Gore District Council Decisions

NOTIFICATION UNDER s95A AND s95B AND DETERMINATION UNDER s104

Resource Management Act 1991

Application reference	LU 24023
Applicant	Greenbriar Limited
Proposal	Application under Section 88 of the Resource Management Act 1991 (RMA) for resource consent: • to extend the 178 hectare mining operation area at the New Vale Mine by an additional 145 hectares; and to undertake ground disturbance activities associated with the mining activity that will exceed twelve months under the Operative Gore District Plan; and • to undertake indigenous vegetation clearance and land disturbance under the Proposed Gore District Plan; and • to undertake soil disturbance and removal under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
Location	640 Miller Road, RD4 (New Vale Mine, Waimumu)
Legal Descriptions	Lot 72-73 Deposited Plan 177 held in RT SL211/99 Lot 74-75 Deposited Plan 177 held in RT SL211/100
Activity Status	Discretionary activity
Decision Date	17 September 2024

SUMMARY OF DECISIONS

1. Pursuant to sections 95A-95F of the Resource Management Act 1991 (**RMA**), the application will be processed on a **non-notified** basis given the findings of Section 5 of the Section 95A and 95B report. This decision is made by Werner Murray, on 17 September 2024, under delegated authority pursuant to Section 34A of the RMA.

2. Pursuant to Section 104 and Section 104B of the RMA, consent is **GRANTED SUBJECT TO CONDITIONS** outlined in this report of the Section 104 decision imposed pursuant to Section 108 of the RMA. This consent can only be implemented if the conditions in this report are complied with by the consent holder. The decision to grant consent was considered by Werner Murray, on 17 September 2024, under delegated authority pursuant to Section 34A of the RMA.

1. THE PROPOSAL

The Applicant, Greenbriar Limited (trading as New Vale Coal), has a land use consent granted by the Gore District Council to carry out mining and associated activities at the New Vale Mine site (resource consent reference LU 2006/13, dated February 2007). This consent enables mining to occur within a defined 178 hectare area at 640 Miller Road, RD4.

The Applicant seeks resource consent to extend the existing mining operation area at the New Vale Mine by an additional 145 hectares, to enable the extraction of coal from a 30ha area outside the boundaries of resource consent LU 2006/13. The proposal includes associated ground disturbance activities and the removal of indigenous vegetation and wetlands.

The proposed extension will enable the New Vale Mine to operate for approximately four additional years (approximately 2038) depending on the demand for coal. At this point (end of life), the mine will be restored to farmland and a lake with areas of revegetation planting and wetlands.

The proposal is detailed on the Site Layout Plan in Figure 1 and is included as Appendix A to this decision report. The blue outline shows the existing consented extraction boundary under resource consent LU2006/13; the red outline shows the proposed site boundary under this application; and the yellow dashed lines show the proposed extraction area extension being sought under this application.

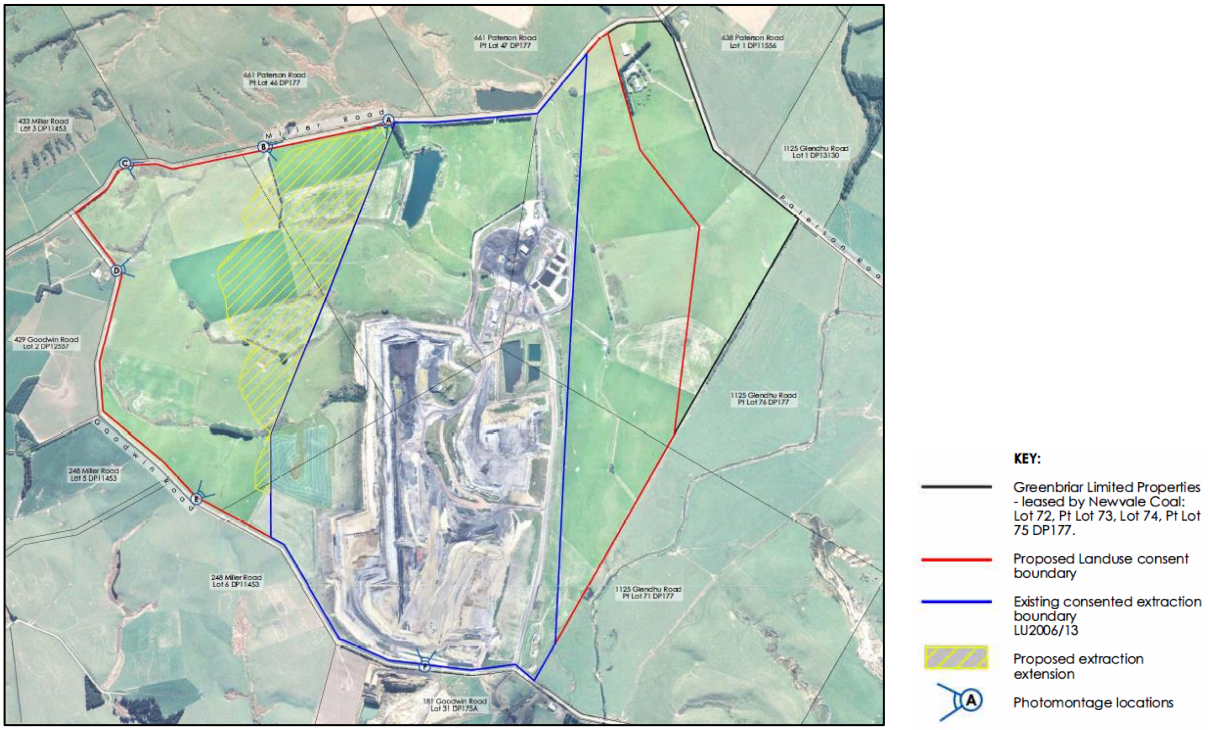


Figure 1: Extract of the Proposed Site Layout Plan (SITE Landscape Architects, August 2023)

The Applicant has provided a planning report as part of the application titled, *"Greenbriar Ltd, New Vale Opencast Mine Extension – Resource Consent Application and Assessment of Environmental Effects",* prepared by Taylor Planning, dated June 2024. This planning report is hereon referred to as the 'Applicant's AEE' and is included as Appendix B to this decision report.

A detailed and comprehensive description of the proposed activities is provided in section 5 of the Applicant's AEE. This description is adopted in full, and in summary:

- The existing 178 hectare mine area is proposed to be extended by 145 hectares in area (to 323 hectares in total). The proposed extension will increase the land area available to be mined and provides additional space at the site to implement mitigation and ecological enhancement works.
- The additional land proposed to be included in the New Vale mining area includes:
    - An area of 89 hectares on the north-west side of the existing mine. Of this total area, 30 hectares is proposed to be used for coal extraction (open cast mining activities) and 59 hectares is proposed to be used for stockpiling topsoil and subsoil for reuse at the end of mine life; and
    - An area of 56 hectares on the eastern side of the existing mine is proposed to be used for wetland restoration and enhancement, and the construction of an Engineered Land Form.
- Mining activities will be staged from a south to north direction with only one part of the overall mine site used for operational mining at any one time. A Mining Plan is prepared before extraction activities occur. Each Mining Plan covers a block of approximately 3.5 to 4 hectares. The proposed extension to the mine will not increase the scale or intensity of the mining activities operating at any one time.
- The length of time that mining in the extension area will be carried out is anticipated to be up to approximately 12 years (2026 until 2038) depending on the demand for coal, being an additional four years. However, no consent duration is proposed. The mining schedule provided in the Applicant's AEE is not a strict schedule. The timelines for extracting coal will be dependent on market demand. Therefore, the mining schedule is fluid and subject to change.
- Indigenous vegetation clearance and earthworks will be required within all areas associated with the extension. As a conservative estimate, the proposal involves the removal of up to 9,159m^2 of indigenous planting (this estimate also includes exotic vegetation) within the mapped natural inland wetlands. In order to off-set this, approximately 9,121m^2 of indigenous planting is proposed to enhance the existing wetlands, and approximately 20,983m^2 of indigenous vegetation planting is proposed to restore the existing wetlands. A separate, concurrent resource consent under the National Environmental Standards for Freshwater is being sought from Environment Southland for the proposal removal of the wetlands.
- At the end of mine life, the mine pit (approximately 48 hectares in total) will be filled with water and turned into a lake, and native plantings will be established around the perimeter. The remainder of the land within the extension area will be rehabilitated with pasture grasses and returned to either pastural agricultural activities, or constructed and restored wetlands.

The following reports have been provided in support of the application:

- Landscape Assessment Report – New Vale Mine Extension (and Plans and Views), prepared by SITE Landscape Architects, dated 15 August 2023, included as Appendix C to this decision report.
- New Vale Mine Wetland Delineation and Ecological Assessment, prepared by e3Scientific, dated 18 January 2024, included as Appendix D to this decision report.
- New Vale Mine Economic Impact Analysis, prepared by Sense Partners, dated 12 February 2024, included as Appendix E to this decision report.
- New Vale Coal Mine, Site Environmental Management Plan, dated 18 July 2023, included as Appendix F to this decision report.
- Cultural Statement Prepared on Behalf of Hokonui Runanga Inc. in relation to Resource Consent Applications by Greenbriar Ltd for New Vale Mine, dated 22 May 2024, included as Appendix G to this decision report.

- Addendum to Resource Consent Application, prepared by Gallaway Cook Allan, received 16 September 2024.

These reports are summarised in subsequent sections of this report.

Further information was requested on 25 June, 15 July and 13 September 2024. The information provided on 04 and 30 July and 16 September 2024 forms part of this application and is included as Appendix B to this decision report.

2. SITE DESCRIPTION

The sites subject to this application are shown in the following table and in Figure 2, and are collectively herein referred to as the 'site'.

Record of Title	Legal Description	Area
SL211/99	Lot 72-73 Deposited Plan 177	190.0808ha
SL211/100	Lot 74-75 Deposited Plan 177	163.9786ha

Figure 2: Location of the site (GRIP, June 2024)

A detailed and comprehensive description of the site and the existing mining activities are provided in sections 2 and 3 of the Applicant's AEE. The following clarifications and additions are provided:

- 'Block X Waimumu Hundred' is referred to at the end of the legal description on page 9 of the Applicant's AEE. This is an old legal description for the site that is not referenced on the current records of title.
- Record of title SL140/191 shows that Lot 72-75 DP177 are held in a coal estate.

- LU 2006/13 provides for the storage of hazardous substances at the site, and this was varied by LU 2009/06 to increase the quantities of hazardous substances. There will be no change in the quantities or type of hazardous substances stored at the site.
- The consents, LU 2006/13 and LU 2009/06 will be retained by the Applicant to manage the extraction activities within the existing mining area, while the extension of the mining area will be provided for and managed by the consent sought under this current application.
- The proposed mining extension area is currently used for sheep and beef farming.
- Pages 18-20 of the Applicant's AEE lists the various ecological enhancement projects that have been undertaken by the Applicant over recent years. A site visit to the New Vale Mine, the adjoining roads and the surrounding area was completed on 9 July 2024. It is considered that the site description provided in section 2 of the Applicant's AEE is accurate.
- From the site visit, it was observed that some mitigation planting has commenced. Specifically, Stage 1 of the trees / hedgerow identified as 'H' on the 'Proposed Landscaping Plan (2038)' has been planted in part already, in preparation for this mine expansion proposal, and is growing well. A lake has also been formed adjacent to the existing extraction area.
- There are no Significant Natural Areas present within the proposed mining extension area.
- The Council's Senior Roading Asset Manager, Murray Hasler, provides the following summary of the surrounding roads. The site is located south of Miller Road between Paterson Road to the east and Goodwin Road to the west. The sections of Miller Road and Goodwin Road adjacent to the site are local access roads. Miller Road is chip sealed, while Goodwin Road is unsealed. Both sections of these roads have undulating vertical alignment and have some horizontal curves. A 100kph speed restriction applies to both sections of road, however the operating speed is likely to be significantly less due to the characteristics of the roads.

The remainder of the description in sections 2 and 3 of the Applicant's AEE is adopted in full, and in summary:

- The New Vale Mine was established at the site in the 1940s and covers an area of 178 hectares. The mining of coal has therefore been undertaken in this area for over 75 years. The New Vale Mine has long established customers in Southland, Otago and South Canterbury that rely on the supply of coal from the mine to operate their factories and businesses (three dairy factories, four meat processing plants, as well as numerous smaller customers).
- The New Vale Mine only extracts coal as it is required by its customers. It does not extract coal to stockpile it for future sales, nor does it export coal. The extracted coal is processed at a processing plant which is located at the site. On average, the mine extracts 340,000 tons of coal per year, although this is trending down with 286,000 tons extracted in 2023.
- The New Vale Mine formerly operated under a Coal Mining License granted under the Coal Mines Act 1979, which expired in March 2019. The New Vale Mine currently operates in accordance with land use consent LU 2006/13. There is also a comprehensive Site Environmental Management Plan (SEMP) in place (being a requirement of conditions 20-23 of LU 2006/13) to manage the effects of the mine operations, including noise emissions, dust / air quality and groundwater / stormwater runoff, as well as health and safety matters. The SEMP is reviewed by Gore District Council every five years.
- Section 4 of the Applicant's AEE includes a list of the relevant resource consents that are held by the Applicant for the activities at the New Vale Mine from the Gore District Council and Environment Southland.

- The mine, including the proposed extension area, is contained within a broader area of land that is owned by the Applicant, which is 354 hectares in area, and is bound by Goodwin Road to the south and west, and Miller Road to the north. The land owned by the Applicant provides a buffer around the operational mining site to the east and west.
- Access to the site is from both Goodwin Road and Miller Road. Goodwin Road is the primary entrance and exit point for heavy vehicles carting coal, while Miller Road is used by light vehicles.
- The surrounding area is predominantly pastural farmland for dairy grazing and sheep farming, and accommodates some limited residential uses that are associated with farming. There are two dwellings located within 1km of the site boundary.

Operative Gore District Plan

In the Operative Gore District Plan, most of the existing site is located within the Rural Zone (Planning Map DST 19) and the majority of this land is classified as Land Use Capability Class 3 soils on the Council's online High Class Soils Map. Meanwhile, a small part of the existing site is located within the Industrial Zone. The existing processing plant area and associated buildings are located within and on the boundary of the industrial zoned area.

The proposed extension area is located within the Rural Zone. The zoning is shown in Figure 3.

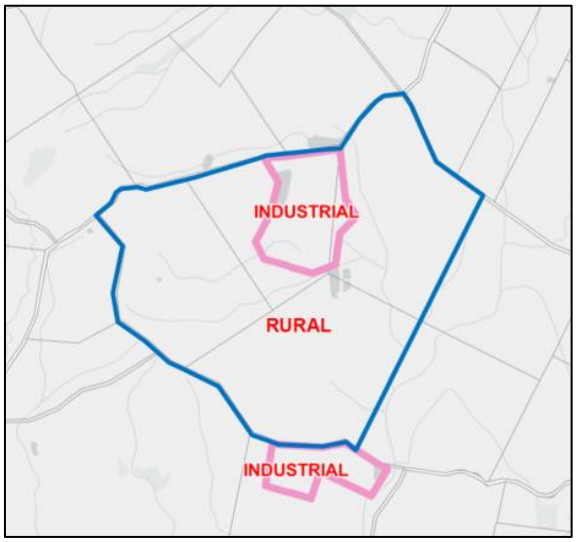


Figure 3: Operative zoning of the site (GoreDC Maps – Operative District Plan)

Part of the site is identified on Environment Southland Regional Council's Selected Land Use Sites Register ('SLUS') as an actual or potentially contaminated site (SLUS-00000278, Partially Investigated), as shown in Figure 4. The entire site is also identified in the Council's online Hazards map as a contaminated site (Areas 153 and 199, Coal Mine, Ref. 185).

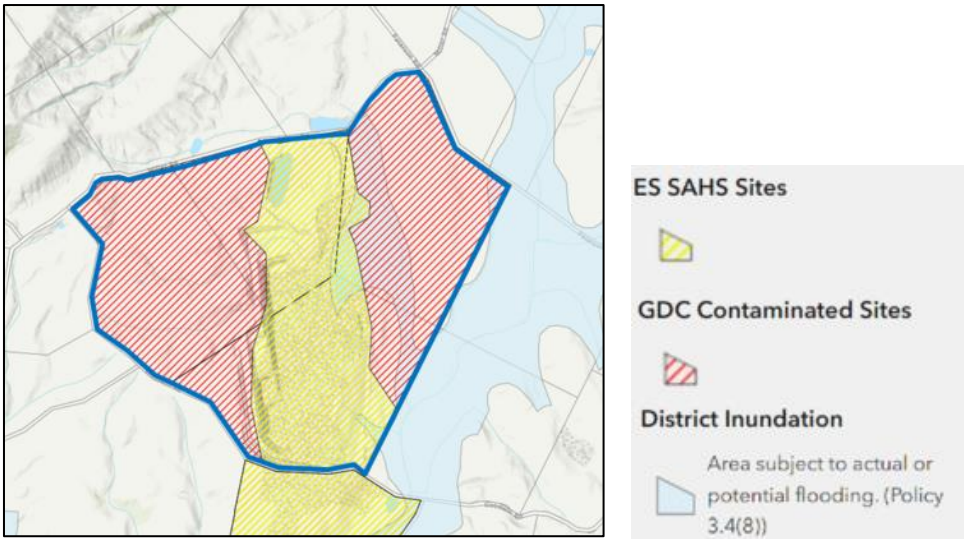


Figure 4: Hazards on the site (GoreDC Maps – Hazard Maps)

The Hazards map also identifies part of the site as an area subject to actual or potential flooding and identifies the liquefaction risk across the site as both 'negligible' and 'medium'.

Proposed Gore District Plan

In the Proposed Gore District Plan (notified 31 August 2023), the entire site is located within the General Rural Zone and part of the site is subject to actual or potential inundation, as shown in Figure 5. The same map also identifies the liquefaction risk across the site as both 'negligible' and 'medium'.

Figure 5: Proposed zoning of the site (GoreDC Maps – Proposed District Plan)

It is noted that the Applicant has made a submission (submission 128) on the Proposed Gore District Plan requesting (a number of matters including) the rezoning of the site to a New Vale Special Purpose Zone. The Applicant proposes that the purpose of the New Vale Special Purpose Zone would be to enable the sustainable management, operation and development of the New Vale Mine. The Applicant did not make a further submission.

Submission 128 was considered at paragraphs 399 to 424 in the S42A report for Hearing Stream 1 – Introduction, General Provisions and Strategic Direction. The recommendation of the Senior Planner is that a 'New Vale Precinct' is included in the General Rural Zone. This would be an efficient and effective way of managing the development of what is a unique site in the General Rural Zone. The hearings on the Proposed Gore District Plan commenced on 5 June 2024 and no decisions have been made to date.

At the time of lodgement and processing this application, there are no other planning notations on the site that are shown on the publicly available Proposed Gore District Plan maps.

3. ACTIVITY STATUS

3.1 Operative Gore District Plan

The Gore District Plan contains the following definitions that are relevant to this proposal:

> ***Mineral Extraction:*** *means to take, win, or extract, by whatever means, a mineral existing in its natural state in land, or a chemical substance from that mineral, for the purpose of obtaining the mineral or chemical substance; but does not include prospecting or exploration; and "to mine" has a corresponding meaning. Mining includes quarrying but does not include extraction from a farm quarry.*
>
> ***Earthworks****: means earthmoving activities and includes:*
> - *Contouring or recontouring of any land;*
> - *Disturbance of land surfaces by moving, removing, placing or replacing soil or by excavation cutting or filling operations or tunnelling;*
> - *Any heap, pile, or storage of materials that results from earthworks;*
> - *But does not include soil cultivation.*

The proposal involves mineral extraction and earthworks.

In the Gore District Plan, most of the existing site is located within the Rural Zone and some of the site is within the Industrial Zone. The proposed mining extension area is located within the Rural Zone. The proposal requires resource consent under the District Plan for the following reasons:

- A **discretionary** activity resource consent pursuant to rule 4.2.4 Discretionary Activity as the proposed mineral extraction activity does not trigger rule 4.2.1 or rule 4.2.2, and is not provided for as a permitted, controlled, discretionary, non-complying or prohibited activity by any other rule in the Plan.

- A **restricted discretionary** activity land use resource consent pursuant to Rule 4.13.1(1) for earthworks exceeding 12 months in duration. The proposed ground disturbance and the deposit of overburden associated with the mineral extraction activity will exceed a period of 12 months. Works will be staged through to 2038.

  The matters over which the Council shall exercise its discretion are the adverse effects of the earthworks or the disturbance of the ground.

Overall, the application is assessed as a discretionary activity under the Operative District Plan.

3.2 Proposed Gore District Plan

The Proposed Gore District Plan was notified for public submissions on 31 August 2023 and the site is located within the proposed General Rural Zone. The Proposed Gore District Plan contains the following definitions that are relevant to this proposal:

> ***Indigenous vegetation:*** *Has the same meaning as per the National Planning Standard for Indigenous Biodiversity – means vascular and non-vascular plants that, in relation to a particular area, are native to the ecological district in which that area is located.*
>
> ***Indigenous vegetation clearance:*** *Means the clearing or removal of indigenous vegetation by any means, including cutting, crushing, cultivation, irrigation, chemical application, drainage, stopbanking, overplanting, burning or any other mechanical means as well as mob stocking.*
>
> ***Land disturbance:*** *Has the same meaning as per the National Planning Standards – means the alteration or disturbance of land (or any matter constituting the land including soil, clay, sand and rock) that does not permanently alter the profile, contour or height of the land.*

The proposal involves indigenous vegetation clearance and land disturbance.

In accordance with s86B of the Act, some of the rules in the Proposed District Plan have immediate legal effect. The proposal requires resource consent under the Proposed District Plan for the following reason:

- A **discretionary** activity resource consent pursuant to rule ECO-R1(3), as the proposal involves the clearance of up to 9,159m^2 of indigenous vegetation (within the proposed 30ha extraction area) and land disturbance (within the proposed 145ha mine extension area). The proposal is not listed in rule ECO-R1 as a permitted activity and will take place outside of a Significant Natural Area.

Overall, the application is assessed as a discretionary activity under the Proposed District Plan.

3.3 National Environmental Standard for Assessing Contaminants in Soil to Protect Human Health 2011 ("NES-CS")

The piece of land to which this application relates is a HAIL site, and therefore the NES-CS is relevant to this application. The New Vale Coal Mine is listed in the Environment Southland Regional Council Selected Land Use Sites Register (SLUS-00000278, Partially Investigated) under the following Hazardous Activities and Industries List (HAIL) categories:

- A17: Storage tanks or drums of fuel, chemicals and liquid waste.
- E7: Mining industries.
- G3: Landfill sites.
- G5: Waste disposal to land.

The site is also identified by Gore District Council as a contaminated site (Areas 153 and 199, Coal Mine, Ref. 185).

The Applicant has not estimated the volume of soil disturbance required across the proposed mining extension area, as this will vary each year. The mining process requires the removal of topsoil and overburden which is situated over the coal seam, to allow access to the seam. All topsoil and subsoils

that are removed are either stockpiled for future use, or carted and spread in rehabilitation areas on the site.

The Applicant notes that preparing a Detailed Site Investigation (DSI) for the proposed mining extension area is not practicable due to the size of the area at 145 hectares and a DSI has not be submitted with the application.

The proposal requires resource consent under the NES-CS for the following reason:

- A **discretionary** activity resource consent pursuant to Regulation 11 of the NES-CS as:
  - The volume of soil disturbance to be undertaken will exceed the permitted quantity of 25m^3 per 500m^2 over a two month period, as set out in Regulation 8.
  - A DSI has not been prepared for the site to support this application.

Overall, the application is assessed as a discretionary activity under the NES-CS.

3.4 Activity Status Summary

The proposal is considered to be:
- a discretionary activity under the Operative District Plan;
- a discretionary activity under the Proposed District Plan; and
- a discretionary activity under the NES-CS.

Overall, the application is being considered and processed as a discretionary activity.

4. NOTIFICATION ASSESSMENT

Sections 95A – 95F (inclusive) of the Resource Management Act 1991 ('RMA') set out the steps the Council is required to take in determining whether or not to publicly notify an application or notify on a limited basis.

4.1 Public notification – Section 95A

In accordance with section 95A, the following steps have been followed to determine whether to publicly notify the resource consent application:

Step 1 – Mandatory public notification

Mandatory public notification, is not required because:

- The applicant has not requested public notification.
- Public notification is not required as a result of a refusal by the applicant to provide further information or refusal of the commissioning of a report under section 92(2)(b) of the RMA.
- The application does not involve exchange to recreational reserve land under section 15AA of the Reserves Act 1977.

Step 2 – Public notification is precluded

Public notification is not precluded as follows:

- There are no rules in a plan or National Environmental Standard that preclude notification.
- The application is not:
  - a controlled activity; or
  - a boundary activity as defined by section 87AAB that is restricted discretionary, discretionary or non-complying.

Step 3 – Public notification is required in certain circumstances

- There are no rules in a plan or National Environmental Standard that require notification.
- A consent authority must publicly notify an application if notification is not precluded by Step 2 and the consent authority decides, in accordance with s95D, that the proposed activity will have or is likely to have adverse effects on the environment that are more than minor. An assessment in this respect is undertaken as follows:

The following effects must be disregarded:

- Effects on the owners or occupiers of land on which the activity will occur and on adjacent land.
- Trade competition and the effects of trade competition.
- Any persons that have provided their written approval and as such, adverse effects on these parties have been disregarded.

Written Approval

Written approvals to the application have been provided. These written approvals are set out in Table 1 and the properties to which these relate are identified in Figure 6 on page 27.

Table 1: Written approvals received

Person (owner/occupier)	**Address (location in respect of subject site)**	**Refer to Figure 6**
Brian Goodwin (owner/occupier) has signed an affected party approval form on behalf of the registered owners of this property (Brian David Goodwin, Nichola Ann Marie Goodwin)	429 Goodwin Road, Waitane, Gore (Part Lot 2 Deposited Plan 12557)	A
Daniel Goodwin (owner/occupier) and Stephen Goodwin (owner) have signed an affected party approval form on behalf of the registered owners of this property (Stephen Goodwin, Macdonald & Associates Trustees Limited).	433 Miller Road, Waitane, Gore (Part Lot 1 and Lot 3-4 Deposited Plan 11453)	B

Person (owner/occupier)	Address (location in respect of subject site)	Refer to Figure 6
Jason Smith (owner/occupier) has signed an affected party approval form on behalf of the registered owners of these properties (Debbie-Maree Smith, Jonathan Andrew Ogg and Jason James Smith).	248 Miller Road, Waitane, Gore (Lot 5-6 Deposited Plan 11453, Lot 36 Deposited Plan 175A and Lot 1 Deposited Plan 14139 and Lot 1 Deposited Plan 6631) 760 Miller Road, Waimumu, Gore (Part Section 75 Block XI Waimumu Hundred) 512 Paterson Road, Waimumu, Gore (Part Lot 1 Deposited Plan 11235, Lot 1 Deposited Plan 13130, Part Lot 76 Deposited Plan 177 and Part Lot 69 Deposited Plan 178 and Part Lot 71 Deposited Plan 177)	C
Warren Ross (owner/occupier) has signed an affected party approval form on behalf of the registered owners of these properties (Garry Leonard Ross, Warren Leslie Ross, Valerie Jean Ross).	1550 Waimumu Road and 181 Goodwin Road, Waitane, Gore (Lot 35 Deposited Plan 175A and Lot 1 Deposited Plan 14459, Lot 31 Deposited Plan 175A, Lot 32 Deposited Plan 175A and Section 1 Survey Office Plan 10350, Lot 1 Deposited Plan 13131)	D
Charles Reid and Philippa Reid (owners) have signed an affected party approval form on behalf of the registered owner of these properties (C Reid Trustee Limited).	638 Paterson Road, Waimumu, Gore (Lot 1 Deposited Plan 11556) 661 Paterson Road, Waitane, Gore (Part Lot 46-47 Deposited Plan 177, Lot 1 Deposited Plan 5654, Lot 49-50 Deposited Plan 177).	E

As such, any effects of the proposal upon these persons in Table 1 have been disregarded.

The following effects may be disregarded:

- An adverse effect of the activity if a rule or national environmental standard permits an activity with that effect – referred to as the "permitted baseline". The relevance of a permitted baseline to this application is as follows:

Permitted Baseline

The consent authority may disregard an adverse effect of the activity if a rule or national environmental standard permits an activity with that effect.

As the proposal involves mineral extraction over a new area and no such similar activity is provided for in the Operative District Plan; there is no permitted baseline. Additionally, as any earthworks that exceeds twelve months requires resource consent under the Operative District Plan, there is no permitted baseline for the earthworks.

Indigenous vegetation clearance and land disturbance activities are permitted activities only in limited circumstances under the Proposed District Plan. The proposal does not meet those circumstances and the activities take place outside a Significant Natural Area which requires resource consent. Therefore, there is no permitted baseline for the indigenous vegetation clearance and land disturbance activities.

Receiving Environment

The receiving environment beyond the site includes permitted activities under the relevant plans, lawfully established activities (via existing use rights or resource consents), and any unimplemented resource consents that are likely to be implemented. This is the environment within which the adverse effects of this application must be assessed.

In this case, the receiving environment includes the rural activities and buildings and the open space character of the immediate surrounding area, which are anticipated by the Rural Zone / proposed General Rural Zone. The existing mine was established in the 1940s and has been a long-standing part of the character of the area and operates under a Rural / Industrial zoning.

The unimplemented resource consents that affect the site include the three consents authorised by Environment Southland Regional Council for activities which relate to the proposed extension of the extraction area. These resource consents are listed on page 23 of the Applicant's AEE.

Actual and Potential Effects on the Environment

The actual and potential adverse effects on the environment include:

A. Visual and landscape effects;
B. Noise and vibration effects;
C. Dust nuisance effects;
D. Transport effects;
E. Effects on indigenous vegetation;
F. Land disturbance effects;
G. Contaminated land effects;
H. Effects on highly productive land;
I. Cultural and historic heritage effects; and
J. Natural hazard effects

A. Visual and Landscape Effects

A Landscape Assessment Report and Plans and Views, prepared by SITE Landscape Architects, dated 15 August 2023 has been included with the application. This report assesses the visual amenity and landscape character effects of the proposal, in relation to specific viewpoints towards the site. Further information in relation to landscape matters was provided on 4 July 2024 and 30 July 2024.

The visual amenity and landscape effect upon each viewpoint, along with the mitigation proposed are summarised in Table 2. This planner's conclusion is in blue text in the right column.

Table 2: Summaries from the Landscape Assessment Report

Location and viewpoint	Effects of the proposal on visual amenity and landscape character (without mitigation)	Mitigation Proposed	Effects of the proposal on visual amenity and landscape character (with mitigation)
Miller Road (views A-B)	High, as the pastoral character will change dramatically to industrial.	Proposed 3m wide mixed native screen hedgerow along the northern site boundary. Some of these trees have already been planted along the northern boundary ('H' Stage 1 of the Proposed Landscape Plan (2038). As these plantings are between 0.2m to 0.5m high at the time of planting, with up to 0.5m to 0.6m of growth per year, this results in a 2.6m to 3m high screen planting after five years. This height requirement will be included as a condition of consent, which has been accepted by the applicant as forming part of the proposal.	Very Low within five years (present to approx. 2029), noting that mining is scheduled to commence in the southern extension area from 2026 and the hill that screens this area will be removed by extraction in 2029 at the earliest. = Less than minor effects within first five years. Very Low after five years (from approx. 2029 onwards), noting that mining is scheduled to occur in the northern extension area from 2033. = Less than minor effects after five years.
Miller Road Upper Section (view C)	Low, as the proposal will form a small increase to an already visible and expansive extent of mine activity that extends to the south, under the existing land use consent.	Proposed native screen planting along the boundary, which is below road level, and a Leylandii / Eucalyptus hedgerow within the western paddocks to screen part of the mine extension to the right of view.	Low, noting that a significant portion of this view can already be changed under the current land use consent. = Minor effects
Goodwin Road north-western end of site (view D)	Low, as the proposal will form a small increase to the visible mine and the overburden mounds that are contained within the existing land use consent area.	Proposed hedgerow located in the western paddocks will screen part of the mine extension.	Low, as the proposal will increase by a small amount into the pastoral landscape. = Minor effects
Goodwin Road western end of site (view E)	A very small increase of visible mine will be opened up.	Proposed removal of the existing hedgerow to enable the establishment of native gully plantings.	Some degree of earthworks and mining are already anticipated in this view under the existing land use consent. = Less than minor effects

Location and viewpoint	Effects of the proposal on visual amenity and landscape character (without mitigation)	Mitigation Proposed	Effects of the proposal on visual amenity and landscape character (with mitigation)
Goodwin Road southern end of site (view F)	There are open views to the north into the existing mine pit.	The overburden mound at the southern extension area will increase in height over time and screen views of the mine to the north.	Positive, as there will be an improvement to visual amenity from this viewpoint. = Less than minor effects
Goodwin Road to the south-east (view G)	The existing mine pit is visible with the existing overburden mound in the foreground screening the greater part of the mine from view.	The overburden mound will increase in size and continue to screen views of the proposed mine pit located behind.	Nil or slightly positive, as the extraction moves north, the mine pit will reduce in visibility from this location. = Less than minor effects
Waimumu Road (view H)	There are views to the north-west towards the site.	The overburden mounds will be located in the foreground to screen views of the proposed mine pit located behind.	Nil, as similar to view G = Less than minor effects
Paterson Road (view I)	There are views to the east towards the site.	The overburden mounds will be located in the foreground to screen views of the proposed mine pit located behind.	Nil, as similar to views G and H = Less than minor effects

SITE Landscape Architects concludes that:

- *The mine extension will have a high effect on visual amenity from Miller Road where adjacent to the proposed mine pit once extraction occurs to the northern end. With native screen planting in place prior to commencement of mining in this area these effects will be limited to **very low**, with the mining operations being carried out behind a solid wall of native planting running along the boundary.*
- *From higher points on Miller Road and the northeastern end of Goodwin Road there will be a **low** effect on visual amenity and landscape character as the established land use will only be increased by a small amount from what could potentially occur under the current consent.*
- *From southern and eastern viewpoints there will be little change in visual amenity and landscape character for public and private viewpoints, with some possible improvement in the quality of view with an increase in size of overburden mounds screening mining operations to the north.*

(source: section 9.0 of the Landscape Assessment Report, by SITE Landscape Architects, dated 15 August 2023).

