drains and are steep sided with a mud substrate and overhanging grasses. Water quality in the western drainage ditch is characterised by elevated conductivity, high nitrate nitrogen and salinity levels, low ammonia and phosphorus. Long fin eel, upland bully, galaxiid and brown trout were recorded in the western ditch.²²



Figure 7 Photo of L&M pond looking north. L&M cross-pit conveyor visible on edge of pond in centre of photo. (Source: WGML.)

2.3.6 Vehicle access

Vehicle access to the site is currently facilitated by four existing gravel vehicle accesses from Waikaka-Willowbank Road and several unformed farm accesses located along Waikaka-Willowbank Road and Waikaka-Chatton North Road. An example is shown in **Figure 8** below.

¹⁹ Attachment [L], Dungey report, p.7

²⁰ Ibid, p.36

²¹ Ibid, p.40

²² Ibid, p.41



Figure 8 Typical gravel vehicle access from Waikaka-Willowbank Road, located approximately 141m south of the intersection with Waikaka-Chatton North Road (Source: Google Maps, Jan 2013)

2.3.7 Contaminated land

Potential contamination of the application site by former land uses has been considered by Geosciences Limited (“**Geosciences**”) in their Preliminary Site Investigation Report (“PSI”), included as **Attachment [M]**. Geosciences have considered:

- The former use of land for dredge-based gold mining and the potential for anthropogenic mercury from historic mining operations (s.2.2).
- The risk of hydrocarbon contamination at the L&M Storage Area (s.2.2.2).
- An area adjacent to the site is known as a former landfill, located as shown in **Figure 9** below. The landfill area is east of the project area and will not be disturbed by the mining activities.

Geosciences conclude that that there is no heavy metal contamination of the application site area, there is no measurable contamination of the L&M Storage Area and that there no downstream contamination of Shepherds Creek from the landfill.

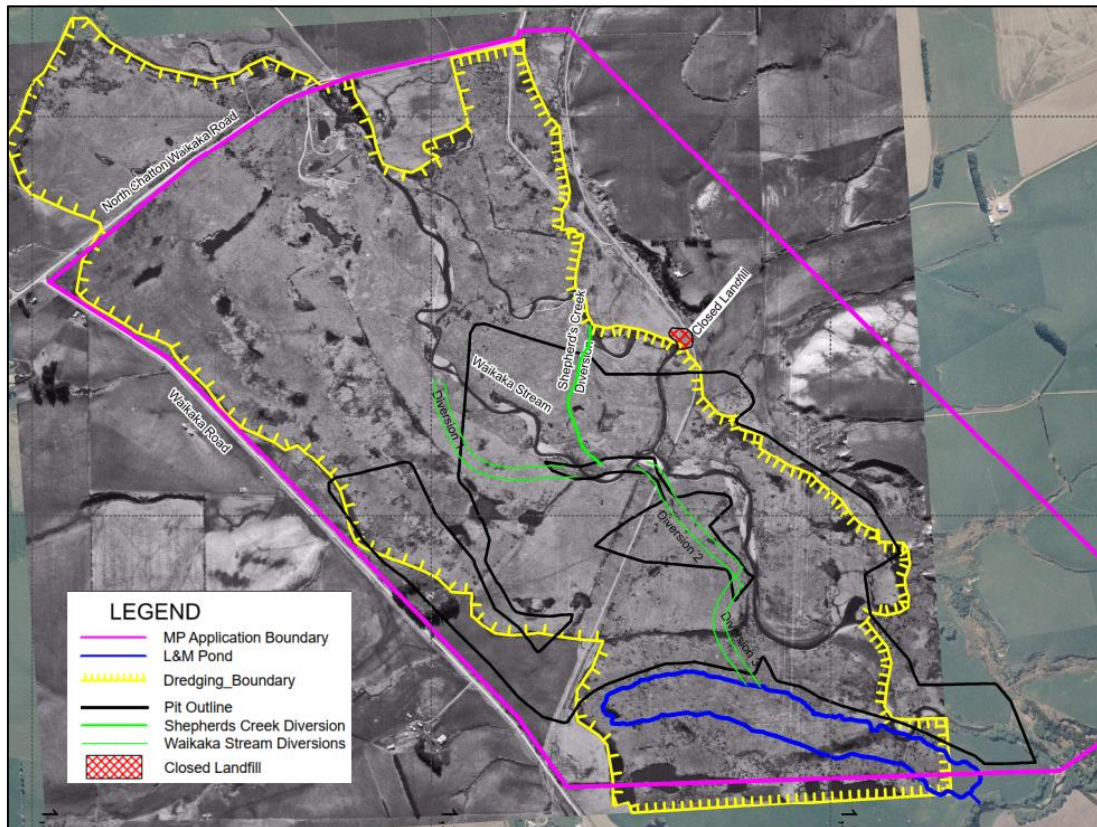


Figure 9 Location of former land uses in respect of the application site. Background image is 1946 Retrolens aerial image. (Source: WGML)

2.4 Surrounding environment

2.4.1 Overview

The project area is located within the Waikaka valley, approximately 2.5km south-east of Waikaka township and approximately 17km north of Gore. The surrounding area is rural with land predominantly used for pastoral farming activities.

2.4.2 Waikaka catchment

The Waikaka Stream drains a predominantly pastoral catchment, flowing southwards to join the Mataura River at Gore. The Mataura River is a Statutory Acknowledgement Area and subject to a Water Conservation Order (“WCO”), though the Waikaka Stream is excluded from both the Statutory Area²³ and the WCO.

The Waikaka Stream has a catchment area upstream of the project area of approximately 180km².

²³ Ngai Tahu Claims Settlement Act 1998

In 2020, the University of Otago published a study on water quality in the Waikaka Stream catchment.²⁴ This study contained a summary of water quality monitoring conducted from October 2018 to September 2019 under baseflow conditions. Data was collected from 16 sampling sites between the headwaters of the Waikaka Stream and its confluence with the Mataura River. A summary of the results is as follows:

“The suspended sediment concentration exceeded the regulatory threshold of 2.5 mg L⁻¹ at every site, with the highest levels being recorded in the upper reaches. E. coli follows the same trend with the highest concentrations at the upper end of the catchment. The tributaries to the stream tend to have higher E. coli values than most main stem sites. The nutrients (nitrogen and phosphorus) showed the opposite trend, where the highest levels were in the bottom half of the catchment, indicating cumulative impacts lead to higher concentrations of nutrients. The sites lower in the catchment exceed nutrient levels, where the upper reaches are within safe guideline concentrations (Table 0.1, Figure 0.1, Figure 0.2). Nitrate levels are all below the 1 ppm, while dissolved reactive phosphorus is above the recommended level of 50 ppb at all sites from 40km, down to the confluence of the Mataura River and Waikaka Stream. Though nitrate levels are below 1 ppm, total nitrogen levels do exceed that threshold at half of the sites (Table 0.1).”²⁵

Based on the monitoring undertaken, the report concluded that the water quality index for all monitoring sites in the Waikaka catchment was ‘poor’, except for ‘site 2’ (located near the headwaters, in the Wendon Valley) rated ‘fair’.

2.4.3 Landscape

The Applicant has commissioned a Landscape and Visual Effects Assessment by Vivian+Espie (**Attachment [R]**). This report identifies the landscape attributes of the surrounding environment.²⁶ The locality is a working rural landscape with a relatively low degree of natural character. The aesthetics of the site are pleasant and typical of farming land in the district. Willows line the winding course of the Waikaka Stream.

2.4.4 Transport

The site is situated between Waikaka-Willowbank Road (to the west), Waikaka-Chatton North Road (to the north), and an un-named public road in the north of the project area, as shown on **Figure 2**.

Waikaka-Willowbank Road and Waikaka-Chatton North Road are both a two-way, two-lane sealed road classified as Arterial Roads under the District Plan with a sign posted speed limit of 100km/hr. There is no cyclist or pedestrian infrastructure, nor on-road parking. GDC have provided traffic counts of Waikaka-Willowbank Road, between

²⁴ Water Quality Assessment of the Waikaka Stream, Report prepared for the Waikaka Stream Catchment Group (August 2020), Jessica McIntyre, Dr Sarah Mager, & Dr Sean Connolly, Downloaded on 12/8/2022 from: https://www.thrivingsouthland.co.nz/site_files/24893/upload_files/WaterQualityAssessmentoftheWaikakaStream.pdf?dl=1

²⁵ Ibid, p.6

²⁶ Attachment [R], Vivian+Espie report, page 8 – 9.



Maitland to the Chatton North Road intersections, taken in June 2021 being 350 vehicles/day travel with 14.4% heavy vehicles.²⁷

The un-named public road is an unmarked, gravel road which connects Waikaka-North Chatton Road to Waikaka Stream. This un-named road is classified as an Unformed Road under the District Plan and is typically used for farm and fishing access.

2.4.5 Existing consents and wells

There are no surface water takes located within 2km upstream of the site, nor within 5km downstream of the site.

There are a number of groundwater wells and groundwater take and use consents within 6km of the site. A summary of these is provided within the Heller report.²⁸

At 999 Waikaka Road, to the southwest of the project area, the following resource consents relate to an active mining operation:

- AUTH-20202552-01 - to discharge water including sediment to settling ponds from aggregate washing from gold mining.
- AUTH-20202552-03 - to excavate up to 20 holding ponds as wells for dewatering and mining purposes.
- AUTH-20202552-02 - to take and use groundwater for the purpose of aggregate washing from gold mining.

The above resource consents do not authorise any discharge to surface water bodies.

There are a number of wastewater discharge resource consents in the local area. Many of these are dairy effluent discharges. Notably:

- AUTH-200336 authorises the discharge of treated sewerage effluent into Shepherds Creek, approximately 2.5km upstream of its confluence with the Waikaka Stream within the project area.
- AUTH-206305 authorises the discharge of stormwater from Waikaka township into an unnamed tributary of the Waikaka Stream, approximately 3km upstream of the project area. It appears likely that this discharge is via Shepherds Creek.

²⁷ Pers comm., Gore DC (Murray Hasler), 10/8/2022

²⁸ Attachment [K], Heller report, p.23

3 Description of the proposal

3.1 Overview of the proposal

The Applicant applies for resource consents jointly from ES and GDC to establish and operate a gold mining and processing operation on the site, with supporting ancillary activities. The Applicant anticipates a mine life of seven to eight years based on the predicted gold processing capacity, although a 20-year resource consent duration is sought with no restriction on the duration of mining within that period.

The Mine Methodology Report, appended as **Attachment [H]** describes in detail the operation of the proposed mine. An overview and matters key to the resource consent applications are summarised in the below sections. A proposed set of conditions are included as **Attachment [I]**. These are intended as a starting point for discussion.

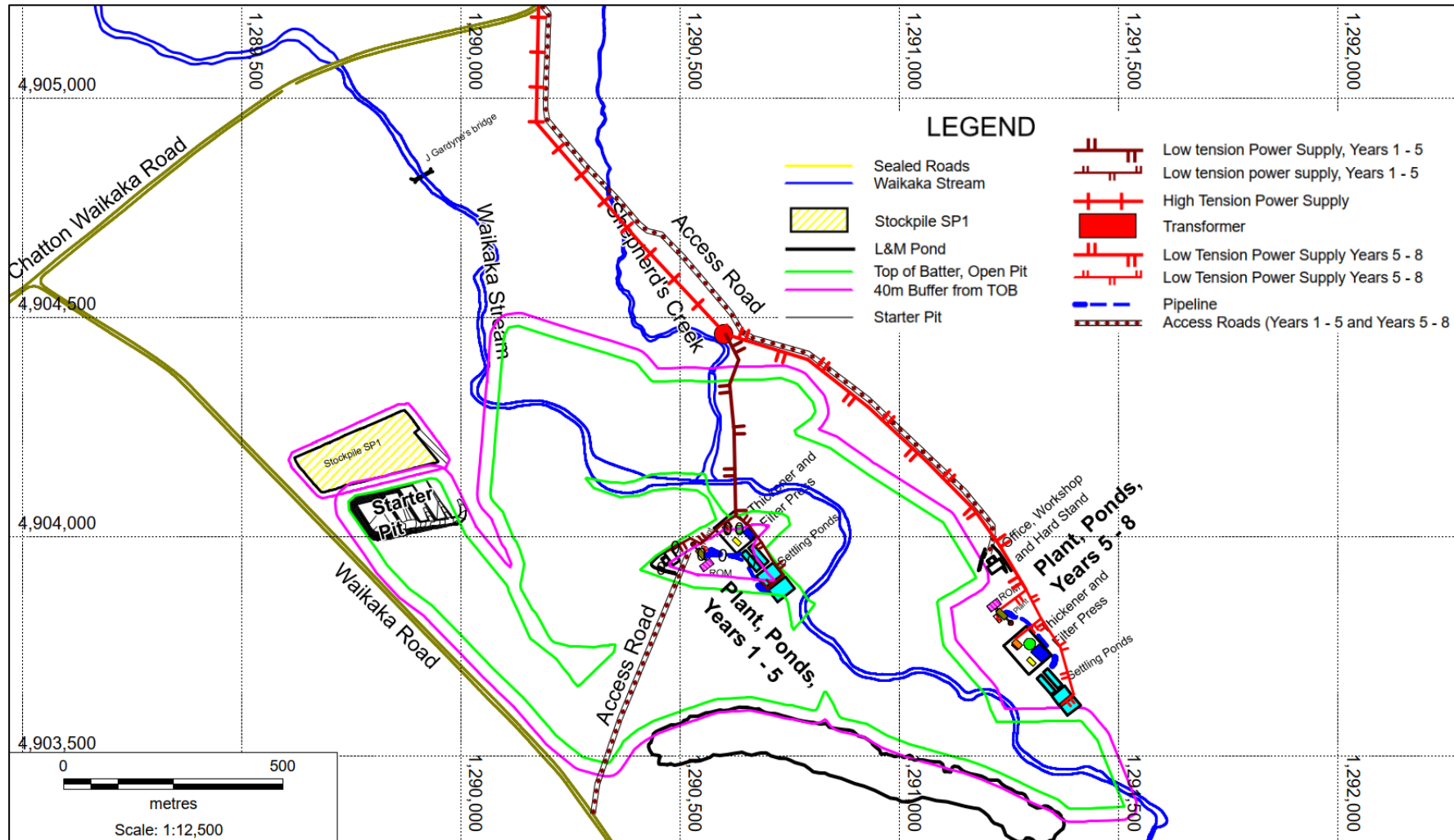


Figure 10 Site layout plan (WGML)



The layout of the proposed mine and ancillary activities is indicated in **Figure 10** with a larger plan included within **Attachment [E]**. Key features of the proposal include:

- The proposed mine extent has been divided into 15 production blocks, which are referred to throughout this report as B01-B15. Each production block is approximately 6 months' work, although 'on the ground' work in one block will blend seamlessly into the next. Mining commences at the starter pit and moves sequentially through each production block. The area to be mined has a 20m set back from the Waikaka Road reserve, the L&M pond and the Waikaka Stream (except where diversions are proposed).
- An Infrastructure Area is situated near the centre of the site. The Infrastructure Area comprises the Gold Recovery Plant ("GRP"), the Run of Mine ("ROM") pad area, the tailings bin, settling ponds and sediment treatment, the workshop, site office, staff amenities, storage areas, vehicle parking, heavy machinery laydown areas and fuel storage areas. Further detail on these facilities is provided in **section 3.6** below.
- A dedicated area for stockpiling overburden is located in the north-western corner of the site, referred to as SP1. Further detail is provided in **section 3.3.2** below.
- The proposed mine path intersects part of the Waikaka Stream and Shepherds Creek. These watercourses are proposed to be temporarily diverted around the mine site. Further detail is provided in **section 3.5** below.

The total proposed project area is approximately 95ha, with approximately 85ha being the mined area.

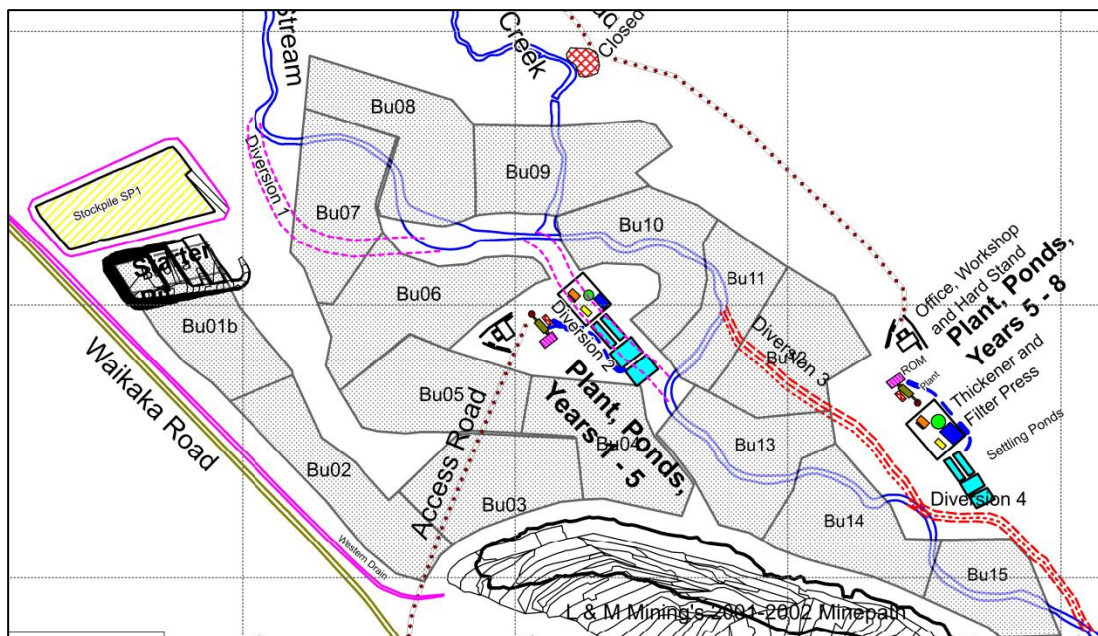


Figure 11 Site plan showing production blocks (WGML)

3.2 Operation of the mine

3.2.1 Hours of Operation

The following hours of operation are proposed:

- The GRP (i.e., processing activities), and wash and overburden mining (i.e., earthworks to extract material and backfill the mine void) will be undertaken as a single 12-hour shift between 7am to 7pm from Monday to Saturday (inclusive).
- Planned shutdowns will occur over the Christmas / New Year break and four-day Easter break. There will be no mining or processing work on Sundays and public holidays.
- Routine maintenance will be undertaken on Sundays and over planned shutdowns.

3.2.2 Personnel

The Applicant will own and operate the proposed mine and employ between 26-30 full-time staff.²⁹

3.3 Mining methodology

3.3.1 Overview of Mining Process

The mineral resource (located within the gold-bearing “**wash**”) lies approximately 20 – 44 metres below the ground. The overlying material (the “**overburden**”) will be removed with excavators and deposited in either a stockpile or backfilled into the mine-pit, depending on the stage of the project.

Wash will be transported to the ROM pad and loaded into the GRP, where it will be processed, and the gold physically extracted by screening and gravity methods. Chemical methods will not be used for gold extraction. The GRP is anticipated to process on average 1,030-1,200 bcm of wash per workday, or 300,000 bcm of wash per year.

The screened and gravity products from the gold recovery process (the “**tailings**”) will comprise wash gravels, sands and coarse silts which will be backloaded to the mine pit and deposited in the backfill using the trucks hauling the wash from the mine to the ROM pad. Process water containing clays and fine silts (the “**slimes**”) in suspension will be discharged to the treatment system comprising settlement ponds and the slimes treatment plant.³⁰ The slimes make up approximately 8% of the wash by weight.

²⁹ Attachment [H], Mining Methodology report, p.12-14

³⁰ Section 3.4.2 provides detail on the settlement ponds and slimes treatment process

3.3.2 Mine pit initial development and stockpiling

Mining will commence by creating the Starter Pit at the north-western end of the site, which will be approximately 170m x 100m. Overburden will be removed and either used to form site perimeter bunding or be transported to the stockpile area SP1. Grassed bunds will be formed around the infrastructure area and starter pit.

The layout and location of SP1 is shown in **Figure 10** and **Figure 11** above.

Overburden management has been modelled by the Applicant's experts and stockpiles are expected to develop between years 0 - 5 of mining due to limited pit void capacity for backfill placement. Stockpiled overburden will be progressively returned to the mine void commencing and completely removed on completion of mining.

SP1 design parameters are:

- Maximum height of 10m above the existing ground level.
- Maximum volume of 446,000 cubic metres.
- Maximum base dimensions 300 m x 150 m, covering 4.5 ha.
- 1:2 side slopes.
- A 10m wide strip for the drainage collection surrounding the stockpiled material.

Any material exceeding the capacity of SP1 will be stored in additional stockpiles on top of the backfill behind the active mine face.

3.3.3 Mine design and progression

The mine will be developed as an open pit mining operation commencing from the starter pit in the northwest corner of the mine area and advancing in the sequence of production blocks, as illustrated in **Figure 11**. Topsoil will be pre-stripped and handled separately so it can be replaced on top of the backfill as topsoil. Overburden excavation will be undertaken in benches between 3-10m height, depending on the nature of the geology. Backfilling and progressive rehabilitation follow the mine face advance, as shown in **Figure 12** below.

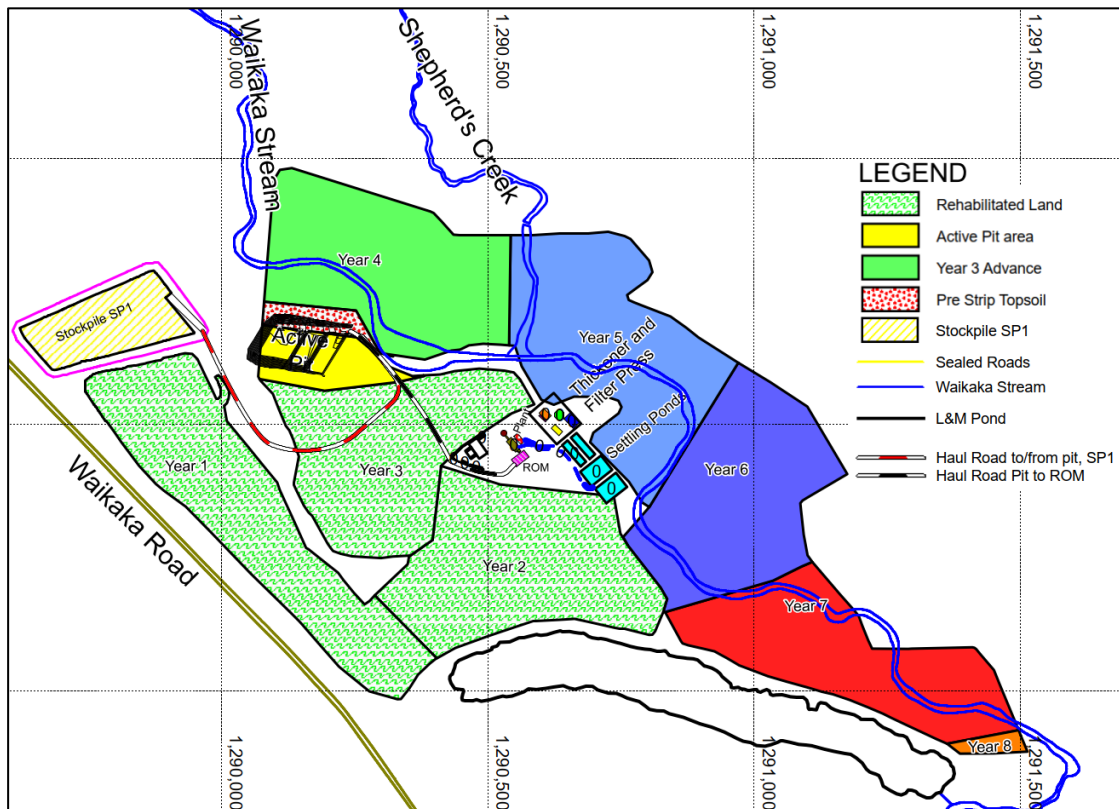


Figure 12 Schematic of mine progression (WGML)

The wash layer averages 2.8m thickness and will be hauled to the ROM pad at the GRP. The wash will be offloaded either directly into the GRP hopper or on to the ROM stockpile. Approximately 92% of wash fed to the GRP will be returned to the pit as tailings gravel, sand and coarse silts, by trucks that have emptied a load of wash. The remaining 8% of wash (silts and clays) will go to the settling ponds and slimes plant (refer to **section 3.4.2**).

The angle of the batter slope formed along the sides of the pit will depend on the materials excavated and will be informed by geotechnical advice. A slope monitoring programme will be detailed in a management plan and a geotechnical consultant will be engaged to monitor and assess the working and backfill slopes as required.