Pages 37 to 41 of the Applicant's AEE includes an assessment of effects upon visual effects. This assessment is adopted in full, with the following clarifications and additional assessment:

General

- There are no mapped outstanding natural landscapes or features on the site. It is considered that the impacts of the proposal upon these features will be less than minor.
- Any views towards the mine extension area from properties or public roads that are located beyond a 1km radius of the site are limited or unavailable, due to the separation distance and the buffer created by the adjacent properties.
- The submitted Landscape Assessment Report has not been peer reviewed, on the basis that the author is a Registered NZILA Landscape Architect; the method of assessment used is based on best practice methodology for landscape assessment in New Zealand (Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022 (NZILA Guidelines)); and the conclusions of the report are robust and generally accurate (except for as noted below); as confirmed by the site visit, which was carried out on 9 July 2024.
- Based on the site visit, section 3.0 Landscape Context and section 4.0 Site Description of the Landscape Assessment Report are broadly concurred with, based on observations of the existing mine site and its setting. It was confirmed during the site visit that some mitigation planting has commenced. Specifically, Stage 1 of the trees / hedgerow identified as 'H' on the 'Proposed Landscaping Plan (2038)' has been planted in part already. The Applicant has confirmed that this planting will be completed in full along this boundary by 2024/25. This mitigation screen planting has been offered as a condition of consent that forms part of this proposal.
- Based on the Landscape Assessment Report, the proposed mine extension area will not be visible from all viewpoints and therefore, the visual amenity and landscape character effects of the proposal will differ depending on the viewpoint (refer to the extract from section 9.0 of the Landscape Assessment Report).
- It is noted that the effects of the mining extraction operations (2026 to 2038) are anticipated to be for approximately 12 years (although the timeframe is subject to change) until the full extension area is under rehabilitation (not 17 years, as noted on pages 7 and 12 of the Landscape Assessment Report).
- Based on the guide on page 2 of the Landscape Assessment Report, an effect which is determined as 'very low' could be considered to correlate with an effect that is 'less than minor' in extent, while an effect which is determined as 'low' could be considered to correlate with an effect that is 'less than minor' or 'minor'. The effect of the mine extension proposal upon public viewpoints 'C' to 'I' have been assessed by SITE Landscape Architects to be 'low' or 'very low'. On this basis, it is considered that the visual amenity and landscape character effects of the proposal, as experienced from public viewpoints 'C' to 'I' are no more than minor.

Northern Extension Area

- An effect which is determined as 'high' could be considered to correlate with an effect that is 'more than minor' in extent. The Landscape Assessment Report notes that the mine extension would have a 'high effect on visual amenity from Miller Road', once extraction occurs (from 2033) to the northern end of the proposed mine pit, as the mine pit could be viewed at close proximity. On this basis, it is considered that the visual amenity and landscape character effects of the proposal, as experienced from public viewpoints 'A' and 'B' would be more than minor if extraction occurs within the northern end of the proposed extension area without any mitigation.

- However, with the establishment of screen planting along the northern boundary prior to commencement of mining in this area, SITE Landscape Architects states the 'high effect on visual amenity' will be reduced to a 'very low' effect. The proposed native screen planting along the northern boundary of the site (noting that some of 'H' stage 1 is already planted in this location) will be approximately 2.6m to 3m in height after 5 years (approx. 2029). The depth and height of this planting is expected to completely screen views of the site along the lower section of Miller Road, by the time mining in the northern extension area is scheduled to commence in 2033 in nine years' time. The four year buffer (2029 to 2033) accounts for slow growth rates and the need for additional and/or replacement planting as required.
- On this basis, it is considered that the visual amenity and landscape character effects of the proposal, as experienced from public viewpoints 'A' and 'B' would be less than minor once extraction begins in 2033 within the northern end of the proposed extension area. This is because the mining operations would be concealed behind a wall of planting that is a minimum 3m in height. As the proposed planting would reach a height that is able to mitigate the high adverse visual effects of the proposal at the outset before extraction commences in the northern end; the effect of the mitigation is appropriate to take into account.

Southern Extension Area

- The meaning of 'effect' as defined by the Act includes any 'temporary' effect. Further information was requested from the Applicant on 25 June 2024 to clarify the visual amenity and landscape character effects of the mine extension from viewpoints 'A' and 'B' in the first five years prior to planting along the Miller Road northern boundary reaching a 3m height, if mining occurs in the southern part of the extension area.
- The Applicant provided a response on 4 July 2024 advising that mining is scheduled to commence at the southern end of the extraction area in 2026. At this time, the immediate hill visible in views viewpoints 'A' and 'B' will remain intact, as the southern part of the extraction area is well beyond this hill.
- It is anticipated the hill will be removed by extraction in 2029 at the earliest. At this point in time, the planting along the northern boundary will have had 4 to 5 years of growth. The plants will likely be approximately 2.6m high in taking a conservative estimate (0.2m planted height + 0.6m growth per year over 4 years). As the plants will be established on ground that is slightly elevated from Miller Road, this height will form a green boundary and screen the extraction activities within the site. As the proposed planting would reach a height that is able to mitigate any adverse visual effects of the proposal at the outset before extraction commences in the southern end; the effect of the mitigation is appropriate to take into account. Therefore, based on the above, any temporary adverse visual effects from viewpoints 'A' and 'B are avoided.

Rehabilitation

- Further information was requested from the Applicant on 15 July 2024 to clarify any adverse visual amenity and landscape character effects of the proposed rehabilitation. The Applicant provided a response on 30 July 2024 advising that the rehabilitation will include wetland planting, pastoral fields and an end of life lake. The lake will have water, planted edges, and will not include any exposed rock faces. The overburden mounds will be shaped with 1:5 grade slopes and grassed, which is consistent with the surrounding rolling hills.
- Based on the above, it is considered that the proposed rehabilitation will help the mine site to integrate back into its natural surroundings, avoid a scar on the rural landscape, and will not impose on any surrounding viewpoints.

Overall, it is considered that any adverse visual amenity and landscape character effects from the proposed mine extension will be no more than minor upon the environment.

B. Noise and Vibration Effects

Pages 41 and 42 of the Applicant's AEE includes an assessment on noise and vibration effects. This assessment is adopted in full, with the following clarifications and assessment:

- The Applicant notes on page 31 of the AEE that it is expected that the proposal can comply with Rule 4.5.1(1) - Noise limits in rural zones of the District Plan. Compliance with these noise limits is a requirement of 'Section 3 – Noise Emissions Management' of the Site Environmental Management Plan, which will be implemented for all activities taking place within the proposed mine extension area. This is accepted and no further consideration of noise effects is required.
- The Council's planning support team have verified that no noise complaints (or other complaints) have been received in the past four years, in relation to the activities at the existing mine site.
- 'Section 3 – Noise Emissions Management' of the original submitted Site Environmental Management Plan did not include policies and procedures for vibration management, as incorrectly noted on page 42 of the Applicant's AEE. Further information was requested from the Applicant on 15 July 2024 to clarify this matter.
- The Applicant provided a response on 30 July 2024 advising that vibration management at mines is normally associated with blasting as part of the extraction process and in this case, no explosives are used at New Vale Mine. The Applicant also updated 'Section 3 – Noise Emissions Management' of the Site Environmental Management Plan to specify that no blasting or explosives are required as part of the extraction activities and included a provision noting that activities must be managed to achieve the following vibration standards:
    - AS 2670.2-1990 Evaluation of human exposure to whole-body vibration - Continuous and shock induced vibration in buildings (1 to 80 Hz)
    - DIN 4150-3:1999 Effects of vibration on structures
- Any noise and vibration from the mine extension area is not expected to be audible or discernible from properties or public roads that are located beyond a 1km radius of the site due to the separation distance provided by the adjacent properties.

Overall, it is considered that any adverse noise and vibration effects from the proposed mine extension will be no more than minor upon the environment.

C. Dust Nuisance Effects

Pages 42 and 43 of the Applicant's AEE includes an assessment on dust nuisance effects. This assessment is adopted in full, with the following additional assessment:

- Any dust generated from the mine extension area is not expected to be visible or discernible from properties or public roads that are located beyond a 1km radius of the site due to the separation distance provided by the adjacent properties.

Overall, it is considered that any adverse dust nuisance effects from the proposed mine extension will be no more than minor upon the environment.

D. Transport Effects

Page 37 of the Applicant's AEE includes an assessment on the transportation network. This assessment is adopted in full, with the following additional assessment:

- The Council's Senior Roading Asset Manager, Murray Hasler has reviewed the application. A summary of his assessment is provided below.
- Access to the site is via existing accesses to both Miller Road and Goodwin Road. These accesses have been in place for many years and have operated without any significant issue. The proposal will not significantly alter the use of the existing accesses. It is therefore recommended that no additional conditions be applied to these.
- There is concern over the proximity of the proposed northern face of the mine extension to Miller Road. Based on the Site Layout Plan, the area of concern is the section of Miller Road between Photomontage locations 'A' and 'B'. Further information was requested from the Applicant on 15 July 2024 to explain how the stability of this section of Miller Road will be protected, along with the proposed monitoring for potential land movement along this section.
- The Applicant provided a response on 30 July 2024 advising that the Mining Plans are prepared by mining engineers with input from geotechnical engineers. This means that measures will be in place to ensure that any erosion of Miller Road is prevented at the time the Mining Plan for the area close to Miller Road is developed. The Applicant estimates that the first cut near the road will not occur until 2034-35. The Applicant offers a condition of consent to provide Council with an assurance that the mining plans will be in place to ensure works do not adversely affect Miller Road.
- Mr Hasler agrees with the proposed measures. However, he considers that there should be a requirement for an independent peer review of the Mining Plans to be arranged by Gore District Council at the consent holder's cost.
- The public roads that are located beyond a 1km radius of the site will not experience an increase in traffic movements.

Overall, any effects on the transportation network will be less than minor.

E. Effects on Indigenous Vegetation

A New Vale Mine Wetland Delineation and Ecological Assessment, prepared by e3Scientific, dated 18 January 2024, has been included with the application. The report assesses whether any natural inland wetlands would be affected by the proposal. The report states that there are five natural inland wetlands with a total area of 48,698m^2 present within the proposed mine extension area. E3Scientific have identified that while most of the mine extension area comprises exotic pasture grass, there are indigenous vegetation species present within the wetlands in the tributaries located within the proposed 30ha extraction area. These wetland habitats contain approximately 9,159m^2 of indigenous vegetation (and exotic vegetation) that are proposed to be removed.

This assessment focuses on the clearance / loss of indigenous vegetation, rather than the removal / loss of wetlands from within the site. A separate resource consent is being sought from Environment Southland Regional Council to remove 9,159m^2 of wetland habitat within the site.

In order to offset the loss of the (degraded wetlands and) indigenous vegetation, the Applicant proposes to restore 20,985m^2 of wetland habitat and enhance 9,121m^2 of wetland habitat by planting them with native vegetation; thereby increasing the total wetland habitat within the mine extension

area by 20,947m^2. The species and allocation are identified in Appendix A of the Wetland Delineation and Ecological Assessment. Overall, E3Scientific assess the ecological effects as having a net gain outcome with increased wetland vegetation coverage, increased indigenous diversity, improved water storage and quality, and increased fauna habitat.

Pages 50 to 52 of the Applicant's AEE includes an assessment on the potential effects on Indigenous Biodiversity. The assessment that relates to 'Effects on Indigenous Vegetation' and 'Effects on 'Avifauna & Herpetofauna' are adopted in full, with the following additional clarifications and assessment:

- The Wetland Delineation and Ecological Assessment has not been peer reviewed by the Council, on the basis that the authors from e3Scientific are a qualified and experienced terrestrial ecologist and planner, and the report is detailed and comprehensive.
- Most of the recommended conditions of consent in section 8 of the Wetland Delineation and Ecological Assessment are largely appropriate for inclusion in the regional resource consent.
- The areas of wetland habitat to be removed have been quantified, rather than the areas of indigenous vegetation within these wetlands to be cleared. In summary, a 3,266m^2 area at the Northern Tributary will be affected; a 2,246m^2 area at the Central Tributary (Northern Branch) will be affected; a 3,545m^2 area at the Central Tributary (South Branch) will be affected; and a 102m^2 area at the South Tributary will be affected. Overall, an estimate of up to 9,159m^2 of indigenous vegetation will be removed, noting that this figure includes exotic vegetation.
- The clearance of indigenous vegetation is not expected to adversely impact upon any avifauna (bird) species. E3Scientific advise that there is unlikely to be such species present within the proposed mine extraction area due to the limited areas of suitable habitat. E3Scientific recommend a condition of consent to require that vegetation removal within natural inland wetlands is not undertaken during October-February as to not disturb nesting birds, unless a survey is undertaken by suitably qualified ecologist or ornithologist. This condition has been agreed to by the Applicant as forming part of the proposal.
- While the scale of the clearance of indigenous vegetation is large, the effects are internal to the site. There are limited visual effects from properties or public roads that are located beyond a 1km radius of the site.

Overall, due to the degraded nature of the existing wetlands, a lack of diversity of existing vegetation species and the limited presence of habitats for avifauna, it is considered that the removal of indigenous vegetation has effects that are no more than minor on the environment.

F. Land Disturbance Effects

The proposed earthworks and the deposit of overburden associated with the extraction activity will exceed a period of 12 months. Works will be staged on 3.5 to 4 hectares blocks between 2026 through to 2038. As part of the Monitoring Condition that is offered by the Applicant, the areas on the site that are disturbed or are being worked, and the areas of land that were disturbed over the previous 12 months will be recorded in writing and plan form. Similarly, any material that needs to be removed off-site will be recorded, as part of the Monitoring condition.

Consent is required under the Operative and Proposed District Plan for the land disturbance activities. An assessment is provided below.

- The site is generally remote from existing dwellings. The closest dwellings are at 429 Goodwin Road (opposite to the west) and 45 Goodwin Road (1km to the south-east), which are 'adjacent properties' that are excluded from this assessment.
- All topsoil and subsoils that are removed are either stockpiled for future use or carted and spread in rehabilitation areas on the site. As all works will be staged and localised at any time, and any overburden will be transported to another part of the site to stockpile, all earthworks are contained within the site. The risk of the spread of sediment beyond the site boundaries is avoided.
- The potential adverse effects include the loss of, or impacts on biodiversity. The earthworks is not expected to impact upon herpetofauna (lizard) species. E3Scientific advise that the likelihood of cryptic skink is 'low' and 'moderate' for the tussock skink. E3Scientific recommend a condition of consent to require that if any lizards are observed on the site before or during earthworks; work must cease, and advice be sought from the Department of Conservation regarding permission needed under the Wildlife Act to undertake work in a lizard habitat. This condition has been agreed to by the Applicant as forming part of the proposal.
- The land disturbance is internal to the site and has limited visual effects from properties or public roads that are located beyond a 1km radius of the site.

Overall, it is considered that the adverse effects of the land disturbance activities are no more than minor on the environment.

G. Contaminated Land Effects

Pages 44 and 45 of the Applicant's AEE includes an assessment on the potential effects of Disturbing Contaminated Land. This assessment is adopted in full, with the following clarifications and assessment:

- The Applicant notes that preparing a DSI for the proposed mining extension area is not practicable due to the size of the area at 145 hectares and a DSI has not been submitted with the application. This reasoning is accepted, given that the 'Partially Investigated' HAIL categories status assigned by Environment Southland Regional Council relates directly to the area of existing mining activity on the site. Furthermore, the contaminated land status assigned by Gore District Council relates to the fact that the wider site is part of the coal mine. The Applicant is not aware of any HAIL activities occurring within the proposed extraction area, nor the area where the wetland enhancement works are proposed.
- All topsoil and subsoils that are removed are either stockpiled for future use or carted and spread in rehabilitation areas on the site. Any material that needs to be removed off-site will be recorded in writing and plan form, as per the Monitoring Condition, offered by the Applicant.
- It is evident from the submitted Site Environmental Management Plan that workers at the mine must carry out their work in accordance with health and safety measures and protocols. Although, there is no specific reference to how potentially contaminated soils will be managed on-site during soil disturbance activities on a day to day basis. Further information was requested from the Applicant on 15 July 2024 to clarify what measure is in place with respect to human health-related exposure from soils, during soil disturbance activities.
- The Applicant provided a response on 30 July 2024 advising that contaminated soil has not been an issue that requires management at the New Vale Mine. Therefore, no specific management of earthworks / extraction activities has been required to date. However, the Applicant offers a new condition related to the contingency of unexpected contaminated soil or material, that sets out the steps to be taken if contaminated soil is discovered within the extension area. This is

considered to be an appropriate precautionary measure to minimise human exposure from the discovery of any contaminated soils.

Overall, it is considered that any effects on human health in the environment from the proposed soil disturbance activities will be less than minor.

H. Effects on Highly Productive Land

The majority of the site is classified as Land Use Capability Class 3 soils and therefore the National Policy Statement for Highly Productive Land (NPS-HPL) is relevant.

Clause 3.9(2)(j)(iii) of the NPS-HPL sets out that the use or development of highly productive land is inappropriate, except where there is a functional or operational need for that use or development to be on the highly productive land, and it is associated with mineral extraction that provides significant national public benefit that could not otherwise be achieved using resources within New Zealand.

A New Vale Mine Economic Impact Analysis, prepared by Sense Partners, dated 12 February 2024 has been included with the application. This report provides an assessment on whether the proposal meets the second part of the test in clause 3.9(2(j)(iii) of the NPS-HPL, specifically whether a significant national public benefit is achieved.

Sense Partners provide the follow conclusions:

- *Our analysis has focused on regulatory tests set out in the NPS-HPL. Mining is a more productive use of the land and brings jobs and economic activity. Given this, we consider the extension constitutes a significant public benefit.*
- *The mine plays a role in providing key energy inputs into the food processing sectors across three regions. On this basis, we propose the benefit qualifies as a* ***national*** *benefit.*
- *Given the cost of and constraints facing local operating coal alternatives, we consider* ***it is likely these benefits would not otherwise be achieved using resources within New Zealand****.*

(source: page 21 of the Economic Impact Analysis, prepared by Sense Partners, dated 12 February 2024).

Sense Partners conclude that the mine extension proposal has national benefits to be gained from the proposal that could not otherwise be achieved using resources within New Zealand. Based on this conclusion, the proposal is not an inappropriate use of the highly productive land.

Pages 45 to 49 of the Applicant's AEE includes an assessment on the potential effects on Highly Productive Land. This assessment is adopted in full, with the following clarifications and additional assessment:

- In terms of the first part of the test in Clause 3.9(2(j), it is noted that the proposal has a functional and operational need to locate on highly productive land due to the location of the coal resource on the subject site. The coal can only be extracted from where it is physically located and where the Applicant is able to access the coal in a logistical and operational manner. The proposal is a logical extension of an existing coal mining operation, which has operated since the 1940s. Overall, the proposed mineral extraction activity meets the two parts of the tests in clause 3.9(2)(j) and (iii) and is not an inappropriate use.

- The Economic Impact Analysis has not been peer reviewed, on the basis that the authors from Sense Partners are qualified and experienced economists, and the report appears detailed and comprehensive in terms of outlining the need for the proposal.
- The positive economic benefits of the proposal that are outlined in the Economic Impact Analysis are not considered as part of this S95A assessment. Only the adverse effects of the proposal upon highly productive land have been considered.
- The NPS-HPL defines 'highly productive land' as land mapped by Regional Councils, or in absence of that, in the interim; highly productive land is a land parcel defined as Land Use Capability (LUC) Class 1, 2 and 3, as mapped by the New Zealand Land Resource Inventory (NZLRI). Based on NZLRI maps, the Gore District has some LUC Class 1 and LUC Class 2 soil, and the majority of the district is LUC 3 soil. LUC Class 3 soils are generally classified as arable and have moderate limitations that reduce the potential for productivity compared to LUC Class 1 or 2 soils. LUC Class 3 soils are often suitable for activities, such as grazing, forestry, and some types of cropping and horticulture.
- Two small areas of the existing mine site are not currently mapped as highly productive land, while the remainder is mapped as LUC Class 3 soils. The location of the proposed extraction area is land that is immediately adjacent to the current extraction area, and is partly separated from other adjacent areas of highly productive land by Miller Road and Goodwin Road.
- The topsoil on the site which needs to be removed is retained and re-used elsewhere on the site.
- The potential for highly productive land to be lost for an extended period or lost permanently is considered. As mining activities over the mine extension area are staged over time; this approach helps to minimise the loss of highly productive land. Areas of land would be removed from productive purposes in stages (from 2026) and the spent areas would be progressively rehabilitated for farming purposes, until all mining activities have ceased (by approximately 2038) and the entire extension area undergoes rehabilitation.
- The end outcome is that the proposed mine extension area and the wider site (comprising 354ha total) will be rehabilitated, so that 48ha of land will become water storage (an artificial lake), 6ha of land will comprise wetland habitat that is fenced off from livestock, and the remainder of the land will be restored and rehabilitated for pastural farming activities. The Applicant notes that the Mining Engineers will endeavour to reduce the size of the lake to the smallest extent possible.
- The loss of LUC Class 3 soils to the proposed mining activities sought in this application for an extended period is approximately 145 hectares in area in stages over time. Meanwhile, the actual, permanent loss of the LUC Class 3 soils to non-productive purposes is approximately 54ha in area (15.3% of the total site area of 354ha). 54ha of land will be transformed into water storage and wetland habitats, which will not be suitable or available for traditional land-based primary production activities.
- In this case, while the loss of 54ha of LUC Class 3 soils is seemingly large in isolation; in the context of the total overall area of LUC Class 3 soils across the Gore District, the loss is no more than minor. Overall, the temporary and permanent loss of highly productive land is considered to be minimised.

On balance, given that there is a functional and operational need for the activity, and the activity provides significant national public benefit; it is considered that the adverse effects of the proposal upon the availability and productive capacity of the subject land over the long term are no more than minor on the environment.

I. Cultural and Historic Heritage Effects

A Cultural Statement prepared on behalf of Hokonui Rūnanga Inc., dated 22 May 2024 has been included with the application. Page 11 of the Cultural Statement sets out the position of Hokonui Rūnanga Inc and this is summarised as follows:

- *Hokonui Rūnanga Inc. has not provided written approval to the application because it would like to ensure any potential effects on Ngāi Tahu cultural values are considered as part of this application.*
- *Hokonui Rūnanga Inc. supports the site rehabilitation and remediation work, and associated ecological enhancement that the Applicant is undertaking on its New Vale mine site. These actions are leaving the site with higher ecological and biodiversity values, and enhanced mauri and mahinga kai values, from those that existed on the site prior to the mining operation.*
- *The use of coal and the associated impacts on Greenhouse Gas Emissions is complex and of concern to mana whenua.*
- *The cultural statement has focused on the effects of the proposed activity on Ngāi Tahu values associated with wai māori/freshwater, nga whenua/land on-site and associated ecosystems on site, and the efficacy of proposed mitigation measures and site rehabilitation as mining ceases.*

Pages 36 and 37 of the Applicant's AEE includes an assessment upon cultural and historic heritage effects. This assessment is adopted in full, with the following additional clarifications and assessment:

- Hokonui Rūnanga Inc. were notified of this application and invited to provide comments on 17 June 2024. An email response was provided to the Council on 2 July 2024, advising that:
    - *Hokonui Rūnanga Inc. is not in a position to give written approval for this application, given the potential impacts that mining has on Ngāi Tahu cultural values. This is reinforced through the cultural statement.*
    - *Hokonui Rūnanga Inc. does not wish to provide any further comments or feedback on the application – other than what is already set out in the cultural statement.*
- Hokonui Rūnanga is the mandated representative of those who hold mana whenua (customary authority) in the Gore District. The existing Memorandum Of Understanding between Hokonui Rūnanga and the Applicant (among a number of matters) addresses the rights, interests, and values of Ngāi Tahu. It also represents the close working relationship between the two parties in relation to the New Vale Mine since 2020.
- The Cultural Statement does not explicitly state that Hokonui Rūnanga oppose the proposed mine extension, nor does it identify any adverse effects on cultural values that are specific to Hokonui Rūnanga (but rather, Ngāi Tahu). It is therefore considered unnecessary to require the Applicant to provide a written approval from Hokonui Rūnanga.
- The Cultural Statement refers to potential effects on Ngāi Tahu values, associated with freshwater, land and ecosystems on-site; noting that generally, all land, waterbodies and natural features within the Gore District are culturally significant to Ngāi Tahu to different extents and for different reasons. The effects on freshwater and ecosystems are assessed under the separate regional resource consent, while the effects on land and ecosystems are assessed under this resource consent. The consideration of effects on land and ecosystems can be found in preceding sections of this report, where it is concluded that the effects are no more than minor on the environment.

- The Applicant and Hokonui Rūnanga will continue to work together on the environmental restoration and monitoring aspects of the mine site, in accordance with the Memorandum Of Understanding, which will help to provide for the values of Ngāi Tahu.
- The site is not located within or adjacent to a Statutory Acknowledgement Area under the Ngāi Tahu Claims Settlement Act 1998. Therefore, it is considered unnecessary to require the Applicant to consult with or seek the written approval of Te Rūnanga o Ngāi Tahu.
- There are no mapped heritage or archaeological features on the site.

Overall, it is considered that the proposal will have no more than minor cultural and historic heritage effects on the environment.

J. Natural Hazard Effects

Part of the site is identified as an area subject to actual or potential flooding, and the liquefaction risk across the site is both 'negligible' and 'medium'.

As the proposal does not involve any sensitive activities or buildings, and the overburden mounds are designed by Mining Engineers, the proposal is not expected to exacerbate the risk of inundation or liquefaction on the environment.

Conclusion: Effects On The Environment

On the basis of the above assessment, in terms of s95D, it is assessed that the proposal will not have adverse effects on the environment that are more than minor.

Step 4 – Public Notification in Special circumstances

- There are no special circumstances that warrant public notification.

4.2 Limited notification – Section 95B

In accordance with section 95B, the following steps have been followed to determine whether to give limited notification of the application:

Step 1 – Certain affected groups or persons must be notified

- There are no protected customary rights groups or customary marine title groups affected by the proposal.
- The proposal is not on or adjacent to, and will not affect, land that is the subject of a statutory acknowledgment.

Step 2 – Limited notification precluded

- The activity is not subject to a rule or National Environmental Standard that precludes limited notification.
- The application is not for a controlled activity (other than for a subdivision of land) under a district plan.

Step 3 – Certain other affected persons must be notified

- Under Step 3, if the proposal is a boundary activity, only the owner/occupier of the infringed boundary can be considered. The activity is not a boundary activity.
- For any other activity, a consent authority must notify an application on any person, if notification is not precluded by Step 2, and the consent authority decides, in accordance with s95E, that the proposed activity will have or is likely to have adverse effects on that person that are minor or more than minor.

An assessment in this respect is therefore undertaken as follows:

Considerations in assessing adverse effects on persons under s95E

a) The consent authority **may** disregard an adverse effect of the activity on a person if a rule or national environmental standard permits an activity with that effect (a "permitted baseline"). The relevance of the permitted baseline to this application is outlined in the above s95D assessment of environment effects.

b) The consent authority **must** disregard an adverse effect of the activity on the person if the effect does not relate to a matter for which a rule or a national environmental standard reserves control or restricts discretion; and

c) The consent authority **must** have regard to every relevant statutory acknowledgement specified in Schedule 11.

d) The consent authority **must** disregard effects on those parties who have provided written approval.

Assessment: Effects on Persons

Taking into account the exclusions in sections 95E, the following outlines an assessment as to whether the activity will have or is likely to have adverse effects on persons that are minor or more than minor.

Neighbouring Properties

The adjacent persons are all of the owners of the properties that are adjoin the site, or are located opposite the site. These owners of the properties shown in Figure 6 and Table 1 have provided a written approval to the proposal.

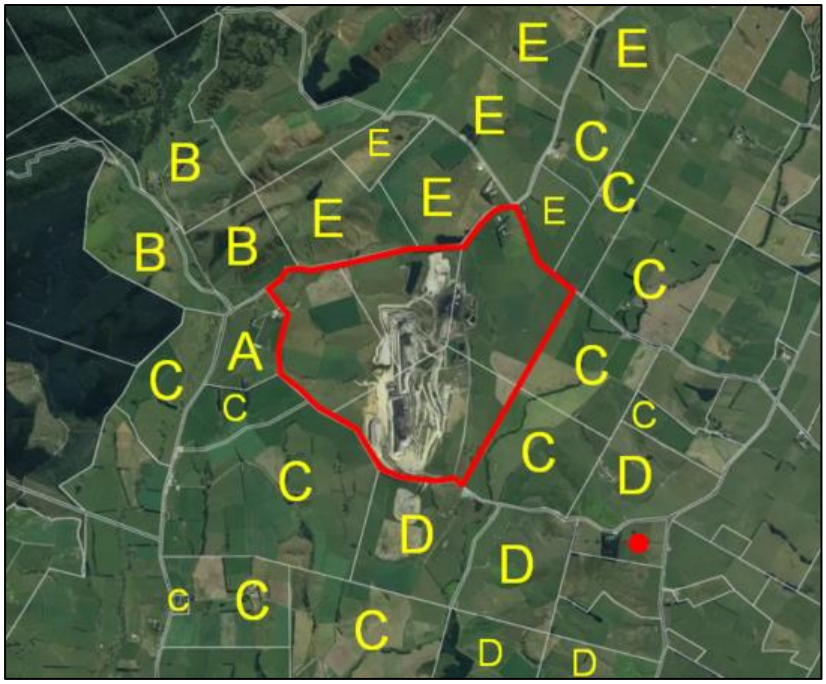


Figure 6: The adjacent persons who have provided a written approval.
The letters correspond to the owners in Table 1 on pages 11 and 12.

The proposal has been assessed in relation to the following adjacent person who has not provided a written approval.

- 45 Goodwin Road, Waitane, Gore (Lot 1 Deposited Plan 1736)

This 22.8ha property is located approximately 1km away to the south-east of the subject site and is identified by the red circle in Figure 6. It is used for rural purposes. It contains a dwelling and accessory buildings near the road frontage that are surrounded by dense vegetation to the south, the sides and along the road frontage. This vegetation provides the dwelling within screening from the existing mining activity and the proposal. The level of amenity and privacy experienced by this owner (and any occupiers) would not be unduly compromised by the proposal.

It is therefore considered that any adverse effects on persons at 45 Goodwin Road are less than minor.

No persons beyond those identified in Figure 4 are considered to be adversely affected by the proposal. This is because all other properties are more than 1km away, and / or are rural properties that do not contain any dwelling.

Conclusions: Effects on Persons

In terms of section 95E of the RMA, and on the basis of the above assessment, no person is considered to be adversely affected.

Step 4 – Special Circumstances for Limited Notification

- There are no special circumstances that warrant limited notification of the application.

5. DECISION PURSUANT TO S95A AND S95B OF THE RMA

For the reasons set out above, under s95A and s95B of the RMA, the application is to be processed on a non-notified basis.

6. SECTION 104 ASSESSMENT

6.1 Matters for consideration

This application must be considered in terms of Section 104 of the RMA. Subject to Part 2 of the RMA, Section 104 sets out those matters to be considered by the consent authority when considering a resource consent application. Considerations of relevance to this application are:

(a) any actual and potential effects on the environment of allowing the activity; and

(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and

(b) any relevant provisions of:

- *(i) A national environmental standard;*
- *(ii) other regulations;*
- *(iii) a national policy statement;*
- *(iv) a New Zealand coastal policy statement;*
- *(v) a regional policy statement or proposed regional policy statement;*
- *(vi) a plan or proposed plan; and*

(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

6.2 Effects on the Environment

Actual and potential effects on the environment have been outlined in the section 95 report. Conditions of consent can be imposed under s108 of the RMA as required to avoid, remedy or mitigate adverse effects.

Pages 35 and 36 of the Applicant's AEE includes an assessment of positive effects on the environment and this assessment is adopted in full.

6.3 Relevant Provisions

National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB)

Page 58 of the Applicant's AEE includes an assessment of the provisions from the NPS-IB. This assessment is accurate and is adopted in full, with the following additional assessment:

- There are no mapped Significant Natural Areas (SNA) located within the proposed mine extension area. Therefore Clause 3.10 of the NPS-IB does not apply, however, clause 3.16 is relevant.
- Clause 3.16(1) states that any significant adverse effects of new use or development on indigenous biodiversity outside a SNA (and not on specified Māori land) must be managed by

applying the effects management hierarchy. Meanwhile, Clause 3.16(2) states that all other adverse effects of any activities on indigenous biodiversity outside a SNA (and not on specified Māori land), must be managed to give effect to the objective and policies of this National Policy Statement.