Buffer zones at least 20m wide are proposed between the mine pit and surrounding features; the L&M pond, Waikaka Road, the Waikaka Stream (except where diversions are proposed).

The maximum amount of unrehabilitated land disturbed by mining and ancillary activities at any one time is expected to be approximately 20ha, of which approximately 5ha will be the active mine pit.



3.4 Water Management

3.4.1 Dewatering

The unconfined groundwater table is expected to lie approximately 1.5-2.5m below ground level³¹ and dewatering of the mine pit is required to create a dry working area. A channel will be excavated into the base of the mine pit and internal drains directed to convey water to this area. Dewatering will be undertaken with a portable sump pump which will be moved as necessary with the mine pit progression. Drainage throughout the site will direct surface water from internal roads, the working benches and access ramps to the pit floor channel.

The required dewatering rates have been calculated by Environmental Associates, who note that there will be two stages of dewatering:

- Initial dewatering during development of the Starter Pit. A higher initial rate will be required to lower the groundwater level and overcome stored groundwater volume.
- On-going dewatering for established mine pit progression. Lower ongoing rates will likely be required once a dry working area is established, however there is likely to be variability in dewatering rates due to local material and mine pit depth.³²

The rates and volumes of groundwater take sought are set out in **Table 4** below.

Table 4 Dewatering rates and volumes for consent (replication of Heller report Table 4.3)

Rate or Volume	Quantity	Effective rate	Basis
Maximum instantaneous rate	50 L/s	47.3 L/s	Peak short term rate as modelled + average rainfall contribution + 30% contingency
Maximum daily volume	4,086 m ³	47.3 L/s	Maximum volume with peak rate employed
Maximum monthly volume	114,635 m ³	42.8 L/s	Maximum monthly rate as 90% of daily rate modelled + average monthly rainfall contribution + 30% contingency
Maximum annual volume	952,387 m ³	30.2 L/s	Maximum 365-day rate modelled + average annual rainfall contribution + 30% contingency

³¹ Attachment [K], Heller report, p.5

³² Attachment [K], Heller report, p.10.



Dewatering water and stormwater which enters the pit will be pumped to the settling ponds where it will be used to make-up process water being recycled to the GRP. Any water surplus to process water requirements will be discharged to the Waikaka Stream after treatment. The operation of the settling ponds, use of dewatering water for processing in the GRP, water treatment process and discharge to the Waikaka Stream is outlined in **section 3.4.3** below.

The rate of dewatering from the mine pit will be measured by a flow meter on the pit dewatering pipeline and at the overflow from the final polishing pond. At other points in the water circuit, the total flow will be impacted by recirculated water. The volume of dewatering water will not be separable from the volume of stormwater as stormwater will be directed into mine pit and effectively combined with dewatering water prior to being pumped to the settling ponds.

3.4.2 Stormwater

Stormwater from internal roads and active mining areas will be directed either into the active mine pit, or to the on-site network of drains which will convey water to the existing surface drainage network. Stormwater entering the mine pit will be pumped with the dewatered groundwater to the settling ponds.

An erosion and sediment control plan will be created to manage stormwater that does not enter the mine pit and detail the sediment traps and controls that will be implemented.

Stormwater from the fuel storage area will go through an oil-water interceptor, and then be pumped to the settling ponds.

3.4.3 Operation of the settling ponds, slimes treatment plant and discharge of surplus water

Four settling ponds are proposed; two primary ponds, which will be used alternately to allow for clearing out of settled sediment from the pond not in use, a central recirculating pond (“**CRP**”) and a final polishing pond (“**FPP**”). The four settling ponds together will cover an area of approximately 70m x 150m and will be approximately 2-2.5m deep.

The purpose of the primary ponds is to receive dirty water from the mine pit (dewatering water and stormwater), stormwater from internal site drainage and GRP process water (the slimes). Some sediment settlement is expected to occur within the primary ponds.

Process water discharged from the GRP will contain approximately 6% suspended solids (the “**slimes**”). As detailed in **Attachment [T]**, the Applicant has undertaken testing and modelling and determined that it is not viable to settle the slimes and recover water for gold processing using settling ponds only. Therefore, dirty water will be pumped from the primary ponds to a slimes treatment plant (“**STP**”). The Mine Methodology report³³ provides an example of a third-party provider slimes treatment plant to demonstrate feasibility. While a different brand may be used, the operational

³³ Attachment [H], Mine Methodology report, p.35, description of Matec plant

concept will be similar, with the plant including a flocculant tank, thickener and filter press.

Water pumped to the STP will initially be dosed by flocculants and thickened to about 35% solids in a radial thickener. Flocculant dosage is automatically calibrated by a sensor within the thickener. Clear water overflows the top of the thickener and is directed to a recovery pond at the STP. Sediment and water at the base of the thickener is fed to the filter press, where water is effectively squeezed from the solids. The filter press produces clear water that is pumped to the STP recovery pond and a cake of approximately 80% solids is produced that will be loaded onto a truck and transported to the mine pit as backfill. Water recovered from the STP will all be directed to the recovery pond and then pumped back to the central recirculating pond.

The STP recovery pond will be small, as its function is to provide a small amount of surge capacity and act as a pump suction container. The size will be approximately 4m x 4m x 2m deep. This recovery pond could be a container, rather than excavated into the ground.

Process water for the GRP is expected to be 90% recovered and so make-up water of around 10l/s will be required. This will be made up from the dewatering water.

Water that is surplus to the GRP processing water requirements will overflow from the CRP to the final polishing pond, before discharge to the Waikaka Stream. The average flow rate of the final discharge is expected to be between 21.5 and 30.2L/s but this will fluctuate depending on the time of the day (there will no recycling of process water or need for make-up water during the night when the GRP is shutdown) and the amount of surface run-off contributing to the mine pit discharge.

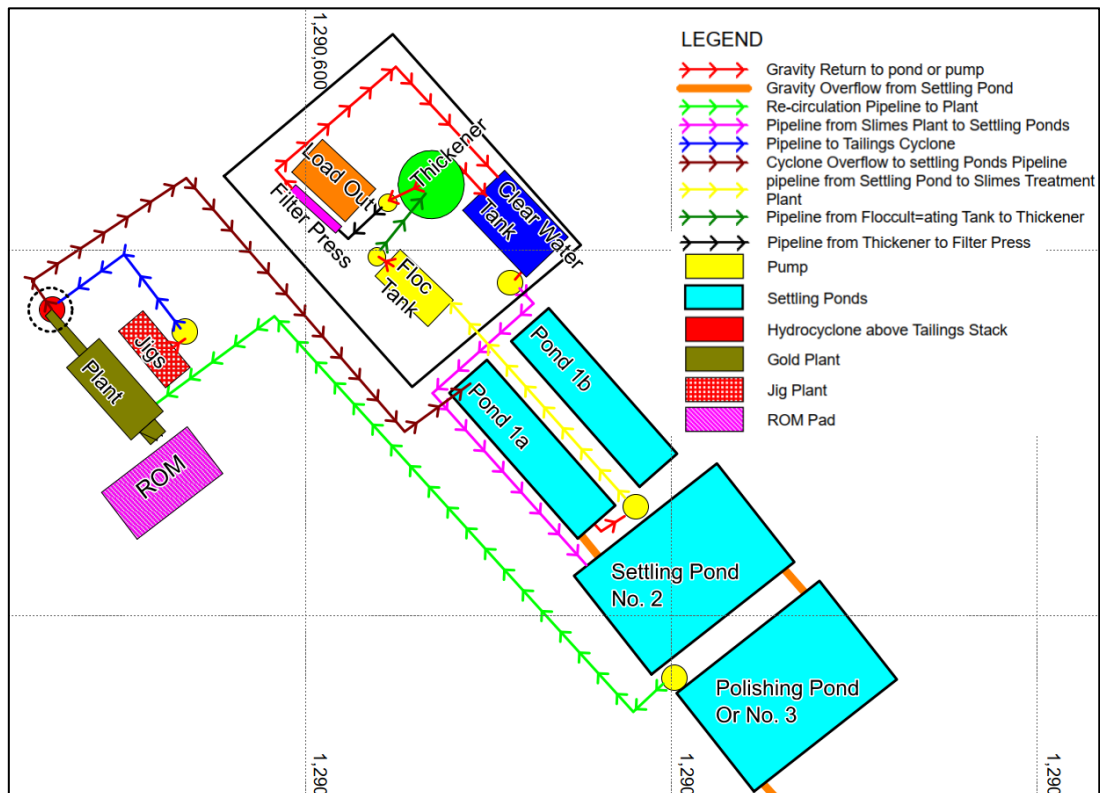


Figure 13 Schematic layout of gold processing area, settlement ponds and slimes treatment plant (WGML)

The discharge from the FPP to the Waikaka Stream will have a suspended solid load no more than 50mg/L. Flocculants will be required to ensure that the appropriate sediment removal rates are achieved due to the fine nature of clays on the site. Flocculant will be added during the slimes treatment plant process as described above, and at the overflow from the CRP to the FPP if required. The final discharge will enter the Waikaka Stream through a new outfall installed for the duration of the discharge.

Settlement ponds will be constructed by removing topsoil and constructing walls with overburden from the Starter Pit. The walls will be capped with gravels. Internal low bund walls may be constructed within the settlement ponds as flow restrictions to improve the deposition and retention of sediment. Skimmer outlets and pipes will be installed between the ponds for water transfer and concrete or rock aprons used to minimise erosion of any bund walls.

A temporary settling pond will likely be necessary during site development and the excavation of the Starter Pit. This will be constructed in proximity to the works and receive on site stormwater until the slimes treatment plant and four settling ponds are operational.

All settlement ponds and associated infrastructure will be decommissioned and removed at the end of the project.

A schematic of the project water circuit is shown in **Figure 14** below:

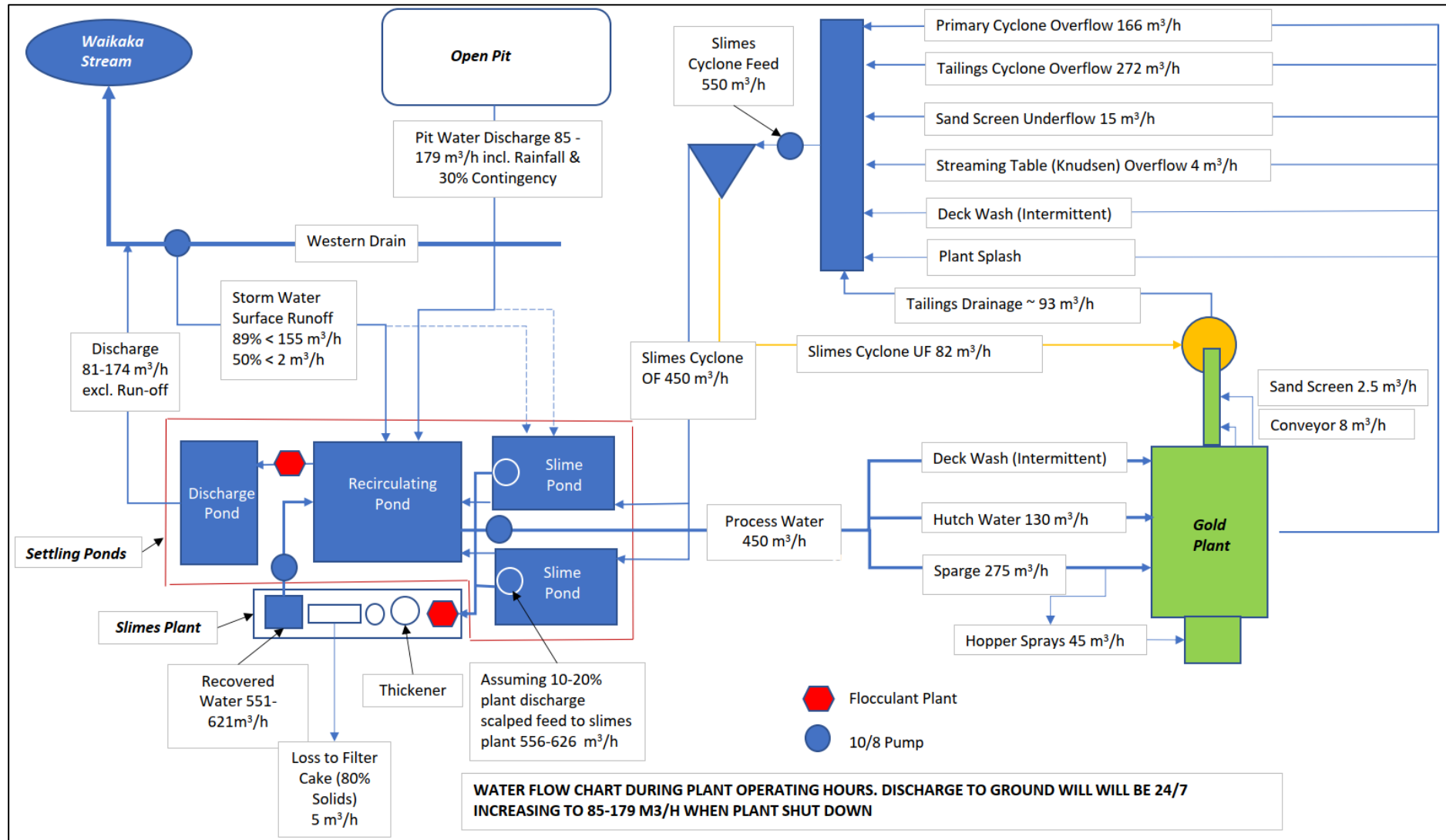


Figure 14 Project water circuit (WGML)

3.4.4 Discharge of dewatering water, GRP process return water and stormwater as overflow from main settling ponds

As soon as the Settling Ponds have been constructed, the ultimate peak rates of discharge are expected to generally align with those rates of dewatering take in **Table 4** above, with a reduction of make-up water to the GRP (10l/s over the 12 hours per day that the GRP operates). The rate of discharge will be monitored at the outflow from the final polishing pond.

The Applicant proposes to monitor the quality of the discharge water using automated turbidity sensors as set out in **Table 5** below.

Table 5 Proposed discharge water quality monitoring parameters for dewatering water, GRP process return water and stormwater.

Contaminant	Monitoring Parameter	Monitoring Location
Sediment	Turbidity value calibrated to 50g/m ³ total suspended solids	Tertiary settlement pond outflow
	Change in turbidity	Waikaka Stream, 10m upstream and 60m downstream of the discharge outfall

3.4.5 GRP processing water

The GRP requires approximately 450m³/hour of process water, equivalent to 125L/s. Water losses of 10% are assumed during processing due to moisture retention by tailings. The process water will be taken from the central recirculation pond. Make-up water of approximately 10l/s will be required during GRP operating hours; this will be derived from the mine pit dewatering water, or from the stored water in the central recirculating pond.

3.5 Waikaka Stream and Shepherds Creek Diversions

3.5.1 Overview

The Waikaka Stream and Shepherds Creek are within the proposed mine footprint and the Applicant proposes to temporarily divert segments of the streams to enable mining. Each diversion will be temporary, lasting approximately one year, and the streams will be rehabilitated to their existing course. The Applicant proposes to include riparian enhancement work as part of the stream diversion rehabilitation. The diversions are shown in **Figure 15** and detailed below.

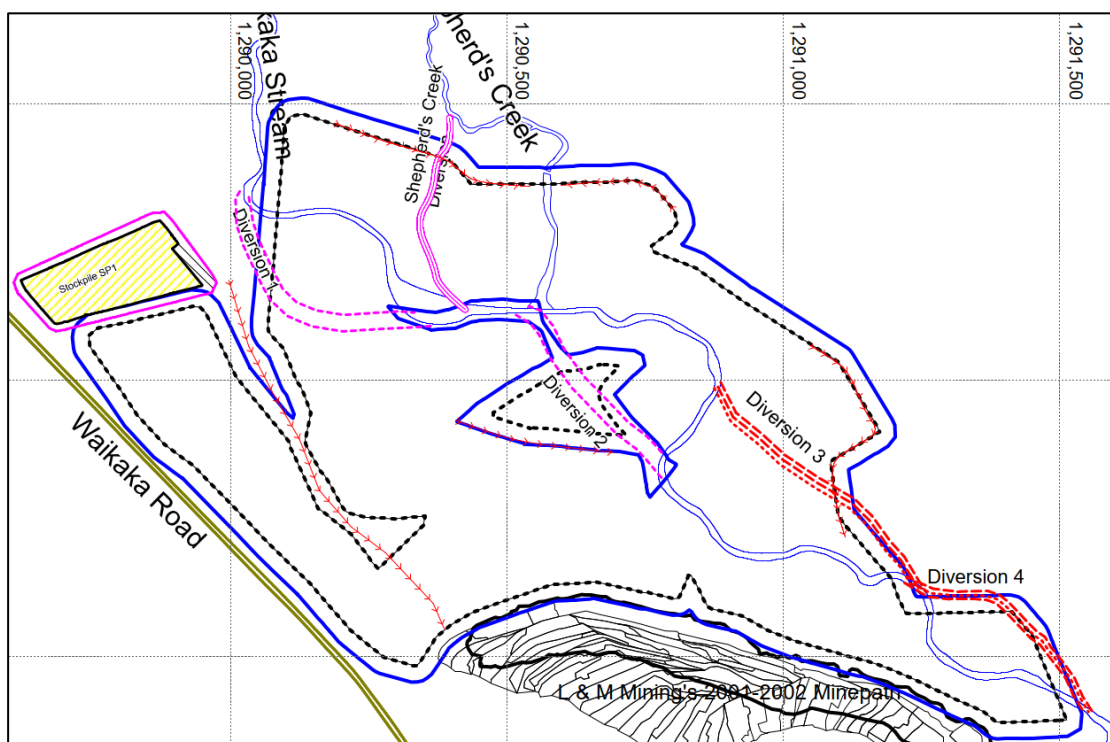


Figure 15 Plan of Waikaka Stream diversion showing staging (Source: WGML)

The Applicant proposes to construct five separate stream diversions, with each being rehabilitated to its pre-mining course. The length and timing of each stream diversion is shown in **Table 6** below.

Table 6 Stream diversion lengths and timing

Diversion	Diversion Length (m)	Diverted Length (m)	Year Diverted	Year Reinstated
Waikaka Stream				
Diversion channel 1	420	470	3	4
Diversion channel 2	500	630	4	6
Diversion channel 3	230	700	6	7
Diversion channel 4	450	550	7	8
Sub-total Waikaka	1870	2350		
Shepherds Creek	400	590	4	5
Total	2250	2940		

3.5.2 Temporary diversions

The design of the diversion channels has been undertaken by R.J. Hall & Associates Ltd. (the “**Hall report**”), included as **Attachment [N]**. The diversion channels will be constructed to carry 1:20 year AEP flood flows with 300mm freeboard, in accordance with the cross section shown in **Figure 16** below.



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Vehicles and machinery will need to cross the bed in order to construct the new diversion channel and will require one or more new fords to cross the stream.

Diversion channels will be in place for 1 – 2 years, hence the embankments will be grassed.

Any structures within the reach of the Waikaka Stream to be diverted, such as farm drain discharge outfall structures, will be removed. Removal of structures will occur after the flow has been moved to the diversion channel.

After mining has passed through a diverted area, the stream will be reinstated to its original channel alignment as described below.

3.5.3 Channel rehabilitation

A fundamental principal of the reinstatement of the Waikaka Stream and Shepherds Creek is that these streams will be restored to their former course and rehabilitated to at least the same, and preferably better habitat value, ecological value and flood carrying capacity, compared to the existing. The Applicant has engaged various experts in order to achieve this.

The affected sections of the Waikaka Stream and Shepherd's Creek will be reinstated to the same course, and with the channel constructed in accordance with the cross section in the Hall report (**Attachment [N]**, p29 of the pdf), replicated as **Figure 17** below. The rehabilitated channel will comprise a 5m wide low flow channel within a 20m wide high flow channel. The low flow channel will be constructed with a sinuosity of 1.3, so that it meanders within the high flow channel, no closer than 1.5m to the edge. The bed of the low flow channel will be covered with cobbles ranging from 40 to 200 mm mean diameter and pool / riffle features will be created. After reinstatement of all diversions the original length and broad meanders and sinuosity of the streams will be retained, as well as the flood carrying capacity.

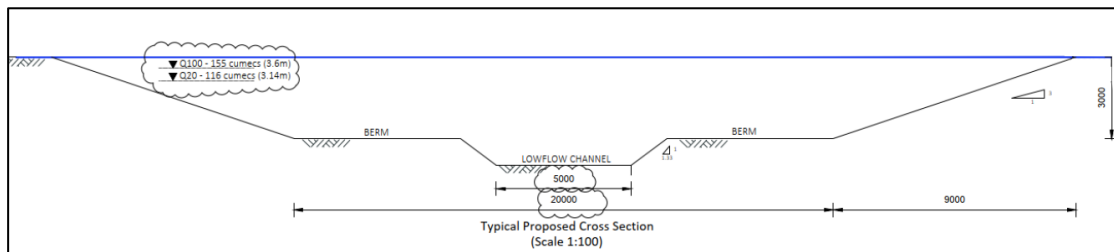


Figure 17 Typical cross section of proposed diversion channel (replicated from D01 appended to Hall report, **Attachment [N]**, p29 of the pdf)

Embankment batter slopes will be constructed at 3:1, providing sufficient capacity for a 1 in 20 years AEP flood event, with 300mm freeboard).³⁴ The berm and embankments are proposed to be topsoiled and grassed. Stock will be excluded from the new riverbed until the grass is established, at which point limited grazing of the embankments and berm is anticipated.

The riparian margin of the low flow channel will be planted with a combination of native and introduced species. Consideration has been given to solely native plantings, however the advantages of introduced species for rapid growth are considerable, providing both stabilisation of the new channel and shading of the water to limit temperature increases. A planting schedule is proposed to be completed post-consent, informed by ecological and river engineering expertise, and relocating existing plants where possible.

The Dungey report identifies the following key habitat features in the Waikaka Stream,³⁵ which will be replicated in the rehabilitated channel:

- Riffles with coarse gravel and cobbles
- Undercut banks
- Overhanging vegetation-grasses, shrubs, willows
- Large woody debris
- Deep pools

³⁴ Attachment [N], Hall report, p.2

³⁵ Attachment [L], Dungey report, p.50

- Boulder clusters

These features will be constructed in consultation with a suitably qualified freshwater ecologist.

The Waikaka Stream is understood to receive inflows from shallow groundwater losses.³⁶ To maintain this environmental feature, the base of the low flow channel will not be lined with any impermeable material. The channel will be cut into the backfill or existing in situ material and the cobbles forming the base of the low flow channel will be placed on top.

One new bridge will be required over the Waikaka Stream in the first reach to be temporarily diverted. This will be a single span bridge that will be designed to meet permitted activity criteria. The bridge will be used for vehicle access while mining and will be permanently retained to provide farm access.

3.6 Ancillary Activities

3.6.1 Infrastructure Area

The mine infrastructure area includes the Gold Recovery Plant (“**GRP**”), the Run of Mine (“**ROM**”) pad area, the workshop, site office, staff amenities, storage areas, vehicle parking, heavy machinery laydown areas and fuel storage areas. These facilities occupy approximately 3.5ha. Two locations are proposed for the infrastructure area: one in the approximate centre of the site, and an optional second location further south-west. Relocation of the infrastructure areas is identified as a possible option to minimise pumping and haul distances, but if the first site is not compromised by mine development it may be retained for the duration of the mining operation

The two locations of the infrastructure area are shown in **Figure 10** above. The layout of the gold processing area, settlement ponds and slimes treatment plant are shown in **Figure 13** above. Other ancillary activities are shown in **Figure 18** below. Larger versions of all plans are included in **Attachment [E]**.

³⁶ Attachment [N], Hall report, p.3



Figure 18 Ancillary activities within the Infrastructure Area (Source: WGML)

Buildings within the Infrastructure Area will be temporary. **Figure 19** below shows the concept design of the workshop, which is one of the largest structures at approximately 6.2m high. The GRP is yet to be designed but will likely be similar to the equipment shown in **Figure 20** below, which is from a different site.