- It is noted that the removal of existing indigenous vegetation from the site cannot be practically avoided or minimised due to the location of the coal resource. The proposed loss of indigenous vegetation is up to 9,159m^2 in area, which is large in area. The adverse effects of this loss have been assessed to be minor in nature (and not significant) due to the degraded nature of the existing wetlands, a lack of diversity of vegetation species and the limited presence of habitats for avifauna and herpetofauna.
- However, the minor adverse effects of this loss can be remedied. The proposed offsetting includes restoring 20,985m^2 of wetland habitat and enhancing 9,121m^2 of wetland habitat by planting them with native vegetation; thereby increasing the total wetland habitat within the mine extension area by 20,947m^2. E3Scientific confirm that the proposed extensive restoration and enhancement planting is expected to offset the loss and result in a net gain outcome; in terms of increased wetland vegetation coverage, increased indigenous diversity, improved water storage and quality, and increased fauna habitat.
- Extraction activities will cease by approximately 2038 and the Applicant is committed to completing the full rehabilitation of the site. The Applicant notes that the revenue generated by the extended mining operation over an additional four years will assist the Applicant to carry out the extensive proposed ecological enhancement works at the mine site. Conditions of consent have been imposed to ensure that the 'Proposed Landscape Plan (2038)' is implemented.
- Overall, the proposal restores indigenous vegetation and would achieve a net gain of indigenous vegetation. The rehabilitated areas will contribute to the rural environment, in terms of enhanced ecological values and biodiversity. The proposal is not contrary to the objective and policies of the NPS-IB.

National Policy Statement for Highly Productive Land 2022 (NPS-HPL)

The majority of the site is classified as Land Use Capability Class 3 soils and therefore the NPS-HPL is relevant. Following rehabilitation, the permanent loss of the LUC Class 3 soils to non-productive purposes is approximately 54ha in area (15.3% of the total 354ha site area). Clause 3.9(2)(j)(iii) of the NPS-HPL sets out that the use or development of highly productive land is inappropriate, except where it is associated with mineral extraction that provides significant national public benefit that could not otherwise be achieved using resources within New Zealand, and there is a functional or operational need for that use or development to be on the highly productive land.

Pages 45 to 49 of the Applicant's AEE includes an assessment of the provisions from the NPS-HPL. This assessment is accurate and is adopted in full, with the following additional assessment:

- The Economic Impact Analysis by Sense Partners concludes that the mine extension proposal has national benefits to be gained that could not otherwise be achieved using resources within New Zealand. Based on this, the use of the highly productive land is not inappropriate. Overall, the proposal meets the two parts of the tests in clause 3.9(2)(j) for a mineral extraction activity and is not an inappropriate use. This has been assessed on pages 22 to 23 of this decision report.
- Clause 3.3(a) of the NPS-HPL directs Councils to take measures to ensure that the actual loss, or potential cumulative loss of the availability of highly productive land is minimised or mitigated. It is considered appropriate to impose a condition to require the extraction works to occur as

planned, within the southern half (from 2026) and within the northern half (from 2033) in progressive stages, to ensure that land within the site can be fenced and grazed up until specific areas of land are required for extraction. There are no cumulative loss effects expected as New Vale Mine is the last operating opencast coal mine in the district and has a planned end date for extraction.

- Clause 3.3(b) of the NPS-HPL directs Councils to take measures to avoid if possible, or otherwise mitigate, any actual or potential reverse sensitivity effects on land-based primary production activities. Mining is not a noise-sensitive activity, and the neighbouring farming activities are unlikely to disrupt or conflict with the mining activities. Therefore, reverse sensitivity effects are avoided. The proposal therefore meets clause 3.9(3)(a) and (b), as assessed in the Applicant's AEE.
- Overall, the proposal is not contrary to the objective and policies of the NPS-HPL.

Southland Regional Policy Statement 2017

Pages 59 to 62 of the Applicant's AEE includes an assessment of the provisions from the Southland Regional Policy Statement. This assessment is accurate and is adopted in full, noting that regional matters are deferred to Environment Southland for assessment.

Operative District Plan

The relevant operative objectives and policies from the Operative District Plan are contained within Chapter 2 - Matters of National Importance, Chapter 3 - Land Use Activities - A Framework and Chapter 5 Transportation.

Pages 62 to 65 of the Applicant's AEE includes an assessment of the objectives and policies from Chapters 2 and 3 the Operative District Plan. This assessment is considered to be accurate and is adopted in full, with the following additional assessment.

- In terms of Chapter 3: Land Use Activities – Framework, given the history of mining on the site, the proposal will not result in unacceptable adverse visual effects that would detract from the character and amenity values associated with the site and the surrounding area. The proposed screen planting and rehabilitation will help to restore and enhance the character and amenity values of the site and help the site to integrate back into the surrounding rural area.
- In terms of Chapter 4A: Natural Hazards, the proposal does not involve any sensitive activities or buildings that require protection. The proposal is not expected to exacerbate the risk of natural hazards and members of the public are not permitted to enter an active mine area.
- In terms of Chapter 5: Transportation, the proposal will not result in discernible effects upon the transportation network.

Overall, the proposal is considered to be consistent with the relevant objectives and policies of the District Plan.

Proposed District Plan

The Proposed District Plan was notified for public submissions on 31 August 2023. The submission period closed on 27 November 2023 and the further submission period closed on 12 April 2024. The hearings phase commenced on 5 June 2024. As the rules that have immediate legal effect are relevant to this proposal, it is necessary to apply some limited weighting to the Proposed District Plan at present time.

Pages 65 to 71 of the Applicant's AEE includes an assessment of the objectives and policies from the Energy, Ecosystems and Indigenous Biodiversity and General Rural Zone Chapters of the Proposed District Plan. This assessment is considered to be accurate and is adopted in full.

Te Tangi a Tauira

An assessment of the relevant provisions from Te Tangi a Tauira – The Cry of the People (Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008) is provided below.

The proposal is generally consistent with policy 3.5.9.3. The Applicant proposes to implement landscaping with native plants and restore the site to an improved state, in accordance with the submitted drawings. This will be secured via a condition of consent.

The proposal is generally consistent with policy 3.5.9.10. Conditions of consent relating to monitoring and a review condition have been included to require the Applicant to oversee and document the mining activities and identify any non-compliance with consent conditions.

Overall, the proposal is not contrary to Te Tangi a Tauira, with respect to mining in the Southland Plains.

Summary

Overall, the proposal is considered to be consistent with the relevant Plans under the RMA.

7. PART 2 OF THE RMA

Section 5 - Purpose

The proposal is generally consistent with the sustainable management purpose set out in section 5 of the RMA. Section 5(2)(a) excludes 'minerals' from the requirement to sustain natural and physical resources to meet the needs of future generations. However, the rehabilitation of the mine site, once completed, will enable the land to transition back to farming purposes for use by future generations. In terms of Section 5(2)(b), the life supporting capacity of the soil is largely safeguarded, as the mining process ensures that the topsoil is retained and reinstated elsewhere on the site. In terms of Section 5(2)(c), the adverse effects on the environment have been appropriately avoided, remedied, or mitigated.

Section 6 - Matters of national importance

There are no matters of national importance set out in section 6 of the RMA that are relevant to this application. In particular, the site is not part of the coastal environment, nor an outstanding natural feature or landscape. The indigenous vegetation on the site does not represent an area of significant indigenous vegetation or habitat. As the mining activities are on private land, there are no effects on public access. The site is not subject to any known cultural heritage or historic heritage sites. The site is not subject to significant risks from natural hazards.

Section 7 - Other matters

Particular regard has been given to the matters set out in section 7 of the RMA. Page 72 of the Applicant's AEE includes an assessment on section 7(g) and this assessment is considered to be accurate and is adopted in full. In terms of section 7(i), the effects of climate change; generally, the process of coal extraction itself does not contribute to climate change, but the subsequent use of coal as an energy source does. The proposal contributes to energy security for New Vale's customers by ensuring a stable and reliable supply of energy, until those industries and facilities are able to fully transition to renewable or alternative energy sources.

Section 8 - Treaty of Waitangi

The Applicant has engaged with Hokonui Rūnanga to ensure that their role as kaitiaki has been recognised. It is considered that the proposal is consistent with the principles of the Treaty of Waitangi.

8. DECISION ON RESOURCE CONSENT

Pursuant to Section 104B of the RMA, **land use** consent is **granted** for the following activities at 640 Miller Road, RD4 (Lot 72-73 DP 177 and Lot 74-75 DP 177):

- to extend the 178 hectare mining operation area at the New Vale Mine by an additional 145 hectares; and to undertake ground disturbance activities associated with the mining activity that will exceed twelve months under the Operative Gore District Plan; and
- to undertake indigenous vegetation clearance and land disturbance under the Proposed Gore District Plan; and
- to undertake soil disturbance and removal under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

The activities are subject to the following conditions imposed pursuant to Section 108 of the RMA:

Consent Conditions

General

1. The land use activity must be undertaken generally in accordance with the application made to the Gore District Council on 11 June 2024, and the further information response received on 04 and 30 July and 17 September 2024, as follows:

   Plans

   - Figure 0: Context Plan, prepared by SITE Landscape Architects, dated 15 August 2023.
   - Figure 1: Existing Plan (2020), prepared by SITE Landscape Architects, dated 15 August 2023.
   - Figure 2: Proposed Landscaping Plan (2038), prepared by SITE Landscape Architects, dated 15 August 2023.
   - New Vale Mine Infrastructure, June 2023, prepared by New Vale Coal, dated 2 June 2023.
   - New Vale Mine Infrastructure E. O. M. Management Plan, prepared by New Vale Coal, dated 21 June 2023.

These plans are attached as Appendix A.

Reports

- Greenbriar Ltd, New Vale Opencast Mine Extension – Resource Consent Application and Assessment of Environmental Effects, prepared by Taylor Planning, dated June 2024, and further information responses received 04 July and 30 July 2024 and the Addendum received 16 September 2024.
- Landscape Assessment Report – New Vale Mine Extension (and Plans and Views), prepared by SITE Landscape Architects, dated 15 August 2023.
- New Vale Mine Wetland Delineation and Ecological Assessment, prepared by e3Scientific, dated 18 January 2024.
- New Vale Mine Economic Impact Analysis, prepared by Sense Partners, dated 12 February 2024.
- New Vale Coal Mine, Site Environmental Management Plan, dated 18 July 2023.
- Cultural Statement Prepared on Behalf of Hokonui Runanga Inc. in relation to Resource Consent Applications by Greenbriar Ltd for New Vale Mine, dated 22 May 2024.

These reports are attached as Appendices B to G.

Site Environmental Management Plan

2. Prior to extraction works commencing within the extension area; the consent holder must update the Site Environmental Management Plan to incorporate the extension to the extraction area and associated stockpiling and engineered landform areas, and must set out how the consent holder will manage its operations within these additional mine operational areas to ensure compliance with the conditions of this consent.

3. A copy of the Site Environmental Management Plan required by condition 3 above shall be provided to the Council's planning department via email at planning@goredc.govt.nz. A copy of any amendment or update to the Site Environmental Management Plan shall also be provided to the Council's planning department and held on file.

4. The consent holder must comply with and implement the Site Environmental Management Plan during all mining activities within the extension areas.

Timing and Direction of Activities

5. Extraction works shall commence within the southern half of the extension area from 2026 in progressive stages. Extraction works shall commence within the northern half of the extension area from 2033 in progressive stages.

6. The rehabilitation of excavated areas shall commence as soon as practicable after the completion of operations in an area.

Screen Planting

7. The mitigation screen planting shown as 'H' on the 'Figure 2: Proposed Landscaping Plan (2038),

prepared by SITE Landscape Architects, dated 15 August 2023', must be implemented in accordance with this plan in the first available planting season following the granting of this consent.

8. The mitigation screen planting along Miller Road required by condition 8 above shall be at least 3m high, prior to the commencement of the extraction works within the northern half of the extension area.

9. The consent holder must undertake the following monitoring of the planting:

   a) Three-monthly site inspections of the plants will be undertaken to assess plant maintenance. Weed control around the plants is to be undertaken for a minimum of three years or until canopy closure (i.e. ground cover) has been achieved.

   b) For ongoing control of weeds amongst the new plantings, as identified during the three-monthly site inspections, spot spraying and/or combined with hand and/or mechanical removal of weeds around plantings must be undertaken when required, i.e. when weeds are starting to suppress the new plantings.

   c) Landscape plantings must be maintained to ensure that at least 90 percent of the planted areas are covered by live plants. Otherwise, replacement plants must be established within the next planting season.

Noise

10. The noise from operations on the site must not exceed:

    i. 55 dBA Leq 7:00am to 10:00pm

    ii. 40 dBA Leq 10:00pm to 7:00am

    iii. 75 dBA Lmax 10:00pm to 7:00am

    measured at any point in the notional boundary of any noise sensitive activities existing in the Rural Zone as at 11 June 2024.

    For the purposes of this condition:

    - "Notional Boundary" means a line 20m from the façade of a building containing a noise sensitive activity, or the legal boundary where this is closer to the building.
    - "Noise sensitive activities" means buildings or parts of buildings used for, or able to be used for the following purposes: residential activity, visitor accommodation, residential care activity, educational activity, hospital activity, health care activity, day care activity, or a Marae activity.

11. Explosives are not permitted to be used as part of any activities on the site.

Glare

12. Any lightspill or glare from operations on the site must not exceed 5 lux during periods of darkness, measured at any point beyond the boundary of the site, in either the horizontal and vertical plane approximately 1.5 metres above ground level and assessed in accordance with Standard AS/NZS4282 2019: Control of obtrusive effects of outdoor lighting.

Dust

13. All activities on the site must be undertaken in such a manner as to avoid dust nuisance beyond the site boundary.

14. The consent holder must comply with 'Section 4 – Air Quality' of the Site Environmental Management Plan, dated May 2018, or any subsequent update / review of this document.

Spills

15. The consent holder must comply with the Fuel and Oil Spill Prevention and Contingency Plan, which is included in 'Section 6 – Hazardous Substances' of the Site Environmental Management Plan, dated July 2023, or any subsequent update / review of this document.

Erosion and Sediment Control

16. Prior to commencing mining pursuant to this consent, the Consent Holder shall provide the site-specific Erosion and Sediment Control Plan to the Gore District Council to certify that the Plan sets out the Methods to be adopted to minimise sediment run off from disturbed ground into natural inland wetlands within the mine site.

17. All works associated with the deposit of overburden for an Engineered Landform and top soil stockpiling activities within 100m of a natural inland wetland must be undertaken in accordance with a site-specific Sediment and Erosion Control Plan that is certified in accordance with condition 16 above.

Stockpiles and Topsoil

18. All excavated material stockpiled at the site must be located clear of property boundaries, watercourses and wetlands, and must be vegetated and otherwise maintained, to minimise the risk of dust generation.

19. All stockpiles of material on the site must be kept free of pest plants.

Contingency for unexpected, contaminated soil or material

20. In the event that any unexpected contaminated soil or material is uncovered by any works being undertaken within the extension area of the mine, an accidental discovery protocol shall be implemented, including but not limited to the following steps:

    a) Extraction activities / earthworks within ten metres of unexpected contaminants must cease immediately;

    b) All practicable steps must be taken to prevent the contaminated material becoming entrained in stormwater. Immediate steps must include, where practicable:

        i. diverting any stormwater runoff from surrounding areas away from the contaminated material; and

        ii. minimising the exposure of the contaminated material, including covering the contaminants with an impervious cover;

c) Notification of the discovery to Council within 24 hours;

d) Earthworks within ten metres of unexpected contaminants must not recommence until a suitably qualified and experienced contaminated land practitioner (CL-SQEP) confirms that continuing works does not represent a significant risk to the environment;

e) All records and documentation associated with the discovery must be kept. This includes any:

   i. Load registers and weighbridge dockets for soil taken from the Works Area;

   ii. Analytical results for soils removed from the Works Area;

   iii. Advice provided by the CL-SQEP, and laboratory analysis for future reference.

f) Copies of the records and documentation collected under e) for unexpected contamination discoveries shall be provided to the Council within two months of the discovery.

Weed Control

21. The consent holder must undertake weed management works to control crack willow, grey willows and elderflower stands within the site area. This will involve the removal of willow and elderflower stands, as shown on Figure 13 of the New Vale Mine Wetland Delineation and Ecological Assessment, prepared by e3Scientific, dated 18 January 2024, and ongoing maintenance and monitoring of these species will need to be undertaken to eliminate regrowth.

Lizards

22. If any lizards are observed on the site before or during earthworks; work must cease, and advice be sought from the Department of Conservation regarding permission needed under the Wildlife Act to undertake work in a lizard habitat.

Birds

23. Vegetation removal within natural inland wetlands must not be undertaken during October-February to avoid disturbing nesting birds. Alternatively, a suitably qualified ecologist or ornithologist must undertake a survey or areas to be disturbed and all recommendations of the survey are to be followed. Where unavoidable disturbance is required within the breeding/nesting season, a permit is required under the Wildlife Act 1953 to disturb or kill indigenous species.

Roading

24. The Mining Plan(s) for the extraction areas close to Miller Road shall be provided to the Council for review to ensure that the extraction works do not adversely affect the stability of Miller Road. Should the Council deem it necessary, the Mining Plan(s) will be subject to an independent peer review to be arranged by the Gore District Council at the consent holder's cost.

Accidental Discovery

25. If any artefact and/or any historical, cultural or archaeological material of Māori origin, or likely to have significance to Māori, is found or uncovered during the undertaking of activities, the following must be complied with:

a) Work must cease immediately; the area be secured and any uncovered material must remain untouched;

b) Advice of the discovery must be given as soon as possible to:

   i. Te Ao Marama Inc: Phone: 03 931 1242, to enable appropriate cultural procedures / tikanga to be administered;

   ii. Hokonui Rūnanga: Phone 03 208 7954 and Email hokonui@xtra.co.nz

   iii. Heritage New Zealand / Pouhere Taonga, Phone: 04 472 4341, Email infodeepsouth@heritage.org.nz

c) No work can recommence until:

   i. Agreement has been reached with Te Ao Marama Inc; and

   ii. If required, an Authority has been issued by Heritage New Zealand if the find involves an archaeological site.

Complaints

26. The consent holder must maintain a complaints register setting out:

    a) details of any complaints received, including those relating to activities undertaken on the site and the movement of vehicles to and from the site. Such details must include the time and date of the incident subject to complaint and the name and contract details of the complainant;

    b) an assessment of the incident subject to complaint; and

    c) any action taken by the consent holder.

27. The complaints register must be available for inspection by Gore District Council staff at any time.

28. No later than 1 February each year, the consent holder must advise the Gore District Council of any complaints received during the previous calendar year and appropriate details from the complaints register.

Monitoring

29. No later than 1 February each year, the consent holder must advise the Chief Executive of the Gore District Council in writing and plan form, details of:

    a) the volumes of material removed from the site;

    b) the areas of land disturbed over the previous 12 months;

    c) the areas currently disturbed or being worked; and

    d) any identified breaches to the conditions of this consent.

    Advice Note: The information required to satisfy this condition can be combined with the requirements in Condition 17 of LU 2006/13.

Rehabilitation

30. Within 12 months of this consent commencing, the Consent Holder shall prepare a Site Rehabilitation Plan and submit it to the Gore District Council. The Site Rehabilitation Plan will

identify the proposed end of mine life layout anticipated.

31. The Consent Holder shall maintain a programme of progressive rehabilitation and enhancement of the Site, in accordance with the Site Rehabilitation Plan.

32. The Consent Holder must prepare an Annual Report containing the following details and provide the Report to the Gore District Council no later than 1 February each year that mining occurs on Site. The Report must detail the rehabilitation, and mitigation works completed in the preceding 12 months, including where relevant:

    a) The contour and stability of all post-mining landforms;

    b) The establishment of pasture cover and planting;

    c) The restoration of drainage channels;

    d) The lake and its perimeter edge;

    e) The wetlands;

    f) For the first 4 years following commencement of this consent, progress on landscape screen planting completed in accordance with conditions 7 to 9 of LU 24023;

    g) Ecological enhancement works;

    h) The removal of buildings, fixed plant/equipment and structures;

    i) Any post-mining monitoring requirements;

    j) Any post-mining weed and pest control requirements; and

    k) Any amendments made to the Site Rehabilitation Plan in light of the work completed.

Review condition

33. In accordance with Sections 128 and 129 of the Resource Management Act 1991, the Council may serve notice on the consent holder of its intention to review the conditions of this resource consent. The purpose of this is to avoid, remedy and/or mitigate any unanticipated adverse effects on the environment, which may arise from the exercise of this consent.

Advice Notes

1. Any future development on the site will be subject to the requirements of the Gore District Council Subdivision and Land Development Bylaw 2019 and the Gore District Plan and will be assessed at the building consent stage.

2. The consent holder must obtain any separate and additional permitted and /or regional and NES resource consents that are required for the proposal from Environment Southland.

3. This consent does not allow for any additional activities or breaches that are not specifically applied for and approved by this decision.

Administrative Matters

The costs of processing the application are currently being assessed and you will be advised under separate cover whether further costs have been incurred.

The Council will contact you in due course to arrange the required monitoring. The Monitoring Officers time will be charged to the consent holder. It is suggested that you contact the Council if you intend to delay implementation of this consent or if all conditions have been met.

This resource consent is not a building consent granted under the Building Act 2004.

This resource consent must be exercised within five years from the date of this decision subject to the provisions of section 125 of the RMA. If you have any enquiries, please contact the duty planner on phone (03) 209 0330 or email planning@goredc.govt.nz.

Prepared by

Penny Weng
Consultant Planner

Decision made by

Werner Murray
Delegate

APPENDICES

Appendix A: Approved Plans

Appendix B: Assessment of Environmental Effects, prepared by Taylor Planning, dated June 2024, and further information responses received 04 July and 30 July 2024 and 16 September 2024.

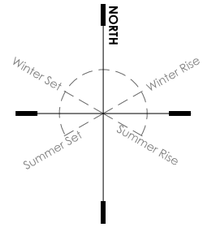
Appendix C: Landscape Assessment Report, prepared by SITE Landscape Architects, dated 15 August 2023

Appendix D: Ecological Assessment, prepared by e3Scientific, dated 18 January 2024.

Appendix E: Economic Impact Analysis, prepared by Sense Partners, dated 12 February 2024.

Appendix F: Site Environmental Management Plan, dated 18 July 2023.

Appendix G: Cultural Statement, prepared on Behalf of Hokonui Runanga Inc, dated 22 May 2024.



2km

1km

0

KEY:

Greenbriar Limited Properties - leased by Newvale Coal: Lot 72, Pt Lot 73, Lot 74, Pt Lot 75 DP177.

Proposed Landuse consent boundary

Existing consented extraction boundary LU2006/13

Proposed extraction extension

Photomontage locations

VISIBILITY OF PROPOSAL:

Mine extension area visible - or earthworks within extension area will lead to increased visibility of mine within existing consent area

Existing mine visible, western extension area not visible

SITE LANDSCAPE ARCHITECTS ^

Figure 0: **Context Plan**

New Vale Mine Extension

RC 15.08.23 1:20,000 @ A3

SITE Landscape Architects . www.sitela.co.nz . 267_Fig 0_Context Plan

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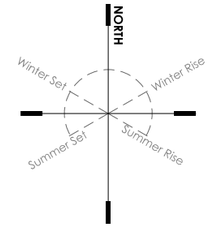


1,000m

500m

0

KEY:

Greenbriar Limited Properties - leased by Newvale Coal: Lot 72, Pt Lot 73, Lot 74, Pt Lot 75 DP177.

Proposed Landuse consent boundary

Existing consented extraction boundary LU2006/13

Proposed extraction extension

A — Photomontage locations

SITE LANDSCAPE ARCHITECTS ^

Figure 1: **Existing Plan (2020)**

New Vale Mine Extension

RC 15.08.23 1:10,000 @ A3

SITE Landscape Architects . www.sitela.co.nz . 267_Fig 1_Existing Plan

NORTH

Winter Set · Winter Rise · Summer Set · Summer Rise

KEY:

- Greenbriar Limited Properties - leased by Newvale Coal: Lot 72, Pt Lot 73, Lot 74, Pt Lot 75 DP177.
- Proposed Landuse consent boundary
- Existing landuse consent / consented extraction boundary **LU2006/13**
- Proposed extraction extension
- (A) Proposed end of life lake (Mine pit filled with water)
- (B) Proposed overburden mound, gently sloped regrassed and grazed (max. 35m high)
- (B1) Extent / limit of overburden mound
- (B2) Temporary topsoil stockpiles (natural grassing will occur / grazed)
- (C) Existing farm paddocks
- (D) Existing tributary of Hedgehope Stream
- (E) Proposed wetlands constructed during extraction for discharge of mine water
- (F) Proposed native gully planting and strip around edge of lake, fenced from stock. To be determined in consultation with Hokonui Rununga
- (F1) Proposed drainage / end of life stream planted with natives (10 - 20m wide strip)
- (G) Existing Leyandii cypress / Eucalyptus hedgerow within site
- (H) Proposed mixed native hedgerow, completed in two stages -

  Stage 1 Colonizers, planted as fast growing screening shelter:
  Plagianthuis regius
  Pittosporum tenuifolium
  Griselinea littoralis
  Aristotelia serrata

  Stage 2 forest trees will be interplanted within the stage 1 plants once they reach 1m height:

  Silver beech (hilltops)
  Red beech (gullies)
  Totara

  (Or similar species, fenced from stock)

  All @ 1.5m crs, 3m wide strip
- (A) Photomontage locations

1,000m
500m
0

SITE LANDSCAPE ARCHITECTS ^

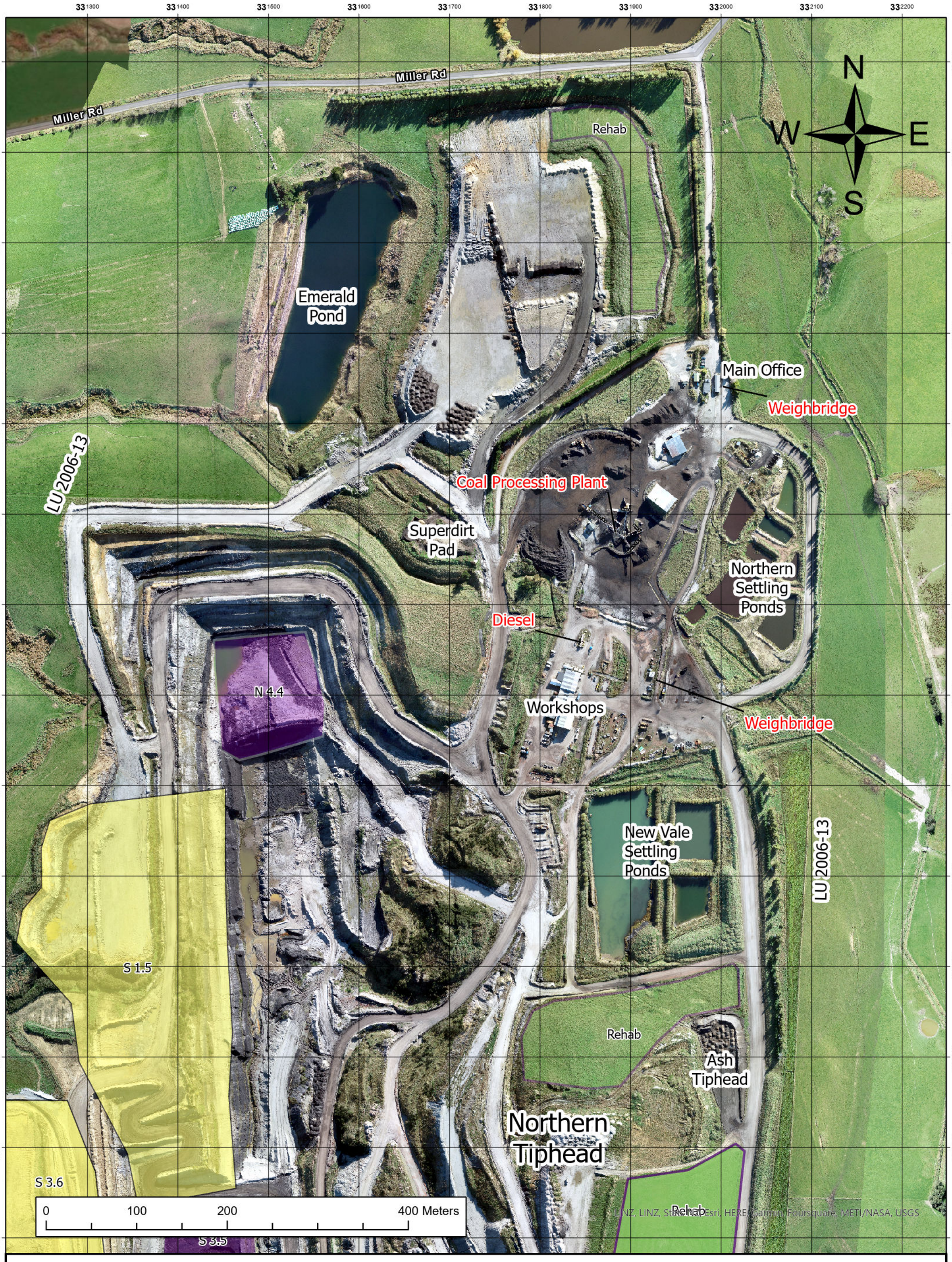
Figure 2: **Proposed Landsaping Plan (2038)**

New Vale Mine Extension

RC 15.08.23 1:10,000 @ A3

SITE Landscape Architects . www.sitela.co.nz . 267_Fig 2_Rehabilitation Plan

2



NEW VALE COAL

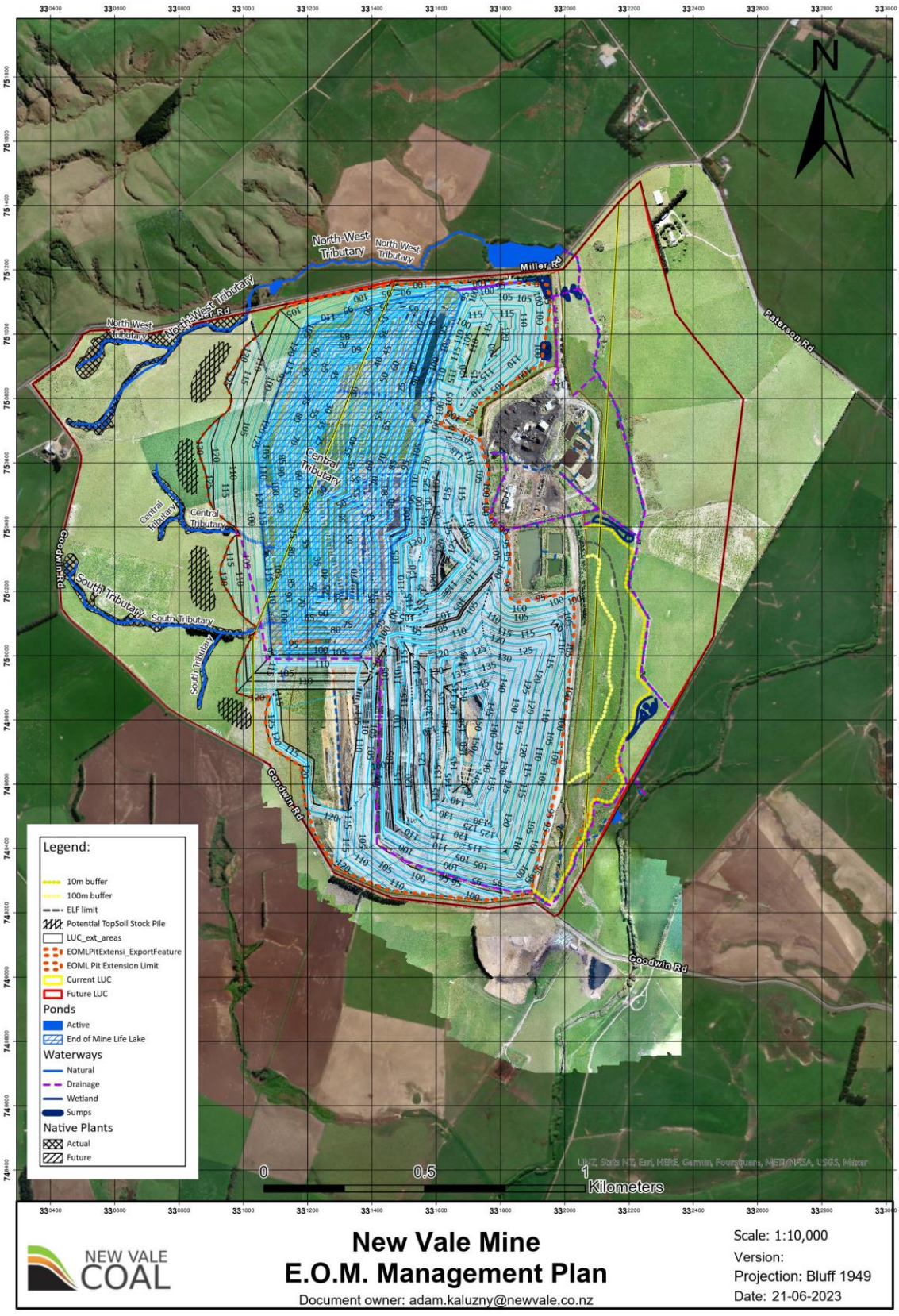
New Vale Mine Infrastructure, June 2023

Document owner: adam.kaluzny@newvale.co.nz

Scale: 1:2,500

Projection: Bluff 1949

Date: 2/06/2023



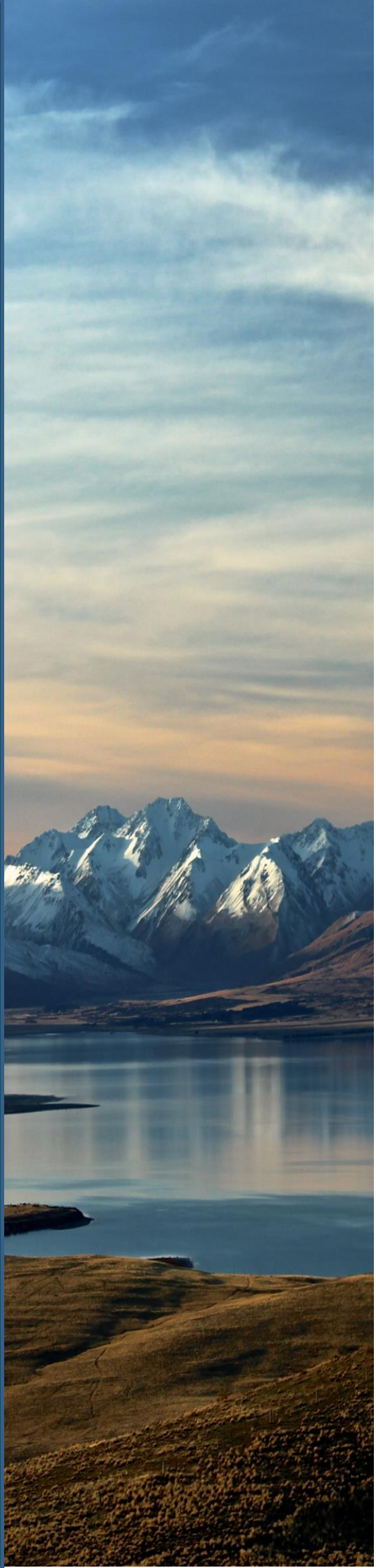
Proposed Site Layout Plan

Taylor. Planning

Greenbriar Ltd

New Vale Opencast Mine Extension - Resource Consent Application and Assessment of Environmental Effects

June 2024



Supporting clients to solve their resource management challenges.

Appendices

FORM 9

APPLICATION FOR RESOURCE CONSENT

Sections 88 and 145, Resource Management Act 1991

To **Gore District Council**
29 Bowler Avenue
GORE 9710

1. Greenbriar Limited, (trading as New Vale Coal), 640 Miller Road RD4, Waimumu 9774, applies for the following type(s) of resource consent:

   Landuse Consent - to expand the mining operation area of the New Vale Mine, located at Miller Road, Waimumu.

2. *The activity to which the application relates (the proposed activity) is as follows*:

   The activities that are the subject of this resource consent application are associated with the expansion of the existing mining operations at the New Vale Mine, Waimumu, and the works being undertaken to rehabilitate the site.

   The activity is described in full in the attached Assessment of Environmental Effects ("AEE"), which is attached to and forms part of the application.

   The applicant seeks a fixed term for the duration of the resource consent. The applicant seeks that any resource consent issued for the subject application has an expiry date of 1 January 2050.

3. *The site at which the proposed activity is to occur is as follows*:

   The activity is located at the New Vale Mine, Waimumu. The site is legally described as Lot 72, part Lot 73, Lot 74 and part Lot 75, DP 177, Block X Waimumu Hundred and is held in Record of Title SL211/99 (Lots 72 and 73), Sl147/66 (Lots 74-75), which is attached to this application in **Appendix A**. The site is owned by Greenbriar Limited.

The mine and proposed expansion area is depicted in the plan attached in **Appendix B**.

The particular location of the activities for which consent is sought is described in detail in the AEE which is attached to and forms part of this application.

4. *There are no other activities that are part of the proposal to which this application relates.*

   Nil.

5. *No additional resource consents are needed for the proposal to which this application relates.*

   Resource consent is being sought from Environment Southland under the National Environmental Standard for Freshwater Management.

6. *I attach an assessment of the proposed activity's effect on the environment that—*

   (a) includes the information required by clause 6 of Schedule 4 of the Resource Management Act 1991; and

   (b) addresses the matters specified in clause 7 of Schedule 4 of the Resource Management Act 1991; and

   (c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

7. *I attach an assessment of the proposed activity against the matters set out in Part 2 of the Resource Management Act 1991.*

8. *I attach an assessment of the proposed activity against any relevant provisions of a document referred to in section 104(1)(b) of the Resource Management Act 1991, including the information required by clause 2(2) of Schedule 4 of that Act.*

9. *I attach the following further information required to be included in this application by the district plan, the regional plan, the Resource Management Act 1991, or any regulations made under that Act:*

   Appendix A Record of Titles

   Appendix B Mine Plan

Appendix C Landscape and Visual Assessment

Appendix D Site Environmental Management Plan

Appendix E Wetland Delineation Report

Appendix F Economic Impact Analysis

Appendix G Cultural Report prepared on behalf of Te Rūnanga o Hokonui Inc

Date: 4 June 2024

Antony Stodart
General Manager
A. R. Stodart

(Person authorised to sign on behalf of applicant)

Address for Service: Taylor Planning Limited, PO Box 12041 Dunedin 9010

Telephone: 027 227 2444
Email: meg.justice@taylorplanning.co.nz

Contact person: M Justice

Note to applicant

You must include all information required by this form. The information must be specified in sufficient detail to satisfy the purpose for which it is required.

You may apply for 2 or more resource consents that are needed for the same activity on the same form. If you lodge the application with the Environmental Protection Authority, you must also lodge a notice in form 16A at the same time.

You must pay the charge payable to the consent authority for the resource consent application

under the Resource Management Act 1991 (if any).

If your application is to the Environmental Protection Agency, you may be required to pay actual and reasonable costs incurred in dealing with this matter (see section 149ZD of the Resource Management Act 1991).

1. Introduction

This Assessment of Environmental Effects (**"AEE"**) is provided in accordance with the requirements of Section 88 and the Fourth Schedule of the Resource Management Act 1991 (**"RMA" or the "Act"**). Greenbriar Ltd (which trades as New Vale) (herein referred to as **"Greenbriar" or "the applicant"**) operates the New Vale coal mine ("**New Vale**" or **"New Vale Mine"**), and the associated crushing and screening plant at its existing site. The site is located in the Waimumu area, which is situated west of Gore in Southland. Coal mining has been undertaken in this area for over 75 years, and New Vale mine has long established customers that rely on the supply of coal from the mine to operate their factories and businesses.

Greenbriar held a Coal Mining License (CML) granted under the Coal Mines Act 1979, which expired in March 2019. Mining activities are no longer authorized by mining licenses, so when a license expires, the mining activities are required to obtain any necessary resource consent to operate. Greenbriar has a land use consent granted by the Gore District Council ("**GDC**") in 2007 to carry out mining and associated activities at the New Vale site (resource consent reference LU 2006/13). This enables mining to occur within a defined area. Greenbriar is now seeking to extend the site of its mining operations at New Vale mine to enable the extraction of coal from an area outside the boundaries of the existing resource consent, and to undertake ecological enhancement works at the site. The proposed extension will enable the mine to operate for approximately four more years.

In addition to this land use consent application, the following resource consents are required from Environment Southland for the Proposal:

- Resource consent to dam and divert unnamed tributaries impacted by the proposed extension to the extraction areas and associated discharges – these resource consents have been obtained (AUTH 20222206 -01, 02, 03)

- Resource consent under the National Environmental Standards for Freshwater from Environment Southland, due to the proposed extraction works (within the extension area) impacting existing natural inland wetlands at the site – this resource consent will be sought in conjunction with the land use consent required from Gore District Council.

Planning is underway for the end of life for the New Vale Mine. Precise timing for the end of mine life is difficult to estimate, as it will depend on when the mine stops extraction activities, which will be based on demand ceasing as a result of industries transitioning away from the use of coal for energy. New Vale only extracts coal as it is required by its customers. It does not extract coal to stockpile it for future sales, nor does it export coal, so as its customers transition away from coal as an energy source, mining will cease. This timing is expected to be determined by Government decisions and demand for coal. However, in order for the mining activity to align with New Zealand's decarbonization goals, a limited duration is sought for this land use consent. It is proposed that any resource consent granted for the extraction of coal within the proposed

extension area at New Vale Mine expires on 1 January 2050. The proposed expiry date of 1 January 2050 will allow for the existing consented and proposed extraction activities, and for the rehabilitation of the site to be completed.

Report Structure

This AEE addresses all the matters the applicant is required to address in the resource consent applications by Schedule 4 of the RMA. It is set out in nine sections as follows:

Section 1 Provides an introduction.
Section 2 Describes the site and existing environment.
Section 3 Describes the existing mining activity.
Section 4 Sets out the existing resource consents held by Greenbriar for the New Vale mine.
Section 5 Provides a description of the activities for which consent is sought.
Section 6 Sets out the activity status of the resource consents sought and the scope of the relevant matters when considering the application.
Section 7 Assesses the effects of granting the resource consent sought.
Section 8 Includes the suggested conditions of consent.
Section 9 Describes the consultation undertaken in respect of this resource consent application.
Section 10 Provides an assessment of the relevant planning documents, and how the proposed activities sit in relation to them.
Section 11 Sets out the RMA notification provisions and assesses the proposed activities against them.
Section 12 Is a concluding comment.

2. Description of the Site

The application site is legally described as Lot 72, Pt Lot 73, Lot 74, Pt Lot 75 DP 177 Block X Waimumu Hundred and is owned by Greenbriar Limited Properties.

The New Vale Mine was established at the site in the 1940's, and is located approximately 15 kilometers south west of Gore and 10 kilometers northwest of Mataura, as shown in Figure 1 below. The mine, including the proposed extension area, is contained within a broader area of land that is owned by the applicant, which is 354 ha in area, and is bound by Goodwin Road to the south and west, and Miller Road to the north. The land owned by the applicant provides a buffer around the operational mining site.

Figure 1: Location of New Vale mine

The land surrounding the mine is predominantly pastural farmland, and the topography is rolling hills, comprising the foothills of the Hokonui range, which are located west of the site. The agricultural activities in the area include predominantly dairy grazing and sheep farming, which are typical of the land uses found in the wider Gore District and beyond. Vegetation patterns in the surrounding areas generally consists of exotic farm shelter hedgerows dissected by more organic shapes of stream and gully systems, some containing remnant or regenerating native vegetation.

Landscape character in the wider area and surrounding site is described as productive rural landscape in the Landscape Assessment prepared by SITE Landscape Architects (**"SITE"**) (refer **Appendix C**). SITE state that the Southland Region has historically been heavily modified from pre-human state of podocarp Temperate Forest to farmland, and the human presence in the way of farming activities and rural buildings are a reminder that the area is very much shaped around productive use.

The surrounding area accommodates some limited residential uses, which are typically associated with farming. There are two dwellings located within 1 kilometer of the site boundary, and other dwellings are located further from the site.

The existing mine was established in the 1940s and is therefore a long-standing part of the area.

3. Existing Mining Activities

New Vale mine's primary activity is the extraction and processing of coal. The New Vale mine was previously owned by a state-owned enterprise, Solid Energy. Solid Energy was divided up and sold in 2017, at which time Greenbriar purchased the mining activity and land. Greenbriar held a Coal Mining License (CML) granted under the Coal Mines Act 1979 which expired in March 2019[1]. It now operates under land use consent LUC-2006/13. The mining operational area consented under LUC-2006/13 is shown by the yellow line in Figure 2 below (and the plan attached in **Appendix B)**, and this area was included within the CML area.[2]

Figure 2: Plan depicting proposed extension to the extraction area (yellow horizontal lines) and the

[1] CMLs can no longer be issued under the Coal Mines Act. When the RMA was enacted, the CMLs remained valid, however, when the CMLs expired, mine operators were required to replace these licenses with a land use resource consent. At the time the CML expired, Greenbriar already held a land use consent for to undertake mining at the whole site including, the CML area, as they were already mining outside the CML.

[2] The CML area is shown on Figure 8.

application site area is outlined in red.

In addition to the extraction and processing of coal (which are described in more detail below) other activities undertaken at New Vale include:

- Production of 'Superdirt', a compost comprising lignite fines, saw dust and meat works wastes.
- Rehabilitation of mined areas, including backfilling, cultivation and over sowing.
- Construction and maintenance of water treatment infrastructure, e.g. settling ponds, drainage channels, wetlands.
- Ancillary services include de-watering, drainage and water treatment via settling ponds, as well as administration activities.
- Ash disposal - a point source ash disposal where ash is blended with overburden at a rate not exceeding 5% ash to 95% overburden.
- Workshops for the servicing and maintenance of equipment and plant machinery.
- Ecological enhancement projects.

A detailed description of the activities which are undertaken at the site is provided below.

Mining Operation

The existing mining operation at New Vale, which covers an area of approximately 178 hectares, consists of:

- An open pit mine of approximately 40 hectares in area and a depth range of between 55-75m The mining within the pit progresses in stages;
- Two overburden mounds (Engineered Land Forms "ELF"[3]), the 'Central' one is approximately 38 hectares in area, and the second 'Northern' one is 8.5 hectares in area. Once overburden material is graded the mound is sown with pasture grass;
- Settling ponds, administration buildings, workshops, plant and a service area.

The mining process requires the removal of topsoil and overburden which is situated over the coal / lignite seam, to allow access to the seam. All topsoil and subsoils that are removed are either stockpiled for future use or carted and spread in rehabilitation areas. Other overburden material comprises the overlying sandstone, mudstone, sand, and waste coal. This overburden is re-used as back fill in previously mined areas. It is then levelled to the final contour design and vegetated.

The extraction process at New Vale follows the following steps:
- Step 1 - Topsoil is removed by hydraulic excavator and bulldozer and stockpiled.
- Step 2 - Subsoil is removed by hydraulic excavator and bulldozer and stockpiled.
- Step 3 - Overburden is removed by hydraulic excavator(s) and used as backfill within the pit.
- Step 4 - Overburden is carted by articulated dump trucks to ELF site.

[3] The Engineered Landforms at New Vale are designed by a mining engineer to be stable. The ELF that is central to the site has also been designed to provide some light and noise screening for the closest sensitive receiver.

- Step 5 - Coal is removed by 87 tonne excavator and carted on rigid dump trucks.

It is noted that blasting is not required at New Vale as coal and overburden are freely extracted by hydraulic excavators.

Land within the site that is not within the immediate mining operational area is fenced and grazed. Grazing therefore occupies a large part of the site.

The Mining activity is undertaken in accordance with a Site Environmental Management Plan (**"SEMP"**) (which is a requirement of conditions 20-23 of LU 2006/13). The SEMP sets out how the applicant manages its operations to ensure compliance with the conditions of consent LU 2006/13.[4] This SEMP is reviewed by the Gore District Council every five years. A copy of the most up to date SEMP is attached as **Appendix D**.

Currently, the New Vale mine employs 39 staff and typically operates 06:00–18:30, Monday-Friday, and Saturdays 06:00-14:00 as required. Winter hours are 07:00-16:30, Monday to Friday, and Saturdays 09:00-14:00 as required. There is potential for the mine to operate extra hours outside these hours if required by demand, however the current operating hours are preferred to avoid the need for shift work.

Coal Processing

Extraction rates depend on demand for coal, and on average, the mine extracts 340,000 tons of coal per annum, although this is trending down with approximately 286,000 tons extracted in 2023. Once extracted, coal is processed by a crushing and screening plant which has a capacity of ~400 tonne/hour. All coal extracted at New Vale is processed at a processing plant which is located at the site.

The processing plant area is located on the boundary of the industrial zoned area (in the Operative District Plan), as shown in Figure 3: Processing Plant. The light truck weighbridge and the administration activities are located 150 m north east of the processing plant.

[4] The SEMP provides a comprehensive management regime for the New Vale Mine. Some elements of the SEMP are not required by conditions of LU 2006/13.

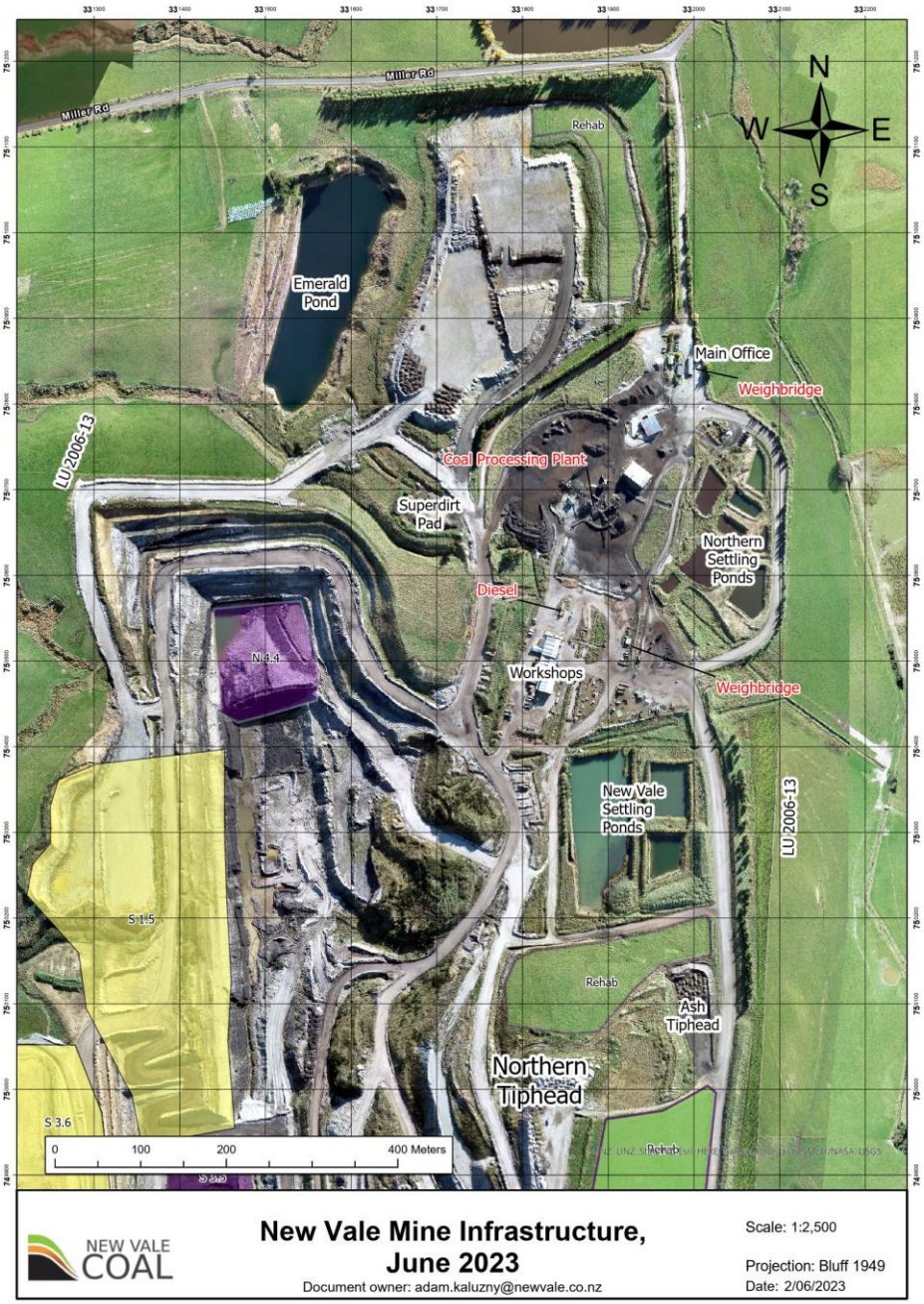


Figure 3: Existing infrastructure at New Vale Mine, depicting processing plant.

Superdirt Production

Superdirt is also produced on the site. Superdirt is a compost product made from coal fines and meat works waste. This product is made to the NZ standard, NZS 4454:2005, for Composts, Soil Conditioners and Mulches.

Site Access and Vehicle Movements

Access to the site is from the south via Goodwin Road and from the north via Miller Road. The Miller Road entrance is located at 640 Miller Road. Miller Road and Goodwin Road are defined as 'Collector and Local Roads' in the Gore District Plan, and therefore are not arterial Roads.[5]

Vehicle movements to and from the site comprise:

- Approximately 27 heavy vehicles access the site per day, or 9700~ vehicle movements per annum.[6]
- Approximately 20 light vehicles regularly operate at the site (including contractors).
- Transport is provided by New Vale for staff, so private vehicles only occasionally access the site.
- Very few trucks leave the site via Miller Road because heavy vehicles over 50-tonne gross weight are not permitted to use this access, and instead use the Goodwin Road access.
- Goodwin Road is the primary entrance and exit point for truck and trailer units carting coal.

The access to Goodwin Road has been designed and formed to achieve the "rural milk tanker" access design, as illustrated in sheet R12, Standard Construction Diagrams, of the Subdivision and Development Bylaw 2019, which is for high use commercial accesses on Arterial roads.[7] This design standard for the Goodwin Road access achieves Condition 11 of land use consent LU 2006-13:

> *11. Any vehicular accesses to the mine site shall be formed and maintained to the satisfaction of the Gore District Council Roading Manager in general conformity with Diagram 5.8 of the District Plan, a copy of which is attached to this decision. Such works shall be undertaken no later than 30 September 2007.*

All accesses onto public roads have been and will continue to be maintained to a good standard to minimise spreading of debris / dirt on the road surface.

Site Environmental Management Plan

New Vale has a comprehensive environmental management regime in place to manage the actual and potential environmental effects of its operations, as well as health and safety matters. The SEMPs includes methods to manage, amongst other things:

- Noise emissions,
- Dust / air quality,

[5] Table 5.3 of the Gore District Plan

[6] As noted, less coal is expected to be extracted in 2024, so this will result in less heavy vehicle movements to and from the site.

[7] Diagram 5.8 attached to LU 2006-13 Condition 11, is the same design standards as R12 from the Subdivision and Development Bylaw 2019, except that the later version of this diagram does not require sealing to the site boundary where site fronts a gravel road.

- Groundwater and stormwater runoff.

The current SEMPs are attached in **Appendix D**.

Air Quality Management Plan

The Air Quality Management Plan forms section 4 of the SEMP. The purpose of the Air Quality Management Plan outlines the risks of production of dust and airborne contaminants from site operations, and the operational procedures that are in place to control the production of dust from the site.

The generation of dust is an unavoidable result of the extraction, transportation, handling and loading out of coal, overburden stripping and disposal, ash disposal and associated site works. If not managed appropriately, dust from these activities has the potential to be a nuisance to adjoining property owners.

Potential sources of dust that could cause a nuisance to adjoining land owners include:

- Coal dust generated from the coal screening/processing plants.
- Coal dust/sediment from use of access/haul roads.
- Dust/sediment generated from overburden stripping for the purposes of rehabilitation (forming ELFs).
- Unblended ash stockpiles.

The production of dust is influenced by climatic factors, and the dust potential from the sources listed above is greatest during high velocity wind events\periods originating from the Northwest.

Environment Southland resource consent 201709 (air discharge permit) requires the production of a dust management plan for New Vale operations. Section 4 of the SEMP fulfils that obligation.

Methods used to manage dust emissions from the site are described in the table below:

Source	**Method of Control**	**District & Regional Plan Provisions**
Venting of exhausts from trucks and plant	• Regular maintenance of equipment (WOF/COF or equivalent).	N/A
Coal dust generated within the screening plants	• Regular maintenance of plant. • Reticulated sprinklers on plant, and processing yards. • Regular wash down of plant. • Enclosure of transfer points.	ES Consent 201709: Air Discharge Permit
Coal dust/ sediments on mine roads and	• Wetting of the roads by sprinklers and/or water cart during dry periods.	ES Consent 201709: Air

ROM	• Annual spreading of road metal aggregate on mine roads. • Regular grading of mine roads.	Discharge Permit
Coal Ash Tip Head	• Ensure coal ash tip head is located away from site boundaries and is not exposed to either prevailing (NE) or high velocity (NW) winds. • Ensure any ash stockpiles do not exist for longer than 30 days.	ES Consent 201709: Air Discharge Permit ES Consent 202596: Ash Discharge Permit
Overburden Stripping	• Establishment of farm shelter belts upwind of high velocity (NW) winds. • Grass areas of mine over summer that will not be disturbed for a period. • Rehabilitate mining footprint in a timely manner.	ES Consent 201709: Air Discharge Permit
Superdirt Manufacture	• Minimize stockpiles of coal fines. • Mix coal fines to start composting of superdirt as soon as is possible.	ES Consent 201709: Air Discharge Permit

Monitoring of dust emissions is undertaken to understand the effectiveness of the Air Quality Management Plan. Nine deposited particulate dust monitors have been installed on the New Vale site boundary and the Goodwin site boundary, and the location of these monitoring sites is depicted in Figure 4 below. These dust pots measure fugitive dust that travels over the site boundaries. A diary of the monitoring results is maintained by the consent holder. Greenbriar also maintains a dust complaints policy and diary (which is a requirement of air discharge permit 201709).

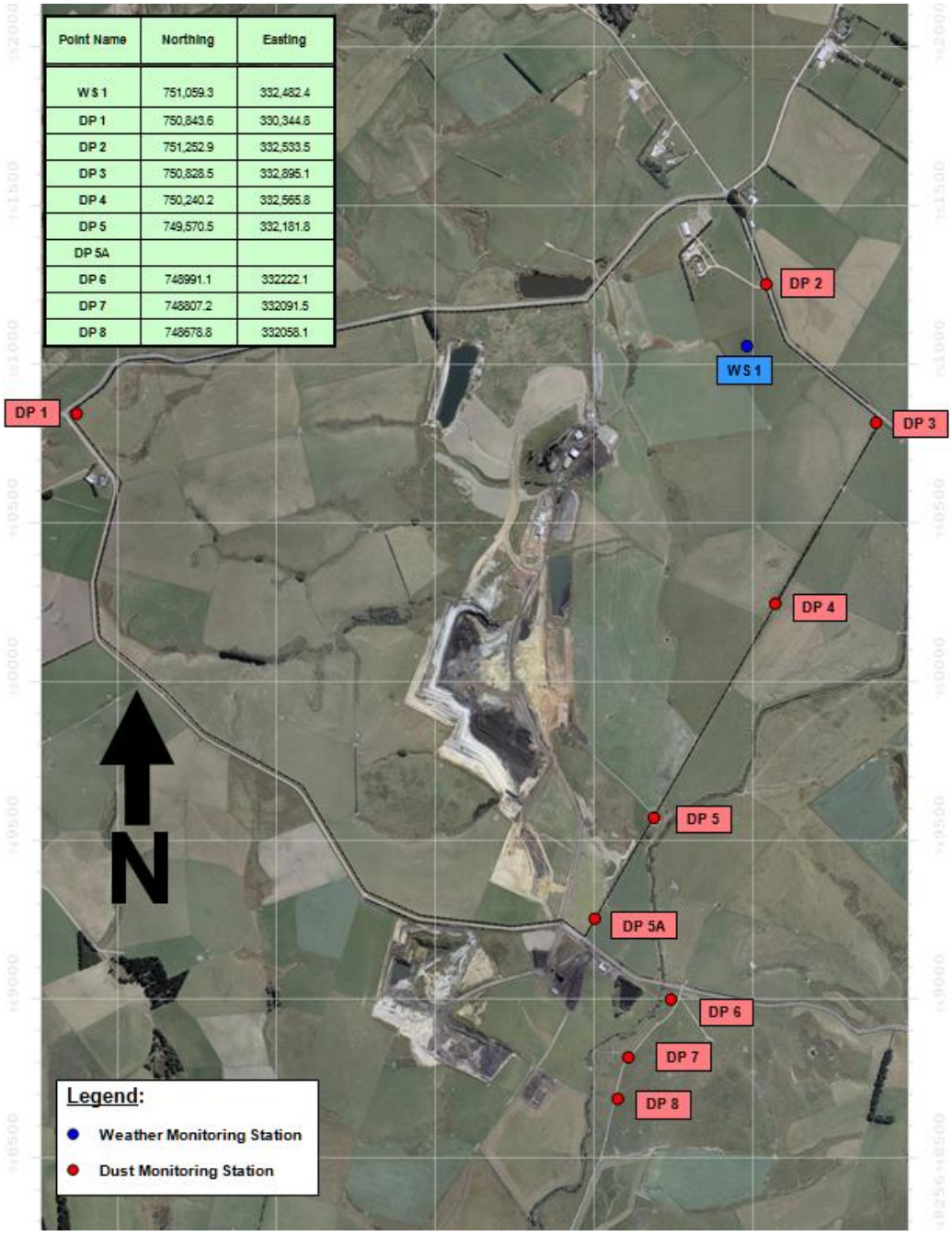


Figure 4: New Vale dust monitouring sites

Ecological Enhancement

Various ecological enhancement projects have been undertaken by the applicant over recent years as part of a genuine commitment to leave the site with higher ecological and biodiversity values than existed when mining started, and as part of undertakings for resource consents. Enhancement works undertaken by the applicant include:

- The implementation of a weed control program;
- Enhancements to the southern tributary of the Hedgehope Stream to improve the habitat for Gollum galaxias, which DOC has classified as being a threatened and nationally vulnerable indigenous fish species. This is a consent requirement of Environment Southand consent AUTH 20222206-02;
- As part of the program to enhance the habitat for Gollum galaxias associated with consent AUTH-20222206-02, Greenbriar has obtained authorisation from the Department of Conservation to construct a fish barrier which has created a safe environment for the Gollum galaxias and a permit from Fisheries New Zealand to transfer native fish into the newly enhanced environment. The fish are transferred upstream as mining occurs, and are also transferred from the Central Tributary to the Southern Tributary as mining progresses.
- In 2011, Greenbriar fenced the Southern and Central (South Branch) tributaries at the site to exclude livestock from these waterways and riparian margins. This fencing has enabled the regeneration of native plants within these margins, which is expected to improve the water quality in these tributaries. This work has also allowed streams to channelize as livestock were not damaging the delicate banks. As described below, this fencing has since been upgraded to nine-wire fencing, and now approximately 10 hectares is enclosed with approximately 4.8 kilometres of nine wire fencing including two electric wires.
- At the end of mine life, the Pit Lake and 'new' North Tributary will be fenced, and riparian planting will be undertaken around the edge of the lake using indigenous species (consent requirement from AUTH 20222206-01).
- A pond to discharge the treated mine water through to the east of the mine is proposed, which is expected to enhance the water quality and result in improved biodiversity values.

The applicant has developed a three-year plan in consultation with te Rūnanga o Hokonui to improve fencing and to plant native vegetation at the site. These plantings are designed to form part of a native plant corridor connecting the Hokonui Hills to the Hedgehope Stream. The intended outcome of the works is to improve instream habitat, attract native birds and insects to the corridors, provide habitat for freshwater species and enhance mahinga kai and cultural values. When completed and post mining, this ecological enhancement project is expected to contribute towards restoring the ecological values of this area.

This plan has been initiated with the following works having been completed to date:

- The Southern and Central (South Branch) tributaries have been re-fenced with nine wire, including two hot wires, to improve livestock exclusion. These tributaries were originally fenced off in 2011. Both tributaries have been planted out in native plants. Planting in these areas is ongoing, along with maintenance and pest plant/animal control.
- The Northwest tributary has been fenced with nine wire (including two hot wires). The area within the fencing is currently being progressively planted with natives. Significant planting has been undertaken over 2022/2023.
- All fencing is now complete; planting and plant pest control within the riparian areas is ongoing.

Figure 5 below depicts the three year fencing and planting program, and Figure 6 depicts the

Tributaries within the site that are referred to above.