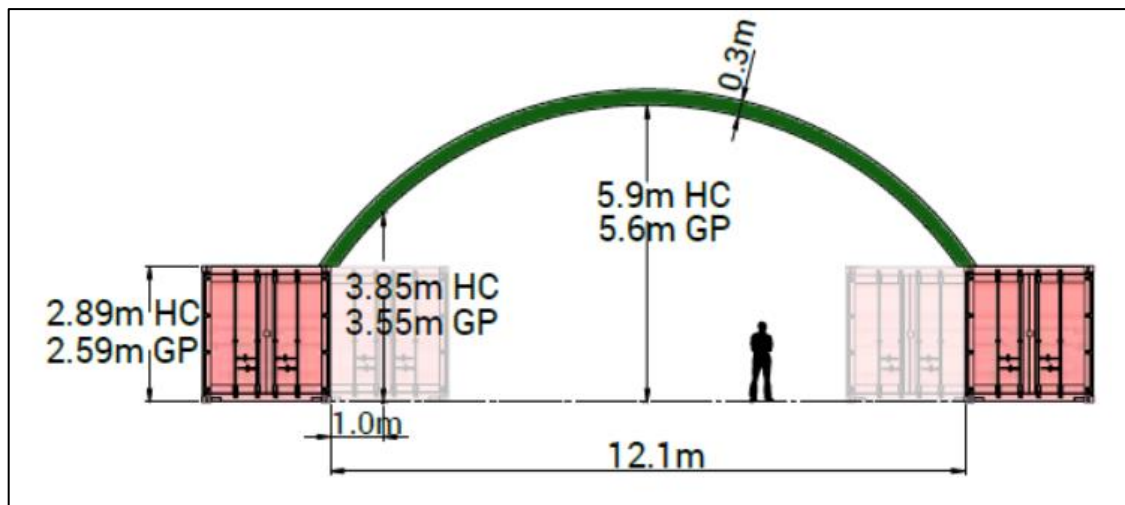


Figure 19 Smart Shelter workshop concept. There will be two units located adjacent (Source: WGML).



Figure 20 Photo of a gold processing plant from a different site (Source: WGML).

Table 7 below summarises the various buildings and structures within the infrastructure area. The total area required for infrastructure is approximately 3.5ha.

Table 7 Summary of buildings and structures

Building / Structure Name	Description	Maximum Height above ground level
Office and amenities	Portacoms	3m
Workshop	Refer to Figure 19	6m
Power transformer	Standard utility	3m
Light poles	Standard utility lights	10m
Fuel facility	Temporary above-ground storage tank	3m
Gold recovery plant	To be designed.	<10m ³⁷
Run-of-mine (ROM) pad	Earth platform	5m
Light poles on ROM pad	Same as other light poles on site but elevated as installed on the ROM pad.	15m
Thickener (Slimes Plant)	Part of Slimes Management	6.2m
Filter press (Slimes Plant)	Plant, refer to section 3.4.3.	5.4m

3.6.2 Flood protection

The project site is on the Waikaka Stream flood plain. The Applicant proposes to use low temporary bunds to prevent flood flows from entering the mine pit and to protect the infrastructure area. In addition, nine temporary bunds are proposed, located as

³⁷ A maximum height of 10m is conservatively proposed for the GRP, noting that it has not yet been designed. The Applicant considers the likely final height to be in the range of 6-8m.

identified in **Figure 21** below. The size of these bunds is specified in section 4 of the Hall Report (**Attachment [N]**, p5 of the pdf). Generally, the bunds range from 70m to 400m in length and have a maximum height ranging between 0.9m and 1.8m. Bunds will be grassed and are designed to contain a 1 in 20-year annual exceedance probability (“AEP”) flood event with 300mm freeboard within the Waikaka Stream channel.

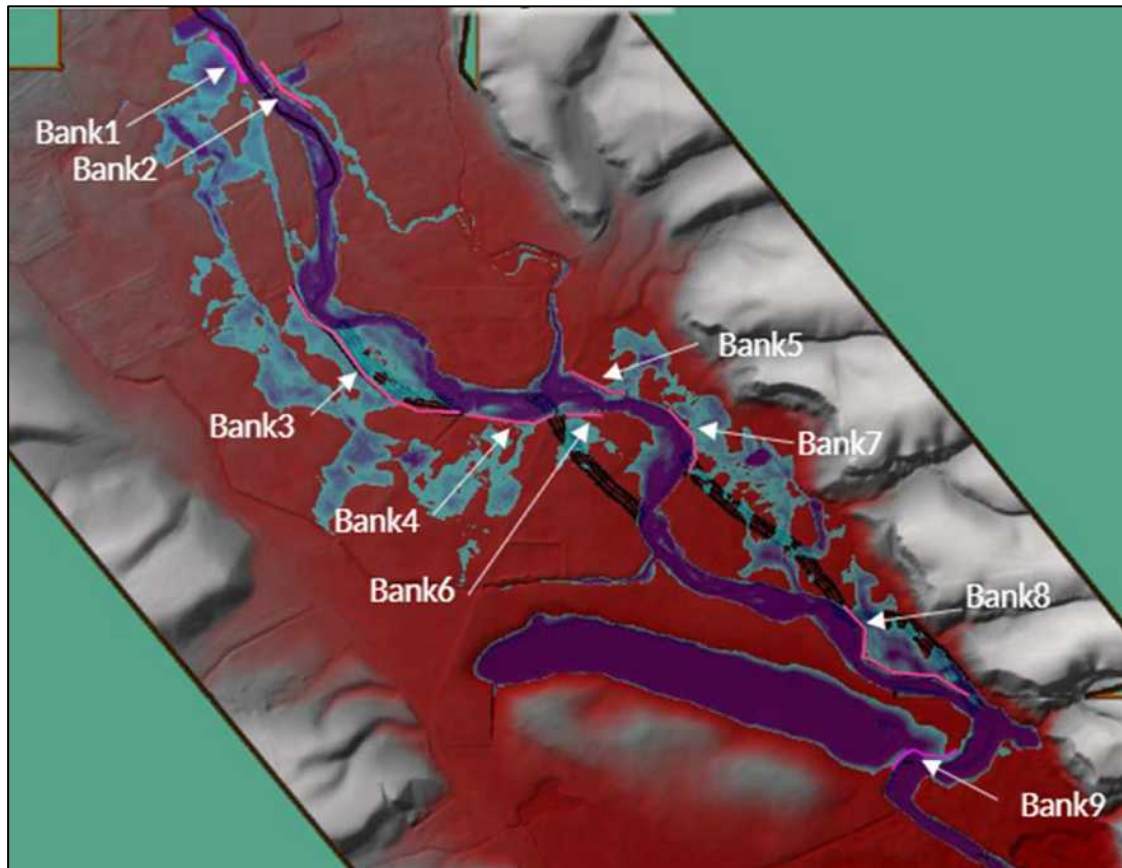


Figure 21 Location of flood protection banks (Source: Attachment [N] Hall Report Figure 4, p5 of the pdf).

A flood management plan will determine when and where temporary barriers need to be constructed and set out trigger points and actions in the event of flooding.

3.6.3 Servicing

Temporary on-site services will be provided appropriate to staffing levels at each stage of the operation. Drinking water will be supplied by roof collection to tanks with UV sterilisation or alternatively a delivery service. Wastewater will be removed from site by a contractor, or alternatively an on-site disposal system may be installed. While servicing details have not been finalised, there are feasible options.

3.6.4 Access, parking and boundary fencing

Sealed double lane vehicle accesses are proposed to be constructed to provide access to the site. Vehicle crossings will be established in accordance with the GDC Subdivision and Land Development Bylaw 2019.

Access (1) to the site in the first year will be on Waikaka Road approximately 1.7km south of the intersection with Waikaka-North Chatton Road, opposite 971 Waikaka Road. A farm vehicle access with gravel surface is established in this location.

Access (2) to the site in years 2-5 will be on Waikaka Road approximately 800m south of the intersection with Waikaka-North Chatton Road.

Access (3) to the site from year 5 to the end of the project may be via the second access, or from Waikaka Road, along a section of road reserve to the east of 1264 Waikaka Road.

The location of each vehicle access is shown in the site plans (**Attachment [E]**) and an overview location of each vehicle access referred to above is shown in **Figure 22** below.



Figure 22 Location plan of proposed vehicle accesses (Source: Grip Map).

A roading network internal to the site will be created which will be changeable as the mine pit progresses. In general, separate roads for light traffic and heavy machinery (haul roads) will be needed. These will be constructed to standards appropriate to the type of vehicle that will be using the road. Roads will be removed progressively as they are no longer needed and/or become overtaken by the mine pit. All internal roads will be removed on completion of the project as part of a rehabilitation plan unless incorporated into farm management plans.

A parking area for staff and visiting vehicles will be provided and constructed in accordance with the parking dimension and manoeuvring requirements in the District Plan. At least twelve parking bays will be provided for light vehicles. The surface of the parking area will be compacted gravel, constructed and managed so as not to create a dust nuisance. There will be sufficient manoeuvring space in the parking area such that vehicles do not need to reverse off site. More than 30m of queuing space is provided between the parking area and the road.

A separate heavy vehicle laydown area and haul road network is provided to separate heavy and light vehicles for safety reasons.

Existing farm fencing will be maintained along the site boundary, except at the vehicle access where a lockable gate will be installed.

3.6.5 Vehicle Movements

During the mine development phase of the project, heavy plant and equipment will be brought to site- over a period of approximately 3 - 4 months. An indicative estimate of truck and transporter movements is summarised in **Table 8**.

Table 8 Estimated heavy vehicle movements during mine development phase (Source: WGML)

Item	Estimated number of heavy vehicle movements
Gold Recovery Plant (300t, assuming 20t loads)	15 over 1 month
Heavy Plant & Equipment (excavators, trucks, bulldozers)	15 - 20 over 3-4 months
Ancillary Equipment & Materials	15 – 20 over 3-4 months
Import of hardfill for roading	1000 over 3 months

During mining operations heavy vehicle movements on and off site will generally be limited to a fuel tanker every 2-3 days and intermittent delivery of plant and equipment (1-5 movements per year).

On completion of mining operations, the GRP, heavy plant and equipment and ancillary equipment and materials will be progressive removed over a 1 to 3-year period. During rehabilitation farm machinery (cultivators, fertilizer, etc) movements will be comparable to current farming requirements.

The maximum number of light vehicle movements will be in the order of 30 vehicles per day (excluding Sundays and public holidays), although car-pooling will be encouraged and/or organised by the Applicant if there is insufficient parking space. Not all light vehicles will be on site at any one time and light mine vehicles will be out and about the mine site. After the initial establishment phase, the maximum number of daily

mine-related vehicle movements will increase traffic movements on the Waikaka Road by about 10 percent or less of current traffic count.³⁸

3.6.6 Lighting

Lighting will be necessary around the GRP, ROM pad, and site office areas, as well as at the active work area within the mine pit, especially during winter months. A preliminary lighting design for the infrastructure area is shown in **Figure 23** below (a larger version is included as **Attachment [E]**). Lighting in the mine pit will be mobile and move with the active area of work. Lights will be directed downward at the work areas, and internal to the site as far as possible.

In the mine pit, lighting will be mobile and will adjust according to the active work zones. Lights will be oriented downward towards the work areas and confined internally within the site wherever feasible. Flood lighting will only be activated during operational hours. Additionally, security lights, smaller in size and equipped with motion sensors, will be strategically placed around the workshop and office areas.

The light positioned at the vehicle access will be designed in accordance with the GDC Subdivision and Land Development Bylaw 2019. Lighting internal to the site will be designed to ensure appropriate lighting of the facility, while minimising light spill to the public road and nearby residences.

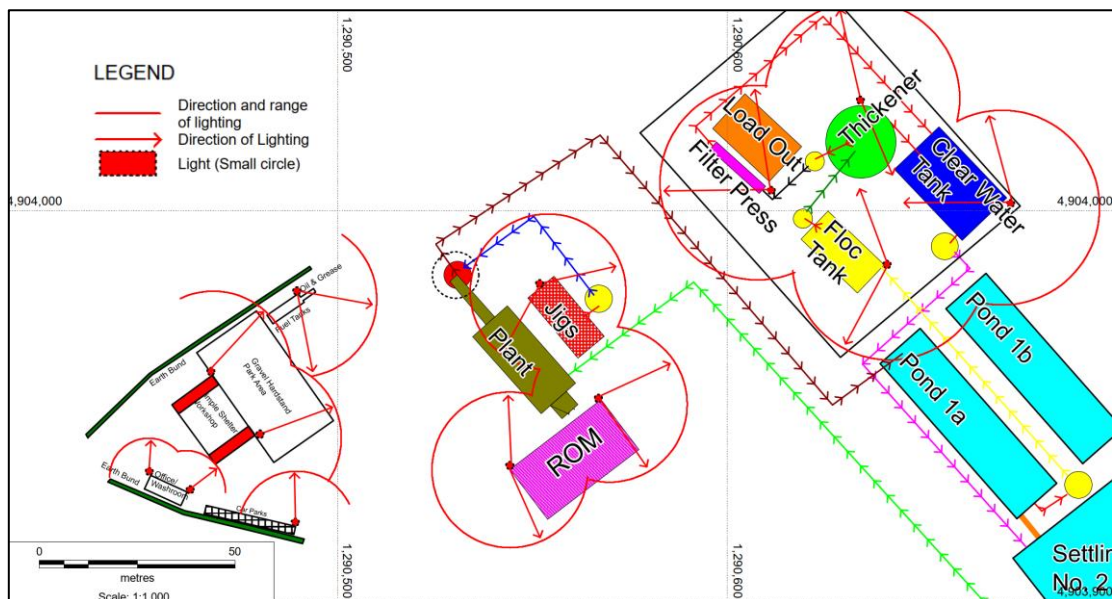


Figure 23 Concept lighting plan for infrastructure area (Source: WGML)

3.6.7 Operational and construction noise

Hegley Acoustics have prepared a Noise Assessment (the “**Hegley report**”) for the proposed mine, included as **Attachment [O]**. The Hegley report identifies that noise generation is typically assessed as two components; construction noise associated with the site establishment assessed against construction noise standards, and the

³⁸ Based on 350 vehicles/day, refer to section 2.4.3.

ongoing operational noise of the mining activity assessed against district plan provisions. Due to the difficulty in separating these two components, Hegley have applied the noise criteria from District Plan Rule 4.5.1 (being the more stringent criteria) in respect of all noise. This is a conservative assessment.

Construction noise is predicted to be between 37-55 dB L_{Aeq} at the six closest sensitive receivers (residences) to the site during the daytime, considering both operational and construction phase noise. Refer to **Attachment [O]**, Section 3.8, Table 2.

3.6.8 Dust management

The Applicant will create a dust management plan, which will include the following methods and any others to be used as necessary to minimise dust nuisance from the site:

- Use of water carts on haul roads and unconsolidated surfaces with water sourced from the settling ponds.
- Construction of internal roads with a compacted gravel surface.
- Slow vehicle speeds on gravel roads.
- Grassing unconsolidated surfaces such as bunds.

3.6.9 Hazardous substance storage and use

Up to 60,000L of diesel storage will occur on site to fuel the machinery. A mobile tanker with 2,000 – 4,000L capacity will transfer fuel from the on-site storage facility to plant located throughout the site.

Any other hazardous substances stored on site will be very small quantities (for example oils and lubricants in the workshop). No petrol will be stored on site.

All hazardous substance storage and use will be undertaken in compliance with the Health and Safety at Work (Hazardous Substances) Regulations 2017. For the on-site diesel storage, a secondary containment system is required and will be provided. Stormwater from the diesel storage area will travel through an oil-water separation device prior to entering the settling ponds.

On site refuelling will occur at the location of heavy machinery on the site, including within the mine pit. Refuelling will not occur within 5m of the Waikaka Stream. Any refuelling will be undertaken with spill mitigation measures on hand to contain and clean up any diesel spills promptly.

3.6.10 Signage

Signage for the project has not yet been designed, however the Applicant anticipates the need to install one sign at the vehicle access, facing the road. The sign will identify the site operator and name, provide contact details, identify site hazards and advise that visitors are to report to the site office.

The site identification signage will be a maximum of 4m² and will contain a company logo and lettering that will be at least 125mm high. The top of the sign will be no more than 3m above ground level. The sign may be freestanding or affixed to boundary fencing.

Additional signs may be installed at boundary locations advising that there is no public access for health and safety reasons. These will be installed at logical locations where the public may approach the site, for example along the Waikaka Road near to the Waikaka Stream. These advisory signs will be no greater than 0.25m², will be affixed to a fence and positioned approximately 1-1.5m above the ground. Within the site there will be appropriate traffic management and water hazard signs that are unlikely to be visible from public spaces.

3.7 Rehabilitation

The project rehabilitation philosophy is to return the land, soil and stream to essentially the same or better as was previously existing. Rehabilitation and monitoring are expected to continue for 3 years after mine closure.

WGML will create a detailed rehabilitation plan for the site which will encompass the below matters in additional detail.

WGML's project team has operated a gold mine at Waikaia between 2013 – 2019 with a very good compliance history and record of rehabilitation at that site. At the time of preparing this report, the Waikaia mine site has now been almost completely rehabilitated. The WGML project team comprises people with the skills and experience to ensure rehabilitation is undertaken as proposed.

3.7.1 Land and soil rehabilitation

The mine void will be progressively filled with overburden and tailings and covered in topsoil that has been separately stockpiled from other site materials. The landform is proposed to be rehabilitation in accordance with **Figure 24** below. Stockpiles will be removed and levelled to conform with the surrounding landform. All internal roads, and fixed and mobile plant and infrastructure will be removed after completion of mining.

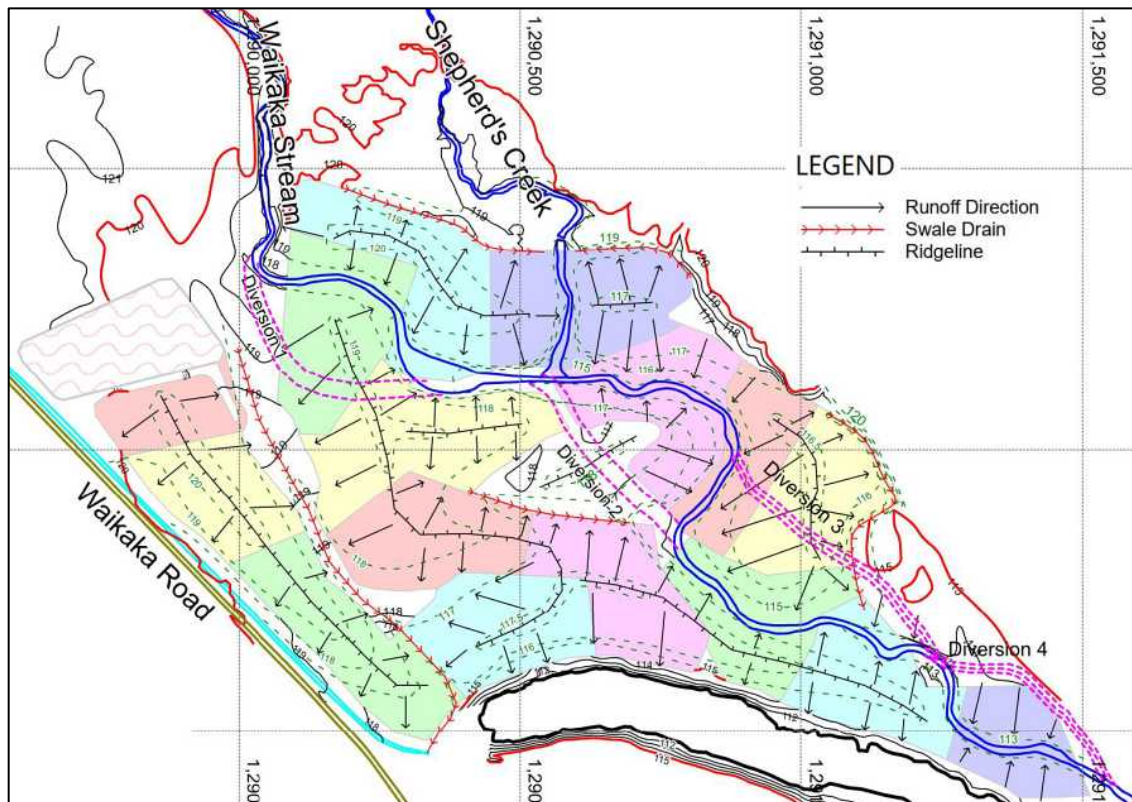


Figure 24 Rehabilitation contour plan, larger version included in **Attachment [E]** (Source: WGML)

The Applicant has liaised with landowners to understand the existing farming use of the project area, productivity and improvements, and to create a rehabilitation concept. The key rehabilitation matters include:

- Stockpiling topsoil separately.
- Ripping the subgrade in the direction of the surface fall prior to the application of the subsoil and the topsoil and ripping topsoil prior to seeding.
- Contouring the site as illustrated in **Figure 24** above.
- Specific cultivation and fertiliser management for the first few years in collaboration with the landowner to achieve a nominated degree of productivity.

Topsoil will be reinstated to a minimum thickness of 200mm, subject to on-site availability. The Applicant will return the mined farmland to at least pre-mining productivity, and this criteria forms part of the access agreements with landowners.

No stockpiles or structures will remain on site on completion of mining and rehabilitation.

3.7.2 Terminal void

A terminal void may or may not remain on site on completion of mining. The uncertainty arises from the several factors, including the amount of 'swell' (positive or negative) as material is removed from the ground, and rehabilitation needs. If there is a terminal

void, the side walls will be contoured to create a stable and planted riparian margin. The void will fill with groundwater and surface runoff to leave a permanent pond.

3.7.3 Stream rehabilitation and ecological enhancements

The Waikaka Stream diversion channel will be constructed as specified in **section 3.5** above. Ecological enhancements to the stream channel will be undertaken in the form of:

- Native riparian planting.
- Creation of habitat enhancements as recommended by the Dungey report.³⁹
- Stabilisation of all erodible surfaces.
- Limitation of stock grazing opportunities within the bed and margins of the watercourse.
- Creation of a complete cobble substrate within the low flow channel.

3.8 Consultation

WGML has undertaken pre-application consultation with the following parties:

- Environment Southland
- Gore District Council
- Landowners within the mine footprint
- Landowners within approximately 1km of the proposed mine footprint
- Hokonui Rūnanga
- Fish and Game NZ Invercargill office
- Department of Conservation
- Land Information New Zealand

Consultation began in 2021 when WGML first proposed mining activity on the site. While many parties were generally comfortable with the proposal, Hokonui Rūnanga expressed concerns about the design of the proposal, particularly with respect to the (formerly proposed) permanent diversion of the Waikaka Stream.

In direct response to the outcomes of consultation, the Applicant has made amendments to the proposal. In particular, the scale of the proposed activity has been reduced and the diversion of the Waikaka Stream and Shepherds Creek have been redesigned to reduce impacts on these water bodies. The Applicant now proposes to temporarily divert the Waikaka Stream and Shepherd's Creek to facilitate works, and

³⁹ Attachment [L], Dungey report, p.50

restore these watercourses to their former alignment, with ecological enhancements forming part of the rehabilitation proposal.

Consultation on the revised proposal has been undertaken in early 2024. A full summary of consultation and copies of pre-application consultation notes are included as **Attachment [G]**.

4 Statutory provisions

4.1 Southland Regional Water Plan

The Southland Regional Water Plan (“**RWP**”) is fully operative and also applies to this activity, though this plan is in the process of being replaced by the Proposed Water and Land Plan.

The site is identified as subject to the following overlays in the RWP:

- Lowland hard bed and soft bed water quality units
- Lowland water quantity classification

The RWP planning map extents of the water quality unit overlay is indistinguishable from the corresponding PSLWP map (refer **Figure 26** below). The site is not located in any groundwater management zone.

A detailed rule assessment is included as **Attachment [F]**. In summary, resource consent is required under the RWP, as follows:

Discharges

- Rule 1 – Discretionary Activity –
 - Discharge of water and contaminants to the Waikaka Stream, via the treatment facilities within the site infrastructure area, from the gold processing return water, stormwater and dewatering operations.
 - Discharge of the entire flow of the Waikaka Stream and Shepherds Creek and resultant entrained sediment, via the temporary diversion channels, to re-join the existing Waikaka Stream.
- Rule 3 – Discretionary Activity – the discharge of water and contaminants from the settling ponds into the western drain and other unnamed drains.
- Rule 16D – Discretionary Activity - Discharge of contaminants from gold processing activity onto and into land where it may enter water, as part of the treatment processes through the settlement ponds and subsequent replacement of tailings back into the mine pit.
- Rule 53 – Restricted Discretionary Activity - Discharge of cleanfill⁴⁰ overburden material into or onto land to backfill the mine pit.

⁴⁰ Overburden material and tailings replaced within the mine pit and used to infill the L&M pond will meet the definition of cleanfill.

Land use

- Rule 22 – Discretionary Activity – To use land for the construction, use, maintenance and decommissioning of a bore or well.⁴¹

Water

- Rule 18 – Non-complying Activity - Take, diversion and use of surface water, relating to the diversion of the entire flow of the Waikaka Stream and Shepherds Creek and return of the flow to the same waterbody.
- Rule 19 – Discretionary Activity – Damming of water in the Waikaka Stream and Shepherds Creek for the purpose of temporarily diverting the flow into a diversion channel.
- Rule 23 – Non-complying Activity - Take and use of groundwater for the purpose of dewatering the mine pit, and use of groundwater for gold processing, dust suppression and site rehabilitation purposes.