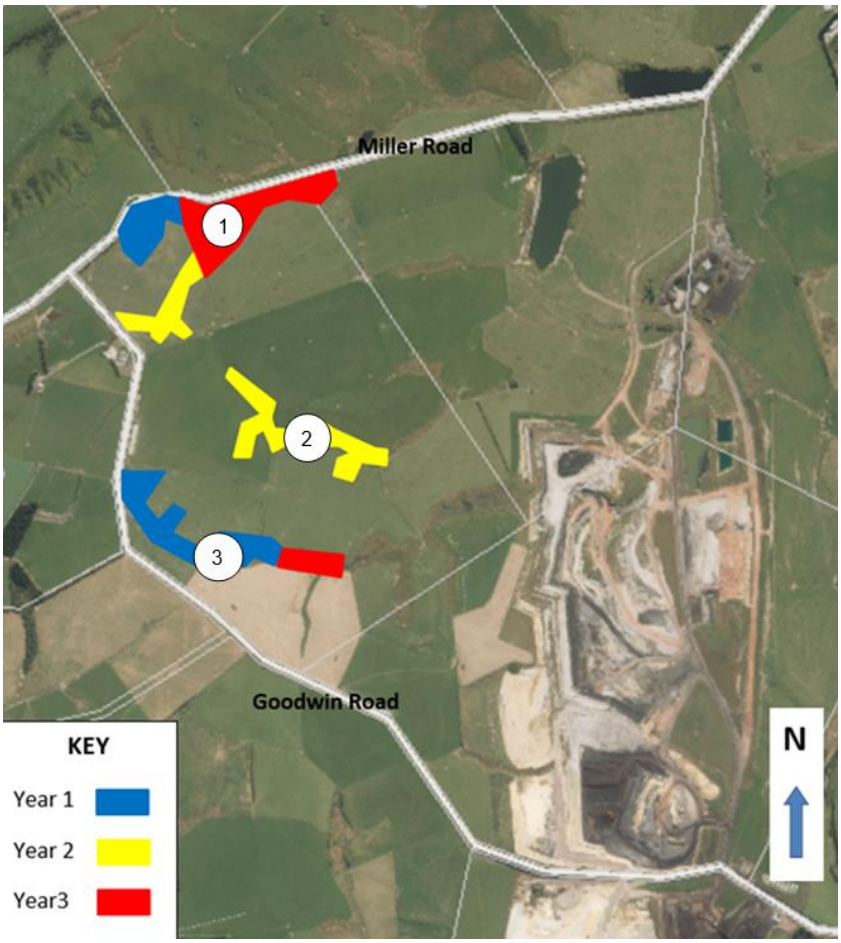


Figure 5: Three-year fencing and planting program

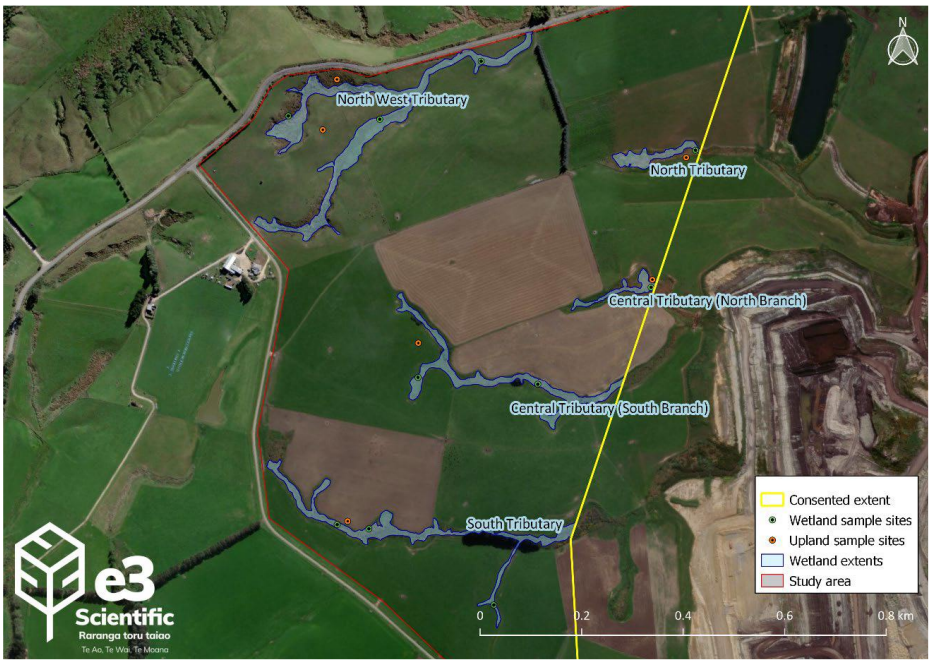


Figure 6: Tributaries within the site

Site Rehabilitation

Site rehabilitation is a significant part of the mining process. The existing mining activities are cyclic in nature, with only part of the site being actively mined at any one time. Once the area has been mined the rehabilitation process for that area begins, which involves re-contouring the land to match the local landscape character and returning the land to pastoral farmland. The ecological enhancement works described above are also part of the rehabilitation works.

The rehabilitation of the existing mining area must be in accordance with a Site Rehabilitation Plan (as required by condition 16 of LU 2006/13). Condition 16 of LU 2006/13 requires the plan to:

- Provide for the rehabilitation of excavated areas as soon as practicable after the completion of operations in that area;
- Create landforms that are in a stable and safe condition; and
- Provide rehabilitated land that is suitable for farming purposes.

Figure 7 below shows how the site will be rehabilitated, with the slopes for the ELFs depicted by the green areas. For the proposed extension of the mine, the Site Rehabilitation Plan will require the recontouring of the pit slopes to a contour no greater than 11.3 degrees or 5:1. A lake is to be formed in the remaining mine pits. Following site rehabilitation, the mine site will revert back to farmland, aside from the areas set aside for wetland and ecological enhancement and the pit lake.

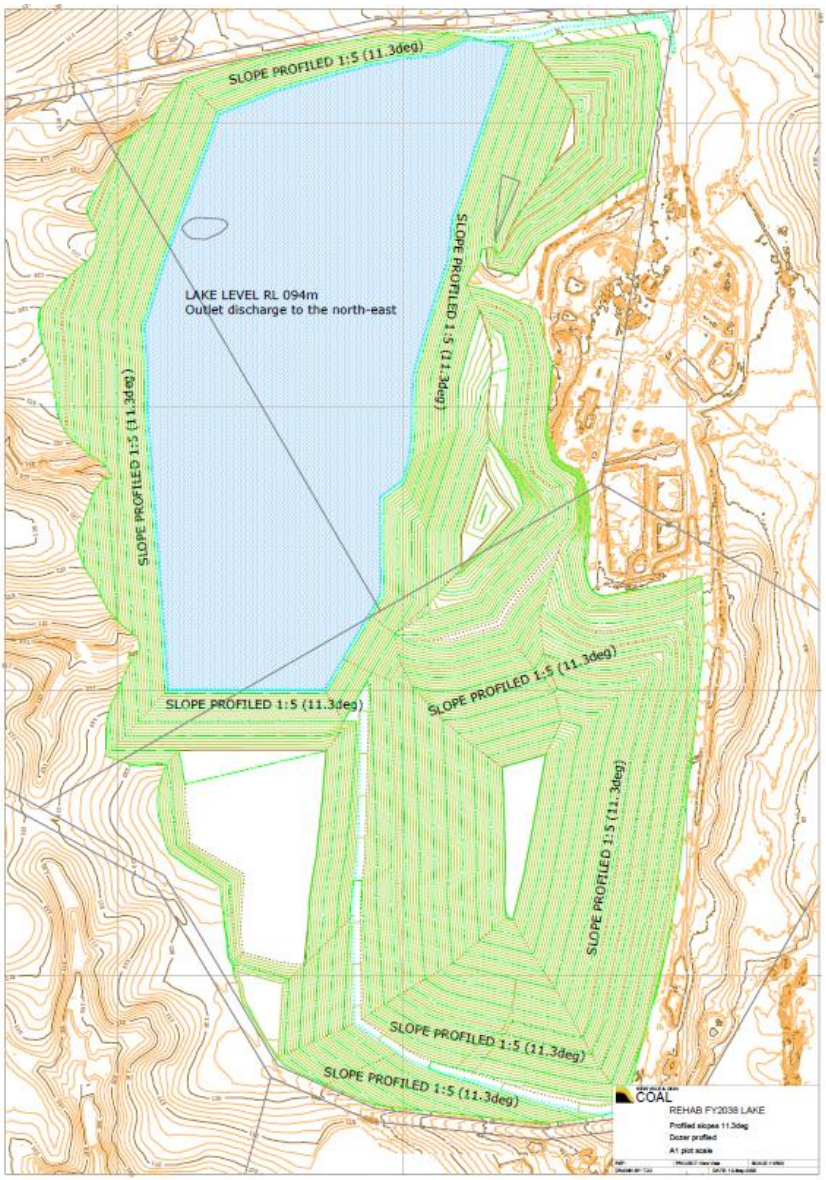


Figure 7: Rehabilitation Plan for part of the New Vale Mine

4. Existing Resource Consents

The following resource consents are held by Greenbriar for the New Vale mine activities. Note that the consents highlighted grey are required for the proposed extension of the extraction area, and associated works that is the subject of this land use consent application.

Reference / Consent Authority	**Activity**	**Term / Expiry Date**
Gore District Council LU 2006 / 13	Land use consent for the operation of the coal mine	n/a
LU 2009 / 06	Land use consent variation to LU 2006 / 13 for fuel storage activity (allows for a total of 150,000 litres of diesel on site)	n/a
Environment Southland 20222206-01	Land use consent to disturb the beds of three unnamed tributaries of the Hedgehope Stream in order to dam and divert the tributaries, including the discharge of clean fill	Expiry date: 20 October 2047
Environment Southland 20222206-02	Water Permit to divert the water of three unnamed tributaries of the Hedgehope Stream	Expiry date: 20 October 2047
Environment Southland 20222206-03	Discharge Permit to discharge contaminants to water from bed disturbance activities	Expiry date: 20 October 2047
Environment Southland 201709	Air discharge permit to discharge contaminants to the air from the mining, crushing, screening and stockpiling of lignite at two sites at Waimumu - New Vale Mine and Goodwin Mine	Expiry date: 31 January 2028
Environment Southland	Discharge permit to discharge treated groundwater, stormwater and surface water from the New Vale mine into a tributary of the	Expiry date: 31 December 2030

20158148-01-V1	Hedgehope Stream	
Environment Southland 20158148-02 (surrendered)	Discharge Permit to discharge treated surface runoff and groundwater from Goodwin Coal Mine to the Hedgehope Stream at Waimumu (surrendered)	Expiry date: 1 December 2030
Environment Southland 20158148-03 and 04	Water Permit to take groundwater, surface water and stormwater (56,223,000 l/day from opencast pits for mine pit dewatering	Expiry date: 1 December 2030
Environment Southland 20191218	Discharge Permit to discharge ash to land from the operation of a lignite mine into both the New Vale mine and the Goodwin Mine sites at Waimumu	Expiry date: 25 November 2034

The existing Gore District Council land use consents LU 2006 / 13 and LU 2009 / 06 will be retained and will continue to manage extraction within the current mining area, and the expansion of the mining area will be provided for by an additional consent. This will enable the existing consented works to continue under existing consent LU 2006 / 13 and associated conditions. Where necessary the consents will be integrated through common requirements such as site rehabilitation etc.

Further to the above, an additional resource consent is required for the proposed extraction extension area under the National Environmental Standard for Freshwater (**"NESF"**), as the proposal will result in the loss of some areas of natural wetland. Environment Southland will be the consent authority for this application. The restoration and enhancement of the wetland areas in the eastern and western parts of the site is proposed as part of the offsetting package for the NESF resource consent application.

5. Description of the Proposal

Proposed Mine Extension

Extraction Activity

The proposal seeks resource consent to extend the existing landuse consent area of 178 hectares by 145 hectares. The proposed extension is required to increase the land area to be mined and also to provide additional space at the site to implement mitigation and ecological enhancement works. The additional land sought to be included in the New Vale mining area includes:

- An 89 hectare (approx.) wedge shaped parcel of land on the northwest side of the existing mine; of this total area 30 hectares (approx.) is proposed to be used for coal extraction and 59 hectares is proposed to be used for stockpiling topsoil and subsoil for reuse at the end of mine life; and
- A 56 hectare (approx.) area of land on the eastern side of the consented mining site to be used for wetland restoration and enhancement, and possibly the construction of an ELF.

The proposed extension to the site area is shown by the red line in **Figure 2** (above), and in **Appendix B**.

The proposed extension will enable the mine to operate for approximately four more years. This will see the social and economic benefits of the mine continue for those years. The revenue generated by the extended mining operation will assist with the implementation of the extensive ecological enhancement works to occur at the site (beyond those secured by existing consent conditions).

As outlined above, the western extension area is proposed to be used for open cast mining activities. Mining within the western extension area will be undertaken in a northerly direction, starting from the existing mine pit at the southern end of the extension site. Extraction is proposed to be carried out from the mine pit, with overburden material filled and spread atop the existing ELFs on site, in a series of fill mounds along the central / eastern parts of site (refer to the green areas in Figure 7 above).

While the extraction area at the site is proposed to be extended, the mining will be staged, meaning there will not be an increase in the intensity of the mining activity as a result of this proposal. No increase in the number of vehicles, both heavy vehicles and regular vehicles, is anticipated as a result of this proposal. The extension to the mine will not increase the scale of the mining activities operating at any one time.

The extended site area will also enable more flexibility for the utilization of the site and to enable wetland areas to be avoided (where possible), and parts of the site to be used for ecological enhancement areas.

The details set out in the “Existing Mine Activities” section of this AEE above (section 2) accurately

describe how the extension area will be managed and are not repeated here.

At the end of mine life, the mine pit will be filled with water and turned into a lake, and native plantings around the edge of the lake will be undertaken. The remainder of the land within the extension area will be rehabilitated with pasture grasses and returned to pastural agricultural activities or constructed and restored wetlands.

Ecological Enhancement

The current proposal includes ecological restoration works and site rehabilitation works to enable the site to be reverted back to pastural farming use once mining ceases. Wetland enhancement and restoration works are proposed to offset the loss of natural inland wetlands which will result from the extraction area extension.[8]

In addition to the offsetting associated with the wetlands, other ecological enhancements and mitigation works are proposed as part of the mine extension proposal. For clarity, and in order to demonstrate which ecological offsetting, mitigation and other compensation works align with which resource consent application (or granted consent), the ecological enhancement works are set out in the table below. It is noted that Greenbriar has already undertaken some of these works in preparation for the mine expansion proposal.

Resource consent	**Offsetting/ Mitigation /Other Ecological Enhancement**
Current Land Use Consent **Application** - Gore District Council	**Mitigation** Planting to partially screen views into the site – A mixed native hedgerow along the northern boundary of the site, adjacent to Miller Road, to screen views into the northern extension of the mine pit, and to provide visual links to existing native planting within the road reserve. An evergreen farm hedgerow of either Eucalyptus or Leylandii cypress (or similar) within the western paddocks to assist to screen views of the extension area from elevated areas of Goodwin Road. **Other Ecological Enhancement** All crack willows, grey willow and elderflower stands will be controlled within the 'study area' (refer e3 Scientific Wetland Delineation Report,

[8] The is the subject of the concurrent resource consent being sought from Environment Southland under the NESF.

	Appendix E) and ongoing maintenance and monitoring will be undertaken by Greenbriar to eliminate regrowth. This will reduce localized seed sources and reduce further spread of these species. Isolated stands of Himalayan honeysuckle and cotoneaster (within the southern tributary) are being removed. To date, isolated grey willow, elderflower, gorse and broom have all been successfully removed and are part of an ongoing maintenance program within the study area[9]. Plant lists include: - Mahinga Kai species in consultation with te Rūnanga o Hokonui, and: - Plants listed as threated such as Coprosma spp, Melicytus flexuosus, Olearia spp, Pittosporum obcordatum, Pseudo panax ferox.
To be part of the resource consent **application** under the NESF consent required to drain wetlands - Environment Southland	**Off-setting**[10] To offset wetland habitat lost (the area lost is approximately 9,159 m^2) within the proposed extraction site the following is proposed – *Existing Wetland Enhancement & Wetland Restoration* The loss of natural wetlands within the proposed extraction extension area is proposed to be offset by providing enhancement and restoration of highly degraded, historic wetlands located within the eastern side of the site, and the restoration of the north-western tributary. The proposed works will result in a net gain ecological effect and will help disperse indigenous wetland vegetation over a larger extent of the site. Approximately 9,121 m^2 of indigenous planting will be undertaken to enhance existing wetlands, and approximately 20,983 m^2 of indigenous vegetation planting is proposed to restore existing wetlands. This offsetting is described in sections 6.2 and 6.3 of the e3 Scientific report.
Consented AUTH-20222206-02 & 03	**Mitigation** Fencing and revegetating of tributaries within the western side of the site,

[9] The Study Area referred to in the e3 Scientific report aligns with the Site Area for this resource consent area.

[10] This off setting is described in full within the New Vale Mine Wetland Delineation and Ecological Assessment Document, prepared by e3 Scientific, contained in **Appendix E**).

Environment Southland consent to divert water from unnamed tributaries of the Hedgehope Stream & discharge permit	and the enhancement of the habitat for Galaxis Gollum. Divert the current discharge to the Hedgehope stream, effectively creating more habitat for Galaxius Gollum. A pond/wetland will be established to take water from the Southern Tributary via a drain diversion that goes around the southern extent of the pit. The pond will be planted with native wetland species. At the end of the mine life, the pond will form part of the natural stream system and contribute to the ecology enhancements on the farm.
Consent AUTH-20158148 Environment Southland consent to discharge minewater from the New Vale mine into a tributary of the Hedgehope Stream	A pond will be established for the treated minewater to discharge into before it enters a natural tributary. This pond will be planted with native wetland species. At the end of the mine life, the pond will form part of the natural stream system and contribute to the ecology enhancements on the farm.

6. Rules Assessment

The rules in the Operative Gore District Plan ("Gore District Plan") that apply to the proposal are addressed below. The Gore District has recently notified a Proposed Gore District Plan (**"Proposed Plan"**) which will eventually replace the Operative Gore District Plan. The Proposed Plan rules that have immediate legal effect are addressed below.

Operative Gore District Plan

The majority of the existing site is located within the Rural Zone and partially within the Industrial Zone in the Gore District Plan. Part of the site is identified as an area subject to actual or potential flooding on the Hazards and Utilities maps. The Industrial Zone at the site is depicted by the blue line in Figure 8 below, as shown on Gore District Planning Map DST 19, and the Rural Zone covers the remainder of the site. The coal shed is located within the Industrial Zone.

The Gore District Plan contains the following definition for mining activities:

> ***Mineral Extraction***: *means to take, win, or extract, by whatever means, a mineral existing in*

> *its natural state in land, or a chemical substance from that mineral, for the purpose of obtaining the mineral or chemical substance; but does not include prospecting or exploration; and "to mine" has a corresponding meaning. Mining includes quarrying but does not include extraction from a farm quarry.*

The proposed activity is best defined as Mineral Extraction. However, there are no rules that provide for Mineral Extraction in the Gore District Plan, so this definition does not affect the activity status of the proposal.

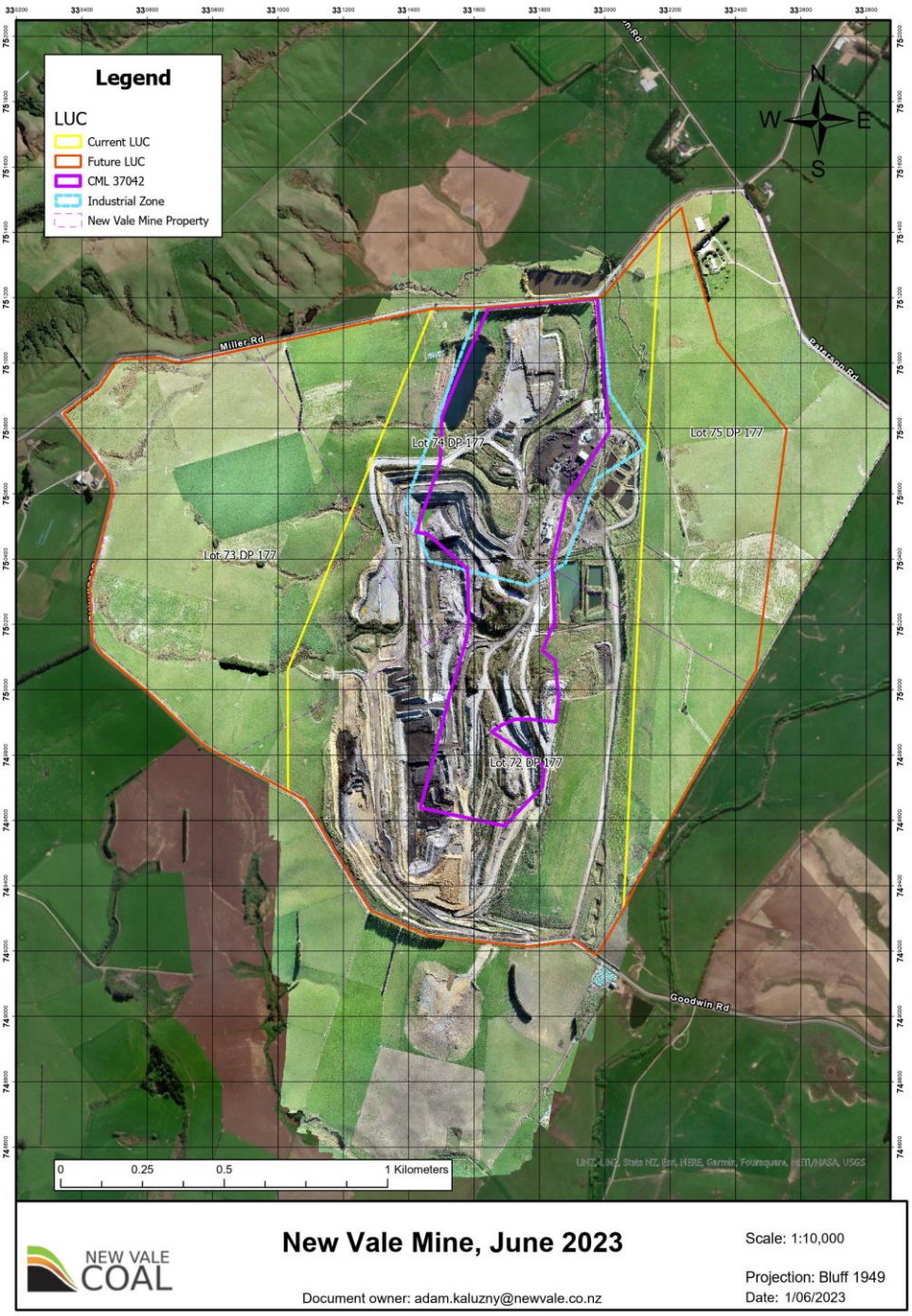


Figure 8: Plan depicting site boundaries and zoning and the CML area

The resource consents required and the relevant Gore District Plan rules that apply to the subject proposal are set out in the Table below.

Relevant Gore District Plan Rule	**Activity Status**
3.2 Permitted Activities 3.3 Rule 4.2.4 Any land use activity that: (1) does not comply with Rule 4.2.1 or Rule 4.2.2 and (2) is not otherwise explicitly provided for as a permitted, controlled, discretionary, non-complying or prohibited activity by any other rule in this Plan is a discretionary activity	**Discretionary**, as mining is not provided for as a permitted, controlled, discretionary, non-complying or prohibited activity.
4.5 Noise[11] (1) Noise limits in rural and residential zones On any day: 7.00 a.m. to 10.00 p.m. 55 dBA Leq 10.00 p.m. to 7.00 a.m. 40 dBA Leq 10.00 p.m. to 7.00 a.m. 75dBA Lmax Measured: Rural zones at any point in the notional boundary of any noise sensitive activity Non-compliance with this standard 4.5 (1) – restricted discretionary Activity	This standard is expected to be complied with. Consent is not sought to breach this standard.
4.6 Lightspill (1) All activities shall comply with the following standards: (a) Rural and residential zones The emission of lightspill and/or glare measured at the boundary of the site of the emission, does not exceed: 7.00 p.m. - 7.00 a.m. 5 Lux (b) Commercial, Industrial and Mixed Use zones The emission of lightspill and/or glare measured at the boundary of the site of the emission does not exceed:	This standard is expected to be complied with. Consent is not sought to breach this standard.

[11] The noise limit that applies to the Industrial Zone is not included as compliance with the more stringent Rural Zone limit will mean the more lenient Industrial Zone noise standard is complied with.

7.00p.m. to 7.00a.m. 15 Lux Provided that at the boundary of Commercial, Industrial or Mixed Use Zones with either Rural or Residential Zones, the emissions of lightspill or glare do not exceed the maximum allowable emission with Rural or Residential Zones Non-compliance with this Standard 4.6 (1) is a restricted discretionary activity.	
4.10 Signs (a) General (i) The sign is not designed to be viewed from a public road where the authorised speed limit equals or exceeds 70 kph. (ii) An illuminated sign does not create glare or lightspill beyond the site boundary. (iii) Lettering on signs intended to be read from public roads is not less than 125 mm. (iv) The size, scale and characteristics of any sign does not obscure or detract from any public information or safety signage. (v) The sign shall not exceed the height permitted in the appropriate zone. (b) In Rural zones (i) No more than two signs shall be erected on any site. (ii) Signs on any site do not exceed a cumulative area of 2m². (iii) The sign is not flashing. (iv) Where the sign is intended to be viewed from a public road, the sign must not contain more than six words or symbols and no more than 40 characters. (vi) No part of any freestanding sign shall be greater than 3 metres above ground level. (vii) Signs on buildings and other structures may be placed on the vertical faces of the building or structure but shall not extend above the height of that portion of the building or structure on which it is located. (viii) The signage is related to an activity occurring on the site.	No additional signage is proposed as part of the current mine site extension proposal.

4.13 Ground Disturbance and Earthworks 4.13.1 Rule (1) Except as provided for in (2) below, any land use activity that involves earthworks or results in the disturbance of the ground where the period from the commencement of such earthworks or disturbance until the completion of rehabilitation work exceeds twelve months is a restricted discretionary activity.	Ground disturbance associated with the mining activity and the overburden will exceed twelve months. Consent is sought under Rule 4.12.1 for a restricted discretionary activity.

Existing resource consent LU 2006 / 13 provides for the storage of hazardous substances at the site, and this was varied by LU 2009/06 to increase the quantities of hazardous substances. There will be no change in the quantities or type of hazardous substances stored at the site as part of the current application. The current consent LU 2009/06 will continue to be relied upon to provide for the hazardous substance's storage.

Proposed Gore District Plan

The New Vale Mine site is zoned General Rural Zone in the Proposed Plan. Rules managing historic heritage and indigenous vegetation in the Proposed Plan have immediate legal effect. The following rules in the Proposed Gore District Plan have immediate legal effect and are relevant to the proposal:

Ecosystems and Indigenous Biodiversity	
ECO-R1 - Indigenous vegetation clearance and land disturbance Activity Status Permitted if the works is necessary for activities specified in the rule.	Some indigenous vegetation will be cleared within the proposed extraction site. The proposed extraction activity is not listed in rule ECO-R1 as a permitted activity, therefore the activity comprises a Discretionary activity, as the activity takes place outside of a Significant Natural Area (Rule ECO-R1(3)).

The activity comprises a **Discretionary Activity** under the Proposed Plan.

Relevant National Environmental Standards

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health ("NES Soil") is relevant to this application.

The New Vale Coal Mine is listed in the Selected Land Use Sites register (SLUS) under the following Hazardous Activities and Industries List (HAIL) categories:

- Storage tanks or drums of fuel, chemicals and liquid waste.
- Mining.
- Coal processing yard.
- Waste disposal to land.

Resource consent is required for a **Discretionary Activity** under clause 11 of the NES Soil, as:

- The site is classified as a HAIL site;
- The quantum of ground disturbance will exceed the permitted quantities for disturbance for a HAIL site, and the removal of material from the site;
- No Detailed Site Investigation has been prepared for this site.

Summary

The current mining activity is provided for at the New Vale site under land use consent LU 2006 / 13. This consent (LU 2006 / 13) will be retained, and an additional land use resource consent is sought for mining to occur within the extension areas proposed as part of the subject application. For the extension areas, consent is sought for a **Discretionary Activity** under the Gore District Plan, a **Discretionary Activity** under the Proposed Plan and a **Discretionary Activity** under the NES Soil.

Overall, the land use application comprises a **Discretionary Activity**.

As noted, a resource consent is also being sought from Environment Southland for the proposal, under the National Environmental Standards for Freshwater.

7. Assessment of Environmental Effects

This section of the AEE assesses the actual and potential environmental effects of the proposal. The environmental effects associated with the extension of the mining activity are considered to be:

- Positive effects;
- Effects on cultural and historic heritage values;
- Effects on the transportation network;
- Effects on landscape values;
- Noise and vibration effects;
- Dust nuisance effects;
- Effects of potential contaminants;
- Effects on Highly Productive Land; and
- Effects on Indigenous Biodiversity.

Positive Effects

Economic Effects

The New Vale mine has been operational at this site for 75 years, providing a locally sourced cost-effective energy source for the community. The mine only extracts coal when there is demand for the coal close to the source. It does not extract coal for export or to stockpile long term. Lignite from the New Vale coal mine is used as the primary energy source for many industries throughout Southland, primarily servicing the food processing industry.

New Vale's major customers are three dairy factories, four meat processing plants, as well as numerous smaller customers. Dairy factories and meat processing plants throughout Southland, as well as one customer in Otago and one in South Canterbury are supplied coal from New Vale mine. These industries are working towards the use of alternative energy sources to run the plants. However, until these new systems, and the infrastructure to support it, are established and operational, the operation of these industries rely on thermal coal. The New Vale mine therefore supports industries within the Southland Region, and further afield, as they transition to alternative fuel sources.

Sense Partners has prepared an Economic Impact Analysis (refer **Appendix F**) for this proposal which quantifies the positive economic effects of the mine. They conclude that the mine has a direct positive impact on the local economy through providing employment and purchasing goods and services, creating both jobs and business opportunities. Secondly, as a supplier of coal, New Vale is an important enabler of other economic activity. This report states that:

- New Vale mine contributes directly $7.4m annually to Gore District's gross domestic product, which equates to approximately 0.7% of the District's GDP (in 2023).
- The mine supports the pastural agriculture sectors by supplying coal to dairy and meat processers in Southland, and to a lesser extent in Otago and Canterbury. Sense estimates that New Vale Mine is an enabler of up to $501m in annual economic activity and 5,094 jobs in the pastural agricultural processing sector in the lower South Island.
- New Vale Mine directly employs 39 people on site and in support roles and the mine supports an estimated further 25 jobs, which equates to 1.12% of the jobs in the Gore District, which Sense Partners describes as a material contribution in a district that has seen slow growth in employment over the past decade[12];
- Jobs at New Vale are well paid, with average compensation above the median wage across Southland in 2023. Sense Partners states that this makes a material contribution to local economic wellbeing.

[12] Source Economic Impact Assessment, page 4.

The mine at present has supply to last through to 2034, depending on customer demand. With an extension of the mine, this economic contribution will be sustained for an additional four years (approx.). This will enable the mine to contribute an extra $29.5m in economic activity over four years.

The works required for the final rehabilitation of the site will further extend the economic contribution the mine makes to the district's economy.

Ecological Enhancement Works

The ecological enhancement programme that has been implemented at New Vale for some years has proven to be successful in sustaining the Gollum galaxias population at the site and increasing the natural character overall. The end of life mine plan will result in improved water quality through the site, increased biodiversity, improved ecological habitat and once the lake and wetlands are established, an improvement in amenity and natural character values at the site.

When the mine is rehabilitated to a full farming operation, the farming enterprise will receive a property with enhanced biodiversity and protected waterways.

Cultural and Historic Heritage Effects

It is understood that te Rūnanga o Hokonui is mana whenua for the area within which the New Vale mine operates. The mining activity has the potential to adversely affect cultural and heritage values of mana whenua. New Vale mine has an established relationship with the Rūnanga and has worked closely with key members of this iwi in developing the mitigation projects and the ecological enhancement plans.

The applicant entered into a Memorandum of Understanding (MOU) with te Rūnanga o Hokonui in 2020. The MOU has been ratified by both parties. The applicant has undertaken early engagement with te Rūnanga o Hokonui in relation to the subject proposal, in order to understand if the Rūnanga has any concerns about the proposed expansion of the mining activity area. This engagement has resulted in te Rūnanga o Hokonui expressing support for the proposed wetland enhancement works that are proposed as part of the resource consent sought from Environment Southland under the NESF. Te Runganga has not identified any particular concerns with the subject land use resource consent application. However, as discussed in the notification section below, it is considered appropriate to notify the Rūnanga of this application to ensure te Rūnanga o Hokonui remain part of the decision making process. A Cultural Report prepared on behalf of Hokonui Rūnanga Inc is attached as **Appendix G**.

While the applicant is not aware of any identified sites of cultural or heritage significance being located within the subject site, if any site of cultural significance is discovered accidentally during extraction activities, accidental discovery protocols will be initiated. It is noted that during the 75 plus years of mining on the New Vale site, there has not been any discovery that would require notifying the local iwi or Heritage New Zealand Pouhere Taonga.

The accidental discovery protocol is suggested to be included as a condition of any consent

granted for this application and is set out in the Suggested Conditions at Section 6 of this AEE.

It is considered that the actual and potential adverse environmental effects on cultural and historic heritage values can be managed to be no more than minor.

Effects on the Transportation Network

The current proposal seeks to extend the mining site by 145 hectares, to enable 30 hectares to be mined (northwestern extension site), and the remaining areas to provide for associated activities such as stockpiling and wetland restoration.

While it is proposed to extend the mining operational area by 145 hectares, no changes to the number of vehicle movements entering and exiting the site will arise. The extension to the mine will not increase the scale of the mining activities operating at any one time. The mining of the extension area sees the progressive relocation of the current mining activities into the extension area. In practice, this will occur gradually as the open pit progresses north, and the spent part of the pit is closed and rehabilitated.

No new access points to connect the extension sites to the local road network are proposed. All existing accesses onto public roads will continue to be maintained to an appropriate standard in order to minimise soiling of the road surface.

Overall, no change in adverse effects on the transportation network are anticipated to result from the mine extension proposal. The actual and potential adverse effects of the proposal on the transportation network are considered to be less than minor.

Visual Effects

The New Vale mine site is located in a predominantly rural area, comprising rolling farmlands, and it is situated close to the lower slopes of the Hokonui Hills, which are 3km west of the site. While the existing mine has a visual presence at the site, the actual and potential visual effects that may be generated by the proposed expansion of the mining activity at the site have been considered.

A Landscape Assessment has been undertaken for the proposal, by SITE Landscape Architects (**"SITE"**). A set of viewpoints has also been prepared by SITE. The assessment and viewpoints are attached in **Appendix C**.

This assessment describes the landscape character in the wider area and surrounding site as a productive rural landscape. The dominant presence of low rolling hills, farm hedgerows / amenity plantings and naturalised gully systems that contribute to a sense of attractive rural amenity. SITE describe the landscape values of the site and surrounds as:

> *"rural amenity with moderate to high scenic values and visual amenity. The existing mine was established in the 1940s and is visible at various points around the landscape. Where*

> *the existing mine becomes visible the landscape qualities and visual amenity reduce. The mine forms a contrast to the visual consistency of the rural landscape as a different land-use with large areas of exposed earth, machinery, and buildings*".[13]

SITE has assessed the actual and potential adverse effects of the proposed extension to the New Vale mine on landscape values and visual amenity. This assessment is limited to those extension areas proposed and considers the existing mine operation to be part of the existing environment. However, if mine features/activities contained within the existing land use consent area will be more visible by earth removal contained within the extension area, then this effect has been attributed to the current proposal.

SITE states that the existing mine is visible from a number of locations surrounding the site and is an established part of the landscape character. Static viewpoints include private residential dwellings or places where people will stay for a long period of time. Transient viewpoints are considered to be the surrounding public roads where motorists will be passing by for a short period of time. SITE has determined that the mine extension will be visible from:

- Miller Road - northern and northwestern end of site (refer **views A & B**);
- Miller Road upper section (**view C**); and
- Goodwin Road - northwestern end of site (**view D**).

SITE concludes that, from further afield the mine extension area may be visible from high vantage points on the Hokonui Hills. From here the proposal will be inconsequential as it will be a very small feature in the much wider landscape setting.

The only private dwellings where the proposal will potentially be viewed from include:

- Goodwin Road house (rapid number 429 Goodwin Road) to the northwest of the site on hilltop adjacent to **view D;**
- Goodwin Road house (45 Goodwin Road) to the southeast of the site adjacent to **view G;**

Other rural dwellings in the landscape surrounding the property are screened from the site by evergreen shelter belts and topography or are too far away for any change in view to be consequential.[14]

SITE has assessed the visual effects of the mine extension on these sites, and a summary of its conclusions are set out below. This assessment is supported by photographic images, which are part of the Landscape Assessment.

Miller Road - north to north-western end of site (view A-B)

Mining operations are proposed to be carried out from south to north - the northern end of site will

[13] SITE Landscape Assessment, dated August 2023, page 2.

[14] SITE Landscape Assessment Report, page 8.

be the last area of the mine to be opened. When the rising topography adjacent to the road is removed, views to the expansive mine pit extending 1km to the south will be available.

This will have a **high** (significant) effect on visual amenity and landscape character as the pastoral character will be changed. This view will be similar to view F where the existing mine pit can be viewed at close proximity.

To mitigate views of the mine extension from this viewpoint, a 3 m wide mixed native screening hedgerow is proposed within the northern boundary of the site to screen views into the mine pit. This planting will link with the existing native plantings within the road reserve.

The plantings will provide a screening effect within 5 years following planting. If the plants are 0.5m high at time of planting, and with 0.5m growth per year, they will potentially be 3m high after 5 years. The planting area is slightly elevated from the road so will block views rapidly, and mining in this area (where it would be visible from the road without the screening trees) is scheduled to occur in 2033. Planting of the screening trees in this location has already commenced meaning the screening will likely be achieved prior to commencement of mining in the relevant area.

After 5 years from planting, views into the site will be screened from viewpoints A and B, reducing the effect on visual amenity to **very low** (less than minor).

Miller Road Upper Section (view C)

From this viewpoint a large portion of the existing landuse consent area is already visible extending to the south, so the proposal will only result in a small visible increase to an already expansive view of the mine activity. Native screen planting is proposed to be established along the boundary, which will provide screening at various viewpoints along this road. However, due to the topography, the effectiveness of the screening will take longer to establish.

From this viewpoint, a minor reduction in the extent of rural pasture will be visible and the visibility of mining and earthworks activities will increase. However, because a significant portion of the view could already be changed under the current consent, SITE concludes that there will be a **low** visual effect brought on as part of the small area of extension to the west.

Overall, SITE concludes that landscape character will not be significantly different to the consented landscape character, and therefore effects on landscape character will be **low** (minor) from this viewpoint.

Goodwin Road north western end of site (view D)

From this viewpoint, earthworks within the proposed mine extension area will result in a small increase to the amount of visible mine and overburden mounds contained within the existing landuse consent area (refer red area on the view D, **Appendix C**).

The extent of the existing mine visible from this viewpoint is a reasonably small slither of land in the overall view. The proposed mine extension will result in a very small increase of visible mine, with the proposed hedgerow located in the western paddocks screening a portion of this area. SITE conclude that this will result in a **low** (minor) visual effect, with the most visible portion of the mine largely contained within the existing landuse consent area.

Goodwin Road western end of site (view E)

From this viewpoint, a very small increase of visible mine will be available as a result of the removal of the existing hedgerow for native gully plantings and earthworks within the extension area. Some degree of earthworks and mining are already anticipated in this view (under the existing resource consent), so the increase will be a small effect on visual amenity and landscape character.

Goodwin Road southern end of site (view F)

For a stretch of approximately 400m at the southern end of site there are open views to the north into the existing mine pit. The proposed extension will see extraction works move to the north with the southern end of the pit slowly filled with overburden. As the overburden mound increases in height, screening views of the mine to the north, there will be an improvement to visual amenity from this viewpoint, eventually leading to a **positive** effect on visual amenity and landscape character from this viewpoint.

Goodwin Road to the south-east (view G)

Goodwin Road dips to a low point past the southeastern end of the site and then rises to the south east towards the crest of the hill and Waimumu Road. Viewpoint G is taken at the crest of the hill and is representative of views from the rural dwelling on the south side of the road.

The existing mine pit is visible with the existing overburden mound in the foreground screening the greater part of the mine pit from view.

The proposal will result in the overburden mound increased in size which will continue to screen views of the proposed mine pit located behind. Over time as the mound increases in size and extraction moves north, visibility of the mine pit will reduce. Therefore, the proposed extension will result in **nil** or **slightly positive** visual effects from this viewpoint, as the screening influence of the overburden mound will increase.

Waimumu Road (view H)

Waimumu Road runs along the crest of the topography and at various points views are gained northwest towards the site. Similar to view G, the proposed overburden mounds will be located in the foreground and thus there will be **nil** visual effect from here.

Paterson Road (view I)

Paterson Road leads from the elevated intersection at Waimumu Road down the hill towards the eastern end of site. Elevated views of site are possible and similar to views from viewpoints G & H, the proposed overburden mounds will be located in the foreground screening views of the mine pit. Therefore, there is expected to be no change in effects on visual amenity from the proposed expansion from this viewpoint.

Summary of Effects on Visual Amenity and Landscape Character

SITE has concluded that, based on the visual assessment and photomontages, the proposed extension area will be most visible towards the northern end of site, from Miller Road, and the

northwestern end of Goodwin Road.

The proposed native screen planting along the northern boundary of the site will be approximately 3m in height after 5 years, and this planting will screen views of the site along the lower section of Miller Road. The planting will also provide ecological enhancement and links to existing native planting within the road reserve.

As mining activity within the northern section of the mine is expected to be several years away, at which point the views of the northern section of the mine will be evident, planting should be undertaken as soon as possible (following the granting of consent). This will result in a semi-mature canopy closure once mining activity becomes visible.

From the elevated sections of Miller Road and Goodwin Road the eastern slopes of the mine pit will be visible. From here the existing (consented) mining activity is already visible. Therefore, while the mine area will be expanding, the increase in extent of mining activity visible is not expected to result in adverse effects on landscape character and visual amenity because the land use is already established within this landscape.

From the south and east of the site the proposed overburden mounds from the existing consented mining area are visible in front of the mine pit. The proposed extension will result in a minimal change in landscape character, with the mounds appearing as a part of the surrounding rolling hills.

Overall, SITE concludes that the proposal will not lead to adverse cumulative effects on landscape and visual amenity values as the existing activity has already changed the landscape character in the vicinity of the site. Furthermore, the activity has an end life where the landscape character will be rehabilitated back to a rural character that will reflect the surrounding landscape once mining has ceased. It is concluded that actual and potential adverse landscape and visual effect resulting from the proposal can be appropriately managed and will be no more than minor.

Noise & Vibration Effects

Noise

Mining activities generate noise and vibration effects. The existing mine has operated at this site for 75 years and operates under a comprehensive management plan to ensure noise generated by activities at the site are appropriately managed. The current Noise Management Plan, which is section 4 of the SEMP, is attached to this application as **Appendix D**. The purpose of the Noise Management Plan is to manage noise emissions so that the noise generated by the activity complies with the relevant noise limits imposed by the Gore District Plan.

Monitoring of the existing mining activity's noise emissions is not currently a requirement of the existing land use consent. However, there are two noise monitors that can be made active should any complaints about noise emissions be made. It is understood that no noise complaints have been made.

The subject proposal seeks to extend the boundaries of the mining activity. This will result in mining activity occurring further north and north-west of the consented site, and other land development

activities occurring further east of the consented site. However, the relatively large area surrounding the site retains large setbacks from sensitive receivers.

Noise within the proposed extension areas will be generated by engine/exhaust noise, reversing beepers, horns on earthmoving machines, crushing and screening operations and truck noise. These noises are the same as those currently occurring within the site.

The Noise Management Plan will continue to ensure noise generated at the site is appropriately managed to remain no more than minor.

Vibration

Vibration may be generated by ground disturbance activities, and the use of heavy vehicles within the site. Because the soil is very soft, vibration effects from blasting will not occur as no blasting is conducted at New Vale mine. Also, no rock is being extracted, which again eliminates the need for blasting.

To date, no effects of vibration on nearby buildings have been reported, and it is considered unlikely that this would occur due to the separation distances of the buildings from the operational mining site.

Policies and procedures for vibration management at the site are included in the SEMP, Section 4, Noise Emissions Management (refer **Appendix D**), and it is proposed that this Management Plan is implemented for all activities taking place within the site extension areas. The purpose of the Management Plan is to ensure that vibration emanating from any activity does not exceed the relevant vibration limits in any of the following standards at any dwelling, residential activity, educational facility or office on any other property:

- AS 2670.2-1990 Evaluation of human exposure to whole-body vibration - Continuous and shock induced vibration in buildings (1 to 80 Hz).
- DIN 4150-3:1999 Effects of vibration on structures

Vibration effects are expected to be negligible.

Dust Nuisance Effects

The methods that Greenbriar has implemented to manage dust emissions from the site are discussed earlier in this AEE. If not appropriately controlled, dust has the potential to arise from the excavation and handling of coal, the removal and placement of overburden, and during the movement of vehicles on the haul road. This dust may cause nuisance effects for neighbouring properties. The applicant has dust management measures in place to reduce dust emissions being generated at the site, as outlined in the Air Quality Management Plan (which is part of the SEMP), and is attached to this AEE in **Appendix D**.

Over the years, the applicant has built up considerable knowledge about the dust that can be generated by the activity, and how climatic conditions affect the nuisance effects associated with

this dust. Dust management planning at the mine takes account of the prevailing climatic conditions in the area.

The prevailing south-westerly winds can reach high velocities, however there are few neighbours downwind of the south-westerly wind. Properties to the east of the mine have historically had concerns with dust discharge from the mine. The existing land use consent (LU 2006 / 13) requires all activities to be undertaken in a manner as to avoid dust nuisance beyond the site boundary (condition 7). This is to be achieved by the consent holder preparing, maintaining and complying with the Air Quality Management Plan (condition 8). This condition is suggested to be imposed for the extension activity to manage dust effects.

It is also noted that the applicant has an Air Discharge permit from Environment Southland (AUTH 201709) that established standards that must be achieved and requires monitoring of dust emissions (consent reference 201709). The Air Quality Management Plan prepared to comply with Condition 8 of LU 2006 / 13 is also adhered to for the purpose of Air discharge permit AUTH 201709.

To ensure compliance with the requirements of the air discharge permit, Greenbriar carries out regular monitoring of dust emissions. Regular dust pot samples show compliance with the consent condition 7 of LU 2006 / 13 (dust nuisance beyond the site boundary must be avoided).

Greenbriar currently undertakes dust monitoring monthly at the nine sites marked DP1 to DP8 on Figure 4 of this AEE). Site DP1 is the original control site. This site was chosen as the control as it is on the site boundary and upwind from the prevailing wind direction. Dust pots 1 to 5A are sited to capture dust from the New Vale mine, and dust pots 6, 7, and 8 to capture dust from the Goodwin mine.

Dust pot 5A was installed in February 2016 to understand the origin of concerns raised in consultation with a neighbour. It was installed at its current location in July 2016. It is situated close to Goodwin Road (a public gravel road) and microanalysis of results show a large amount of mineral matter in the samples. This mineral matter is understood to come from dust generated from vehicles using Goodwin Road and possibly the mine. Existing dust monitoring results from air discharge permit (201709) are shown in Figure 9 below. Monthly deposited dust results are averaged for the period from December 2008 to June 2018.

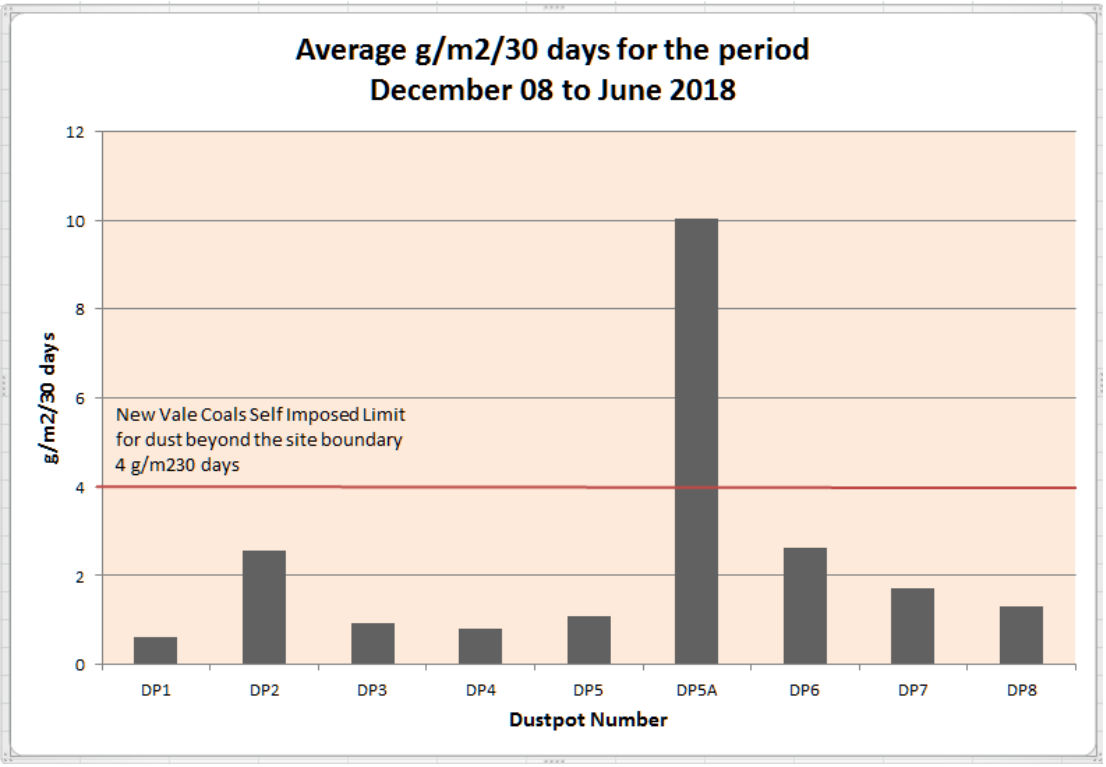


Figure 9: Dust Monitouring Results

With the proposal to extend the mining operational site, there is potential for dust to be generated from the proposed extension area. However, the nature and scale of the activities will remain the same so the potential effects will be consistent with operations being undertaken to date. Further, the extension area is located nearer to the northern boundary of the site, which results in a large buffer area between the fugitive dust source and the down-wind sensitive receivers.

In order to ensure that dust is appropriately managed, the same conditions imposed under LU 2006 / 13 are proposed for the extension activity consent.

Potential Effects of Disturbing Contaminated Land

The mining activity itself requires considerable ground disturbance, and accordingly the activity triggers the need to consider the NES Soil regulation. However, due to the size of the extension site, preparing a DSI for the site is not practicable, and accordingly resource consent is required for the disturbance activities under the NES Soil.

In the absence of a detailed site investigation, a review of historic mining activities, with a particular interest in potential soil contaminants that may endanger human health was undertaken. As a result of the review the following conclusions were made:

- The overburden from the coal extraction operation is soil and rock that has been removed to obtain access to the underlying coal. This is different to ore mines where tailings from a processing plant may contain cyanides and heavy metals.

- The overburden and coal from New Vale is not chemically treated to obtain the coal.
- No soil tests were taken due to the lack of knowledge of where potential contaminants may be located.
- The potential contaminants have been identified as:
    - Wire rope
    - Assorted scrap steel
    - Wool Scour Waste
- Potential contaminants are typically found in waste dumps and to the applicant's knowledge there are no waste dumps located within the proposed extension site area.
- Old drums that may contain hazardous substances have not been found in dumps uncovered while mining the New Vale pit.
- The agricultural use of broadacre pesticides, herbicides and fertilisers may have caused very low levels of contamination and would be of low risk for all land use practices.

A consent condition is suggested to require the consent holder to adhere to an appropriate procedure in the event of the accidental discovery of contaminants during mining activities. This condition is included in Section 8: Suggested Conditions. Given the low risk of contaminants being encountered within the proposed extraction area of the site, the accidental discovery condition is considered to be appropriate to manage the risk to human health and the environment of exposure to contaminants to an extent that is minor or less.

Effects on Highly Productive Land

The National Policy Statement for Highly Productive Land ("NPS-HPL") seeks to improve the way highly productive land is managed under the RMA to ensure favourable soil is available for food and fibre production. Until Environment Southland identifies highly productive land in the Southland Regional Policy Statement, the Gore District Council must apply the NPS-HPL to land that is currently zoned rural *and* has a Land Use Capability (LUC) Class 1, 2 or 3; and where there is scope to do so under the District Plan (i.e. for discretionary or non-complying activities).

The Gore District Council's High Class Soils mapping tool classifies the majority of the subject site that is zoned Rural, as 'Land Use Capability Class 3 (refer Figure 10 below), and the activity for which consent is sought is a Discretionary Activity. Therefore, regard of the NPS-HPL is required when considering this application.

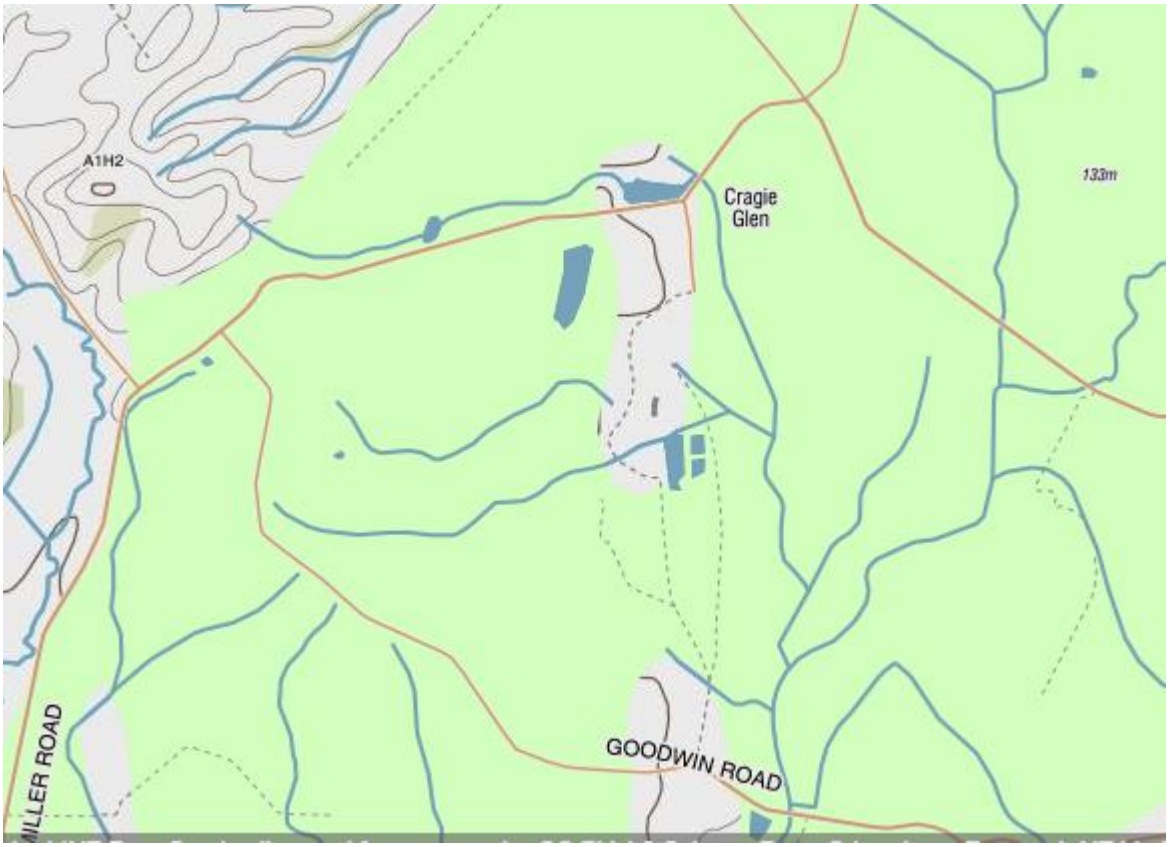


Figure 10: Exert from https://ourenvironment.scinfo.org.nz/, green colour shows land that us HPL-LUC Class 3

Appropriate Use Assessment

Clause 3.9(1) requires territorial authorities to avoid the inappropriate use or development of highly productive land that is not land-based production. Clause 3.9(2) defines what activities are considered to be 'appropriate' under this NPS. Clause 3.9(2) states that the following uses are considered to be 'appropriate':

(e) it is for the purpose of protecting, maintaining, restoring, or enhancing indigenous biodiversity;

…

(j) it is associated with one of the following, and there is a functional or operational need for the use or development to be on the highly productive land:

…

(iii) mineral extraction that provides significant national public benefit that could not otherwise be achieved using resources within New Zealand:

A large part of the Proposal involves undertaking wetland enhancement and wetland restoration, including a considerable amount of indigenous vegetation planting. This work will result in enhancing the indigenous biodiversity at the site. This activity is therefore considered appropriate under clause 3.9(2)(e) of the NPS-HPL.

The coal mining is considered to be 'mineral extraction' based on the definition of 'mineral' in the Crown Minerals Act 1991. An economic impact analysis of the proposed New Vale mine extension has been prepared by Sense Partners to assess whether the proposal achieves clause 3.9(2)(j) (iii) of the NPS-HPL. This report is attached to the application in **Appendix F**. As discussed in the Positive Effects section above, Sense Partners has concluded firstly that the mine provides a *significant national public benefit* because:

- Mining is a more productive use of the land and brings jobs and economic activity. Given this, Sense Partners consider the extension constitutes a significant public benefit.
- The mine plays a role in providing key energy inputs into the food processing sectors across three regions. On this basis, Sense Partners propose the benefit qualifies as a national benefit.

Secondly, Sense Partners have determined that the benefit generated by New Vale Mine would likely *not otherwise be achieved using resources within New Zealand*. This conclusion is based on the fact that the coal from New Vale mine is the only operating source of low cost coal in Southland. Customers would incur a high cost when using other coal resources in New Zealand to operate their plants and would likely resort to imports of coal.

Determining that there are no cost-effective alternative sources of coal in New Zealand for New Vale's customers is complex, and requires consideration of:

- Costs of transporting the coal from the source to the customer; and
- The availability of thermal coal that is suitable for the required use.

Sense's analysis of the viability of alternative coal sources is summarised below.

Travel Costs

New Vale Mine's primary customers are meat processing plants and dairy factories. The users of coal for meat processing and dairy factories typically require large quantities of coal to operate the plants. Therefore, transportation costs for coal are a considerable determining factor when sourcing coal resources. Sense Partners has undertaken a review of alternative sources of lignite and sub-bituminous coal[15] on the West Coast, and in Otago and Southland in order to determine if other operating mines could supply these industries when extraction ceases at New Vale.

Deposits of lignite are concentrated in Southland and Otago, with over 9 billion tonnes of lignite contained within 10 major deposits across the two regions. These deposits constitute between 80-85% of New Zealand's coal resources. Lignite is only mined in Southland. Of the two operating

[15] Lignite and sub-bituminous coal are lower energy content coals that are typically used for thermal energy in New Zealand. Bituminous coal is the highest grade coal produced in New Zealand, however it is highly valued in export markets so is not available as a substitute for thermal coal.

lignite mines in Southland, New Vale and Waituna, only New Vale produces lignite for thermal uses.

In Otago, the only coal mining is for sub-bituminous coal, at Castle Hill/Kaitangata. It is understood that the sulphur levels in the Castle Hill/Kaitangata coal are too high, so burning this coal typically results in exceedances in air discharge consent conditions, which would make this coal unsuitable.

Sources of sub-bituminous coal are also located on the West Coast of the South Island. The high transportation costs from the West Coast means it is an expensive alternative. The remaining domestic alternative to New Vale is the Takatimu mine in Southland, which produces sub-bituminous coal.

In Southland, only customers in close proximity to Takatimu have the lower transport cost sufficient to compensate for the higher coal price. None of New Vale's major customers, making up 91.3% of demand, are close enough to Takatimu to achieve this.

If the New Vale mine closes, then New Vale's customers will need to pay a higher price for a sub-bituminous coal alternative. Sense Partners estimate the cost increase would be around 19.4%, which totals approximately $2.6m in increased energy costs across New Vale's largest Southland customers. Based on the additional costs, these alternatives sources of coal are not expected to be viable.

Availability of other fuel Sources

Takatimu is currently the lowest cost alternative to New Vale lignite coal. The mine is understood to be subject to regulatory constraints that may limit future supply. The regulatory constraints relate to the National Policy Statements and National Environmental Standards which aim to phase out thermal coal mining by only providing consenting pathways for existing coal mine and/or sunsetting consenting pathways by 31 December 2030 for all thermal coal mining (see for example NPS-IB regulation 3.11 and NESF regulation 45D). It is understood that the owners of this mine are not planning to commence extraction at Takatimu for a range of reasons. Therefore, sourcing coal from this mine is not currently considered to be a viable alternative.

Therefore, Sense Partners conclude that the most cost efficient alternative sources of coal in Southland for New Vale's customers is to import coal from Indonesia. This would impose a cost increase of 118%.

In summary, the continuation of the mining at new Vale is required to provide an affordable energy source to industries throughout Southland and further afield. While these industries are working towards alternative energy sources to run the plants/facilities, until these new systems are established and operational, these industries rely on locally sourced lignite coal.

The New Vale mine therefore supports industries within the wider Southland Region, and beyond which are considered to have a significant national public benefit, and there are no other viable lignite or sub-bituminous coal sources that are available in New Zealand. Based on the above analysis, it is considered that the proposed coal extraction can be classified as an *appropriate use*

under clause 3.9(2) of the NPS-HPL.

Minimise effects on HPL

If the use is considered appropriate under clause 3.9(2), the measures in subclause 3.9(3) must be applied:

(1) Territorial authorities must take measures to ensure that any use or development on highly productive land:

(a) *minimises or mitigates any actual loss or potential cumulative loss of the availability and productive capacity of highly productive land in their district; and*

(b) *avoids if possible, or otherwise mitigates, any actual or potential reverse sensitivity effects on land-based primary production activities from the use or development.*

While the proposed area for the New Vale mine extension will temporarily prevent this specific area from being used for productive purposes, no significant change in the land available for food and fibre production will result from this proposal and the permanent loss of the productive capacity of that land will be minimised. This conclusion is based on the following:

- only one part of the wider New Vale site is used for operational mining at any one time. This means that the proposal will not significantly decrease the area of land available for food and fibre production, as the mining is undertaken in a staged manner, and as mining ceases in one area is another area is opened up, and the spent areas are rehabilitated and reverted to pastural farming purposes.

- approximately 48 hectares of the proposed extension area will become a lake once mining has ceased;

- roughly 60,000 m^2 of the site will comprise wetland habitat (which will comprise restored and enhanced existing degraded wetlands and an extension to the existing wetlands) as part of the mine extension proposal) and fenced off from livestock, which will enhance the ecological values of the site;

- the remaining parts of the extension site will be rehabilitated to a state suitable to resume pastoral farming.

Given the site, for the most part, will resume pastural farming activities once rehabilitated, it is considered that the actual loss of the availability and productive capacity of the LUC3 land are minimised.

The actual and potential reverse sensitivity effects on land based primary production activities are considered to be adequately mitigated. A large part of the New Vale site is farmed. Management processes have been implemented to ensure the activity can operate alongside its agricultural farming neighbours. Because the mining activity is not a noise sensitive activity, the potential for reverse sensitivity effects, such as noise from farming affecting the mining, is negligible.

Effects on Indigenous Biodiversity

Effects on Indigenous Vegetation

The Proposal site is currently grazed and is not identified as a Significant Natural Area in the Proposed Gore District Plan. In order to understand if any natural inland wetland would be affected by the proposal, E3 Scientific have prepared a Wetland Delineation Report for the proposal (**Appendix E**). This report identifies that, while the majority of the land associated with the mine extension comprises exotic pasture grass, there are indigenous vegetation species within the tributary gullies located within the proposed 30 ha extraction area. E3 Scientific has identified 48,698m^2 of wetland habitat within the site. Resource consent is being sought under regulation 45D of the NESF from Environment Southland concurrently with the subject application to remove 9,159m^2 of this wetland habitat, where the removal cannot be avoided as it is within the extraction area. In order to maintain the wetland habitat at the site, an extensive wetland restoration and enhancement plan is proposed as part of the consent sought under the NESF.

Because the wetland habitat contains indigenous vegetation, and resource consent is required from the Gore District Plan to clear the vegetation, an assessment of the effects of the loss of the vegetation is included in this AEE. A summary of the indigenous species found at each of these tributaries, and the area of habitat to be removed is described in the table below:

Tributary Affected by Extraction	**Indigenous Vegetation Present**	**Area of wetland habitat to be disturbed**
North Tributary	Vegetation present is predominantly tussock grassland and sedgeland, grading out to exotic pasture as slope and distance increases away from the central channel. Species present in this tributary are described in detail in the e3 Scientific report.	3,266m^2
Central Tributary	Northern branch Predominant vegetation within the wetland is indigenous sedgeland within and adjacent the channel and in areas of higher water table. It then grades into copper tussock grassland with diverse sections of fern land scattered in shaded slopes.	2,246m^2

	South branch The lower reaches of the tributary branch contain moderate diversity, being dominated by indigenous vegetation and the increased occurrence of shrubland and larger grasses (toetoe). Upstream of the proposed clearance is still dominated by indigenous species, however, Carex secta and copper tussock become scarce and Carex coriacea is the dominant species.	3,545 m^2
South Tributary	The vegetation comprises three main communities that are compositionally different, two of which are affected by the proposal. The first comprising Harakeke and Carex sedgelands is the only community being affected by the proposed extension. The species within the proposed extension area include copper tussock, Carex secta, Carex coriacea, Coprosma propinqua, Juncus edgariae and harakeke. Also present are a range of exotic species intermixed within the native vegetation. The second affected community comprises Coprosma propinqua, Coprosma dumosa and extensive coverage of toetoe. In between the shrubland and harakeke dominant vegetation, sedgeland and rushlands prevail. Species within the wider wetland area include all those listed above within the proposed disturbance area. A full list of the species present in this tributary is provided in the e3 Scientific report.	102 m^2

The loss of wetland habitat described in the table above is the subject of the resource consent application required from Environment Southland under the NESF. As part of this application, extensive wetland enhancement planting is proposed to offset this loss of wetland habitat (which includes the indigenous vegetation). This is set out in detail in the e3 Scientific report. Therefore, while the proposal will result in the loss of indigenous vegetation within the proposed extraction

area, the effects of the loss will be offset by the enhancement of the degraded wetlands with extensive indigenous vegetation planting.

Overall, the proposed offsetting package will result in the restoration or enhancement of an additional 20,947m^2 of highly diverse wetland habitat at the site. E3 Scientific assess this as achieving a Net Gain ecological effect and will help disperse indigenous wetland vegetation over a larger extent of the site.

In addition to the offsetting package of works (the enhancement and restoration of the existing wetlands on the eastern and western parts of the site), the applicant proposes to undertake weed management works as part of the current proposal. This will involve the control of crack willow, grey willows and elderflower stands within the site area. Ongoing maintenance and monitoring of these species will be undertaken to eliminate regrowth. This will reduce localised seed sources and reduce further spread of these species. The locations of willow and elderflower stands proposed to be removed are shown on Figure 13 of the e3 Scientific report. A condition of consent is suggested for this work.

Finally, the isolated Himalayan honeysuckle and cotoneaster recorded within the southern tributary are being removed as part of Greenbriar's ongoing weed management programme. This is in line with current efforts by Greenbriar to remove weed species from within wetlands and stream margins. To date isolated grey willow, elderflower, gorse and broom have all been successfully removed from the southern tributary area, and these works are part of an ongoing maintenance program within the study area.

Overall, effects on indigenous vegetation are considered to be appropriately managed and the outcome of the proposal will result in a net gain ecological effect.