Activities in the bed of a river

- Rule 29 - Discretionary Activity - Placement / erection of a dam in, on or over the bed of a river, and any associated bed disturbance and use of the dam structure, for the purpose of diverting the entire flow of the Waikaka Stream and Shepherds Creek into temporary diversion channels.
- Rule 39 – Discretionary Activity - The excavation or disturbance of the bed of the Waikaka Stream and Shepherd's Creek for the purpose of rehabilitation of the channel.
- Rule 44 – Discretionary Activity - The introduction or planting of any plant, or part of any plant, in the bed of the rehabilitated Waikaka Stream and Shepherd's Creek channels.

4.2 Proposed Southland Water and Land Plan

Environment Southland's proposed Southland Water and Land Plan was made partially operative following a council meeting in January 2021. While parts of the PSWLP are still under appeal, all of the rules have immediate legal effect.

The site is identified as subject to the following overlays in the Proposed Southland Water and Land Plan ("PSWLP") (refer **Figure 25**, **Figure 26** and **Figure 27** below):

- Mataura Freshwater Management Unit
- Lowland hard bed and soft bed water quality units
- Upper and Middle Gore Lignite Measures Aquifer Zones
- Mataura significant floodplain

⁴¹ The mine pit walls, and the L&M pond walls (during/after dewatering) meet the definition of a bore or well.

- Oxidising and Gleyed Physiographic Zones



Figure 25 PSLWP Maps; Physiographic zones. Site outline in red. Oxidising physiographic zone indicated by brown shading. Gleyed physiographic zone indicated by pale green shading.

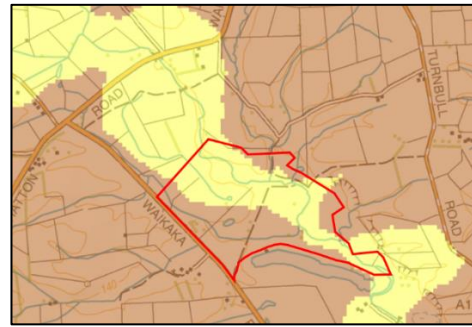


Figure 26 PSLWP Maps; Water Quality Units. Site outline in red. Lowland hard bed indicated by yellow shading. Lowland soft bed indicated by red shading.

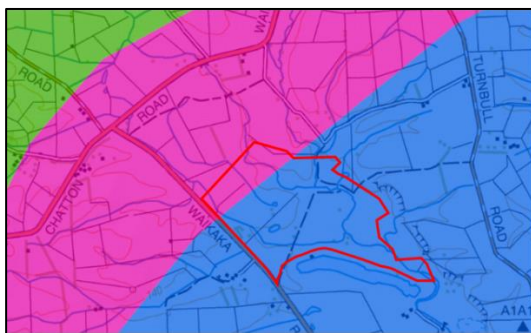


Figure 27 PSLWP Maps; Tertiary Aquifer Zones. Site outline in red. Middle Gore Lignite Measures indicated by pink shading. Upper Gore Lignite Measures indicated by blue shading.

The site is not located in any groundwater management zone identified in map series 3 of the PSLWP.

For clarity, the L&M pond and a number of other former dredge ponds within the site boundary are artificially constructed water bodies and are not a 'river' or 'lake' as defined by the RMA. Therefore section 13 of the RMA does not apply to these ponds.⁴²

A detailed rule assessment is included as **Attachment [F]**. In summary, resource consent is required under the PSWLP, as follows:

Discharges

- Rule 5 – Discretionary Activity -
 - Discharge of water and contaminants to the Waikaka Stream, via the treatment facilities within the site infrastructure area, from the gold processing return water, stormwater and dewatering operations.

⁴² Confirmed by Environment Southland during pre-application consultation. Refer to Attachment [G].

- Discharge of the entire flow of the Waikaka Stream and Shepherds Creek and resultant entrained sediment, via the temporary diversion channels, to re-join the existing Waikaka Stream.
- Rule 34 – Discretionary Activity - Discharge of process return water from gold processing activity onto and into land where it may enter water, as part of the treatment processes through the settlement ponds.
- Rule 42 – Restricted Discretionary Activity - Discharge of cleanfill⁴³ overburden material into or onto land to backfill the mine pit, in circumstances where contaminants may enter water.

Land use

- Rule 53 – Discretionary Activity – To use land for the construction, use, maintenance and decommissioning of a bore or well.⁴⁴

Water

- Rule 49 - Non-complying Activity - Take, diversion and use of surface water, relating to the diversion of the entire flow of the Waikaka Stream and Shepherds Creek and return of the flow to the same waterbody.
- Rule 54 – Non-complying Activity - Take and use of groundwater for the purpose of dewatering the mine pit, and use for gold processing, dust suppression and site rehabilitation.

Activities in the bed of a river

- Rule 60 - Discretionary Activity - Placement / erection of a dam in, on or over the bed of a river, and the associated damming of water (either inside or outside the bed), and any associated bed disturbance and discharge, for the purpose of diverting the entire flow of the Waikaka Stream and Shepherds Creek into temporary diversion channels.
- Rule 71 – Discretionary Activity - The excavation or disturbance of the bed of the Waikaka Stream and Shepherd's Creek for the purpose of rehabilitation of the channel.
- Rule 77 – Restricted Discretionary Activity - The entry into or passage across the bed of a river by any wheeled or tracked vehicle or machine, and any associated bed disturbance and discharge.

⁴³ Overburden material and tailings replaced within the mine pit and used to infill the L&M pond will meet the definition of cleanfill.

⁴⁴ The mine pit walls, and the L&M pond walls (during/after dewatering) meet the definition of a bore or well.

4.3 Regional Effluent Land Application Plan for Southland

The Regional Effluent Land Application Plan (“**RELAP**”) is fully operative and also applies to this activity, though this plan is in the process of being replaced by the Proposed Water and Land Plan.

A detailed rule assessment is included as **Attachment [F]**. In summary, resource consent is required under the RELAP, as follows:

- Rule 5.5.1 – Discretionary Activity – Discharge of ‘effluent’ (process return water) from gold processing onto or into land.

4.4 Southland Regional Air Plan 2016

The Regional Air Quality Plan for Southland (1999) has been partially reviewed, and the current operative Southland Regional Air Plan (2016) incorporates both the operative provisions of the Stage 1 Air Plan review (2016) and the remaining operative provisions of the 1999 Air Plan (Stage 2).

Stage 1 of the 2016 Air Plan review encompasses domestic home heating, outdoor burning, the application of agrichemicals and fertilisers, and fire training, and is fully operative. None of the provisions in Stage 1 are relevant to this application.

The remaining operative provisions of the 1999 Regional Air Quality Plan (“**RAQP 1999**”) is incorporated into the Southland Regional Air Plan 2016 as Stage 2.

Resource consent is required for a Discretionary Activity under Rule 5.5.2 (5)(a) for the discharge to air resulting from mineral extraction and associated overburden storage.

- the extraction of minerals at a rate exceeding 100 tonnes per hour⁴⁵ and
- storage of more than 10,000 cubic metres for material 5mm diameter and larger.⁴⁶

No crushing (i.e., size reduction activities) will take place.

Power for the proposal is provided mostly by the lines network, such that only 150kw of portable generator capacity is required to power the mine pit sump pumps. Any discharge to air from the portable generator is permitted under Rule 5.5.4.

4.5 Gore District Plan

The site is located within the **Rural Zone** under the District Plan (**Figure 28**) and is noted as an area subject to actual or potential flooding as shown in (**Figure 29**).

⁴⁵ The peak rate of extraction is estimated to be 1,600bcm/hour, which converts to approximately 3,200 t/hour (refer to Mining Methodology Report, Attachment [H], p.12).

⁴⁶ Maximum SP1 volume is 446,000 bcm



Figure 28 Zoning Map, approximate full extent of mine and ancillary activities (including Waikaka River diversion) indicated in red (Gore District Plan)

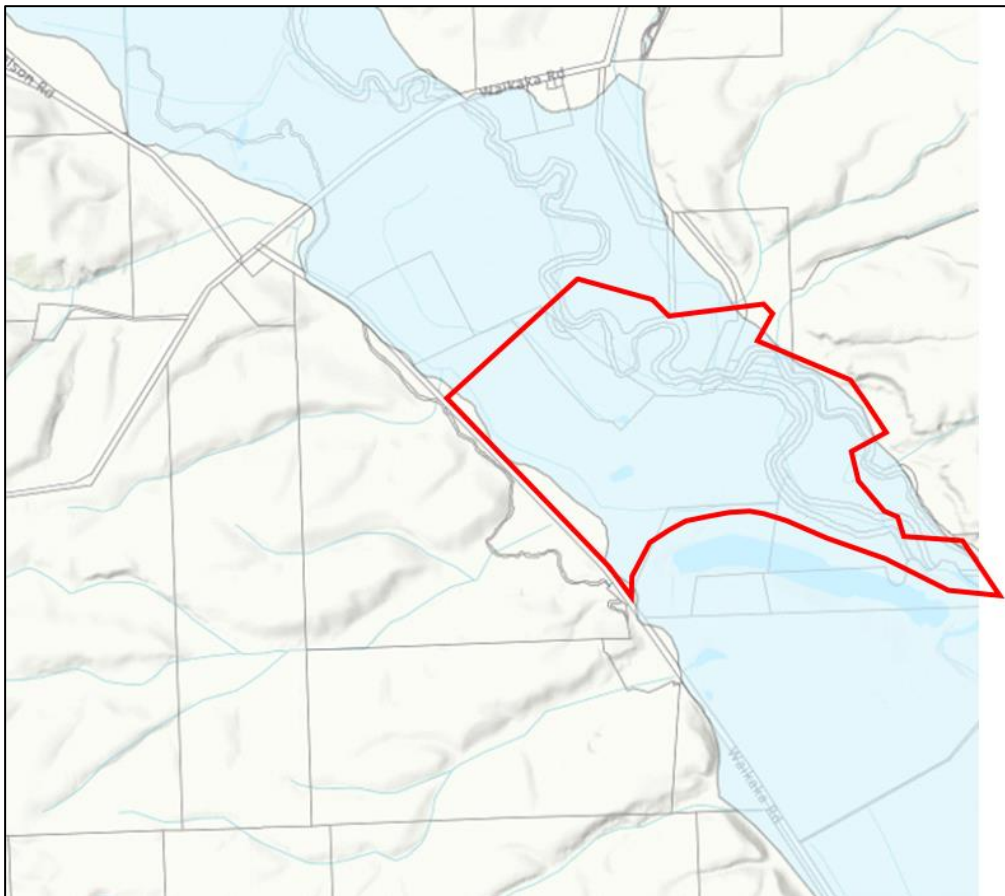


Figure 29 Area subject to actual or potential flooding (Policy 3.4(8)) indicated in light blue. Site extent indicated by red outline (Gore District Plan)

A detailed rule assessment is included as **Attachment [F]**. In summary, resource consent is required under the District Plan for the following:

Discretionary Activity

- Rule 4.2.4 – The use of land for mining and ancillary activities.

Restricted Discretionary Activity

- Rule 4.9.1 - Non-compliance with site coverage standard.
- Rule 4.10.2 - Non-compliance with signage standard.
- Rule 4.13.1 – Earthworks for a period of more than 12months.
- Rule 5.9.4 – Off-street carparking requirements partially not met.
- Rule 6.9 – Above-ground storage of diesel in excess of permitted standard.

4.6 Proposed Gore District Plan

The Proposed Gore District Plan (“**PGDP**”) was notified on 31 August 2023. The PGDP further submission period closed on 28 February 2024 and at the date of writing this report, hearings are underway but no decisions have been made.

The site is located within the **General Rural Zone** under the PGDP and part of the site is noted as an area subject to inundation as shown in (**Figure 30**). The entire site falls within a liquefaction risk overlay.



Figure 30 Area subject to inundation indicated in blue. Site extent indicated in red outline

Many rules in the PGDP do not currently have legal effect. ECO-R1 is the only rule that does currently have legal effect and is relevant to the proposal. The Applicant is likely to remove some form of native vegetation from the project area. There is no native vegetation across large areas of the site that are currently formed as paddocks, though it is likely that there may be some indigenous vegetation along the margins of the Waikaka Stream. The Waikaka Stream is fringed mainly with paddock grasses and willow and a detailed survey of any indigenous vegetation is not available, hence the Applicant prefers to take a conservative approach and trigger this rule to authorise indigenous vegetation clearance and land disturbance in relation to any indigenous vegetation that is unknown but located within the project area.

As a result, resource consent is required for a **Discretionary Activity** under the PGDP.

4.7 National Environmental Standards

4.7.1 Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (“NESC”) (“NESC”)

The Applicant engaged Geoscience to prepare a PSI appended as **Attachment [M]** to investigate the application site for the presence of contaminants.

The ES and GDC contamination registers do not identify any HAIL activities having been undertaken on the application site.

The PSI indicates that the following activities have been undertaken on the application site or within proximity.

- Mining (HAIL E.7) – the site has been previously mined for gold on a number of occasions, as described in **section 2.2** above. The assembly and storage area for L&M's plant and machinery is encompassed within this category, as Geoscience do not consider it to be on a scale commensurate with Class F Vehicle refuelling, service and repair.⁴⁷
- Landfill (HAIL G.3) – a closed landfill is present adjacent to Shepherd's Creek, to the east of the mine. This is outside the project area.
- Agricultural persistent use of pesticides (HAIL A.10).

The NESC is applicable to the project. The activity includes disturbing the soil described in clause 5(4) of the NESC and the land is described by both clause 5(7)(c) and 5(8)(d) of the NESC. A detailed site investigation (“**DSI**”) does not exist, and resource consent is required under clause 11 of the NESC for a **Discretionary Activity**.

⁴⁷ Attachment [M], Geosciences PSI, p.9

4.7.2 Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (“NES-F”)

The Applicant commissioned Mr Ross Dungey to undertake an ecological assessment of the site, including the Waikaka Stream and a number of existing ponds and farm drains within the project area. The ponds are all old dredge ponds and thus do not meet the definition in the NES-F of natural wetland. Mr Dungey did not identify any natural wetlands within the project area.

The proposal does not involve the installation of any structures affecting fish passage.

There are no other relevant provisions in the NES-F.

4.7.3 Resource Management (National Environmental Standards for Air Quality) Regulations 2004

The only contaminant that may arise from the proposal is PM10, as a small proportion of dust. However, with appropriate control practises as outlined in **section 3.6.8** above, the discharge of PM10 to air is expected to be negligible. Hence consent is not required under the NES for Air Quality.

4.8 National Policy Statements

The following National Policy Statements are relevant to this proposal:

- National Policy Statement for Freshwater Management 2020
- National Policy Statement for Highly Productive Land 2022
- National Policy Statement for Indigenous Biodiversity 2022

These are addressed in section 6.2 below.

The National Policy Statement for Urban Development 2020 is not relevant to this proposal.

4.9 Water Conservation (Mataura River) Order 1997

Although the Waikaka Stream is a tributary of the Mataura River, it is not included in the Water Conservation Order⁴⁸.

It is considered that the site is sufficiently distant from the Mataura River (at least 20 kilometres, measured linearly without accounting for sinuosity in the river), such that effects of the proposal, subject to the proposed controls, will be indiscernible in the context of the catchment and the provisions of the Water Conservation Order are not applicable to this proposal.

⁴⁸ With reference to section 2 of the Water Conservation (Mataura River) Order 1997, the definition of ‘protected waters’ does not include the Waikaka Stream.

4.10 Consent Requirement Summary

Overall resource consent is required for a **Non-complying Activity**. A summary of all resource consents required is provided in **Table 9** below. Permitted activities forming part of the proposal are identified in **Attachment [F]**.

Table 9 Summary of resource consent requirements

Environment Southland			
Ref	Consent Type	Activities	Activity Status
1	Land use consent s9	Use land for the construction, use, maintenance and decommissioning of a bore or well.	Discretionary
2	Land use consent s13	The entry into or passage across the bed of a river by any wheeled or tracked vehicle or machine, and any associated bed disturbance and discharge.	Restricted Discretionary
		Placement / erection of a dam in, on or over the bed of a river, and any associated bed disturbance and use of the dam structure, for the purpose of diverting the entire flow of the Waikaka Stream and Shepherds Creek into temporary diversion channels.	Discretionary
		The excavation or disturbance of the bed of the Waikaka Stream and Shepherd's Creek for the purpose of rehabilitation of the channel.	
		The introduction or planting of any plant, or part of any plant, in the bed of the rehabilitated Waikaka Stream and Shepherd's Creek channels.	
4	Water permit	Damming of water in the Waikaka Stream and Shepherds Creek for the purpose of temporarily diverting the flow into a diversion channel.	Discretionary
		Take, diversion and use of surface water, relating to the diversion of the entire flow of the Waikaka Stream and Shepherds Creek and return of the flow to the same waterbody.	Non-complying
		Take and use of groundwater for the purpose of dewatering the mine pit, and use of groundwater for gold processing, dust suppression and site rehabilitation purposes.	

Environment Southland (continued)			
Ref	Consent Type	Activities	Activity Status
5	Discharge permit	Discharge of cleanfill overburden material into or onto land to backfill the mine pit, in circumstances where contaminants may enter water.	Restricted Discretionary
		Discharge of water and contaminants to the Waikaka Stream, via the treatment facilities within the site infrastructure area, from stormwater, gold processing return water, and dewatering.	Discretionary
		Discharge of the entire flow of the Waikaka Stream and Shepherds Creek and resultant entrained sediment, via the temporary diversion channels, to re-join the existing Waikaka Stream.	
		Discharge of water and contaminants from settling ponds into the western drain and other unnamed drains.	
		Discharge of stormwater, gold processing return water, and dewatering water onto and into land where it may enter water, as part of the treatment processes through the settlement ponds.	
6	Discharge to air	Discharge to air from mineral extraction processes and associated overburden storage.	Discretionary
Gore District Council			
Ref	Consent Type	Activities	Activity Status
7	Land use	Breach of standards (light spill, signage, earthworks, landscaping in carparks, hazardous substance storage and use).	Restricted Discretionary
		Mining activity in the Rural Zone.	Discretionary
		Indigenous vegetation clearance and land disturbance (PGDP).	
8	Land use	NESCS – soil disturbance and change of land use.	Discretionary

5 Assessment of effects

5.1 Overview

In accordance with Section 88 and Schedule 4 of the RMA an assessment of any actual or potential effects on the environment that may arise from the proposal is required with any details of how any adverse effects may be avoided, remedied or mitigated. Accordingly, the below is an assessment of effects relative to the scale and significance of the proposed activity.

The proposal will have a range of actual or potential effects on the environment and this assessment is addressed under the following headings:

- Geotechnical effects
- Acid Mine Drainage
- Groundwater quantity effects
- Groundwater quality effects
- Surface water quantity effects
- Surface water quality effects
- Ecological effects
- Effects on erosion and bed and bank stability
- Flooding effects
- Effects of dust on air quality and amenity
- Flooding effects
- Effects on recreation and public access
- Effects of signage
- Transport effects
- Effects of hazardous substance storage and use
- Archaeological and heritage effects
- Effects on amenity and landscape character values
- Effects on land resource and soil productivity
- Effects relating to potentially contaminated land
- Effects on social and economic wellbeing
- Effects relating to climate change

5.2 Geotechnical effects

T+T has assessed the geotechnical effects of this proposal including managing the likelihood of pit slope instability, with a focus on the potential for slope instability to encroach on site boundaries, and/or to have off site environmental effects. The potential for adverse effects is addressed by the proposed pit slope angles, configurations, and mining method, along with the recommendation for an observational approach to pit stability and adjustment to the mining method as indicated from assessment of the observation results.

T+T conclusions and recommendations are detailed within the Geotechnical Assessment Report ("**T+T Report**") appended as **Attachment [J]** and briefly summarised below.

5.2.1 Pit wall stability

The proposed pit wall configurations have been arrived at by iterations of the stability analysis. Different locations require different slope configurations to meet the proposed stability criteria. These are shown in Table 5.2 and Appendix A of the T+T Report.

The slope angles and configurations described within the T+T Report are considered to provide a slope design that is defensible at feasibility design and consenting stage. They also allow for the management of the current uncertainty by allowing sufficient space (and time) to react to any observed instability by applying measures such as flattening slope angles, buttressing slopes, and dewatering slopes.⁴⁹

5.2.2 Trafficability

Each geotechnical unit is assessed for trafficability in the T+T report, Table 5.3. Overall, the materials are expected to be trafficable when dry, with T+T recommending a number of measures to increase operational efficiency. Clean tailings from the GRP will be used for sheathing haul roads, ramps and backfill where and when required.

5.2.3 Stockpiling

T+T advise that a 1.5H:1V slope gradient for the stockpile is appropriate with material no more than 10m in height. This forms part of the Applicant's proposal.

5.2.4 Backfilling the mine void

T+T advise that an overall slope gradient of 2H:1V is appropriate across the proposed mine site for backfill returned to the mine void, provided continuous observation for local instability on the backfill is undertaken.

⁴⁹ Attachment [J], Tonkin + Taylor report, page 17

5.2.5 Waikaka Stream diversion

T+T advise that the Waikaka Stream diversion should be constructed on a compacted layer of low permeability Silt/Clay material which would serve to perch the stream flow and reduce potential leakage of groundwater flows into the mine pit. The Applicant does not propose to do this in order to replicate the natural condition of shallow groundwater losses to the Waikaka Stream.⁵⁰

5.2.6 Terminal pond

T+T recommend a design slope gradient of 3H:1V for long term slope stability of any terminal pond. This forms part of the Applicant's proposal.

5.2.7 Mine pit adjacent to the L&M pond

Pit slopes will be excavated parallel to the existing L&M pond along cells B01 to B03. T+T state:

*"The pond profile, thickness of tailings 'mud' infill, and grading of insitu gravel lenses suggest that it is relatively unlikely that hydraulic connection between the pond and the proposed pit cells could lead to rapid failure of pond water and 'mud' into the mine. While assessed as unlikely the consequence for disruption to mining is significant."*⁵¹

T+T provide a specific monitoring regime for excavations adjacent to the L&M pond in section 6.2 of the Geotechnical Assessment report, in order to mitigate risk in particular adjacent to the L&M pond. The Applicant adopts these recommendations.

5.2.8 Mine pit adjacent to road boundary and Waikaka Stream

Figure A5 and Table 5.2 of the T+T Geotechnical Assessment provide specifications for the pit wall slope along the road boundary. The pit slope configuration specification does alter depending on the location, height, and other factors. An example is shown in **Figure 31** below, where the minimum buffer is half the pit wall height, between the road boundary and the crest of the pit slope.

⁵⁰ Attachment [K], Heller report, p.6

⁵¹ Attachment [J], Tonkin + Taylor report, section 6.2, page 23

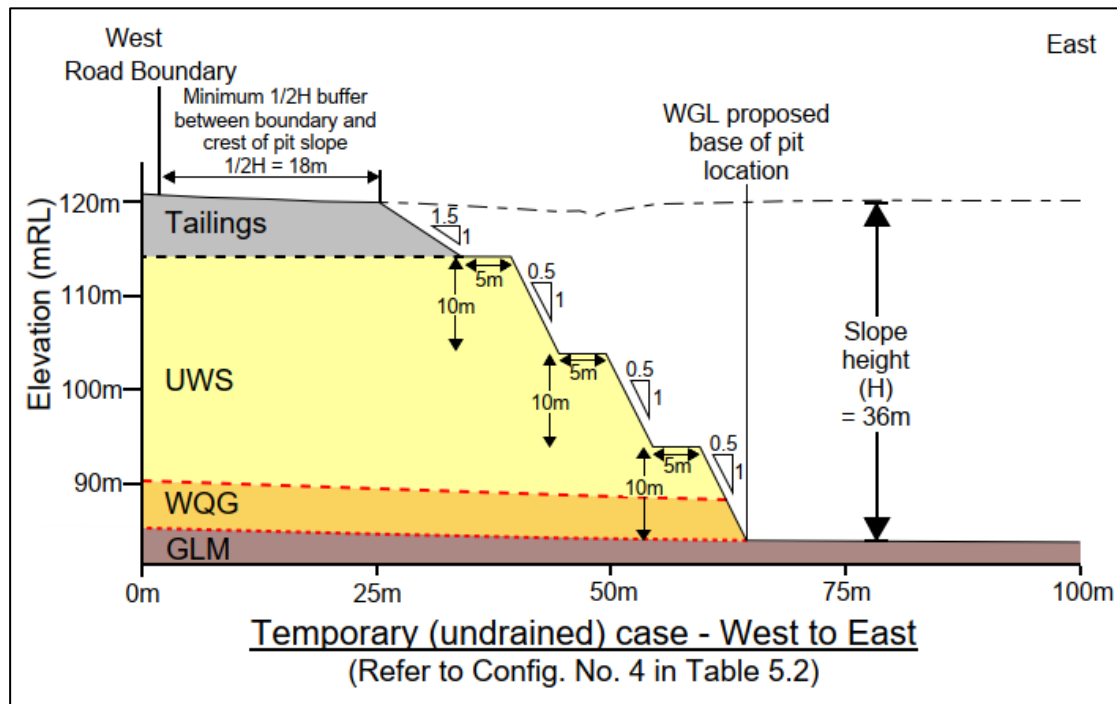


Figure 31 Example of schematic cross section of slope configuration at road boundary (Source: T+T, Attachment [J], Figure A5)

5.2.9 Summary of geotechnical effects

T+T recommend an overall observational approach to slope stability performance and note that it may be possible to operate the mine with steeper slopes than designed. The proposal will operate in general accordance with the recommendations in the T+T Geotechnical Assessment, though it is considered appropriate for an adaptive management approach to be taken, so that the geotechnical risk management can be altered in response to observations of the actual performance of the materials on site.