Effects on Avifauna & Herpetofauna

The current vegetation and habitat present within the study area is best suited to a range of indigenous passerine species. Avifauna species observed by e3 Scientific during the field work include Australasian harrier (Circus approximans), South Island fantail (Rhipidura fuliginosa) and grey warbler (Gerygone igata). Additional species known to utilise comparable habitat to that of the mapped wetlands include the following:

- Kōtare/New Zealand kingfisher (Todiramphus sanctus vagans);
- Pūkeko (Porphyrio melanotus melanotus);
- Korimako/bellbird (Anthornis melanura melanura);
- Tauhou/silvereye (Zosterops lateralis lateralis); and
- Warou/welcome swallow (Hirundo neoxena neoxena).

E3 Scientific state that, due to the lack of extensive shrubland or any forest trees as well as the degraded and open nature of the lowland wetlands the areas are unlikely to be utilised by many indigenous wading or forest species, although pūtangitangi/paradise shelducks (Tadorna

variegate) and Tōrea/South Island pied oystercatcher (Haematopus finschi) may utilise cultivated land and sparsely vegetated areas.

No herpetofauna species were observed by e3 Scientific during the completed field work over two days. Native geckos (Woodworthia spp.) are assessed as highly unlikely to be present given a lack of suitable habitat. Habitat is present for two species of skink: the tussock skink (Oligosoma chionochloescens) and Cryptic skink (Oligosoma inconspicuum). E3 Scientific consider the likelihood of occurrence of these species at the site as 'low' for the cryptic skink, and 'moderate' for the tussock skink.

E3 Scientific states that the restoration and enhancement of degraded wetlands within the eastern side of the study area will result in increased habitat for avifauna species. The restoration will reduce current fragmentation of wetland and shrubland habitat and may facilitate species expansion from resident and seasonal populations within the Gore ecological district. All species currently noted to be present will likely benefit from the increase of total habitat and diversification of potential habitat. However, additional species are unlikely to inhabit these areas as the scale of the restoration is unlikely to provide new ecological niches than what is currently present.

Whilst lizards are not expected to be present at the site, a condition of consent is recommended to ensure adverse effects on lizards are appropriately managed if they are observed during mining activities, or during the wetland enhancement activities. The suggested condition requires works on site to cease and advice sought from the Department of Conservation regarding permission needed under the Wildlife Act.

Overall, the proposal is expected to result in a net gain ecological effect.

8. Suggested Conditions

Suggested conditions to manage the actual and potential adverse effects of the proposal are set out below. The wetland enhancement works that are proposed to offset the loss of wetland habitat (including indigenous vegetation) is included as a suggested condition of consent for the Environment Southland resource consent application that is being sought concurrently with this land use consent.

General

1. The activity shall be undertaken generally in accordance with the plans and details submitted with the application and described in the Assessment of Environmental Effects received by the Gore District Council on [date application is lodged], unless required otherwise by the following conditions of this consent.

2. If any artefact and/or any historical, cultural or archaeological material of Māori origin, or likely to have significance to Māori, is found or uncovered during the undertaking of this project, the following must be complied with:

a) Work shall cease immediately, the area secured and any uncovered material must remain untouched;

b) Advice of the discovery must be given as soon as possible to:
i) Te Ao Marama Inc: Phone: 03 931 1242, to enable appropriate cultural procedures / tikanga to be administered;
ii) Hokonui Rūnanga: Phone 03 208 7954 and Email hokonui@xtra.co.nz
ii) Heritage New Zealand / Pouhere Taonga, Phone: 04 472 4341, Email infodeepsouth@heritage.org.nz

c) No work shall recommence until:
i) Agreement has been reached with Te Ao Marama Inc;
and
ii) If required, an Authority has been issued by Heritage New Zealand if the find involves an archaeological site.

Hours of Operation and Noise

3. Noise from operations on the site shall not exceed:

(i) 55 dBA Leq 7:00am to 10:00pm

(ii) 40 dBA Leq 10:00pm to 7:00am

(iii) 75 dBA Lmax 10:00pm to 7:00am

Measured at any point in the notional boundary of any noise sensitive activities existing as at [date application is lodged].

For the purposes of this condition: "Notional Boundary" means a line 20 m form the façade of a building containing a noise sensitive activity, or the legal boundary where this is closer to the building.

"Noise sensitive activities" means buildings or parts of buildings used for, or able to be used for the following purposes: Residential activity, visitor accommodation, residential care activity, educational activity, hospital activity, health care activity, day care activity, Marae activity.

4. No explosives are to be used as part of any activities on the site.

Glare

5. No lightspill or glare shall exceed 5 lux during periods of darkness, measured at any point beyond the boundary of the site, in either the horizontal and vertical plane approximately 1.5 metres above ground level and assessed in accordance with Standard AS/NZS4282 2019: Control of obtrusive effects of outdoor lighting.

Dust

6. All activities on the site shall be undertaken in such a manner as to avoid dust nuisance beyond the site boundary.

7. The consent holder shall comply with 'Section 4 – Air Quality' of the Site Environmental Management Plan, dated May 2018, or any subsequent review of this document.

Stockpiles and Topsoil

8. All excavated material stockpiled at the site shall be located clear of property boundaries and watercourses and shall be vegetated and otherwise maintained in order to minimise the risk of dust generation.

9. All stockpiles of material on the site shall be kept free of pest plants.

Lizards

10. If any lizards are observed on site before or during earthworks, work shall cease, and advice be sought from the Department of Conservation regarding permission needed under the Wildlife Act to undertake work in lizard habitat.

Complaints

13. The consent holder shall maintain a complaints register setting out:

    a. details of any complaints received, including those relating to activities undertaken on the site and the movement of vehicles to and form the site. Such details shall include the time and date of the incident subject to complaint and the name and contract details of the complainant;

    b. an assessment of the incident subject to complaint; and

    c. any action taken by the consent holder.

14. The complaints register shall be available for inspection by Council staff at any time.

15. No later than 1 February each year, the consent holder shall advise the Gore District Council of any complaints received during the previous calendar year and appropriate details from the complaints register.

Impacts on Groundwater

16. The consent holder shall adhere to the Fuel and Oil Spill Prevention and Contingency Plan (which is included in the Hazardous Substances Site Environmental Management Plan).

Rehabilitation

17. Within one year prior to the cessation of extraction activities at the site, the consent holder shall prepare a Site Rehabilitation Plan for the site for approval by Gore District Council.

18. Rehabilitation of disturbed land shall be carried out in accordance with the approved Site Rehabilitation Plan. The purpose of the plan shall be:

    a. to provide for the rehabilitation of excavated areas as soon as practicable after the completion of operations in that area;

    b. to create landforms that are in a stable and safe condition; and

    c. to provide for rehabilitated land to be suitable for farming purposes.

Monitoring

19. No later than 1 February each year, the consent holder shall advise the Chief Executive Officer in writing and plan form, details of:

    a. the volumes of material removed from the site;

    b. the areas of land disturbed over the previous 12 months;

    c. the areas currently disturbed or being worked;

    The information required to satisfy this condition can be combined with the monitouring requirements inherent in LU 2006/13 Condition 17.

Site Environmental Management Plan

20. Prior to extraction works commencing within the extension area, the consent holder shall update the Site Environmental Management Plan to incorporate the extension to the

extraction area and associated stockpiling and ELFs areas and shall set out how the consent holder will manage its operations within these additional mine operational areas to ensure compliance with the conditions of this consent.

21. The consent holder shall comply with and implement the Site Environmental Management Plan during all mining activities within the extension areas.

Screen Planting

22. The mitigation screen planting shown as H & I on the SITE figure 2: Proposed Rehabilitation Plan, shall be carried out as per the plan in the first available planting season following granting of consent. The following monitoring of the planting shall be undertaken by the consent holder:
    a) Three-monthly site inspections of the plants will be undertaken to assess plant maintenance. Weed control around the plants is to be undertaken for a minimum of three years or until canopy closure (i.e. ground cover) has been achieved;
    b) For ongoing control of weeds amongst the new plantings, as identified during the three-monthly site inspections, spot spraying and/or combined with hand and/or mechanical removal of weeds around plantings shall be undertaken when required, i.e. when weeds are starting to suppress the new plantings;
    c) Landscape plantings shall be maintained to ensure that at least 90 percent of the planted areas are covered by live plants. Replacement plants shall be established within the next planting season.

Contaminated Soil

23. In the event of accidental discovery of contamination during soil disturbance and mining activities, the consent holder must immediately cease the works in the vicinity of the contamination, notify the Council, and engage a suitably qualified and experienced practitioner to assess the situation (including possible sampling and testing) and decide on the best option for managing the material to protect human health.

Weed Control

24. The consent holder shall undertake weed management works to control of crack willow, grey willows and elderflower stands within the site area. This will involve the removal of willow and elderflower stands shown on Figure 13 of the e3 Scientific report, and ongoing maintenance and monitoring of these species will be undertaken to eliminate regrowth.

Erosion and Sediment Control

25. All works associated with the deposit of overburden for Engineered Land Fill and top soil stockpiling activities within 100m of a natural inland wetland shall be undertaken in accordance with a site specific sediment and erosion control plan. The site specific erosion and sediment control plan shall be developed and provided to the Consent Authority for approval prior to the deposit of overburden for Engineered Land Fill and top soil stockpiling within 100m of an natural inland wetland being undertaken.

9. Consultation

Pre-lodgment discussions in relation to the extension of the mine site proposed as part of the subject application have taken place with the Gore District Council's planning manager.

Engagement with te Rūnanga o Hokonui is ongoing in relation to the current mining operations at the site, and specific engagement in relation to the proposed extension area has commenced. The outcomes of this consultation will be provided to the Council.

Engagement with neighbouring properties owners and the Department of Conservation will be undertaken. The Department of Conservation has been involved with the earlier consents obtained from Environment Southland for the mine extension proposal (AUTH 20222206-01, 02 and 03).

10. Statutory Considerations

Consideration of the relevant provisions of the Southland Regional Policy Statement and the Gore District Plan are provided below. Consideration of the relevant provisions of the Proposed Gore District Plan is also required, although less weight can be attributed to these provisions given this Proposed Plan is in the early stages of development.

The NPS-HPL is relevant to this proposal. The relevant provisions of this NPS are considered above in the Assessment of Effects section of this AEE. An assessment of the National Policy Statement for Indigenous Biodiversity ("NPS-IB") is provided below.

Relevant Provisions of the National Policy Statement for Indigenous Biodiversity

The NPS-IB commences on 4 August 2023. Objective (1) of the NPS-IB state that the objective of this NPS is to maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity after the commencement date. This will be achieved:

- through recognising the mana of tangata whenua as kaitiaki of indigenous biodiversity;

- by recognising people and communities, including landowners, as stewards of indigenous biodiversity;
- by protecting and restoring indigenous biodiversity as necessary to achieve the overall maintenance of indigenous biodiversity; and
- while providing for the social, economic, and cultural wellbeing of people and communities now and in the future.

Relevant policies include:

> ***Policy 1:*** *Indigenous biodiversity is managed in a way that gives effect to the decision-making principles and takes into account the principles of the Treaty of Waitangi.*
>
> ***Policy 2:*** *Tangata whenua exercise kaitiakitanga for indigenous biodiversity in their rohe, including through:*
>
> *(a) managing indigenous biodiversity on their land; and*
>
> *(b) identifying and protecting indigenous species, populations and ecosystems that are taonga; and*
>
> *(c) actively participating in other decision-making about indigenous biodiversity.*
>
> ***Policy 8:*** *The importance of maintaining indigenous biodiversity outside SNAs is recognised and provided for.*
>
> ***Policy 10:*** *Activities that contribute to New Zealand's social, economic, cultural, and environmental wellbeing are recognised and provided for as set out in this National Policy Statement.*
>
> ***Policy 13:*** *Restoration of indigenous biodiversity is promoted and provided for.*
>
> ***Policy 14:*** *Increased indigenous vegetation cover is promoted in both urban and non-urban environments.*

While the proposal will result in the loss of approximately 9,159 m^2 of wetland habitat, which will include indigenous vegetation, extensive planting of degraded wetlands within the site is proposed which will ensure indigenous biodiversity is restored and enhanced. It is considered that the proposal is consistent with the above policies.

Relevant Provisions of the Southland Regional Policy Statement

The Southland Regional Policy Statement ("SRPS") was made operative in 2017. Provisions that are relevant to the consideration of the subject application are set out below. In particular, the 'Rural Land/Soils' topic concerns activities that utilise the land resource, including intensive farm production, rural-residential activities, mineral extraction activities, and disposal fields for on-site wastewater treatment.

Mining is recognised in the SRPS as an important primary industry in Southland (Chapter 1 and Chapter 5 of the SRPS). The SRPS states:

> *A variety of mineral extraction activities take place in the region, ranging from small scale activities such as on-farm gravel extraction or 'hobby' gold mining to large scale activities such as commercial coal mining or gravel extraction. These mineral extraction activities need to occur in appropriate locations within the rural environment. Adverse environmental effects such as impacts on road networks, ecological water flows and levels, water quality, and health and safety may result from these activities.*[16]

Provision	**Assessment**
Chapter 5 Rural Land/Soils	
Objective RURAL.1 – Sustainable use of rural land resource Achieve sustainable use of Southland's rural land resource, in respect of: (a) agriculture and primary sector activities; (b) subdivision, use and development activities; (c) earthworks and vegetation clearance activities; (d) the use of soil resources; (e) mineral extraction activities; and (f) on-site wastewater systems.	The proposal seeks to extend the area for mineral extraction at the established New Vale mine, and to enable rehabilitation works to continue within areas not contained within the current mining area (under LU 2006 / 13). This proposal is considered to be a sustainable use of the rural environment, aligning with the outcomes sought under Objective RURAL.1.
Objective RURAL.2 – Life-supporting capacity of soils Safeguard the life-supporting capacity, mauri and health of soils in rural areas, and prevent or minimise soil erosion and sedimentation from land use soil disturbance.	The extraction activity will not have a permanent effect on the life supporting capacity of the soil at the site. The mining process ensures that the topsoil is safeguarded and reinstated at the extraction site, and the land will be rehabilitated to a state suitable for pastural farming and with enhanced ecological values. While part of the extraction site will become a lake, the topsoil

[16] Southland Regional Policy Statement 2017, page 63.

	will have been removed from this area prior to the filling of the lake.
Policy RURAL.1 – Social, economic and cultural wellbeing Recognise that use and development of Southland's rural land resource enables people and communities to provide for their social, economic and cultural wellbeing.	Mineral extraction is recognized as an important industry in Southland, which provides for the wellbeing of people and communities. This is supported by the Sense Partners report. The proposal to extend the New Vale Mine will assist in achieving this policy.
Policy RURAL.2 – Land use change and land development activities Manage subdivision, land use change and land development activities in rural areas of Southland, in a way that maintains or enhances rural amenity values and character.	The explanation beneath this policy states that it supports the ongoing operation of rural production activities, including existing mineral extraction, by managing or enhancing the rural amenity values. The SITE Landscape Assessment concludes that the adverse visual effects resulting from the extension are expected to be low (minor), and after rehabilitation, an improvement of visual amenity will result.
Policy RURAL.4 – Loss of high value soils from productive use Avoid the irreversible loss of high value soils from productive use, through inappropriate subdivision, use and development	The SRPS defines High Value Soils as: Soils that are classified as Land Use Capability Class 1 or 2 in the New Zealand Land Resource Inventory (NZLRI). It is understood that the land is classified as Land Use Capability Class 3, so is not considered to be an area of High Value Soil.
Policy RURAL.5 – Effects of rural land development The effects of rural land development shall be sustainably managed and land management practices encouraged so that: (a) soil properties are safeguarded; (b) soil erosion is minimised;	While the extraction activity will disturb the soil at the site, once the mining activity is complete, the land will be reinstated to a state that is suitable for productive purposes, aside from the lake and wetland areas. All topsoil removed from the lake area will be re-used elsewhere on the site. Some activities at the site are the subject of resource consents issued by (or being sought from) Environment Southland, such as the

(c) soil compaction and nutrient and sediment loss is minimised; (d) soil disturbance is reduced; (e) water quality is maintained or enhanced; (f) indigenous biodiversity is maintained or enhanced; (g) the mauri of water and soils is safeguarded.	proposal to divert waterways in the extraction area, and activities impacting natural inland wetlands. As part of these proposals, indigenous biodiversity values at the site will be enhanced, and water quality will be, at worst, maintained.
Chapter 10: Natural Features and Landscapes	
Objective LNF.1 – Identification and protection of outstanding natural features and landscapes Southland's outstanding natural features and landscapes are identified and protected from inappropriate subdivision, use and development.	The Gore District Plan identifies two natural features - the Hokonui Hills and the Mataura River as outstanding landscape features. SITE states that, the proposal, while from some viewpoints fall within the viewshed of the Hokonui Hills, it is not directly related to either of these landscape features. The proposed extension will be largely viewed within a local context and any adverse effects will not extend to include these landscape features.

Overall, it is considered that the proposal is consistent with the above provisions of the SRPS.

Relevant Provisions of the Gore District Plan

The most relevant provisions in the Gore District Plan are assessed in the table below:

Provision	**Assessment**
Chapter 2 Matters of National Importance	
Outstanding Natural Landscapes	
Policy 2.2.4(1) While recognising that the Hokonui Hills is a working rural landscape	SITE states that, while the proposal and site, will, from some viewpoints fall within the

subject to ongoing change as a result of farming activities, protect the Hokonui Hills from development and use that results in adverse effects on landscape values.	viewshed of the Hokonui Hills, it is not directly related to either of these landscape features. The proposed extension will be largely viewed within a local context and any adverse effects will not extend to include these landscape features.
Indigenous Biodiversity	
2.3.3 Objective (1) To protect areas of significant indigenous vegetation and significant habitats of indigenous fauna and to manage the adverse effects of land use activities.	Some indigenous vegetation will be impacted by extraction activities within the extension area. However, these areas are not identified as areas of 'significant indigenous vegetation', and effects on these areas will be offset (via a separate consent process).
Mana Whenua	
2.6.3 Objectives (1) Ensure that waahi tapu, waahi taonga and other taonga and mahinga kai sites are not adversely affected by land use activities. (2) Protect urupa sites. (3) Enable access to mahinga kai sites. (4) Facilitate consultation with Ngai Tahu to ensure that resource management issues of significance to them are had regard to in carrying out functions under the RMA.	It is understood that the extension site area does not encroach upon any known waahi tapu, waahi taonga and other taonga and mahinga kai sites. The applicant maintains close communication with te Rūnanga o Hokonui with respect to all aspects of the mine activities. Specific consultation with respect to the subject resource consent application is ongoing.
2.6.4 Policies (1) Control the adverse effects of land use activities on waahi tapu, waahi taonga and other taonga. (2) Protect urupa sites and when koiwi o nga tupuna (skeletal remains) are discovered, notification of Te Rūnanga o Ngai Tahu be	

required. (3) Facilitate access to mahinga kai sites.	
Chapter 3 Land Use Activities – A Framework	
Objective 3.3(2) Ensure that the effects of land use activities do not adversely affect the quality of the environment and are compatible with the characteristics and amenity values of each locality. *Policy 3.4(2) Control the adverse effects of land use activities on the environment.*	Visual effects of the mine extension activity are expected to be reasonably well contained within the site, and to a small area of infrequently used public roads surrounding the site. Screen planting is proposed to partially screen the activity where directly visible from outside of the site and to ensure visual amenity and scenic values of the rural landscape are retained.
Objective 3.3(7) Ensure that the effects of earthworks and other land disturbance are avoided, remedied or mitigated. *Policy 3.4(10) Recognise that earthworks and disturbance of the ground is a necessary part of undertaking many activities.*	Visual effects of the proposal are expected to be reasonably well contained within the site and a small area of infrequently used public roads surrounding the site. Proposed planting is intended to mitigate (via screening) the visual effects of the activity where it will be directly visible. This is expected to ensure the visual amenity and scenic values of the rural landscape are retained.
Objective 3.3(8) Avoid where practical the adverse effects of land use activities upon infrastructure.	The proposal is not expected to result in a change in adverse effects on the District roading network. The proposal will not result in an increase in vehicle numbers to and from the site, when compared with the current activity.
Policy 3.4(8) Refer to Section 4A.4 Natural Hazards 4A.4 (4) Within areas shown as "Subject to Actual or Potential Inundation" on the District Plan Maps the Gore District Council will: (a) with the exception of the urban area of	Policy 3.4(8) is relevant to the subject site due to the site being identified, in part, as an area that is subject to actual or potential flooding. The proposal does not involve the erection of buildings or structures that may be at risk from flooding.

Gore shown as lime green on the District Plan maps, refer all resource, subdivision and building consents to Environment Southland for comment prior to determining whether to approve or issue those consents.	Careful management of the extraction activity is required to ensure the activity does not result in sediment runoff into waterways or other properties in the event of heavy rainfall. The SEMP (Water Management) includes methods to manage this risk.

Overall, the proposal is considered to be consistent with the relevant provisions of the Gore District Plan.

Relevant Provisions of the Proposed Gore District Plan

The Proposed Gore District Plan was publicly notified in August 2023. The first submission stage has been completed and Council is expected to notify the summary of submissions in early February 2024 and invite further submissions. The Proposed Plan is therefore in the early stages of development, and less weight can be attributed to the provisions of this Plan.

The relevant provisions of the Proposed Plan are set out in the table below:

Provision	**Assessment**
Energy	
ENRG-O1 The significant local, regional and national benefits derived from the use and development of renewable energy resources are recognised and provided for and the transitional need for non-renewable energy is appropriately managed.	The proposal to extend the New Vale mine will ensure its customers have approximately four additional year's supply of coal. This will enable employment at New Vale and the GDP generated by the activity to continue. This will assist with the transitioning from non-renewable to renewable fuel sources to operate their businesses and plants. The Sense Partners report (**Appendix F**) concludes that the extension will provide a nationally significant economic benefit.
ENRG-P9 When considering any residual environmental effects arising from the use and development of energy resources that cannot be avoided, remedied or mitigated, regard may be had to offsetting measures or	It is considered appropriate to offset the loss of wetland habitat (including the indigenous vegetation within the wetland) as part of the proposal to extend the New Vale mine. The offsetting proposal aligns with clause (1) of this

compensation, including: 1. measures which benefit the local environment; and 2. measures which benefit the local community affected; and 3. measures which benefit mana whenua aspirations or projects.	policy.
ENRG-P10 Recognise the need for resilient energy supply, including standby power generation in emergency situations, and stand-alone power systems where other sources are not available.	The coal from New Vale mine provides a resilient energy supply to its customers, which they reply on.
Ecosystems and Indigenous Biodiversity	
ECO-O1 Maintain Indigenous biological diversity in the Gore District and protect areas of significant indigenous vegetation and significant habitats of indigenous fauna (Significant Natural Areas).	The applicant is committed to ensuring that indigenous biodiversity at the site is maintained. This is evident in the works already undertaken by the applicant at the site with indigenous vegetation planting and the management of the Galaxius Gollum. For the subject mine extension proposal, the ecological enhancement works proposed as offsetting for the wetland and associated indigenous vegetation loss result in an increase in wetland habitat at the site, which will enhance the indigenous biodiversity at the site.
ECO-P6 Promote the restoration of indigenous biodiversity by prioritising: 1. SNAs whose ecological integrity is degraded: 2. threatened and rare ecosystems representative of naturally occurring and formerly present ecosystems:	The proposal will result in the loss of 9,159m^2 of natural inland wetland habitat, which includes indigenous vegetation (and exotic vegetation). The proposal includes extensive works that will increase the wetland habitat at the site by 20,947m^2, resulting in a net gain ecological effect, aligning with clause 4 of this policy.

3. areas that provide important connectivity or buffering functions: 4. natural inland wetlands whose ecological integrity is degraded or that no longer retain their indigenous vegetation or habitat for indigenous fauna: 5. areas of indigenous biodiversity on specified Māori land where restoration is advanced by the Māori landowners: 6. any other priorities specified in regional biodiversity strategies or any national priorities for indigenous biodiversity restoration.	
ECO-P8 When assessing consents for subdivision, land use and development, avoid effects which will: 1. Prevent an indigenous species or community being able to persist in their habitats in the ecological district; 2. Result in a degradation of the threat status, further measurable loss of indigenous cover or disruption to ecological processes, functions or connections in land environments in category one or two of the Threatened Environment Classification at the ecological district level; 3. Result in a reduction in the local population of threatened taxa in the Department of Conservation Threat Categories 1 – 3a - nationally critical, nationally endangered and nationally vulnerable; and 4. Discourage mana whenua access to indigenous biodiversity for a mana whenua cultural purpose.	The proposal will not result in an indigenous species or community not being able to persist in their habitats in the ecological district. While the site is a category one Threatened Environment Classification, the proposal will not result in a degradation of the threat status as the replacement of additional like habitat and species will not have an effect on the threat status of any species noted within the areas to be cleared. The proposal will not result in further measurable loss of indigenous cover as the replacement planting will exceed loss. No disruption to ecological processes, functions or connections in land environments in category one of the Threatened Environment Classification is anticipated. Given the proposed ecological offset package and location of consented disturbance ecological, connections in land environments should not be altered at an ecological district level. The effect on ecological processes and functions is not as clear, given the area drains into a human-made streams and lakes (still within the site) regardless and wetland restoration will provide additional functional habitat. E3

	Scientific have concluded that the effects on ecological processes and function would be Very Low at an ecological district level. The proposal will not result in the reduction of local population of threatened taxa in the Department of Conservation Threat Categories 1-3a. Via the pre-lodgment engagement with te Rūnanga o Hokonui, the Rūnanga has not identified any particular concerns with the subject land use application. However, as discussed in the notification section below, it is considered appropriate to notify the Rūnanga of this application to ensure they remain part of the decision making process.
ECO-P10 Maintain indigenous biodiversity across the district by: 1. Managing any significant adverse effects of new subdivision, use or development by applying the effects management hierarchy; 2. Managing the adverse effects of new subdivision, use or development on highly mobile fauna areas in order to maintain viable populations of specified highly mobile fauna across their natural range 3. Maintaining, and where appropriate enhancing or restoring, the functioning of ecological corridors and linkages; 4. Minimising adverse effects on, and encouraging mana whenua access to, areas of indigenous biodiversity which are significant to mana whenua;	The loss of indigenous vegetation within the wetlands is not considered to be a significant adverse effect given the wetland habitat is degraded, and extensive planting of indigenous vegetation is proposed. The wetland restoration and enhancement planting will enhance the indigenous biodiversity at the site, achieving the intent of this provision.
ECO-P11 Provide for biodiversity offsets and compensation to manage residual adverse effects of an activity where:	The proposal includes an extensive wetland restoration and enhancement planting plan which is proposed to offset the loss of wetland habitat, including the indigenous vegetation.

1. The goal of the biodiversity offsets is no net loss and, preferably, a net gain of biodiversity of similar species and location where practicable; 2. The conservation outcomes are measurable and positive; and 3. The biodiversity offsets or compensation are in accordance with best practice, including but not limited to New Zealand Government guidance on biodiversity offsetting; and 4. Off-setting and compensation packages are consistent with Ngāi Tahu cultural purposes.	E3 Scientific have concluded that this will result in a net gain in ecological effects.
General Rural Zone	
GRUZ-O3 Non-primary production activities that support primary production or rely on a rural location are provided for, while managing the nature, scale and location of such activities.	The mine is required to be at the subject site as this is where the coal resource is located. The coal resources from the mine assist in supporting primary production activities through providing an energy supply to the meat and dairy processing plants.
GRUZ-P4 Recognise the benefits of conservation, pest management, increasing biodiversity, riparian planting, and fencing erosion prone areas.	The proposal includes a comprehensive wetland restoration and enhancement planting plan to restore the degraded wetlands on the eastern side of the site, which is proposed to offset the loss of the wetland areas, including the indigenous vegetation within the wetlands. In addition, New Vale mine has undertaken numerous conservation initiatives and programs at the site (refer section 5 of this AEE) which have enhanced the biodiversity values at the site.
GRUZ-P5 Recognise the benefits of quarrying and mining activities on the local economy and supporting associated industries through enabling small scale quarries and mines.	The benefits of the New Vale mine to the local economy, as well as the broader enabling benefits the mine has for the agricultural farming industries in Southland and further afield is discussed in detail in the Assessment

	of Effects and the Economic Impact Analysis. The benefits are considered to be significant.
GRUZ-P6 Manage the environmental and cultural effects of quarrying and mining and avoid quarrying and mining activities that result in adverse cultural or environmental effects that cannot be avoided, mitigated or offset.	Te Rūnanga o Hokonui has expressed support for the proposed wetland enhancement works proposed as part of the Environment Southland application made under the NESF, and has not identified any particular concerns with the subject land use application. However, as discussed in the notification section below, it is considered appropriate to notify the Rūnanga of this application to ensure they remain part of the decision making process.
GRUZ-P12 Require activities and development to maintain rural character, rural amenity and the underlying Ngāi Tahu relationships with the natural environment by: 1. ensuring that buildings and structures are of a scale and height which is compatible with the rural character and amenity of the zone; and 2. requiring appropriate setbacks to waterways to maintain and enhance amenity values and natural character.	It is considered that the proposal will retain the rural character and amenity values. No new buildings and structures are proposed, and the extraction site will be partially screened from views outside the site boundary. The activity is, however, well established in the receiving rural environment. The proposal requires the diversion of tributaries and the drainage of wetlands. The diversion works have resource consent (AUTH 20222206-02) and the drainage of the wetlands (which overlaps with the tributary diversion works) is the subject of a resource consent application with Environment Southland. It is considered that, with the wetland enhancement off setting proposal, which is part of the mine extension proposal, and the rehabilitation of the extraction site, the rural character and amenity, and the underlying Ngāi Tahu relationships with the natural environment will be maintained. Te Rūnanga o Hokonui has expressed support for the proposed wetland enhancement works and has not identified any particular concerns with the subject land use application. However, as discussed in the notification section below, it is

	considered appropriate to notify the Rūnanga of this application to ensure they remain part of the decision making process.

Section 104

Section 104 of the RMA identifies the matters that a consent authority must have regard to, subject to Part 2, when considering an application for resource consent. It states:

> *(1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to–*
> *(a) any actual and potential effects on the environment of allowing the activity; and*
> *(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and*
>
> *(b) any relevant provisions of—*
> *(i) a national environmental standard:*
> *(ii) other regulations:*
> *(iii) a national policy statement:*
> *(iv) a New Zealand coastal policy statement:*
> *(v) a regional policy statement or proposed regional policy statement:*
> *(vi) a plan or proposed plan; and*
>
> *(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.*

Section 104 of the RMA does not give primacy to any of the matters to which a consent authority is required to have regard. All of the relevant matters are to be given such weight as the consent authority deems appropriate in the circumstances, and all matters listed in section 104(1) are subject to Part 2 of the RMA.

An assessment of the proposed activity against the relevant matters set out in section 104 of the RMA is provided in this AEE. The actual and potential effects of the proposal are assessed in Section 5 of this AEE. The provisions of the relevant planning documents, and an assessment of how the proposed activity and works aligns with the provisions of relevant Regional Policy Statement, Gore District Plan and relevant NPS's is provided in Section 10 of this AEE.

Part 2 of the Act

It is understood that a consent authority is not generally required to consider Part 2 of the RMA beyond its expression in the relevant statutory planning documents. In most circumstances, there is no requirement to refer back to Part 2 of the RMA in determining a resource consent application unless the statutory planning documents do not fully reflect Part 2.

For the current proposal, it is not considered necessary to undertake an assessment against Part 2 as the provisions of the Southland Regional Policy Statement and the Gore District Plan are considered to reflect the resource management issues contained in Part 2, insofar as they are relevant to this application. That said, some consideration of Part 2 is provided below as it is considered to assist the decision making process.

In particular, some of the Other Matters listed in section 7 of the RMA are relevant to the Proposal. The proposal provides for the efficiency of the end use of energy (s7(ba)) by supplying thermal coal to industries in close proximity to the mine, which reduces transportation requirements. Further, as discussed earlier in this AEE, while many of New Vale mine's customers are in the process of transitioning to renewable energy sources to power the factories and facilities, this process will take some time, and the existing energy supply is required while this transition occurs. During this transition period, there are no other reasonable alternatives to supply energy to these industries/facilities (refer Economic Impact Analysis).

Section 7(g) requires regard to be had to the finite characteristics of natural and physical resources. While coal is a finite resource, it is understood that preserving this resource is not necessary as the economy phases out the use of coal as an energy supply and moves to decarbonise energy generation[17]. Mining coal to supply local industries has proven to be an efficient use of this natural resource over many decades (section 7(b). Coal remains a highly cost effective energy source. However, it is acknowledged that alternative renewable energy supply is required as the country phases out the use of coal for energy. The current proposal seeks consent to enable the supply of coal to industries and facilities only insofar as the coal is needed while this transition occurs. The applicant does not stockpile coal, nor does it transport coal offshore to other markets. The coal extraction enabled by the current Proposal will only be extracted if it is required by industries and facilities within the lower South Island. Ensuring these industries and facilities can continue to operate during this transition period provides a significant national benefit, which enables people and communities to provide for their social, economic and cultural well-being, and for their health and safety.

Overall, the proposal is anticipated to have positive effects as it will enable New Vale mine to continue to provide a vital energy source to industries within the region[18], when there is demand for

[17] Section 5(2)(a) excludes 'minerals' from the requirement to sustain natural and physical resources to meet the needs of future generations.

[18] No exporting of coal occurs from New Vale mine. All the coal extracted from New Vale mine is purchased by industries and community facilities/amenities (schools and hospitals) located within Southland and Otago.

coal, whilst also preparing for the end of mine life and the implementation of the site rehabilitation and enhancement works. Any adverse effects associated with the activities proposed to occur on the extension sites will be managed to an appropriate level and the site will be returned for rural productive use once the mine is closed.