It is considered that the effects on the surrounding environment can be mitigated to an acceptable level by adopting the recommendations of the T+T Geotechnical report regarding road corridor setbacks and the monitoring regime set out in section 6.2 for excavations adjacent to the L&M pond.

In regard to management of mine pit wall stability and other geotechnical matters covered by the T+T Report, it is considered appropriate for these to be addressed through a management plan, informed by geotechnical expertise, and adapted as necessary throughout the mine life.

5.3 Acid Mine Drainage

The Applicant has engaged Mine Waste Management Limited (“MWM”) to complete an assessment of effects of acid and metalliferous drainage (**Attachment [P]**)⁵². The

⁵² Note that the MWM Report references a previous project design. This document should be referred to for information on the project design. The change to the design of the project does not impact on the conclusions in the MWM report as the project occurs within the spatial extent considered by the MWM Report.

report has assessed the potential for acid forming materials to be created by excavation and subsequent exposure of sub-surface materials to oxygen and water. MWM advise that there are potentially acid forming (“PAF”) materials (primarily the iron sulphides, pyrite and marcasite associated with carbonaceous layers) present in the site geology (refer to section 5.1 of the MWM report for the complete list of PAF materials). PAF materials comprise approximately 15% of the estimated total materials disturbed by the project, however the overall net acid producing potential for the project is negative, resulting in classification of the project as overall non-acid forming⁵³.

MWM conclude that: *“with good materials management, the risks for AMD can be minimised such that the effect on the receiving environment is less than minor.”*⁵⁴

Good materials management practises recommended by MWM and which the Applicant will adopt include the following measures outlined in section 6 of the MWM report:

- Carbonaceous materials encountered in the overburden will be directed to the backfill rather than stockpiles and placed as low in the backfill as is reasonably practical.
- All PAF material mined with the wash is expected to report to the GRP tailings and will be continuously back hauled to the pit for ultimate disposal in the back fill.
- Stockpile drainage will be intercepted and directed to the settling ponds. Discharge from the settling ponds can be monitored for pH and treated if necessary.
- All PAF materials will be placed back into the pit below the level of the long-term water table and will not form part of long-term (>5 years) stockpiling out of the mine pit.
- Engineering controls to manage PAF materials (described in section 6.2 of the MWM report) will be incorporated into mine operational management.
- All surface run-off from the ROM pad and SP1, and process water is discharged via the settling ponds and so presents the opportunity to monitor and treat water prior to discharge if necessary.
- Creation of an AMD management plan, which incorporates the above engineering controls, performance monitoring of AMD risks, and development of a trigger action response plan (“TARP”).

Processing residues, which present the greatest potential risk of AMD, is a term which includes the slimes, material removed from the settling ponds and the tailings from the GRP. These materials will be transported regularly from the Infrastructure Area by truck

⁵³ Attachment [Q], MWM report, page iii.

⁵⁴ Ibid, page iv.

and placed back into the mine pit, below the long-term water table. The Applicant also notes that the other PAF materials, such as the Gore Lignite Measures (the highest potential for AMD by volume), will be backfilled into the pit and following groundwater rebound will be below the water table and pose no risk of AMD.

MWM note that on closure of the mine, provided PAF materials are replaced below the long-term water table, the potential for ongoing AMD is eliminated.⁵⁵

MWM performed some further analysis of site-specific geochemistry to determine potential contaminants of concern, which is outlined in their supplementary memorandum also included as **Attachment [P]**. MWM determine that potential contaminants of concern could include Al, As, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, and Zn.⁵⁶ MWM further note that elevated contaminant levels are unlikely given the low proportion of PAF materials, and that overall the project materials are non-acid forming due to an excess of acid-neutralising materials.⁵⁷ However, this data will be used to inform the development of a monitoring regime and TARP forming part of an overall AMD management plan. The Applicant proposes to create the AMD plan prior to starting physical mining works but after the commencement of the consent.

The MWM investigations demonstrate that the overall project risk of AMD is low, and outlines methods of operation to further minimise potential for AMD creation. If there is contamination of surface run-off or process waters, these are unconnected to natural surface or groundwater bodies until the point of discharge to the Waikaka Stream. Ongoing monitoring and the development of a TARP are feasible and practical methods to mitigate the potential for any discharge of contaminated water to surface water bodies.

5.4 Groundwater quantity effects

The Applicant has engaged Environmental Associates Ltd to provide a technical assessment of the proposed groundwater take and discharges (the “**Heller report**”), appended as **Attachment [K]**.

5.4.1 Effects on surrounding well users

The Heller report provides a conservative assessment of the effects of the proposed dewatering drawdown effects on surrounding groundwater users. The predicted radius whereby dewatering drawdown from the mine pit will exceed the acceptable criteria in the ES PSLWP, and well users within that radius are summarised in **Table 10** below.

⁵⁵ Attachment [Q], MWM report, page iv.

⁵⁶ Attachment [Q], MWM memo commencing at page 95 of the pdf, page 5 of the memo

⁵⁷ Ibid, page 4 of the memo

Table 10 Potentially affected wells by dewatering drawdown effects

Aquifer	Drawdown radius - interference effects exceed acceptable criteria	Potentially affected wells
Water table aquifer	554m	F45/0650 F45/0235
Intermediate confined aquifer	1539m	None
Lower confined	6908m	F45/0214 CF12/0572 F45/0618 F45/0543 F45/0223 F45/0183 F45/0204 F45/0541 F45/0238 F45/0553 F45/0237

The assessment is conservative for a number of reasons:

- The assessment is based on maximum dewatering rates sought plus contingency. These rates are expected to be much higher than long term average dewatering rates, as evidenced by the drawdown modelled at the mine pit radius exceeding the actual drawdown proposed.⁵⁸
- The mine pit cell moves, varying the proximity of the dewatering drawdown to a potentially affected well. The predicted drawdown is based on the smallest distance between the mine pit and the surrounding well. In reality, this distance will vary and so will drawdown effects.

Due to the conservative nature of the assessment, there is potential that the identified wells will not experience the predicted degree of effect. To mitigate the effects on the identified well owners, the Applicant proposes that the water levels in the identified wells are monitored, and if an unacceptable drawdown effect occurs, the Applicant will arrange an alternative water supply. A condition to this effect is proposed in **Attachment [I]**.

5.4.2 Efficiency of use

Groundwater will be pumped from the base of the mine pit, from an in-pit sump. This methodology ensures that groundwater is not lowered any further than necessary to create a dry pit working area, meaning maximum efficiency in the volume of groundwater removed from the pit is achieved.

⁵⁸ Attachment [K], Heller report, Table 5.1

Groundwater abstracted will be pumped to the settlement ponds, where it will be used for gold processing. Process return water from the GRP is discharged to the settlement ponds and then re-used again through the GRP. Processing return water and dewatering water is discharged once the volume of water exceeds the secondary settlement pond storage capacity and overflows into the tertiary settlement pond.

The Applicant will ensure that pipes conveying groundwater are maintained to avoid leaks and wastage of water.

Overall, the quantum of groundwater abstracted is reasonable and the groundwater that is abstracted will be used efficiently.

5.4.3 Allocation

The site is not located in any regional plan groundwater allocation management zone, and so effects on allocation are considered specific to the nature of each aquifer.

The surface unconfined aquifer is considered to lose water to the Waikaka Stream, and as such the water drawn from this aquifer is returned to the end receiving waterbody, within a short timeframe and distance, by way of the discharge. Effects on the surface unconfined aquifer are therefore considered to be less than minor.

The Heller report conservatively calculates the recharge of both the intermediate and lower confined aquifers as 55.9L/s. Further, the maximum annual proposed rate of take (from both confined aquifers is 24.7L/s) plus existing takes (estimated at 5.5L/s) are equivalent to 54% of the predicted aquifer recharge.⁵⁹ The Heller report concludes that the calculations are conservative by nature and include contingency allowance in the maximum rates, meaning the actual abstraction (in combination with existing takes) will be closer to 44% of the predicted aquifer recharge. The report concludes:

“...in terms of groundwater allocation, the activity fits within recognised groundwater allocation criteria for both the unconfined water table and Tertiary confined aquifers. Considering the non-consumptive and temporary nature of the requested activity, the effect upon overall groundwater allocation is considered to be no more than minor.”⁶⁰

5.4.4 Aquifer Integrity

Aquifer integrity can be undermined by excessive abstraction or modification of subsurface materials by mining and overburden replacement.

Considering the saturated thickness of the existing aquifer and extent of predicted drawdown, the Heller report concludes:

“...the lowering of the unconfined aquifer water level presents a nil to low risk of any aquifer compression or loss of potential storage capability in that regard.”⁶¹

In regard to the intermediate and lower confined aquifers, the Heller report concludes:

⁵⁹ Attachment [K], Heller report, p.28

⁶⁰ Ibid, p.28

⁶¹ Ibid, p.29



“Any potential lowering of head within the overburden and aquifer formations..., is most unlikely to result in any formation compression or loss of potential storage capability. Given the short-term and transient nature of the mine pit progression and commensurate groundwater abstraction, any plausible aquifer compression on the above basis would be of a small and limited extent, and present a low risk of any associated environmental effect.”⁶²

The proposed abstraction of groundwater is not expected to create any more than minor adverse effects on aquifer integrity.

Overburden removed from the mine void will be replaced back into the void, however it is unlikely to be replaced in the same location or sequence (apart from topsoil). The Heller report considers that the existing aquifers will certainly be modified, considering the native material will be replaced (though in a different sequence) and existing very low transmissivity nature of the aquifers, the activity:

“...will result in no obvious change to the general hydraulic nature and functioning of the aquifer(s) and adjacent materials, and incur no effect upon any use of the aquifer or any environmental value.”⁶³

Overall, the effects on aquifer integrity will be less than minor.

5.5 Groundwater quality effects

5.5.1 Dewatering and function of the mine void as a bore

Excavation and dewatering of the mine pit will create sediment as a potential contaminant. Stormwater will also be generated from the mine access ramps, on site roads and working areas. Contaminants in stormwater will be predominantly sediment. Some refuelling of heavy machinery will occur within the mine void and will be undertaken with spill mitigation measures on hand to contain and clean up any diesel spills promptly. These measures will ensure that the risk of diesel contamination of groundwater is minimised.

Groundwater and stormwater entering the mine void will be directed via drainage channels to a low section at the base of the mine pit. Water in the mine pit will be continuously pumped to the settlement ponds creating a positive head within the aquifer toward the mine void. The Heller report concludes:

“Such that with this process occurring, there is no potential for any of the sediment-laden mine water, or stormwater, to be introduced into the aquifer, or contribute to any flow within the aquifer that regresses away from the mine pit.”⁶⁴

The Heller report recommends that dewatering continues to maintain the positive head toward the mine void until all infilling is completed. The Applicant adopts this mitigation.

⁶² Attachment [K], Heller report, p.29

⁶³ Ibid. p.30

⁶⁴ Ibid. p.30



On the basis of the above, the effects on groundwater quality as a result of dewatering and the function of the mine void as a 'bore' will be less than minor.

5.5.2 Discharge from the settling ponds and drains

The settling ponds will receive process water returned from the GRP, and stormwater and dewatering water pumped from the mine void. The settling ponds are not designed to discharge to groundwater as they also function as a water storage system for the GRP. There is likely to be some localised interaction between the drains and the upper unconfined aquifer.⁶⁵

The Heller report provides an analysis of the effect of potential discharge to groundwater, noting that any discharge will be from the tertiary polishing pond and conveyance drains to the upper unconfined aquifer, and comprise a small amount of suspended sediments, which will be limited by the low permeability of the unconfined aquifer.⁶⁶

Water enters the drains following treatment through the settling ponds. Any discharge to groundwater from these pathways will be of a quality to discharge to the Waikaka Stream, as no further treatment occurs after the point of discharge to the western drain.

The Heller report concludes:

*"Given the relatively low permeability of the water table aquifer, and that the polished discharge will be of similar content (water quality) to that of the natural groundwater, any effect is most likely to be not measurable."*⁶⁷

Overall, the effects of discharge of dewatering water, GRP process return water and stormwater on groundwater quality are considered to be less than minor.

5.5.3 Effects from infill of mine pit

Material used to infill the mine void will comprise only materials derived from the mine pit, being overburden removed from other parts of the project area, tailings from the GRP, filter cake produced by the filter press in the slimes treatment plant and slimes removed from the settling ponds. There are no additives to the material placed in the mine void except for flocculant and water. Flocculants will adhere to sediment particles and will not adversely affect groundwater quality.

The Applicant will retain control of the site, noting that vehicle access to the mine pit will be gated and locked except when staff are present. Farm access may be required and will be arranged directly with the farmer with consideration to the Applicant's health and safety management. No material will be placed into either the mine void or the L&M pond reclamation except the materials described above and unauthorised dumping of material in the mine void will be prevented by the Applicant's operational controls.

⁶⁵ Attachment [K], Heller report, p.31

⁶⁶ Ibid

⁶⁷ Ibid



No adverse effects on groundwater quality are considered to arise as a result of infilling of the mine void.

5.5.4 Effects of terminal pond

The Applicant considers it likely that a terminal void will remain on the site, which will be rehabilitated to a pond. The Heller report recommends that dewatering continues to maintain the positive head toward the mine void until all infilling is completed.⁶⁸ The Applicant adopts this mitigation.

The terminal pond will likely interact with groundwater aquifers, however any seepage away from the pond will be of similar quality to existing groundwater⁶⁹. There are multiple existing mining remnant ponds on the site which will be infilled by the proposed mine. The overall effect is replacing multiple existing ponds intercepting groundwater with a single terminal pond.

The terminal pond will have battered edges planted to form a riparian margin, which will provide a degree of water quality treatment of surface run-off water entering the terminal pond.

The effects of a terminal pond on groundwater quality are considered to be less than minor.

5.6 Surface water quantity effects

5.6.1 Stream depletion from dewatering

The Heller report (**Attachment [K]**, section 5) provides an assessment of the effects of dewatering on the Waikaka Stream flow. The predicted maximum stream depletion effect is 3.0L/s, which is 1.1% of the Waikaka 7-day mean annual low flow.⁷⁰ In addition, the discharge rate from the site will be greater than the rate of stream depletion. Considering the low rate of stream depletion and the contribution to the Waikaka stream flow from the discharge of groundwater from the site, the effects of stream depletion will be no more than minor.

5.6.2 Effects of discharge on Waikaka Stream flow

Table 5.4 of the Heller report (replicated below) provides a comparison of the proposed discharge volume and the Waikaka Stream flow for different scenarios.

⁶⁸ Attachment [K], Heller report, p.36

⁶⁹ Ibid. p.37

⁷⁰ Ibid, p.25

Table 11 Groundwater discharge and stream flow scenarios (replication of Table 5.4, Heller report, p. 33)

Discharge/flow scenario	Discharge from groundwater (L/s)	Waikaka Stream flow (L/s)	Total resulting stream flow (L/s)
Short term daily at low flow	34.7	277	311.7
Long term/annual at low flow	21.5	277	298.5
Short term daily at median or greater flow	47.3	1,070	1,117.3
Long term/annual at median or greater flow	30.2	1,070	1,100.2

The discharge is a small volume in comparison to the Waikaka flow. At low flow in the Waikaka Stream, the discharge is 7.8-12.5% of the Waikaka flow. At median flow, the discharge is 2.8-4.4% of the Waikaka flow.

Overall, the proposed discharge will contribute to the Waikaka flow to a small but noticeable degree. Effects of this volume on ecological values and flooding are discussed in sections 5.8 and 5.10.1 respectively below.

5.6.3 Effects on downstream users

There are no other surface water takes located at the proposed mine site or within 5 km downstream.⁷¹ For any other surface water users further downstream, any effects of the proposal will be indiscernible. There are no potentially adversely affected existing surface water takes.

5.6.4 Waikaka Stream and Shepherds Creek diversions

No net loss of flow is anticipated to occur from the diversion of the Waikaka Stream and Shepherd's Creek, as the entire flow will be diverted. Additionally, the Waikaka Stream will experience a net gain in flow during the project, due to the ongoing discharge of dewatering water.

The Applicant proposes to complete the diversion of flow in a step wise fashion to provide for a gradual transition to the new channel. The final step will be no less than the 7-day MALF (e.g., 277L/s in the Waikaka Stream) to ensure there are no adverse effects in the existing channel as a result of excessively low flows.

⁷¹ Attachment [K], Heller report, p.26

5.7 Surface water quality effects

5.7.1 Waikaka Stream and Shepherds Creek diversions

The diversion of the flow of the Waikaka Stream and Shepherds Creek into temporary diversion channels has the potential to result in entrainment of sediment in surface water.

Construction of the diversion channels will be undertaken 'offline', and the stream flow only moved into the new channel once it is constructed. The bed of the diversion channels will be constructed with a base of gravel and rock and the banks and margins of the diversion channel will be sown with grass prior to diverting the flow to the new channel.

The principal contaminant of concern is suspended sediment. This will be minimised by firstly ensuring an adequate degree of erosion control within the new channel and at the transition between the old and new channel. Exposed surfaces within temporary diversion channels will be stabilised by methods including rock rip rap, cobble or gravel bed material, grassing berms and embankments, prior to diverting any flow into the diversion channel.

Secondly, a number of sediment control measures will be installed where appropriate to isolate the construction areas and to mitigate any initial turbidity. The Hall report (**Attachment [N]**) recommends that these are installed initially within the new channel at pool and riffle features where water speeds are generally slower.⁷²

Connection of the downstream connection between a diversion channel and existing Waikaka Stream will be undertaken first, using machinery positioned on the bank of the waterway and with a coffer dam or similar in place to contain sediment generated by the construction work. Disturbed areas will be stabilised with rock, gravel, geotextile or planting as soon as practicable following the disturbance. Any dirty water within the coffer dam area will be pumped out before the dam is removed. This water will be discharged either into the mine void or onto nearby pasture land to ensure it does not re-enter the channel.

The upstream connection between a diversion channel and existing watercourse will be undertaken using a similar methodology to the downstream connection. However, once the connection is complete, the coffer dam will be removed slowly so as to divert flow into the new channel in a step wise fashion, regulating inflows to the new channel in a gradual manner so as to minimise risk of immediate erosion.

The construction methodology is expected to be carried out in a way that minimizes sediment discharge into the Waikaka Stream. It is anticipated that this approach will comply with the PSLWP Appendix E standards for 'Lowland hard bed' water quality. A condition to this effect is offered as part of the proposal.

⁷² Attachment [N], Hall report, p.5

The effects on the water quality of the Waikaka Stream arising from the diversion construction works are expected to be temporary, with the water quality returning to the same as upstream of the diversion within the reasonable mixing zone. The Applicant proposes to monitor the suspended solids in the diversion channel water, and upstream of the diversion channel, and take further actions to reduce erosion if the diversion channel is contributing excessively to turbidity in the Waikaka Stream.

The Applicant will provide a detailed diversion channel design, construction methodology, planting and habitat rehabilitation specification and monitoring plan prior to the creation of any diversion channels.

5.7.2 Discharge of dewatering and GRP process return water and stormwater

The Heller report (**Attachment [K]**, section 5) provides an assessment of the effects of dewatering discharge on the Waikaka Stream water quality. Existing groundwater quality is represented and compared to Waikaka Stream water quality parameters in Table 5.3 of the Heller report. A parameter concentration and flow balanced mixing model has been created to compare upstream and downstream (below discharge), parameter concentrations for low flow and median-higher flow discharge scenarios. Four parameters were identified as subject to a greater than 10% change in receiving water quality, being electrical conductivity (EC), magnesium, dissolved iron and arsenic. These parameters are naturally occurring in the groundwater and the Heller report discusses the impact of these changes on the Waikaka Stream⁷³, summarised as follows:

- EC increases 85 us/cm to almost 100 us/cm for both low flow scenarios. The Heller report states:
“It is expected that EC will be moderated by the discharge to land and subsequent settlement of suspended solids, commensurate with neutralisation of metals and other dissolved species such as Iron and Phosphorus. ... any final treated discharge to the receiving Waikaka Stream is most unlikely to pose any environmental risk of elevation of EC within the environment or to receiving water quality.”⁷⁴
- Magnesium concentrations increase, but do not pose concern to overall water quality.
- Dissolved iron concentrations increase significantly and may create a short-term visual impact from staining, but do not pose any water quality risk. The discharge of iron is expected to be lower than modelled due to reduction through the settling ponds.
- Arsenic concentrations increase significantly but do not pose any water quality risk. The discharge of arsenic is also expected to be lower than modelled due to reduction through the settling ponds.

⁷³ Attachment [K], Heller report, p.33

⁷⁴ Attachment [K], Heller report, p.33



Sediment will be present in the discharge from the dewatering water, GRP process water return and stormwater. Sediment will be removed through the thickener and filter press in the slimes treatment plant, with flocculant treatment if necessary, prior to treatment through the secondary pond and tertiary polishing pond, and then discharge to the Waikaka Stream.

Contaminants in GRP process return water will be sediment only as the gold recovery process is gravity driven with no chemical additives. Contaminants in stormwater will be sediment and potentially small amounts of hydrocarbons and heavy metals, which are expected to be captured by the settlement ponds. Stormwater from the hazardous substance storage area will travel through an oil water separation device prior to entering the settlement ponds.

Compliance with the PSLWP Appendix E standards for 'Lowland hard bed' is expected to be achieved by this discharge, except the SQMCI measure. The Waikaka Stream already does not comply with this standard and the proposed discharge is not expected to change this.

The treatment system has been designed to ensure that the discharge to the Waikaka Stream is of an appropriate quality. It is considered appropriate and feasible to monitor sediment concentration in the discharge as set out in **Table 5** above to ensure that any adverse effects on the Waikaka Stream water quality outside the mixing zone will be less than minor.

The water quality of the discharge is expected to be better than the existing water quality in the western drain, with lower suspended solids and nutrient concentrations. To this end, no adverse effects on the water quality in these artificial water bodies are expected, and the effects may be positive.

5.7.3 Vehicles and Machinery

Vehicles and machinery will be required to pass through the bed of the Waikaka Stream to access the true left bank when the mine path crosses the Waikaka Stream in years 3-4. The construction of one or more new fords will likely be required in order to enable machinery to cross the Waikaka Stream. Fords will be constructed and used in accordance with the relevant permitted activity rules. Effects on water quality will be minimised by forming fords with rock and gravel material, minimising the number of crossing points and by laying some gravel on the approach to the stream bed as necessary to minimise tracking sediment into the stream.

5.8 Ecological effects

5.8.1 Effects of discharges

The discharge of dewatering water, GRP process return water and stormwater are expected to meet water quality standards in the Waikaka Stream after treatment and reasonable mixing. For this reason, the effects of these discharges on ecological values within the receiving water are considered to be acceptable.

The discharge of the Waikaka Stream and Shepherds Creek diverted flow is expected to result in entrained sediment, temporarily reducing visual clarity of the water. Mitigation methods to minimise the potential for sedimentation are discussed in **section 5.7.2** above. The reduction in visual clarity may impact on aquatic ecological species, however the effect will be of short duration and minimised by the mitigation measures described above. The Applicant will provide a detailed diversion channel design, methodology and monitoring plan prior to the creation of any diversion channels, to demonstrate how sediment will be minimised and monitored.

5.8.2 Effects of diversion on habitat loss

The proposed temporary diversions of the Waikaka Stream and Shepherd's Creek will result in a temporary stream habitat loss of 2940 lineal metres, as outlined in section **3.5.1** above. Note that this occurs progressively in five stages, and not all stream habitat loss occurs concurrently.

The temporary diversion channels are not expected to provide any significant habitat value; as their maximum lifetime is expected to be 2 years, these channels will not have the longevity necessary for establishment of natural stream habitat.

The diverted and rehabilitated sections of the Waikaka Stream and Shepherd's Creek will take several years to attain similar ecological and habitat value to that in the existing waterways. A fundamental principal of the proposal is to establish habitat value within the rehabilitated channel sections that is a similar or better standard to that lost, so that ecological values will recover as quickly as possible. It is acknowledged that this will take time.

The Dungey report identifies key habitat features of the existing Waikaka Stream and identifies that these are fundamental to the success of the stream rehabilitation, including:⁷⁵

- riffles with coarse gravel and cobbles
- undercut banks
- overhanging vegetation-grasses, shrubs, willows
- large woody debris
- deep pools
- boulder clusters

The Dungey report considers that most of these features are easy to create. Undercut banks are the most complex feature to create, though boulder banks and rip rap can be substituted.⁷⁶

⁷⁵ Attachment [L], Dungey report, p.51

⁷⁶ Ibid., p.51

Shade is an important feature of the riparian environment within the existing Waikaka Stream channel, which is currently created predominantly by large willow trees. Creating sufficient shade will be important to minimise nuisance aquatic algal growths, given the elevated nutrient levels within the Waikaka Stream. For this reasons, fast growing willow species are proposed to form part of the stream rehabilitation planting scheme.

The Applicant will provide a detailed rehabilitation channel design, construction methodology, planting and habitat creation specification and monitoring plan prior to the rehabilitation of diverted sections of the Waikaka Stream and Shepherd's Creek.

The success of the diversion channel is proposed to be determined using a combination of water quality, fish survey and MCI / SQMCI measures. Baseline data exist for all these parameters. Proposed conditions to this effect are included in **Attachment [I]**.

5.8.3 Loss of habitat in artificial water bodies

The proposal will result in permanent loss of habitat associated with a number of smaller artificial ponds and drains throughout the site, and part of the L&M pond. A similar degree of land drainage will be reinstated on completion of the project, although the numerous small ponds will not be replaced. A terminal void pond is a possible outcome.

If there is a terminal pond, the embankments will be contoured, and its riparian margin planted with species selected by a suitably qualified freshwater ecologist.

The ecological values of the small ponds and drains were limited by their water quality and excessive weed growth. A terminal pond is expected to have improved water quality and habitat value by virtue of improved riparian planting.

5.8.4 Fish salvage and passage

The Applicant proposes to engage a suitably qualified person to salvage fish species in respect of all diversions and relocate salvaged fish to the Waikaka Stream downstream of the work area.

The Dungey report identifies that the process of fish salvage can be assisted by developing a schedule, incorporating stages of flow diversion and then fish salvage activity following the departure of a proportion of fish of their own accord (resulting from reduced flow).⁷⁷ The Applicant will ensure that the methodology for fish salvage is prepared by a suitably qualified person and coordinated with construction activities.

Fish passage in the Waikaka Stream and/or temporary diversion channels will be maintained at all times. When flow in the existing Waikaka Stream is diverted into a temporary diversion channel, fish will be unable to access the diverted section of the Waikaka Stream but will be able to pass through the new diversion channel.

⁷⁷ Attachment [L], Dungey report, p.51

5.8.5 Effects on avifauna

There are a number of waterbirds using the ponds within the project area. These are expected to temporarily relocate to other ponds in the locality and will likely return on completion of the work.

5.8.6 Effects on native vegetation

There is limited native vegetation within the project area, and this is confined to the Waikaka Stream and margins. The Applicant will relocate existing riparian plants if it is operationally feasible to move them to rehabilitated sections of the Waikaka Stream and Shepherds Creek. The Applicant will plant new native plants (and some non-natives) in the riparian margin area of rehabilitated sections of the Waikaka Stream and Shepherds Creek. Once rehabilitation is complete, there will be a net increase in native vegetation within the project area.

5.9 Effects on erosion and bed and bank stability

5.9.1 Effects of discharge outfall

The discharge of dewatering and GRP process return water and stormwater will be via an outfall structure. Erosion protection in the form of a concrete apron or rock rip rap will be installed to prevent erosion and scour at the point of discharge.

5.9.2 Diversion of Waikaka Stream and Shepherds Creek

The diversion of the entire flow of the Waikaka Stream and Shepherds Creek into the temporary diversion channels, and back into the Waikaka Stream, has the potential to erode the stream channel. This will be minimised by ensuring an adequate degree of erosion control, including:

- The berm and embankments of temporary diversion channels and rehabilitated stream channels will be sown, and grass allowed to establish to provide at least 80% cover of exposed soil prior to diversion occurring.
- The rehabilitated stream channel will be constructed with a low flow channel with a 200mm deep layer of cobble / gravel material, meeting the sizing specification in the Hall report.⁷⁸
- Anchored / layered trees will be placed within the riparian margin of the rehabilitated stream channel, at the locations and frequency, on the advice of a suitably qualified freshwater ecologist.
- Planting of the riparian margin of the rehabilitated stream channel will occur on the advice of suitably qualified freshwater ecologist and with consideration for cultural matters through discussion with Hokonui Rūnanga.

⁷⁸ Attachment [N], Hall report, p13 of the pdf, Drawing 01, Detail 1

Overall, the Applicant will ensure the low flow channel and riparian margin has at in excess of 80% cover, and the berm and embankments have at least 80% grass cover, for erosion protection prior to diversion of water back into the rehabilitated stream channel occurring.

Additionally, the flow will be diverted in a stepwise manner to minimise erosion potential. If it is seen that the diversion is causing excessive erosion (determined with reference to the monitored water quality downstream), additional erosion protection (such as geotextile cloth) can be promptly installed.

A degree of undercut erosion within the low flow channel / riparian margin of the rehabilitated stream channel is expected, and designed to occur, to provide that type of habitat that currently exists in the Waikaka Stream. For this reason, complete erosion protection of the low flow channel is not proposed.

The Applicant will provide a detailed diversion channel design, construction methodology, planting specification and monitoring plan prior to the creation of the diversion channel.

5.10 Flooding effects

5.10.1 Effects of discharges on downstream flooding

Discharges which could have impacts on downstream flooding include:

- Dewatering and GRP process return water and stormwater; and
- Diversion of the Waikaka Stream and Shepherds Creek.

The discharge of dewatering and GRP process return water and stormwater will occur at estimated rates as set out in **Table 11** above. At median flow, the discharge is 3.3-4.9% of the Waikaka Stream flow. A 1 in 20-year AEP event is estimated to be 116 cumecs,⁷⁹ at which level the discharge is 0.02 - 0.04% of the Waikaka Stream flow. The Applicant advises that it is not operationally feasible to switch off the dewatering pumps and therefore this discharge could not cease in the event of flooding in the Waikaka Stream. However, the volume of the discharge is so small in relation to the quantity of water in the Waikaka Stream in a high flow event, that it would be immeasurable, and would result in indiscernible downstream adverse effects.

The Waikaka diversion discharge will not have any impact on potential downstream flooding as the entire flow of the Waikaka Stream / Shepherds Creek will be diverted, i.e., the flow that would normally be in the channel with no additional water.

⁷⁹ Attachment [N], Hall report, p.5

5.10.2 Effects of dam to enable Waikaka Stream and Shepherds Creek diversion on upstream flooding

A temporary bund ('dam') will be used to divert flows from the Waikaka Stream and Shepherds Creek channels into the temporary diversion channels. The diversion of water is proposed to occur in a step wise fashion. Water will not be completely blocked by the bund, rather it will be used to direct water into the new diversion channel instead of the existing Waikaka Stream. To this end, the temporary bund will not cause water to back up and cause upstream flooding.

5.10.3 Flood carrying capacity of temporary diversion channels

The diversion channels have been designed to carry a 1 in 20-year AEP event with minimum of 300mm freeboard.⁸⁰ It is understood that the flood carrying capacity of the diversion channel has been designed to be at least as good as the existing Waikaka Stream channel, and in some places, it will have greater flood carrying capacity.⁸¹ For this reason, the temporary diversions are not expected to cause adverse flooding effects and may have positive effects on local flooding.

5.10.4 Flood diversion effects of bunds

The bunds proposed to be constructed adjacent to the Waikaka Stream address existing break out points in the Waikaka channel and are designed for a 1 in 20-year AEP event (with 300mm freeboard). Downstream effects are expected to be accommodated within the existing capacity of the Waikaka Stream channel, given that existing capacity is estimated to be at the same level, i.e., 1:20 year AEP.

5.10.5 Effects of Waikaka Stream flooding on mining operation

In the event of potential overland flooding entering the mine site, additional pumps may be brought in to increase the rate of dewatering the mine pit. Operations will cease if conditions become hazardous for workers health and safety. Some floodwaters will likely be prevented from flowing into the mine pit as haul roads typically have a small roadside bund. Floodwaters will move downgradient toward the L&M pond, which is their natural course. The mine pit may provide additional floodplain capacity in extreme events.

5.11 Effects of dust on air quality and amenity

There is the potential for dust nuisance to be an effect resulting from the operation as the proposal involves a considerable volume of earthworks. Dust nuisance can arise from earthworks associated with the development of the mine, stockpiling of material, and also during rehabilitation. Vehicle and machinery movement also have the potential

⁸⁰ Attachment [N], Hall report, p.2 of the pdf

⁸¹ Attachment [N], Hudson Report appended to Hall Report, p.42 of the pdf

to generate dust nuisance. Potential receivers in the surrounding environment include residences, surrounding farmland and road-users.

The adverse dust effects of this proposal on the surrounding environment will be mitigated to be less than minor through the measures proposed as detailed within section 3 above. Specifically, dust will be controlled on site in accordance with good industry practise, including use of water carts as necessary, slow vehicle speeds on unsealed roads and establishing vegetation on bunds. A moving mine cell method of operation will ensure progressive rehabilitation of the site and limit the open mine pit area to 5ha at a time.

The mine is located a minimum of 150m from adjoining dwellings⁸², and most of the time it will be further than this. Most of the overburden earthmoving activity will occur within the pit below the undisturbed level of the ground.

The grassing of bunds and stockpiles is considered as the most effective way of preventing dust nuisance from these areas in the longer term, though some areas of stockpiling will remain 'active' through the project. Prior to the establishment of grass on stockpiles and bunds, alternative dust suppression will be employed where necessary.

Dust control will form part of the Applicant's Environmental Management Plan for the site. It is considered that dust control to mitigate nuisance effects to a no more than minor level on the surrounding environment is achievable and practicable.

5.12 Effects on recreation and public access

The Waikaka Stream has recreational values, particularly fishing and walking access. Fish and Game advise that the stream has brown trout fishery value and spawning areas and attracts local anglers in particular.⁸³

Angler usage of the entire Waikaka Stream (not just the reach affected by this proposal) was estimated by NIWA to be 460 ($\pm$ 190 standard error) total angling days per year in the 2014/15 survey season.⁸⁴ Approximately 33% of recorded angling days were from overseas license holders (i.e., tourists). The Waikaka Stream was the third highest used tributary of the Maitai River (38,260 $\pm$ 3,470 angling days per year), only superseded by the Waikato River (4,310 $\pm$ 920 angling days per year) and the Mimihi Stream (490 $\pm$ 260 angling days per year).

⁸² The minimum distance of 150m from 971 and 999 Waikaka Road occurs during work in Production Block 02 and Production Block 03. The minimum distance to 872 Waikaka Road occurs during Production Block 15 and is around 200m distance.

⁸³ Pers. comm., J. Smythe (Fish & Game NZ), pre-application consultation meeting, 20/10/2021

⁸⁴ NIWA, *Angler usage of New Zealand lake and river fisheries: Results from the 2014/15 National Angling Survey*, Prepared for Fish & Game New Zealand July 2016, p.101



Angler values of the streams were surveyed by NIWA⁸⁵ in 2013, with respondents being asked to rate their enjoyment of the fishery on a scale from 1 (least enjoyable) to 5 (most enjoyable). The Waikaka Stream achieved a mean score of 2.36, and the top three identified reasons for enjoyment were: close to home (36% of respondents), ease of access (36% of respondents) and angling challenge (also 36% of respondents).⁸⁶ In the Mataura catchment, the Mataura mainstem above Gore was the most highly rated with a mean enjoyment score of 3.03. NIWA identify that:

“Rivers with high enjoyment scores included many already protected by Water Conservation Orders (WCOs) or recognised as notable headwater trout fisheries.”⁸⁷

There is one existing public access point to the Waikaka Stream that is affected by the proposed mine (refer to **Figure 32**). Public access to the Waikaka Stream in the locality is currently available at the Waikaka Bridge via an existing paper road, near the northern site boundary. Anglers access the river at this point, and then walk further up or down stream. During the entire project life, people will continue to be able to use this access point and access upstream of the project area. Public access downstream of the access point will be restricted when mining activities are within 20 meters of the stream bed and/or when earthworks for diversion of the stream are being undertaken. It is also preferable to allow for a period for the establishment of bankside planting and contingency along the rehabilitated section of stream channel. The Applicant will endeavour to minimise loss of access and ensure at least partial access to fishable sections of the existing stream.

⁸⁵ NIWA, *Values of New Zealand angling rivers: Results of the 2013 National Angling Survey*, Prepared for Fish & Game New Zealand November 2013

⁸⁶ Ibid p.84

⁸⁷ Ibid. p.6

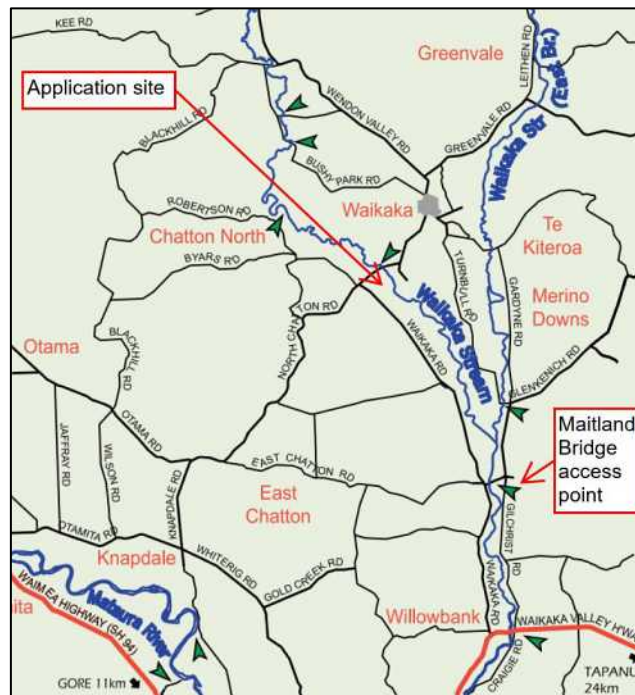


Figure 32 Angling access to Waikaka Stream (Source: Fish and Game⁸⁸)

The next downstream point of access to the Waikaka Stream is at the Maitland Bridge, which is approximately 6.8km south-east of the Waikaka Bridge access site (as the crow flies) and 4.6km south of the application site southern boundary. This access point is sufficiently distant from the application site such that public access to the Waikaka Stream from this this location will not be affected.

In summary, the proposal will restrict downstream public access to sections of the Waikaka Stream from the Waikaka Bridge for a period of up to 5 years, though upstream access will continue to be available and other access points to the Waikaka Stream will be unaffected. The proposal will not affect any public access to the East Branch of the Waikaka Stream.

Shepherd's Creek will also be affected by the project for up to 2 years, and public access to this watercourse appears to be available from the same Waikaka Bridge access point paper road. However, it is understood that Shepherd's Creek does not have high fishery or recreational values due to existing upstream discharges into the watercourse, as noted in **section 2.4.5** above.

5.13 Effects of signage

Signage at the vehicle access will convey necessary information about the site operator and name, site hazards and provide contact details and advise that visitors are to report to the site office.

The signage at the vehicle access will be visible to persons in vehicles passing the site and turning to access the site. The sign will be inoffensive to drivers passing the site

⁸⁸ <https://fishandgame.org.nz/freshwater-fishing-in-new-zealand/where-to-fish/>

considering the size and nature of the sign and that vehicle occupants will have fleeting views of the sign. For these same reasons, the sign is not anticipated to create any adverse road safety effects. Persons entering the site will be looking for the sign, therefore it will be positioned adjacent to the site vehicle access. The sign may be visible from nearby residences but will be over 100m distant and partially obscured by intervening topography and vegetation.

Signs may be required along boundaries of the site advising the general public that there is no access to the site. These will be small signs, similar to private property signage that may be expected in the locality where there are people accessing the public space adjacent to private property (e.g., the Waikaka Stream). These signs will be installed where needed to prevent the public from inadvertently accessing the site and are necessary to protect public health and safety. These signs will be discrete in size but must be clearly visible to be effective. Overall, the signs will have less than minor effect on public enjoyment of the amenity of the local environment due to their small viewing catchment and essential purpose. These signs will not be visible from public roads and so will have no effect on road safety.

Overall, the effects of signage on amenity values and road safety will be less than minor.

5.14 Transport effects

5.14.1 Vehicle access

Vehicle access to the site will be via existing farm access points or via a newly constructed access from Waikaka-Willowbank Road, which will be formed in accordance with the Gore District Council Subdivision and Land Development Bylaw 2019. The Applicant anticipates that any new vehicle access will be designed in accordance with Standard Drawing *Figure B30 - R09-2 Commercial Rural Access*, which incorporates sufficient width for two-way vehicle movements and localised widening of the seal to create a taper, enabling safe manoeuvring around vehicles slowing to enter the site.

Any new vehicle access will be sealed to a depth of 10m from the legal road boundary and will be compacted gravel from that point internal to the site. The Applicant will maintain the access and internal roads to a standard appropriate for the volume of traffic using them. Vehicles will be advised to drive at slow speeds along the vehicle accesses to avoid dust generation and excessive wear to the compacted gravel surfacing.

A sufficient number of parking bays will be provided on the site meaning that no vehicles will park along the roadside, and there will be sufficient on-site manoeuvring room to ensure that vehicles exit the site in a forward gear.

Provision will be made to allow farm access to those areas not affected by mining activities at any given time. Appropriate protocols for farm access will be established with the landowners / occupiers and incorporated into the Traffic Management Plan.

The geometry of Waikaka-Willowbank Road and Waikaka-Chatton North Road are generally straight adjacent to the site. Vehicles entering and egressing the site will have sufficient time to sight road users and respond accordingly to avoid any conflict.

There are no pedestrian footpaths, nor is there frequent use of the frontage roads by pedestrians. A dedicated pedestrian access to the site is not considered necessary due to the rural location.

The Applicant considers it to be feasible to establish a safe and appropriate vehicle access to the site, and there is sufficient space within the infrastructure area to provide for safe and efficient vehicle parking and manoeuvring area.

5.14.2 Vehicle movements

During the development of the mine, vehicle movements are anticipated to occur as outlined in **Table 8** above. Heavy vehicle movements will be safely accommodated by the new vehicle access and taper providing ample manoeuvring room into and out of the site. Heavy vehicle movements can be accommodated within the surrounding road network due to the existing low traffic volumes on the surrounding road network.

Once developed, work will occur between 7 am to 7pm (one shift). Staff vehicles are expected to arrive just before the start of shift and depart just after the end of shift. A maximum of 30 light vehicle movements are anticipated to occur daily around the shift start and finish times. This is a maximum number of vehicle movements, and the actual number of vehicle movements may be smaller, as the Applicant will arrange and/or support carpooling for staff to travel to site. The number of additional vehicle movements is considered to be within the capacity of the road network considering the very low existing traffic volumes.

Nuisance effects of glare from vehicle headlights would be most noticeable in winter at the shift start time (7am) and finish time (7pm). Residential dwellings located near to the project site are located set back from the road and are not expected to be adversely affected by glare from vehicle headlights.

5.15 Effects of hazardous substance storage and use

The proposal involves the storage of 60,000 litres of diesel in above ground storage, utilising a mobile tanker to refuel machinery where it stands. This refuelling method minimises heavy vehicle movements within the site (i.e., heavy vehicles do not need to travel to a refuelling point). Fuel deliveries are expected to be to the site every 2-3 days. The Applicant has chosen the scale of on-site hazardous substance storage on the basis of the expected pattern of use.

All hazardous substance storage and use will be undertaken in compliance with the Health and Safety at Work (Hazardous Substances) Regulations 2017. For the on-site diesel storage, a secondary containment system is required and will be provided. Stormwater from the diesel storage area will travel through an oil-water separation device prior to entering the settling ponds.

On site refuelling will occur at the location of heavy machinery on the site, including within the mine pit. Refuelling will not occur within 5m of the Waikaka Stream. Any refuelling will be undertaken with spill mitigation measures on hand to contain and clean up any diesel spills promptly.

Overall, the effects of hazardous substance storage and use will be appropriately managed in accordance with all relevant legislation, such that the effects will be less than minor.

5.16 Archaeological and heritage effects

On behalf of L&M Mining, Ms Jill Hamel prepared an Archaeological Report in 1998 (the “**Hamel report**”) in respect to the archaeology of two areas within Exploration Permit 56372 at Chatton North Southland which L&M Mining were proposing to open-cast mine for gold. The area covered by the Hamel report includes the application site. The Applicant has engaged Southern Archaeology Ltd to review the Hamel report and they advise that the report remains relevant to this application and contains all of the necessary background history and site description information.⁸⁹ The key conclusions from Southern Archaeology in respect of archaeological potential are:

- Most archaeological evidence in the application site area is related to post-1900 dredging.
- A small amount of sub-surface pre-1900 occupation evidence may be present at the former ‘Mains’ house site, which has been removed and is now occupied by a stockyard.
- There is no evidence of any mana whenua sites within the area in question, which has mostly been disturbed by historic-era dredging.

Both the Hamel report and the Southern Archaeological Report are appended as **Attachment [Q]**. An Archaeological Authority has been applied for from New Zealand Historic Places Trust Pouhere Taonga (“**NZHPT**”) and has been granted (Authority reference 2023/123). Southern Archaeology recommend an Accidental Discovery Protocol is adhered to, and the Applicant adopts this mitigation.

Overall, effects on archaeological material will be appropriately managed in accordance with an ADP and the Archaeological Authority issued by NZHPT, such that any adverse effects on archaeology will be less than minor.

5.17 Effects on amenity and landscape character values

5.17.1 Landscape Character

The mining operation will result in around 20 hectares of disturbed land at any one time, which includes the active mine, rehabilitation area and general activity associated with

⁸⁹ **Attachment [Q]**, Southern Archaeology letter, p.1

the excavation and rehabilitation (such as haul roads, vehicle movements, stockpiles and so on). The proposal will affect the landscape values of the area over the duration of the activity, which is of a temporary nature. Mining is a progressive operation with rehabilitation following behind the active mine area (subject to seasons), except that the SP1 stockpile, infrastructure area and settling ponds will exist for duration of the mining operation. Although the project area proposed is 95ha, consideration is given to the area that will be operational at any one time and that the rehabilitation process will be an on-going and integral component of the moving mine path process.

The subject area is not known to be located within a landscape that exhibits high natural qualities. Neither the District Plan nor the Regional Policy Statement identifies the wider local area as one of landscape significance or outstanding natural qualities. The landscape is pastoral and exhibits clear signs of human occupation and modification. As detailed in the site history in **section 2.2**, the landscape has had a long association with mining and visible remnants of that former land use are evident on the site, including former dredge ponds, overburden stockpiles and machinery.

A key mitigation measures for visual effects is the establishment of grassed bunds around the infrastructure area and starter pit.

The Applicant has engaged Vivian+Espie (“**V+E**”) to provide a landscape and visual effects assessment report on the proposal (the “**V+E report**”), appended as **Attachment [R]**. V+E consider that the proposal will change the existing landscape mosaic by introducing elements such as infrastructure and the mine, and removal of existing pasture vegetation. The proposed mine has a working and active character which has effects on landscape character values relating to openness, naturalness and rural amenity. Rehabilitation includes removal of the introduced elements and rehabilitation back to pasture. V+E consider that mining forms part of the established values of the area.⁹⁰

V+E consider that adverse effects on landscape character will occur in relation to the operational area at any one time (being approximately 20 hectares), however the landscape character values of the remainder of the site and the wider area will be largely maintained. V+E conclude that the degree of adverse effect on landscape character is low-moderate during operation, but that these effects are remedied by rehabilitation of the site.⁹¹

5.17.2 Visual amenity effects

The V+E report provides a detailed assessment of visual amenity effects of the activity, assessed from various viewpoints, including surrounding public roads and nearby private properties.

Waikaka-Willowbank Road runs along the western boundary of the site and is the closest public road, being set back 20-30 metres from the closest part of the proposed

⁹⁰ Attachment [R], V+E Report, p.19

⁹¹ Ibid., p.19



activity. Waikaka-Chatton North Road is north of the site, separated from the project area by at least 500 metres.

SP1 and the infrastructure area will be visible from Waikaka-Willowbank Road (to the west) and Waikaka-Chatton North Road (to the north). V+E consider that SP1 will be conspicuous and clearly man-made, however note that stockpiles are not uncommon in rural areas and are perceived as necessary for rural productive activities.⁹² Two locations are proposed for the infrastructure area, with the second location less visible due to topography and position in the site. V+E note that the grassed bunding will assist with screening views of the infrastructure area.⁹³

V+E conclude that the visual elements of the proposal are not aligned with the established rural amenity values and that mine will diminish the aesthetic value associated with the pleasant rural landscape from Waikaka-Willowbank Road and Waikaka-Chatton North Road. V+E suggest the planting of flax and toetoe along the eastern boundary of the site, between the site and Waikaka-Willowbank Road, however the Applicant advises that this mitigation is subject to confirmation and acceptance by the landowner. In consideration of the mitigation measures proposed, transient nature of road users and recognised values associated with mining in the area, V+E conclude that the degree of adverse effect ranges from low-moderate initially reducing to low as the mine moves away from the road and landscaping becomes established.⁹⁴

Chatton North Road and Nicolson Road are located to the north-west of the site, and views of the site are available from these roads at a distance of approximately 650m. V+E consider that the proposed mine will be visible, but not necessarily incongruous with established views. V+E conclude that the degree of adverse effect is low during the mining activity.⁹⁵

Turnbull Road is a gravel road located to the west of the site. Although this road is elevated above the site, the local topography is undulating and provides considerable screening. V+E conclude that the degree of adverse effect from Turnbull Road is low during the mining activity.⁹⁶

A partly formed legal road to the north of the site provides public access from Waikaka-Chatton North Road to the Waikaka Stream and adjoining farmland. It is understood that this road is used primarily for farming access and also for public fishing access. From this road, public access is available extensively along the Waikaka Stream via marginal strip and esplanade reserve. V+E conclude that the degree of adverse effect from these locations is very low due to limited access, screening and the transient viewing audience.⁹⁷

⁹² Attachment [R], V+E Report, p.12

⁹³ Ibid., p.12

⁹⁴ Ibid., p.13

⁹⁵ Ibid., p.13

⁹⁶ Ibid., p.14

⁹⁷ Ibid., p.14

V+E have considered the visual effects of the proposed activity from eight nearby private dwellings. Three of these are landowners who have entered into an access agreement with the Applicant.⁹⁸ A further three have dwellings that are significantly set back from the proposed mine and well screened by intervening topography and vegetation, and V+E advise that the effects on these parties will be very low.⁹⁹ The remaining two are closer and will experience views of the proposed mine from the dwelling and outdoor living areas.¹⁰⁰ V+E conclude that the effect on these properties range from low-moderate to low, changing with the progression of the mine.¹⁰¹

Given the mined area will be restored to farmland, V+E consider that the long-term visual effects are negligible post-rehabilitation.¹⁰²

Examples of the land restoration process can be seen in the photographs of Waikaia Gold Mines (located in Southland near Freshford), **Figure 33** and **Figure 34** below.



Figure 33 Waikaia Gold Ltd alluvial gold mining operation. Photo taken 17 December 2014. View is looking west with several residences in Freshford visible. (Source: WGML)

⁹⁸ J. Gardyne, 29 North Chatton Road; L. Gardyne, 999 Waikaka Road; Weir, 249 Turnbull Road.

⁹⁹ Clifford, 41 Nicholson Road; Childs, 1262 Waikaka Road; Davies, 210 Turnbull Road

¹⁰⁰ Drumond, 872 Waikaka Road; Brownlee, 971 Waikaka Road.

¹⁰¹ Attachment [R], V+E Report, p.17-18

¹⁰² Ibid., p.13, 14, 17 & 18



Figure 34 Waikaia Gold Ltd, land shown in **Figure 33** rehabilitated post-mining. Photo taken 16 October 2018. View looking north with some of the Freshford residences in the left foreground. Note farm buildings recognisable in **Figure 33** above (Source: WGML)

5.17.3 Effects of lighting

Lighting is required to enable operation of the activity outside daylight hours, though may result in adverse effects on general amenity, surrounding land uses and road user safety. Lighting includes fixed lighting around the infrastructures area, vehicle access lighting and mobile mine pit lighting.

Fixed lighting around the infrastructure area will be directed downward at the work areas, with appropriate cowlings to ensure minimal light spill. Bunds constructed around the site perimeter will also assist to reduce light spill and effects of glare to the surrounding environment. Lighting is required for both on site operations (particularly in winter) outside of daylight hours and for security in the infrastructure area.

Lighting in the mine pit is unlikely to be very visible except during the initial establishment phase and during short periods of time when surface excavation is occurring. Mine pit mobile lighting is further mitigated by the separation distance of parts of the mine to the surrounding land uses. There will be no operations between 7:00 pm and 7:00 am requiring lighting but in winter hours lighting will be required for the first and last 2 hours of the mining operating hours.

Design of the lighting at the vehicle access to the site in accordance with the GDC Subdivision and Land Development Bylaw 2019 will ensure that effects of light spill and

glare on the road network and safety of road users will be appropriate. Lighting around the vehicle access will improve safety of the use of that access at night and may also improve visibility for all users of Waikaka Road at night.

Overall, lighting of the site is expected to be visible and noticeable in the surrounding environment, even though it will likely comply with the District Plan standards. Lighting is not anticipated to cause any adverse effects on road users and road safety due to the design mitigation measures, transient nature of road users and benefits to night-time visibility. For surrounding residents, the lighting will be noticeable, but appropriately designed and installed so it is not bothersome.

5.17.4 Non-compliance with car park landscaping standard

The District Plan Rule 5.9.2 sets minimum landscaping requirements for car parking areas. Considering the temporary nature of the project, that the car park will not be accessed by the public and considering that the degree of amenity associated with a mining site is not expected to be high, the lack of landscaping in the car parking area will not create adverse effects on amenity values that are more than minor.

5.17.5 Noise

Noise from the proposed activity has been assessed by Hegley Acoustics (**Attachment [O]**). Predicted noise levels are summarised in **Table 12** below.

Table 12 Operational noise rating levels (replicated from Table 2, Hegley report)

Site (Figure 1)	Rating Level, dB L _{Aeq}
	Night Time
1	54
2	48
3	43
4	55
5	55
6	53
7	38
8	37

Hegley note that the noise level assessment is conservative as modelling has assumed the highest possible level of noise from the activity in each stage.¹⁰³

Hegley provide a summary of ambient noise monitoring in section 3.9.2 of their report and conclude that the receiving environment is reasonably quiet, regularly punctuated

¹⁰³ Attachment [O], Hegley Acoustics Report, p.6

with discrete sounds, and that the noise from the proposal will be apparent in the receiving environment.¹⁰⁴

Section 3.9.3 of the Hegley report notes that effects of noise are a function of the level of noise, its duration, and any feature of the noise. The modelled noise levels are those arising at a time when machinery is located at the closest point to receivers. The modelled noise levels do not represent a continuous level for the duration of consent. Further, the Applicant proposes to ensure there are no tonal reversing alarms, as these may create features of noise that are particularly disruptive. Broadband reversing alarms will be used instead.

Modelled assessments produce a noise level which can be compared against District Plan noise standards. In this case, the modelled noise is equal to or less than the noise levels permitted by both the operative and proposed district plans. The operative and proposed District Plans both exempt a number of primary production activities from any noise standards. Primary production activities feasibly can and are being undertaken as of right on the application site. Noise arising from primary production activities is expected to be seasonal, with some types of activity being noisier than others.

Based on the above, it is considered appropriate to apply the permitted baseline for assessing noise. Therefore, the anticipated noise effects will be equal to or less than the permitted baseline at all times.

5.18 Effects on land resource and soil productivity

The proposal will result in temporary loss of some farming production land for the period between mine establishment and rehabilitation. The fundamental principal of rehabilitation is to return production land to at least pre-mining productivity, and this forms part of the private access agreement with the individual landowners. The Applicant has sought agricultural advice to inform the pre-mining condition assessment, development of productivity measures, rehabilitation advice and post-rehabilitation farming productivity assessment.

The 95ha project footprint will be taken out of farm production sequentially. There is a lag of around 1.5 years between the commencement of mining and the backfill being suitable for rehabilitation to farmland. Overall, mined land is expected to be unusable as farming production land for 2 years, with productivity returning to pre-mined levels approximately 5 years post mining.

Land underlying the infrastructure area and SP1 (approximately 60ha) will be taken out of farming production for the entire duration of the project, estimated to be 7-8 years.¹⁰⁵ This land will be fully rehabilitated on completion of the project as described above,

¹⁰⁴ Ibid, p.18

¹⁰⁵ An option to relocate the infrastructure area mid-way through the project is proposed, however for the purposes of this assessment the areas are considered together.

with rehabilitation expected to take up to 3 years. In total, this land will be out of farming production for 10-11 years.

5.19 Effects relating to potentially contaminated land

The Applicant engaged Geoscience to prepare a PSI appended as **Attachment [M]** to investigate the application site for the presence of contaminants.

The PSI provides an assessment of the potential contaminants, a conceptual model for potential contamination and details of sampling undertaken within the site.

There are three potential sources of contamination that have occurred on or within close proximity to the site:

- Mining of the application site occurred in the early 1900s and involved the removal of gravels via dredges. L&M also briefly mined to the south of the existing mine pond in 2001. An assembly and storage area previously used by L&M for plant and equipment remains on the application site.
- A closed landfill exists to the east of the application site, on the banks of Shepherds Creek.
- Historical use of persistent pesticides / fertilisers including Super Phosphate may fall under the definition of HAIL A.10.

Soil sampling was undertaken by Geoscience with the findings provided within section 10.3 – 10.4 of the PSI and summarised below

- No Organochlorine Pesticides or Total Petroleum Hydrocarbons were detected in the samples analysed.
- The concentrations of heavy metals (including mercury) analysed complied with the NESCS criteria for Commercial Industrial outdoor worker unpaved and NESCS for rural land use.
- Detected polycyclic aromatic hydrocarbons were well below the NES criteria for the proposed and rural land use, and well within the ANZECC (2000) criteria for the protection of the environment.

Overall, Geoscience conclude in section 11 of the PSI that the concentrations of contaminants are compliant with the relevant NESCS criteria for the protection of human health and the Land Care Research / ANZECC (2000) criteria for protection of the environment.

The PSI provides analysis of a targeted sampling regime and concludes that the proposed use of land will not result in unacceptable adverse effects on human health or the environment from contaminants in soil. No additional soil testing is deemed necessary, except for assessments related to rehabilitation targets. Any disturbed soil will be retained on site.

5.20 Effects on social and economic wellbeing

The proposed mine will involve a full-time workforce of up to 30 persons during the mine development and construction phase. It is expected that some site work requirements, maintenance services and supply needs will need to be contracted out to local businesses.

The introduction of an additional employment source near Waikaka will provide additional income and economic stability for the local community. Annual wages and salaries will amount to between \$3-4 million per year, with most of the employees domiciled in Southland and Gore Districts. In addition, the Applicant will draw extensively upon local contractors and service providers including engineering and maintenance, transportation, and agricultural operators. Total annual expenditure will be in the order of \$10-15 million with at least 80% going to local stakeholders, contractors and suppliers.

The Applicant prefers to use local people where they have the required skills and will hire local as first preference. Any staff brought into the area to work on the project will be encouraged to relocate to the district with their families. This will help to maintain the population of the district, and numbers of people using schools and services.

The proposal will result in economic benefits to the local community and wider district and will have socially positive outcomes for the local community. In addition, the annual value of gold production will contribute to the national GDP and have a positive economic effect for the wider community.

The socio-economic effects of the proposal are considered to be positive.

5.21 Effects relating to climate change

While this application is for a mining activity, it is not in relation to a combustible or greenhouse gas generating material (such as coal). The activity will involve vehicles and machinery, however no more so than other industrial and commercial activities that can occur as of right. The Applicant proposes to electrify operations wherever possible, including the GRP, STP and pumps. However, the mining fleet will be diesel powered with an estimated fuel consumption of 13M litres over the life of the project generating 35,100 t of CO₂ emissions. This will be offset to some degree by decrease in emissions from agricultural activities. The Applicant has considered lower emitting mining options, but they are high capital risk and do not offer the required flexibility provided by the large excavator and truck option. Overall, the proposal does not create more than minor effects in relation to climate change.

Impacts of future climate change on this proposal are not considered to be significant, except in relation to the design of temporary diversion channels with respect to flood carrying capacity. The flood carrying capacity design and rationale for this has been discussed in **sections 3.5 and 5.10.3** above.

Overall, the effects relating to climate change are not expected to be of significance.

5.22 Effects on Cultural Values

Effects on cultural values relate to both effects on the 'environment' and effects on a 'person', being Ngāi Tahu and the individual Papatipu Rūnanga whose takiwā encompasses the subject property - in this case the site falls within the takiwā of Hokonui Rūnanga. The Applicant's consultation with Hokonui Rūnanga and reference to Te Tangi a Taura - The Cry of the People (the Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008) informs this assessment.

The Applicant has sought specialist archaeological advice and identified only one potential archaeological site (of non-Māori origin). Further input from tangata whenua will be sought to assess potential wāhi tapu or Māori archaeological sites, and the Applicant is open to an Accidental Discovery Protocol as a condition of consent.

The Applicant plans to restore the mine site to its pre-mining state and beautify the Waikaka diversion channel, supported by further consultation with Hokonui Rūnanga. Native riparian planting along the Waikaka Stream provides an opportunity to enhance cultural values. The Applicant also proposes monitoring to confirm successful restoration and rehabilitation.

The Applicant acknowledges that discharges to land are preferable to discharges to water. The proposal does involve discharge to the Waikaka Stream, noting that discharges to land are not a practical option due to the rate of discharge. Further, the nature of dewatering is that discharge to land would frustrate the purpose of the take, being to create a dry working area.

Adverse effects on land, water and biodiversity are expected to be avoided, remedied, mitigated or offset due to the methodology and mitigation measures proposed and developed through previous and ongoing engagement with Hokonui Rūnanga.

The Applicant anticipates further consultation with Hokonui Rūnanga, to further develop this assessment.

5.23 Positive effects

A summary of positive effects, which have largely been discussed in preceding sections is as follows:

- The proposal will result in social and economic benefits as discussed in **section 5.20** above, by providing work and socio-economic activity in the local area.
- The proposal provides opportunity for habitat and ecological value improvements to the Waikaka Stream, by increasing the proportion of native riparian vegetation and placement of continuous cobble substrate (whereas the existing stream channel has areas of excessive sediment cover). Refer to **section 3.5**.
- The proposal will ensure that the rehabilitated Waikaka Stream and Shepherds Creek channel has a minimum 1 in 20-year flood carrying capacity, which may

reduce local flooding from breaches of the existing river channel where flood carrying capacity is not uniform. Refer to **section 5.10.3**.

- The proposal will result in the removal of a number of old dredge ponds with particularly low water quality. The former dredge ponds will be rehabilitated to farmland. If a terminal pond eventuates, it will likely have better water quality due to design and riparian planting and provide for better farming efficiency as it is a single consolidated pond.
- The rehabilitation proposal involves contouring the land to provide for land drainage, resolving some pre-existing drainage issues that were previously managed on an ad hoc basis.

Overall, the proposal has a number of positive effects.

5.24 Effects conclusion

In consideration of the abovementioned, it is considered that there are a range of effects of the proposal and that suitable mitigation has been proposed to address these.

6 Statutory Assessment

6.1 Section 95, RMA

6.1.1 Section 95A assessment

Section 95A of the RMA considers the need for public notification and sets out four steps in a specific order to be considered in determining whether to publicly notify.

In terms of Step (1), the Applicant requests public notification of this application. In accordance with s95A(2)(a), the consent authorities must publicly notify the application.

The Applicant is amenable to and supports a joint process between Gore District Council and Environment Southland.

6.1.2 Section 95B assessment

An assessment under s95B is not required as the application is to be publicly notified.

6.2 Section 104 (1), RMA

Section 104 (1) of the RMA requires that the consent authority must, subject to Part 2, have regard to a range of matters when considering an application.

Section 5 of this AEE addresses the matters contained in Section 104 (1) (a) and (ab).

An assessment of the relevant provisions of the documents referred to in s104(1)(b) is provided in the sections below. The relevant documents include:

- National Policy Statement for Freshwater Management 2020
- National Policy Statement for Highly Productive Land 2022
- National Policy Statement for Indigenous Biodiversity 2022
- Southland Regional Policy Statement
- Proposed Southland Water and Land Plan
- Southland Regional Water Plan
- Southland Regional Air Plan
- Gore District Plan

The National Policy Statement for Urban Development 2020 is not relevant to this proposal.

A comprehensive assessment against relevant Objectives and Policies outlined in the above documents are included in **Attachment [S]**. Commentary on key matters is provided in the sections below.

6.2.1 National Policy Statement for Freshwater Management 2020 (“NPSFW”)

The National Policy Statement for Freshwater Management 2020 came into effect on 3 September 2020. Section 2.1 of the NPSFW states:

The objective of [the] National Policy Statement is to ensure that natural and physical resources are managed in a way that prioritises:

(a) first, the health and well-being of water bodies and freshwater ecosystems

(b) second, the health needs of people (such as drinking water)

(c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

Key to the proposal is the health and well-being of water bodies and freshwater ecosystems. The effects of the proposed activities on groundwater are no more than minor, by virtue of the project design and mitigation measures which protect groundwater quality from ingress of contaminants.

It is acknowledged that the health and well-being of the Waikaka Stream and Shepherd’s Creek will be temporarily adversely affected by the proposal. Mitigation measures are proposed during the diversion activities to minimise the adverse effects. Re-establishment and improvement of the health of these surface water bodies, and freshwater ecosystems, will be achieved by measures proposed to enhance the stream channel, including riparian plantings, a higher proportion of native species and cobble substrate with minimal sediment cover. These enhancements are to be monitored with targets set that will require the reestablished channels to have superior attributes to the existing channels, where these lie within the Applicant’s control. This mitigation is proposed in recognition of the temporary adverse effects on the existing Waikaka Stream and Shepherd’s Creek. The Applicant seeks to prioritise the health and well-being of the water bodies and freshwater ecosystems by contributing to regeneration of natural values within the affected waterbodies.

The proposal will not have any adverse effects on the health of people. There are no effects on drinking water supplies.

The proposal provides for people to provide for their social and economic wellbeing as described in section 5.20. Effects on cultural wellbeing are continuing to be considered in respect of ongoing consultation with Hokonui Rūnanga.

For the above reasons, the proposal is considered to achieve the NPS-FW Objective.

Policy 7 is key to this proposal:

The loss of river extent and values is avoided to the extent practicable.

The Applicant has examined a number of options and solutions to mitigate effects on river extent and values. The temporary stream diversions proposed are the outcome of detailed investigation and consideration, and consultation with various parties. The temporary diversions will each be restored to the pre-mining alignment and rehabilitated to provide a net gain in river values by incorporating a higher proportion

of native species and cobble substrate. As the streams will be restored to their original course, there will be no overall loss in river extent.

Overall, the Applicant considers that the temporary loss of river values has been avoided to a practicable extent, and that any permanent loss of river extent and values is avoided. For these reasons, the proposal is considered to achieve Policy 7 over the life of the project and following the completion of successful rehabilitation.

Policies 9 and 10 seek to protect the habitats of indigenous species, trout and salmon. While some habitat will be lost through the temporary diversions, habitat will be restored and enhanced through the rehabilitation program. Further, the staged nature of the diversions enables the degree of disturbance to be minimised and relocated species to occupy nearby sections of the channel. It is anticipated that aquatic fauna will recolonise rehabilitated sections of stream channel over time.

Given the nature of this proposal this section summarises key policy matters, and a full assessment against each NPS-FW Policy is provided in **Attachment [S]**. Overall the proposal is considered to be consistent with the NPS-FW.

6.2.2 National Policy Statement for Highly Productive Land 2022 (“NPSHPL”)

The NPSHPL came into effect from Monday 17 October 2022. The site has not been identified or classified in any Regional Policy Statement (“**RPS**”) or District Plan as Highly Productive Land (“**HPL**”). Section 3.5(7) sets out criteria for identifying HPL, prior to maps of HPL being included in an operative RPS. In regard to these criteria:

- The site is zoned rural general.
- The site comprises land with land use capability class 2, 3 and 6 (refer to **Figure 35** below).
- The site is not identified for future urban development or subject to a plan change to rezone it to urban or rural lifestyle.



Figure 35 Land use capability classification of application site. Uncoloured land is LUC class 4-8. Application site extent indicated by red polygon approximately (Source: Gore DC)

Parts of the site identified as LUC 2 and 3 may therefore fall under the definition of Highly Productive Land and the NPSHPL is relevant.

The Objective of the NPSHPL (section 2.1) is to protect HPL for use in land-based primary production, both now and for future generations. Supporting policies are set out in section 2.2, of which Policy 4 and Policy 8 are specifically relevant to this application.

Policy 4 seeks to prioritise and support the use of HPL for land-based primary production. The land is currently used land-based primary production and will be returned to that use on completion of mining.

Policy 8 protects HPL from inappropriate use and development. Section 3.9(2) of the NPSHPL identifies that any use or development of HPL is inappropriate unless one of the exemptions listed is relevant. Clause (g) provides for the following exemption criteria:

(g) it is a small-scale or temporary land-use activity that has no impact on the productive capacity of the land:

This proposal is for a temporary land use activity; land will be removed from primary production for a limited duration. Considering the moving mine cell and progressive rehabilitation methodology, the Applicant considers it feasible to only remove each piece of land, except for the 10 hectares occupied by the SP1 stockpile, vehicle access,

infrastructure area, settling ponds and STP, from primary production for approximately 3 years. For example, the starter pit, and mining blocks B01-B03, will be rehabilitated by the time the mine is entering year 4. Once the mine is established it is expected that the footprint of the mine pit will be about 10 hectares, with around 10ha of land being progressively rehabilitated each year.

The proposed land use is small scale in the context of farmland available in Southland for land based primary production. There is approximately 551,648 ha of land use capability class 1-3 in Southland¹⁰⁶, of which this site is 0.02%.

The project rehabilitation philosophy is to return the land and soil to essentially the same or better as was previously existing. To this end, the overall proposal will have no impact on the productive capacity of the land on completion of rehabilitation.

It is appropriate to apply clause (g) and none of the other exemption criteria are relevant to this proposal. For clarity, exemption (j)(iii) is unlikely to apply, as the scale of the proposal is not sufficient to create “significant national public benefit”. The proposed use of land is concluded to be not inappropriate under section 3.9(2) of the NPSHPL.

Moving to section 3.9(3), which requires a that any use of HPL minimises or mitigates loss of HPL and avoids or mitigates potential for reverse sensitivity effects on nearby land-based primary production. There is no permanent overall loss of HPL, and the Applicant’s proposal is not a sensitive activity that may create reverse sensitivity effects.

In summary, the proposal meets the exemption criteria for a use of HPL, and overall is consistent with the objective and policies of the NPSHPL.

6.2.3 National Policy Statement for Indigenous Biodiversity 2022 (“NPS-IB”)

The NPSHPL came into effect from 4 August 2023. The Objective of the NPS-IB is to maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity. This is to be achieved:

- (i) *through recognising the mana of tangata whenua as kaitiaki of indigenous biodiversity; and*
- (ii) *by recognising people and communities, including landowners, as stewards of indigenous biodiversity; and*
- (iii) *by protecting and restoring indigenous biodiversity as necessary to achieve the overall maintenance of indigenous biodiversity; and*
- (iv) *while providing for the social, economic, and cultural wellbeing of people and communities now and in the future.*

The proposal is likely to involve disturbance to indigenous biodiversity primarily through work in and near the waterways. The Applicant proposes to mitigate these effects by

¹⁰⁶ National Policy Statement – Highly Productive Land Cost-Benefit Analysis, Fig 2.1, page 26, June 2020, M.E consulting

improvements to the rehabilitated stream channels, including riparian plantings, a higher proportion of native species and cobble substrate with minimal sediment cover.

The Applicant recognises the mana of tangata whenua as kaitiaki of indigenous biodiversity. The Applicant has engaged in several conversations with Hokonui Rūnanga and expects further engagement as part of the resource consent process.

The Applicant has provided for a number of enhancements to waterways as part of the project and will maintain these through to the end of their rehabilitation period. Following this, it is expected that the waterway area will be maintained in the typical way, by Council, community groups and landowners as appropriate.

The proposal provides for the restoration of indigenous biodiversity, by enhancements to the existing waterways. Further, the proposal provides for the social, economic and cultural wellbeing of people and communities by providing direct employment and indirect economic benefits to the wider community.

Supporting Policies are set out in section 2.2 of the NPS-IB. A full assessment against each Policy is provided in **Attachment [S]**.

Overall, the proposal is considered to be consistent with the NPS-IB.

6.2.4 Southland Regional Policy Statement 2017

The Southland Regional Policy Statement is fully operative, with Objectives and Policies spanning a number of chapters. Refer to **Attachment [S]** for the comprehensive assessment. Key matters are discussed below.

Objective WQUAL.1 seeks to safeguard the life-supporting capacity of water and related ecosystems, and that the quality of water is maintained or improved. Supporting **Policy WQUAL.1** manages discharges and land use activities to maintain or improve water quality. The proposal affects water quality in the Waikaka Stream and Shepherd's Creek and will result in:

- temporary adverse effects of sediment on water quality from the diversion activities, which are expected to be minimised by the construction methodology and result in no decrease in water quality outside the mixing zone; and
- no anticipated decrease in water quality outside the mixing zone for the ongoing dewatering water, GRP process return water and stormwater discharge.

The proposal is considered to safeguard the life-supporting capacity of water and related ecosystems, subject to the proposed mitigation measures. The proposed activity is expected to comply with the relevant water quality standards, and good practise mitigation measures will be utilised to limit the effects of the discharges. Any adverse effects will be limited in duration and degree. The long-term effects on the life-supporting capacity and water quality in the Waikaka Stream are expected to be positive due to the proposed rehabilitation measures.

Policy WQUAL.2 directs particular attention to the management of sediment. Robust sediment control measures are proposed to minimise the discharge of sediment, with monitoring to confirm the effectiveness of these.

Objective WQUAN.1 seeks to sustainably manage water resources through the use of flow, level and allocation regimes. Supporting **Policies WQUAN.1 and WQUAN.2** seek to maintain instream values and avoid over-allocation respectively. Flows in the Waikaka Stream will increase as a result of the dewatering discharge and groundwater levels will be temporarily drawn down, but within sustainable limits and with any effects on surrounding users mitigated by replacing their water supply. To this end, no adverse effects on the life-supporting capacity or instream values of water resources are expected to arise from changes to local water levels and flows, and the proposal does not cause any water resource to become over-allocated.

Objective BRL.2 and **Policy BRL.4** provide for the maintenance of public access to rivers, though an exception for public safety is provided in BRL.4(c). Public access to parts of the Waikaka Stream and Shepherd's Creek will be restricted for a temporary period, while construction / mining work is occurring and also to enable a period for new plantings to establish. Alternative public access options, particularly for recreational anglers, are available. Public access will be temporary and restored on completion of the rehabilitation of the Waikaka diversion channel.

Objective RURAL.1 seeks to achieve sustainable use of the rural land resource (in respect of mineral extraction and other activities). **Policy RURAL.1** recognises the development of the rural land resource, for example through mining, enables people and communities to provide for their social, economic and cultural wellbeing. The proposed activity is considered to be a sustainable use of the rural land resource by protecting the soils resource, return of land to agricultural use and productivity post-mining and continuous rehabilitation approach.

Objective RURAL.2 safeguards the life-supporting capacity of soils and supporting **Policy RURAL.4** seeks to avoid irreversible loss of high value soils from productive use. This proposal avoids irreversible loss of highly productive soils, through dedicated topsoil management preservation as outlined in section 5.19 of the AEE. There will be no permanent loss of productive agricultural land on the basis of continuous rehabilitation back to pasture post-mining.

Objective BIO.2 seeks to maintain and protect indigenous biodiversity in Southland. Supporting **Policy BIO.4** manages “a full range of indigenous habitats and ecosystems to achieve a healthy functioning state, and to ensure viable and diverse populations of native species are maintained...”. In giving effect to this policy, the following adverse effects are to be given regard:

“(i) fragmentation of, or reduction in the extent of, indigenous vegetation or habitats of indigenous fauna;

“(ii) fragmentation or disruption of connections and linkages between ecosystems or habitats of indigenous fauna;

“(iii) loss of, or damage to, buffering of ecosystems or habitats of indigenous fauna;

(iv) loss or reduction of rare or threatened indigenous species' populations or habitats."

The proposal will maintain ecological connections and corridors, by ensuring that the diversion channels are established and stabilised prior to diverting flow. Additional planting of native species along the rehabilitated sections of the streams will ensure there is no overall net loss to indigenous vegetation except temporarily during the construction phase. There is likely to be a reduction in native vegetation during the construction period, and a net increase to indigenous vegetation on completion of rehabilitation. There are no known rare or threatened indigenous species impacted by the proposal.

Many additional Objectives and Policies in the SRPS are relevant to the proposal and are covered in additional detail in **Attachment [S]**. For the reasons discussed above and in **Attachment [S]**, on balance overall, the proposal is considered to be consistent with the Objectives and Policies of the Southland Regional Policy Statement.

6.2.5 Southland Regional Water Plan

The RWP is fully operative, with Objectives and Policies spanning a number of chapters. Refer to **Attachment [S]** for the comprehensive assessment. Key matters are discussed below.

Objective 2 seeks to maintain water quality beyond the zone of reasonable mixing for discharges. **Policy 3** allows *"no discharges to surface water bodies that will result in a reduction of water quality beyond the zone of reasonable mixing, unless it is consistent with the promotion of the sustainable management of natural and physical resources, as set out in Part 2 of the Resource Management Act 1991, to do so."* The proposal has been designed with robust sediment control measures to minimise any effects on the water quality in the Waikaka Stream, with these measures expected to ensure that water quality is maintained outside the reasonable mixing zone.

Objective 9 seeks to ensure that the volume of groundwater abstracted is sustainable. The volume of groundwater to be abstracted by dewatering has been assessed as being approximately 43% of the predicted aquifer recharge (in combination with other existing takes) and is therefore considered to be sustainable.

Policy 28 requires avoidance of significant adverse effects on long-term aquifer storage volume, existing water users, surface water flows and aquatic ecosystems and habitats and groundwater quality. The proposal will not result in any significant effects on the matters raised in the policy. Effects on long term aquifer storage volumes are no more than minor considering the temporary nature of the activity, and proportion of estimated allocation available. Existing water users that may be affected have been identified and their supply will be protected by proposed conditions of consent whereby WGML will provide an alternative water source for any wells adversely affected. The effects on surface water flows will be net positive, due to the discharge of dewatering water to the Waikaka Stream. Effects on groundwater quality are managed by ensuring that only cleanfill material is backfilled into the mine pit.

Objective 10 requires that the diversity and integrity of aquatic and riverine habitats and ecosystems are maintained or enhanced. The Dungey report provides a study of existing habitats and ecosystem diversity in the Waikaka Stream, and specifications to ensure that the habitat and ecosystem diversity is replicated and improved in the Waikaka Diversion channel. The Applicant aims to achieve an enhancement of habitat and ecosystem values by increasing the proportion of native riparian planting and cobble substrate in the rehabilitated stream channel. Habitat and ecosystem integrity will be maintained by continuous flow through diversion channels and prompt rehabilitation of the stream channel following works.

Objective 14 is inserted by the NPS-FW and requires that fish passage is maintained or improved. Fish passage will be maintained in the Waikaka Stream, though may be temporarily obstructed in artificial waterbodies while work is being undertaken. Any stranded fish will be salvaged by an appropriately qualified person, as described in **section 5.8.4** above.

Many additional Objectives and Policies in the RWP are relevant to the proposal and are covered in additional detail in **Attachment [S]**. For the reasons discussed above and in **Attachment [S]**, overall, the proposal is considered to be consistent with the Objectives and Policies of the RWP.

6.2.6 Proposed Southland Water and Land Plan

Environment Southland's proposed Southland Water and Land Plan was made partially operative following a council meeting in January 2021. Parts of the PSWLP remain under appeal, which are identified in the comprehensive assessment (**Attachment [S]**).

Many of the key Objectives and Policies in the PSWLP cover matters that have been addressed in the RWP and SRPS in the preceding sections. For this reason, the reader is referred to the detailed assessment in **Attachment [S]**.

For the reasons discussed above and in **Attachment [S]**, the proposal is considered overall to be consistent with the Objectives and Policies of the PSWLP.

6.2.7 Southland Regional Air Plan

The Regional Air Quality Plan for Southland (1999) has been partially reviewed, and the current operative Southland Regional Air Plan (2016) incorporates both the operative provisions of the Stage 1 Air Plan review (2016) and the remaining operative provisions of the 1999 Air Plan (Stage 2). Stage 1 of the Air Plan is not relevant to the project, though Stage 2 is.

Objective 4.2.1 seeks to maintain good ambient air quality for Southland. This is supported by **Policy 4.3.5** which requires that ambient air quality is protected. Dust control measures for the project are covered in **section 5.11**, including progressive rehabilitation and good industry practice dust control measures. A dust management plan will be detailed prior to the commencement of work to ensure that dust emissions will be actively managed and minimised to maintain good local ambient air quality.

Overall, the project is consistent with the Southland Regional Air Plan.

6.2.8 Southland Regional Effluent Land Application Plan

Gold processing on site is an industrial or trade process, though mineral extraction is not. The GRP process return water meets the definition of 'effluent' in this plan, and hence the Objectives and Policies are considered in relation to GRP process return water only. A detailed assessment is provided in **Attachment [S]**.

Noting that the content of the GRP process return water is the natural material (i.e., clays, silts, etc.) mixed with dewatering water, the discharge of the GRP process return water into the settlement ponds will not result in less than minor to nil adverse effects on the values identified in **Objectives 4.1.1 – 4.1.6** and the relevant supporting policies.

For the reasons discussed above and in **Attachment [S]**, overall, the proposal is considered to be consistent with the Objectives and Policies of the Southland Regional Effluent Land Application Plan.

6.2.9 Gore District Plan

The Gore District Plan is fully operative, with Objectives and Policies spanning a number of chapters. Refer to **Attachment [S]** for the comprehensive assessment. Key matters are discussed below.

Chapter 2 relates to matters of national importance, however none of these are relevant to this proposal or the project site area.

Chapter 3 contains Objectives and Policies relating to land use activities generally. **Objective 3.3(1)** seeks to “*maintain and enhance*” amenity values “*whilst respecting the different values and characteristics that exist within each area*”. **Objective 3.3(2)** requires that land use activities “*do not adversely affect the quality of the environment and are compatible with the characteristics and amenity values of each locality.*” **Objective 3.3(7)** requires that the effects of earthworks are avoided, remedied or mitigated. Supporting policies seek to recognise that earthworks are necessary **Policy 3.4(10)**, while seeking to avoid, remedy or mitigate effects arising **Policy 3.4(11)**.

The character of the area is rural pastoral, comprising working farms and a history of gold mining activity on the site. The site is not located in an Outstanding Natural Landscape, nor near an Outstanding Natural Feature. The V+E report identifies that mining is a primary production activity that only ever occurs in a rural landscape and concludes that overall effects on landscape and amenity value will be low-moderate for the duration of the mining activity, reducing to no effect on completion of rehabilitation.

The Plan allows a degree of earthworks and activity and so Objective 3.3(1) should not be read as to mean zero effects on amenity are acceptable. Earthworks and land disturbance are a part of farming activity and other rural industries, meaning the proposed activity is not wholly out of character with the rural environment. Local amenity and the quality of the environment are maintained by the various mitigation

measures, including the grass bunds and planting proposed, progressive rehabilitation, setbacks from local neighbours and public roads and operating hours restrictions.

On balance, for the reasons outlined above, the proposed activity is considered to achieve Objectives 3.3(1) and (2), and supporting policies, when considered as a whole, i.e., including operational mitigation measures, site rehabilitation, and stream diversion restoration and enhancement.

Objectives and Policies in Chapters 4A (Natural Hazards), 5 (Transportation) and 6 (Hazardous Substances) and additional Objectives and Policies in Chapter 3 (e.g., relating to signage and effects on infrastructure) are relevant to the proposal and are covered in additional detail in **Attachment [S]**.

For the reasons discussed above and in **Attachment [S]**, overall, the proposal is considered to be consistent with the Objectives and Policies of the Gore District Plan.

6.2.10 Proposed Gore District Plan

The Proposed Gore District Plan has been notified and hearings are currently underway. A comprehensive assessment of the proposal against the PGDP objectives and policies is provided in **Attachment [S]**. Key matters are discussed below.

Objective **GRUZ-O1** recognises the importance of primary production to the social and economic wellbeing of the District. Supporting Policy **GRUZ-P1** enables existing and future primary production. Primary production is defined as:

- (a) any aquaculture, agricultural, pastoral, horticultural, mining, quarrying or forestry activities; and*
- (b) includes initial processing, as an ancillary activity, of commodities that result from the listed activities in (a);*
- (c) includes any land and buildings used for the production of the commodities from (a) and used for the initial processing of the commodities in (b); but*
- (d) excludes further processing of those commodities into a different product.*

The mining activity and initial process of gold bearing wash meets the definition of 'primary production' and are activities that are specifically enabled by **Objective GRUZ-O1** and **Policy GRUZ-P1**. The project site land is currently used for agricultural primary production and will be returned to that use on completion of mining, consistent with these provisions.

Objective **GRUZ-O2** identifies that the character and qualities of the General Rural Zone comprises a variety of primary production activities, a low degree of built form, and high levels of open space and rural amenity. As noted above, mining is one of the primary productive land uses that the PGDP identifies as comprising part of the character and qualities of the General Rural Zone. The proposal does include some built form, but these are well set back from neighbours and road boundaries, maintaining a sense of openness. High levels of rural amenity are considered to include an environment where there are a 'variety of primary production activities'; essentially, a working rural environment. The V+E report notes that:

*"In an overall sense, mining activity is one that only ever occurs in a rural landscape. As the relevant objectives and policies reflect, it is a primary production activity; one that is not at odds with a rural landscape, but the scale of which will cause some disruption. The historical association of this site and the wider locality with mining is noted."*¹⁰⁷

Policy GRUZ-P6 requires the environmental effects of mining to be managed and that mining activities be avoided where there are adverse cultural or environmental effects that cannot be avoided, mitigated or offset. Section 5 of this AEE describes in detail the range of potential environmental effects and how these are to be addressed such that effects are avoided, mitigated or offset. The Applicant continues to consult with Hokonui Rūnanga regarding cultural effects of the proposal.

Objective ECO-O1 seeks to maintain indigenous biodiversity in the district and protect SNAs. This is supported by **Policy ECO-P6** which promotes the restoration of indigenous biodiversity by prioritising a number of factors, and **ECO-P10** which maintains indigenous biodiversity by various strategies. The project is not located in a SNA, and although there may be temporary impacts on indigenous biodiversity, the proposed remediation measures are anticipated to preserve and overall enhance indigenous biodiversity values. For example, suitably qualified persons will capture fish from the diverted section of the stream channel and relocate them to an appropriate location in the Waikaka Stream. Furthermore, native plant species will be prioritised for reestablishing the diverted river sections, further supporting biodiversity rehabilitation efforts.

Public access is sought to be provided to and along waterbodies with high recreational, scenic, Ngāi Tahu cultural or amenity values by **Objective PA-O1** and is supported by **Policy PA-P2**. Public access to the Waikaka Stream through existing access points will be maintained throughout the project's duration and only temporary restrictions on downstream access are planned for safety reasons. These restrictions are consistent with **PA-P5** which seek to restrict public access in areas which would have an adverse effect on several matters, including health and safety.

Objective SASM-O1 requires that all land, waterbodies and natural features in Gore District are recognised as sites and areas of cultural significance *to mana whenua and are afforded appropriate considerations in relation to their management, development, and use*. There are a number of Objectives and Policies throughout the PGDP which direct consideration of cultural values and effects. This proposal has been redesigned in response to early feedback from Hokonui Runanga and further consultation on this revised version of the proposal is ongoing, which will further inform these assessments.

For the reasons discussed above and in **Attachment [S]**, the proposal is considered overall to be consistent with the Objectives and Policies of the Proposed Gore District Plan.

¹⁰⁷ Attachment [R], V+E Report, p.20.

6.2.11 Iwi Management Plan

Te Tangi a Tauira - The Cry of the People is the Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008. There are many Ngā Kaupapa (Policies) which are relevant to the proposal, and these are covered in detail in **Attachment [S]**. Key matters are discussed below, though note that the Applicant is seeking a cultural impact assessment from tangata whenua and therefore commentary below and in **Attachment [S]** should be read as preliminary comments only.

A number of policies in Chapter 3.5¹⁰⁸ address the potential for archaeological sites and wāhi tapu. Notably Chapter 3.5.9 **Policy 1** requires the avoidance of mining in areas of cultural significance or with wāhi tapu values. WGML have sought specialist archaeological advice which has identified only one potential archaeological site (of non-Māori origin). Further advice will be sought from tangata whenua on potential wāhi tapu or Māori archaeological sites, and WGML propose an Accidental Discovery Protocol as condition of consent.

Chapter 3.5.9 relates to mining. **Policy 3** directs that mine restoration plans should provide for a number of matters, including site beautification, post- mining restoration and monitoring, and opportunities to enhance cultural values. The proposal includes restoration of the mine site to pre-mining use, and beautification of the Waikaka Stream and Shepherd's Creek in sections where diversions have occurred. The native planting proposed provides an opportunity to enhance cultural values along the Waikaka Stream. **Policy 4** also directs post- mining monitoring to be for a period of 5-years, however this is not expected to be necessary, as no chemical processing methods that may result in leachates form part of the proposal. WGML will adopt monitoring to confirm that restoration / rehabilitation has occurred as planned.

Chapter 3.5.9 **Policy 7** seeks to avoid adverse effects on land, water, mahinga kai resources and places and biodiversity from mining. WGML is not aware of any mahinga kai resources impacted by the proposal and will consult with tangata whenua to confirm. Adverse effects on land, water and biodiversity are expected to be avoided, remedied, mitigated or offset due to the methodology and mitigation measures proposed.

Chapter 3.5.9 **Policy 9** seeks to avoid any discharge of contaminated water to surface or groundwater from mining. The proposal does involve discharges from the site to surface and groundwater, however stormwater and gold processing return water will be treated via a slimes treatment plant and a three-pond settlement system, ensuring that the quality of the discharge will comply with water quality standards after reasonable mixing.

Chapter 3.5.11 **Policy 10** requires unimpeded passage for native fish species through ensuring continuity of flow ki uta ki tai. The proposal will provide for unimpeded fish passage in the natural streams and diversion channels, with continuity of flow forming a fundamental part of the proposal.

¹⁰⁸ 3.5.8 (1), (2), 3.5.9 (1) and 3.5.21 (5)

Several policies¹⁰⁹ indicate that discharge to land is preferable to discharge to water. The proposal does involve discharge to the Waikaka Stream, though discharge to land is not a practical option due to the rate of discharge. Further, the nature of dewatering is that discharge to land would frustrate the purpose of the take, being to create a dry working area. Advice will be sought from tangata whenua on this matter.

Chapter 3.5.17 **Policies 1 and 6** identify that planting native species can be used to mitigate the effects of land use activities and **Policy 4** notes that indigenous plants that are removed should be replaced. Indigenous vegetation will be removed from the Waikaka Stream and Shepherd's Creek riparian margin. Indigenous vegetation will be planted in the riparian margin of the rehabilitated stream channel, and though some non-native plants may be used, no pest species will be planted.

Chapter 3.5.19 identifies the importance of riparian zones and **Policy 1** promotes the establishment and management of riparian zones to mitigate adverse effects of land use activities on streams. The proposal includes rehabilitation and enhancement of the affected riparian zone, with consideration for channel morphology, habitat creation and planting. **Policy 9** does prevent the use of willow and other exotic species in bank edge planting. The Applicant does propose to include the use of willow in planting the riparian area of the new Waikaka Diversion channel, in order to assist with rapid stabilisation and shading of the channel, which will assist with water quality outcomes. The Applicant does not propose to use pest willow species.

There are a number of other Ngā Kaupapa relevant to the proposal and are covered in additional detail in **Attachment [S]**. The Applicant continues to consult with tangata whenua and is seeking a cultural values assessment which will provide additional assessment against Te Tangi a Tauria.

6.3 Section 104B, RMA

Section 104B applies to discretionary and non-complying activities and enables the consent authority to grant or refuse the application and impose conditions in accordance with section 108.

To assist with understanding the proposal, the Applicant has provided a number of volunteered consent conditions included as **Attachment [I]**. The Applicant anticipates that these will be subject to discussion and revision following review of the application by Council and submissions.

6.4 Section 104D, RMA

Section 104D enables a consent authority to grant consent for a non-complying activity only if one of the two limbs of s104D (1) are met. Not all the adverse effects of the activity on the environment can be mitigated to a minor level. Based on the assessment in the application and supporting attachments, the proposal can be mitigated such that

¹⁰⁹ 3.5.12 (1), 3.5.13 (5)

it is not contrary to the relevant objectives and policies of the relevant plans and proposed plans. Hence the proposal can pass limb (b) of the gateway test under section 104D and the consent authority may grant resource consent.

6.5 Section 105, RMA

Section 105(1) sets out additional matters for consideration, as follows:

- (a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and*

The nature of the discharge and the sensitivity of the receiving environment have been described in **sections 2.3.4, 3.4.4, 3.5 and 5.7** above.

- (b) the applicant's reasons for the proposed choice; and*

The discharge of the Waikaka / Shepherd's Creek diversion flow is chosen to enable the retention of flow in the Waikaka Stream channel and continuity of surface water flows. A discharge to land would result in a poorer environmental outcome and is impractical.

The discharge of dewatering water, process return water, and stormwater to the Waikaka Stream is chosen as to discharge to land is impractical and would likely result in water entering the mine pit, frustrating the purpose of dewatering to create a dry working area.

- (c) any possible alternative methods of discharge, including discharge into any other receiving environment.*

There are no other practical methods of discharge, nor other receiving environments, for the reasons noted above.

6.6 Section 107, RMA

Section 107 sets out additional matters for consideration in relation to discharges.

The proposed discharges are expected to meet the water quality standards beyond the reasonable mixing zone and will not give rise to any of the effects listed in section 107(1).

6.7 Purpose and principles of the RMA

The purpose of the RMA, as set out under Section 5 (2) is to promote the sustainable management of natural and physical resources. The relevant matters in Sections 6, 7, and 8 of the RMA also require consideration.

Matters of national importance under Section 6 that need to be recognised and provided for in this application:

- (a) *the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*

The proposal provides for rehabilitation and enhancement of natural character, thereby achieving the overall preservation of natural character.

- (d) *the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:*

Public access to the Waikaka Stream will be restricted for a temporary duration and to a localised area. Restriction to public access is necessary for public safety and will be restored on completion of the rehabilitation.

- (e) *the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:*

Cultural advice is being sought in relation to these matters, however the Applicant's preliminary investigations have not identified any wāhi tapu or other known sites of cultural significance within or affected by the project area.

- (f) *the protection of historic heritage from inappropriate subdivision, use, and development:*

Appropriate advice and an Archaeological Authority have been sought in relation to a potential archaeological site within the project area.

- (g) *the management of significant risks from natural hazards.*

The proposal does not create any significant risks from natural hazards. Any risk to the mine operation from flooding will be managed by low bunds to prevent inundation where possible, and contingency planning to provide for the health and safety of people on the site.

The RMA specifies that particular regard shall be had to the relevant matters listed in Section 7 including:

- (a) *kaitiakitanga:*

- (aa) *the ethic of stewardship:*

The Applicant continues to engage with tangata whenua and seek their views on matters of cultural significance, enabling kaitiakitanga.

- (b) *the efficient use and development of natural and physical resources:*

The proposal is designed to efficiently use the water taken for dewatering purposes by reusing it during the processing of gold, and efficiently use the land resource by continuous rehabilitation enabling progressive return to farmland.

- (c) *the maintenance and enhancement of amenity values:*

Effects of noise and dust can be controlled within the site so as to maintain amenity values. Any adverse effects on visual amenity will be temporary, mitigated by progressive rehabilitation of the mine, installation of screening around the infrastructure

area and SP1, and grassing long term stockpiles, and remedied by rehabilitation of the site.

(d) intrinsic values of ecosystems:

The proposal will temporarily impact the Waikaka Stream and Shepherd's Creek ecosystem, however the rehabilitation proposals have been developed to contribute to improved ecological values in these affected ecosystems.

(f) maintenance and enhancement of the quality of the environment:

The proposal will maintain the quality of the environment through the mitigation measures proposed to limit environmental impacts, and the rehabilitation strategy.

(g) any finite characteristics of natural and physical resources:

The proposed groundwater abstraction has been assessed as being at a sustainable level, and within the characteristics of the resource.

(h) the protection of the habitat of trout and salmon:

Any trout discovered in work areas will be salvaged and relocated and their habitat rehabilitated in the Waikaka Diversion.

(i) the effects of climate change:

The proposal is unlikely to be affected by climate change, however the diversion channels and rehabilitated stream profiles have been designed for a 1 in 20-year AEP event with consideration for effects of climate change on weather and flooding patterns.

Section 8 requires that the principles of the Treaty of Waitangi are taken into account. The Applicant is in the process of consultation with tangata whenua in order to give effect to section 8 of the RMA.

For the reasons outlined in this report, the proposal is consistent with the purpose and principles under Section 5, and the associated matters under Part 2 of the RMA. The proposal represents an efficient use of natural and physical resources, and will be undertaken in a manner which avoids, remedies, mitigates and offsets adverse effects on the environment. It is considered that the proposal is consistent with the purpose and principles of the RMA and accords with the definition of sustainable management.