11 Notification

Section 95A Public Notification

Whether the application should be notified has been assessed below, according to section 95A of the Act.

Step 1 – Mandatory public notification:
There is no mandatory requirement for public notification of this application noting that:

- The applicant does not request public notification of the application (s95A(3)(a)).
- The application does not include an exchange of recreation reserve land (s95A(3)(c)).

Step 2 – Public notification precluded:
Public notification is not precluded, noting that:

- Public notification is not precluded by any rule or national environmental standard (s95A(5)(a)).
- The proposal is a discretionary activity. Therefore, public notification is not precluded, as the preclusion section in s95A(5)(b)(ii) does not apply to discretionary activity land use activities.

Step 3 – Public notification required in certain circumstances:
There are no circumstances that require this application to be publicly notified, noting that:

- There are no rules or national environmental standards that require public notification in s95A(8)(a).
- For the reasons set out in the AEE in this report, the activity will not have adverse effects on the environment that are more than minor in accordance with s95A(8)(b).

Step 4 – Public Notification in special circumstances:
There are no special circumstances in relation to this application.

For the above reasons, public notification of the application is not required.

95B Limited Notification

Section 95B(1) requires a consent authority to determine whether to give limited notification of an

application if an application is not publicly notified under section 95A of the Act. This has been considered according to section 95B as follows.

Step 1 - Certain affected groups and affected persons must be notified:
Limited notification is not required under Step 1 as there are understood to be no affected protected customary rights groups or customary marine title groups.

Step 2 - if not required by Step 1, limited notification precluded in certain circumstances:
Limited notification is not precluded under Step 2 as:

- The proposal is not subject to a rule in the District Plan or an NES that precludes notification.
- The proposal is not a controlled activity and is not a prescribed activity.

Step 3 - if not precluded by Step 2, certain other affected persons must be notified:
Limited notification of affected persons is not required under Step 3 as:

- The proposal is not a boundary activity and is not a prescribed activity.
- The proposal therefore falls into the 'any other activity' category. In accordance with section 95E, a person is an affected person if the activity's adverse effects on the person are minor or more than minor (but are not less than minor).
-

Te Rūnanga o Hokonui is considered to be affected by this proposal in the context of s95E of the RMA. As concluded by the assessment in Section 5, no other persons are considered to be affected by the subject to an extent that is minor or more. Therefore, there are no affected persons in the context of s95E of the RMA.

Notification Conclusion

It is considered that a limited notification process is appropriate for the current application, with notification being limited to Te Rūnanga o Hokonui.

12 Conclusion

This AEE is in support of an application for resource consents to extend the New Vale mine site. The proposed extension is required to increase the land area to be mined and also to provide additional space at the site to implement mitigation and ecological enhancement works. The proposal will enable approximately four additional years of extraction at the mine, and is expected to provide a significant benefit based on the GDP and employment provided by the mine, as well as the enabling economic impacts associated with the supply of energy to the dairy and agricultural industries.

An assessment of the actual and potential effects of the proposal on the environment is provided in Section 7 of this AEE, and this assessment has been informed by landscape and visual

assessments undertaken by SITE landscape architects, the Economic Impact Analysis undertaken by Sense Partners and the wetland delineation report undertaken by e3 Scientific. By way of summary, it is considered that the proposed extension of the New Vale mining site can be undertaken in a manner that appropriately avoids, remedies, mitigates the adverse effects on the environment, as directed by section 5 of the RMA, and proposes offsetting of those adverse effects that cannot be avoided, remedied or mitigated. The proposal is expected to result in a net gain in ecological effects, and will enable the positive economic and social impacts associated with the mine to continue for an additional four years. All other adverse environmental effects will be managed to ensure they are no more than minor.

With respect to the statutory planning framework that applies to the application, it is concluded that the proposal aligns with the relevant objectives and policies of these documents.

From: Meg Justice <meg.justice@taylorplanning.co.nz>
Sent: Thursday, July 4, 2024 3:27 PM
To: Penny Weng <pweng@propertygroup.co.nz>
Subject: RE: LU24023 - 640 Miller Road

Hi Penny, further to your questions, please see a response from Richard Tyler of SITE. Please let me know if you have any other questions.

What are the visual amenity and landscape character effects of the mine extension from viewpoints 'A' and 'B' (if any?) in the first five years prior to the planting along the Miller Road northern boundary reaching a 3m height, if mining occurs in the southern part of the extension area?

Our assessment report makes the following comment:
"On-going native screen planting along the northern boundary (as noted in Section 5) will be roughly 3m in height after 5 years and will screen views into site along the lower section of Miller Road. The planting will provide ecological enhancement and links to existing native planting within the road reserve. It may take several years before views to the northern section of the mine are opened up, therefore it is anticipated planting will be a reasonably high semi-mature canopy closure once views potential views of the mine area opened up from this location."

To add to this, the applicant has confirmed planting will be completed along this boundary by **2024/25.**

Mining will start at the southern end of the extraction area in **2026**, at which time the immediate hill visible in views A & B will remain intact. (The southern part of the extraction area is well beyond this hill). It is anticipated the hill will be removed by extraction approx. **2029 at the earliest**. At this point in time, planting along the boundary will have had **4-5** years of growth. Plants will be approx. 2.6m high, conservatively (0.2m planted height + 0.6m growth / year x 4 years). Planted on slightly elevated ground from the road, this height will form a green boundary and screen the quarry / extraction within site.

Are there any permanent or temporary visual effects?
Therefore, on the basis of above, there will be no permanent or temporary visual effects.

Also, it can be quite challenge understanding the lay of the land when on site, so Richard Tyler has offered to accompany you when you visit the site. John Howes, the Environmental Manager, will also show you round. Let me know when suits for the visit and I'll have John arrange things.

Regards,
Meg

Taylor. Planning

Meg Justice

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30 July 2024

Gore District Council
PO Box 8
Gore 9740
Attn Penny Weng
Via email: pweng@propertygroup.co.nz

New Vale Proposed Mine Extension, LU24023: Further Information Request Response

Thank you for your letter of 16 July 2024 setting out the further information requests under s92 of the RMA for resource consent application LU24023. We provide a response to the information request below.

1. Contamination

1.1 *The HAIL status assigned by Environment Southland relates directly to the area of existing mining activity on the site. Furthermore, the contaminated land status assigned by Gore District Council relates to the fact that the wider site is part of the coal mine. Is the Applicant aware of any HAIL activities on the site associated with the current grazing / farming activity, where is mine extension area is proposed?*

Response

The applicant is not aware of any HAIL activities occuring within the pieces of land within the site that is affected by the proposed extension to the extraction area nor the area where wetland enhancement works are proposed. This area has not been mined before. Known areas of contamination are located at the processing part of the site.

1.2 *It is evident from the submitted Site Environmental Management Plan (SEMP) that workers at the mine must carry out their work in accordance with health and safety measures and protocols. However, there is no specific reference to how potentially contaminated soils will be managed on-site during soil disturbance activities, or how precautionary measures are taken to minimise human exposure from such soils on a day to day basis. Please clarify the above, and advise if the SEMP will be updated to include working with contaminated soils provisions, or explain if other measures are already in place / will be put in place?*

Response

Despite the site being classified as a HAIL site under the NES-CL, contaminated soil has not been an issue that requires management at the New Vale mine. Therefore, no specific management of earthworks /extraction activities has been required to date. While the resource consent application seeks consent under the NES-CL, this is a technicality as the

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mine is classified as a HAIL site. However, in the event that contaminated soil is discovered within the extension area, the following condition is suggested:

Condition X: Contingency for unexpected contaminated soil or material
In the event that any unexpected contaminated soil or material is uncovered by any works being undertaken within the extension area of the mine, an accidental discovery protocol shall be implemented, including but not limited to the following steps:

a. *Extraction activities/earthworks within ten metres of unexpected contaminants must cease immediately;*
b. *All practicable steps must be taken to prevent the contaminated material becoming entrained in stormwater. Immediate steps must include, where practicable*:
    i. *diverting any stormwater runoff from surrounding areas away from the contaminated material; and*
    ii. *minimising the exposure of the contaminated material, including covering the contaminants with an impervious cover;*
c. *Notification of the Consent Authority, within 24 hours of the discovery;*
d. *Earthworks within ten metres of unexpected contaminants must not recommence until a suitably qualified and experienced contaminated land practitioner (SQEP) confirms that continuing works does not represent a significant risk to the environment;*
e. *All records and documentation associated with the discovery must be kept. This includes any*:
    i. *Load registers and weighbridge dockets for soil taken from the Works Area;*
    ii. *Analytical results for soils removed from the Works Area;*
    iii. *Advice provided by the CL-SQEP, and laboratory analysis for future reference.*
f. *Copies of the records and documentation collected under e) for unexpected contamination discoveries shall be provided to the Consent Authority within two months of the discovery.*

2. Vibration

Page 42 of the Applicant's AEE notes that "Policies and procedures for vibration management at the site are included in the SEMP, Section 4, Noise Emissions Management".
However, Section 3 – Noise Emissions Management of the submitted SEMP does not appear to include policies and procedures for vibration management. Please clarify the above, and advise if the SEMP will be updated to include vibration management.

Response
Vibration management at mines is normally associated with blasting as part of the extraction process. No explosives are used at New Vale.

The mining equipment used at New Vale is relatively small for a mining operation, meaning vibration effects associated with the use and movement of the machinery are minimal. To date, New Vale mine has not received any complaints regarding vibration effects from neighbouring property owners.

The AEE stated that the Noise Management Plan (within the SEMP) sets out the measures to manage vibration at the site to achieve the following standards:

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- AS 2670.2-1990 Evaluation of human exposure to whole-body vibration - Continuous and shock induced vibration in buildings (1 to 80 Hz).
- DIN 4150-3:1999 Effects of vibration on structures

The Noise Emissions Management Plan has been updated to include the above requirements, and to state that no blasting shall occur as part of the extraction activities at New Vale Mine. Please refer to **Attachment 1**.

3. Planting

3.1 *The Landscape Assessment Report refers to 0.5m planted height, with 0.5m growth per year, which results in 3m high screen planting after five years. The email response of 4 July refers to 0.2m planted height, with 0.6m growth per year, which results in 2.6m high screen planting after four years. How high are / will the plants be at the time of planting along the northern boundary ('H' on the 'Proposed Landscaping Plan (2038)')? i.e. one or the other depending on species, or a combination of the above?*

Response

It is acknowledged that some of the planting that has been recommended to screen the proposed extraction area by SITE in the Landscape and Visual Assessment Report has already commenced, ahead of the resource consent application process that would require this planting to occur. The planting that has occurred is therefore outside of the consent process and has been undertaken in anticipation of the resource consent, at a cost to the applicant. This is considered beneficial for the future screening as the plants already planted will be well established, ahead of the time when they may be required for screening.

In the event that consent is granted for the proposal, and the suggested conditions relating to screen planting (as per the SITE report) are conditions of the resource consent, then the planting required to be undertaken under these conditions will be implemented by the consent holder. If, due to seasonal differences, growth rates of the plants do not achieve the expected level of screening predicted, then additional planting may be required to supplement the planting in order to achieve the conditions of consent.

The use of planting to provide screening is common practice in resource consents, and in all cases, some seasonal variations will impact plant growth. If the conditions require a certain outcome, then the consent holder must achieve that outcome to avoid being in breach of the condition. The fact that the applicant has already commenced planting required by the suggested landscaping conditions, ahead of any consent being granted, indicates the willingness of the applicant to adhere to any conditions imposed.

4. Lake

The proposed lake at 48ha is large. Please provide an explanation for the size of the lake. i.e. is it not possible to fill in the mine pit to create a smaller lake?

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Response

The eventual size of the lake is determined by the following:

1. The amount of lignite that is removed from the site, resulting in less fill that can be used to re-fill the pit;
2. The safety of the lake edges, which requires the edges of the lake to be gently sloped, and results in a larger area than if the edges were steep;
3. Ensuring the final landform looks natural in the receiving environment; and
4. Towards the end of the mine life, the coal seams are at their deepest, so extraction works are required to be deeper which results in a larger hole.

Greenbriar's Mining Engineer will design the ELFs and lakes following extraction activities across the site. Greenbriar will endeavour to reduce the size of the lake to the smallest extent possible.

5. Landscape Effects following full rehabilitation

Please further assess the landscape and visual effects of the proposed rehabilitation. Are there any adverse effects related to the establishment of a new lake, new wetlands, new planting, restored land for pastural farming activities, taking into account the size / area of these features?

Response

Richard Tyler from SITE has provided the following response:

The rehabilitation will include wetland planting, pastoral fields of a scale consistent with that found in the surrounding productive rural landscape, and an end of life lake.

The end of life lake will have natural character - water, planted edges, and will not include any exposed rock faces. In this respect it will enhance rural character and visual amenity of the site.

The orange shapes as shown on the photomontages attached to the SITE Landscape Assessment are the final overburden mounds. The overburden mounds will be shaped with 1:5 grade slopes - this is quite gentle and consistent with the surrounding rolling hills. Once grassed they will appear as part of the rural landscape and will not look out of place or impose on any surrounding viewpoints.

6. Roading

The following comments are from the Council's Roading Asset Manager.
There is concern over the proximity of the proposed northern face of the mine extension to Miller Road. Referring to the Site Layout Plan, the area of concern is the section of Miller Road between Photomontage locations 'A' and 'B'. Please provide details of how the stability of this section of Miller Road will be protected and proposed monitoring for potential land movement along this section.

Planner's query: How close to the road boundary will the extraction activities occur?

Taylor. Planning

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Response

A mining plan will be prepared by New Vale Mine before extraction activities occur. Given the rolling nature of the extraction activity, the mining plans are prepared in a block manner, with each block covering approximately 3.5 - 4 hectares being prepared at the time. New Vale Mine's design is considerably more conservative than practices employed in this area historically, and is in line with contemporary mining practices.

The mine plans are prepared by mining engineer with input from geotechnical engineers. This means that measures will be in place to ensure erosion of the Miller Road is prevented at the time the mine plan for the area close to Miller Road is developed. On current sales, New Vale Mine estimates the first cut near the road will not occur until 2034-35.

In order to provide Council with an assurance that the mining plans will be in place to ensure works do not adversely affect Miller Road, the following condition is suggested:

> *Prior to any extraction activities commencing within 50 m of Miller Road, the consent holder shall:*
>
> *a. provide the Consent Authority with measures to be implemented to prevent the erosion of Miller Road caused by extraction activities; or*
>
> *b. if no measures are required to prevent the erosion of Miller Road caused by extraction activities, the consent holder shall provide advice to the consent authority that describes why no measures are required.*

7. Regional Consent

Please provide an update on the status of the Environment Southland consent for the removal of the wetlands.

Has the Wetland Delineation and Ecological Assessment been peer reviewed by the Environment Southland?

Response

The Environment Southland resource consent application has been received by Environment Southland and is being processed. The consent application has reference number APP-20242477.

At the time of writing, the Wetland Delineation Report has not been peer reviewed by Environment Southland.

Please do not hesitate to contact me should you have any questions arising from this response.

Yours sincerely

Meg Justice
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ADDENDUM TO
RESOURCE CONSENT APPLICATION

1. This addendum relates to the resource consent application LU24023 (**Application**). The Applicant wishes to withdraw the following statements from the Application:

   > *The applicant seeks a fixed term for the duration of the resource consent. The applicant seeks that any resource consent issued for the subject application has an expiry date of 1 January 2050.*[1]
   >
   > And
   >
   > *It is proposed that any resource consent granted for the extraction of coal within the proposed extension area at New Vale Mine expires on 1 January 2050. The proposed expiry date of 1 January 2050 will allow for the existing consented and proposed extraction activities, and for the rehabilitation of the site to be completed.*[2]

2. The Applicant has considered this approach further and does not consider that this approach is necessary to manage the effects of the proposed activity. The environmental effects of the proposed activity are addressed through the other conditions proposed. Ultimately those effects do not change as a result of consent duration. A condition setting duration may simply create inefficiency.

Nāku, nā
GALLAWAY COOK ALLAN

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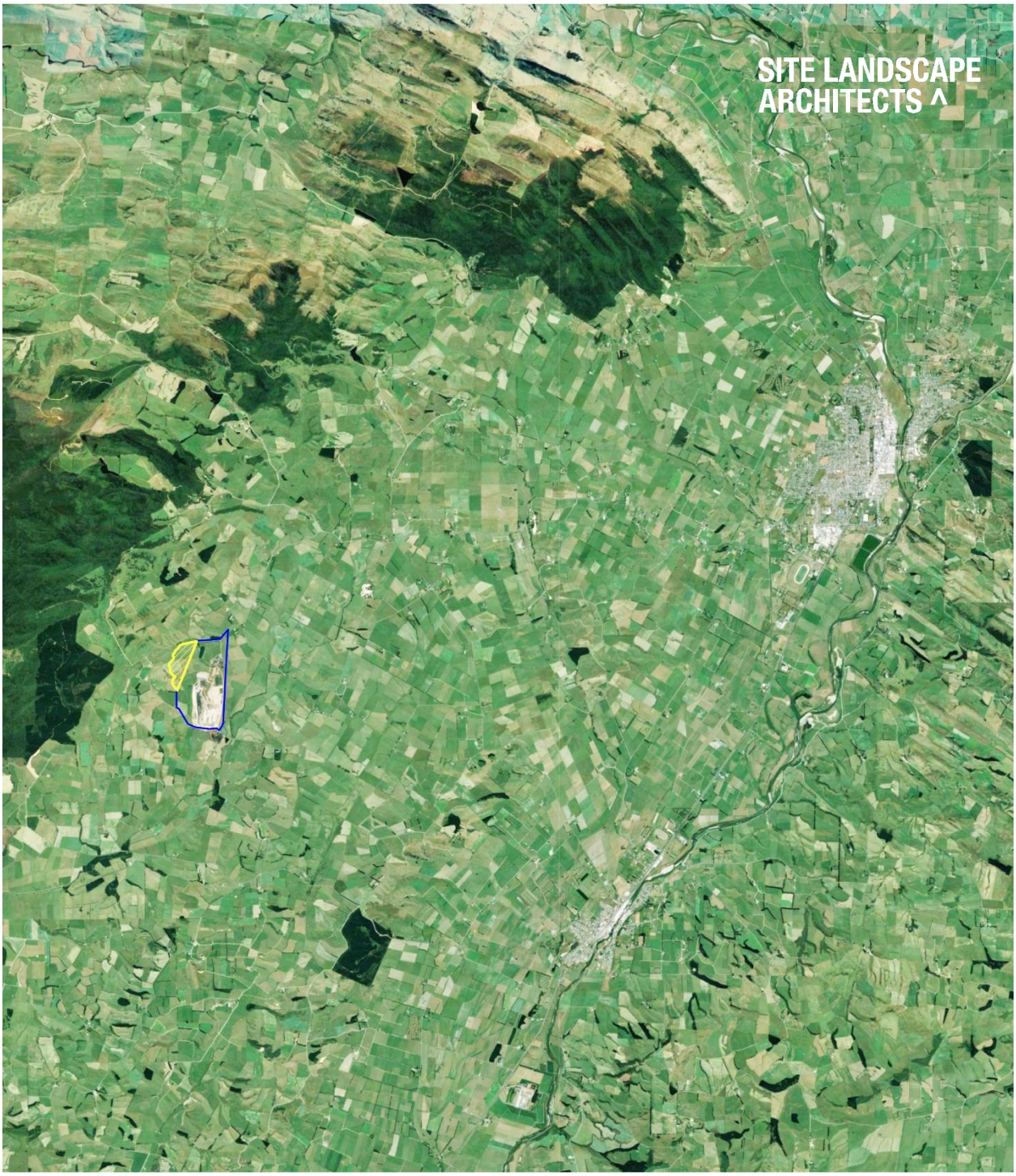
[1] Page 4 of the Application.
[2] Page 9 of the Application.

Greenbriar Limited

Landscape Assessment Report – New Vale Mine Extension

15 AUGUST 2023

Richard Tyler Landscape Architect - NZILA Registered
SITE Landscape Architects



1.0 Introduction

The application site, legally described as Lot 72, Pt Lot 73, Lot 74, Pt Lot 75 DP177, is used by the applicant **Greenbriar Limited** for mining of lignite coal. The registered owner of the land is **Greenbriar Limited** Properties.

The application is to extend the area of the existing mine land-use consent (which covers approx. 177.5Ha) to include approximately 145Ha of additional land, of which 30ha will extend the extraction area, 59ha is proposed to be used for temporary stockpiling topsoil and subsoil for reuse at the end of mine life, and 56 ha (on the eastern side of the site) will be used for wetland construction, and possibly the construction of an Engineered Land Form (ELF). Greenbriar anticipate extraction to continue until approximately 2038 depending on demand. At this point (end of life) the mine will be restored to farmland and a lake with areas of revegetation planting and wetlands.

The mine is located 12.5kms west of Gore and 5kms west of Waimumu in the rolling farmland that extends towards the lower slopes of the Hokonui Hills 3kms west of site.

This report provides landscape and visual assessment of the proposal - including potential effects on visual amenity and landscape character and proposed mitigation measures.

2.0 Assessment Methodology

The methodology is derived from 'Te Tangi a te Manu: Aotearoa New Zealand Landscape Assessment Guidelines', Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022 (NZILA Guidelines). This is considered best practice methodology for landscape assessment in New Zealand.

In the assessment of effects I refer to the 7-point scale listed below, as derived from the NZILA Guidelines. The top rows show how the rating scale can be related to wording in the RMA, noting this is a guide only:

Photomontages

Photomontage views were prepared to demonstrate visibility of the proposed extraction extension area in the landscape. The montages are prepared in accordance with NZILA Best Practise methodology.

The process for preparing the montages included:

- Preparation of a 3d contour model of the existing topography, proposed mine and overburden mounds with georeferenced co-ordinates;
- Locating photo locations in the 3d model using aerial photography and contour information;
- Generating views in the 3d model using a similar camera angle as the real photos;
- In photoshop the 3d wireframe model was overlaid with the real photos utilizing common points shared between the model and real photo;
- Areas of the proposal were coloured as noted on the photomontages to compare the existing land-use consent area (the baseline) with the proposed mine extension.

3.0 Landscape Context

Landscape Character

The subject site is located within the rolling foothills of the Hokonui Hills that extend to the west of site and drain east to the Mataura River Plains.

The Geology of the area is comprised of weathered Sandstone hills and shallow river gully deposits of gravel, sand and peat that has shaped the gently rolling topography of hill and gully systems.

The land-use of the wider Gore District is well known for its productive farmland landscapes that extend from the plains of Invercargill to the foothills of the Garvie Mountains to the north.

Within this rural landscape vegetation patterns generally consist of exotic farm shelter hedgerows dissected by more organic shapes of stream and gully systems – some containing remnant or regenerating native vegetation.

Landscape character in the wider area and surrounding site is productive rural landscape. The Southland region has historically been heavily modified from pre-human state of podocarp temperate forest to farmland, and human presence in the way of farming activities and rural buildings are a reminder that the area is very much shaped around productive use. While this is the case the dominant presence of low rolling hills, farm hedgerows / amenity plantings and naturalized gully systems contribute towards a sense of attractive rural amenity.

The existing mine was established in the 1940s and is visible at various points around the landscape (described further in section 7).

The Southland Regional Landscape Assessment, completed by Boffa Miskell in 2009 describes the Southland valleys and plains as being part of the "*Characteristic Landscapes"* - the highly characteristic landscapes of Southland.

Landscape Values

The land surrounding the site is part of a very large rural landscape unit that extends to the greater part of the Southland region.

The character is strongly rural amenity with moderate to high scenic values and visual amenity. Where the existing mine becomes visible the landscape qualities and visual amenity reduce. The mine forms a contrast to the visual consistency of the rural landscape as a different land-use with large areas of exposed earth, machinery, and buildings.

Aesthetic values of a landscape are determined by the landscape's physical and natural properties and the cultural values of the person experiencing it. In this case, local residents and farming community will consider this landscape from the familiar production stand-point part of the resource that makes up their livelihood and day to day lives. Visitors may perceive it as a more unique landscape with attractive open rural views and native plantings.

View 1 from Miller Road looking south-west towards the subject site – existing mine to the left

View 2 from Goodwin Road looking east of north-western end of subject site with Miller Road in the mid-ground

4.0 Site Description

The subject site is part of a 350Ha block of rural land made up of 4 lots. The existing mine and associated operations make up approximately 100Ha of land located in the south-eastern portion of the land holding and contained within the existing 177.5Ha land-use consent area.

The existing mining consists of:

- An open pit mine of roughly 80Ha and approximately 50m deep with benches for transporting material;
- An overburden mound roughly 15Ha and approximately 20m high with slopes of 1:4 grade. Once material is graded the overburden mound is sown with pasture grass;
- Settling ponds, administration buildings, workshops, plant and service area.

The areas outside of the immediate mining operations are fenced and are grazed by live-stock. Within the western paddocks a gully is fenced from stock and contains native planting.

View of existing mine pit taken from Goodwin Road at the south end of site. Mine pit centre of view, exposed faces of overburden mounds to right

View of existing 20m high overburden mound taken from eastern haul road within site prior to grass growth

5.0 The Proposal

The proposal is to extend the existing landuse consent area of 178Ha by 145Ha. The additional land includes a wedge shaped portion on the northwest side within which the existing mine will be extended (proposed extraction extension area) of approximately 30Ha in size, and an area of land on the eastern side for wetland construction and possibly the construction of an overburden mound (Engineered Land Form ("ELF").

Figure 2 - Proposed Landscaping Plan (Anticipated to be 2038) shows the existing land-use consent area in blue, the proposed land-use consent area in red, and the proposed extraction extension area in yellow hatched. The plan demonstrates proposed rehabilitation features once mining is complete.

Mining will be undertaken in a northerly direction from the existing mine pit at the south end of site. Extraction is carried out from the mine pit with overburden material filled and spread in of a series of fill mounds along the central / eastern part of site. At end of life the mine pit will be filled with water and turned into a lake, with native plantings undertaken around the edge of the lake.

The Plan includes a series of gully revegetation areas within the western extent of the subject landholding, outside of the mining land-use consent area boundary within the grazed farmland. These areas have been fenced from stock in roughly 30m wide strips and will have continued revegetated with local native plants in consultation with Hokonui Rununga.

Two pond areas along the eastern boundary within the mining application site will be constructed and utilised during works for discharge of mine water. The ponds will include areas of native wetland planting. Following mining the ponds will form part of the natural stream system and contribute to wider ecology of the farm.

Following rehabilitation, the mine site will be used for farming.

Mitigation Screen Planting

From a number of photomontage views it is evident the mine extension area will lead to an increase in visibility of mining. As a result mixed native screening hedgerows have been included on the plan (note "H") to mitigate potentially adverse effects. A detailed description of these views is provided in section 7.

The mixed native screening hedgerows will be undertaken in two stages. The first will include planting fast growing shelter colonizers. Once these trees reach a height of 1m, larger growing forest trees requiring shelter will be interplanted amongst the stage 1 plants.

The first hedgerow will be located along the northern boundary along Miller Road, to screen views into the northern extension of the mine pit and provide links to existing native planting in the road reserve. Some of this planting has been carried out by the applicant:

On-going recent planting by the applicant along the northern boundary

The second area of mixed native screen planting will be located within the western paddocks to assist screen views of the extension area from elevated areas of Goodwin Road.

6.0 Description of Potential Landscape Effects

Potential landscape effects that may result from the proposed mine extension are defined as ***mining activities contained within (or made visible by) the mine extension area that may lead to adverse effects on visual amenity and landscape character.***

The existing mine is visible from a number of locations surrounding site and is an established part of the landscape character.

It is important to note that proposed mine features (such as the mine pit and overburden mounds) contained within the existing landuse consent area are not deemed an effect as this landuse is already anticipated. If mine features contained within the existing landuse consent area will be more visible by earth removal contained within the extension area then the proposal would lead to a potential effect which is considered as part of this assessment.

Static viewpoints include private residential dwellings or places where people will stay for a long period of time. Transient viewpoints are considered the surrounding public roads where motorists will be passing by for a short period of time.

Mine Pit

The existing pit will be expanded to the north and will involve a cut into the ground of 70 – 80m depth with benches of bare earth and coal seams, truck and heavy machinery access.

Overburden Mounds

Three proposed overburden mounds will be formed along the eastern side of the mine pit of between 20 – 50m in height (as measured from the eastern and largest side of the mounds) and with 1:5 slopes.

From outside of site, during construction, these will initially appear as large areas of earthworks. Once established, shaped and grassed the mounds will appear visually consistent with the rolling farmland surrounding site. The period of time the earth will be exposed could vary, but in general is relatively short lived (2 – 3 years). Therefore, any adverse visual effects from the overburden mounds is relatively short lived and the features will eventually blend in with the surrounding landscape character.

Timeframe of Landscape Effects

The length of time that mining will be carried out is anticipated to be anywhere upwards of 17 years (until 2038) depending on demand for coal. Once the landscaping plan is carried out the site will be returned to a natural state consistent with surrounding rural land.

7.0 Visual Effects and Landscape Character Assessment

Visual Catchment

Visibility of the proposal has been determined through a site analysis, desktop study and preparation of photomontages.

The high points of hills surrounding the property form the extent of visual catchment where the existing mine and extension area will be viewed. This includes the land bordered by Waimumu, Miller, Patterson and Goodwin Roads which generally follow the crest of the hilltops or ridgelines. There are other more distant views of the existing mine at a distance of 3 – 4km north along Waimumu Road, but from here it is barely visible across the rural hilltops as a narrow strip of modified ground in the wider landscape.

The **mine extension area** will be **visible** from the adjacent public roads at the northern and northwestern end of site including:

- Miller Road - northern and northwestern end of site **(views A & B)**
- Miller Road upper section **(view C),** and
- Goodwin Road - northwestern end of site **(view D).**

From the western to southern portion of Goodwin Road bordering site and moving east up the hill towards Waimumu Road and on Paterson Road **(views E – I)** the proposed mine extension area will **not be visible** as it will sit below the elevated existing and proposed overburden mounds contained within the existing consent area in the foreground.

From these viewpoints proposed overburden mounds will be visible but will be contained within the existing landuse consent area and are allowable under the existing consent.

From the eastern portion of Miller Road past Paterson Road the extension will also not be visible behind existing topography and vegetation in the foreground.

From further afield the mine extension area may be visible from high vantage points on the Hokonui Hills. From here the proposal will be inconsequential as it will be a very small feature in the much wider landscape setting.

The only private dwellings where the proposal will potentially be viewed from include:

- Goodwin Road house to the northwest of site on hilltop adjacent to **view D;**
- Goodwin Road house to the southeast of site adjacent to **view G;**

Other rural dwellings in the landscape surrounding the property are screened from site by evergreen shelter belts and topography or are too far away for any change in view to be consequential.

The following is a descriptive assessment of each viewpoint:

Miller Road - north to north-western end of site (views A – B)

Miller Road is a rural access road servicing the surrounding rural properties and farmland. Traffic is infrequent and generally driven by locals on route to Gore and surrounding properties.

To the northern boundary of site along Miller Road is an existing leylandii cypress / gum hedgerow screening views into the existing mine area.

Moving west (views A & B) views to the mine extension area open up through patches of native vegetation located within the road reserve. Within site topography rises up which currently restricts views any further than the immediate farm paddock adjacent to the road.

Mining operations are proposed to be carried out from south to north - the northern end of site will be the last area of the mine to be opened up. When the rising topography adjacent to the road is removed views will open up to the expansive mine pit extending 1km to the south.

This will have a **high** effect on visual amenity and landscape character as the pastoral character will be dramatically changed to industrial. This view will be similar to view F where the existing mine pit can be viewed at close proximity.

To mitigate views of the mine extension a 3m wide mixed native screening hedgerow is proposed within the northern boundary of site to screen views into the mine pit. This planting will link with the existing native plantings within the road reserve.

The plantings will provide a screening effect within 5 years following planting. If the plants are 0.5m high at time of planting, with 0.5m growth per year will potentially be 3m high after 5 years. The planting area is slightly elevated from the road so will block views rapidly.

Once the planting is established after 5 years views into site will be screened from viewpoints A and B, reducing the effect on visual amenity to **very low.**

It is important to note that from here some degree of mining within the existing land-use consent area would already be visible (if the mining operations expanded north into this existing area) therefore a degree of effect from here is already anticipated under the current consent.

Miller Road Upper Section (view C)

Miller Road rises to a crest at the top of the hill at the Goodwin Road intersection. When travelling east from this point the road winds down the hill with elevated views into site. From here earthworks within the extension area will open up views of the west facing slopes of the top portion of the mine pit and overburden mounds at a distance of 1km (red area on photomontage).

From this point a great portion of the existing landuse consent area is already visible extending to the south, so the proposal will only form a small visible increase to an already expansive extent of mine activity.

Proposed native screen planting running along the boundary will be located below the eyeline as the boundary is below road level. At various points the screening effect will increase as the boundary in relation to eye level rises adjacent to the road. Due to the low elevation in relation to eye level the planting will take longer to screen views than lower points along Miller Road.

A proposed Leylandii / Eucalyptus hedgerow located within the western paddocks will screen a portion of the mine extension to the right of view.

The proposal will lead to a minor reduction in the extent of rural pasture and an increase of visible mining and earthworks. Because a significant portion of the view could already be changed under the current consent, there will be a **low** visual effect brought on as part of the small area of extension to the west.

Landscape character will not be significantly changed and therefore effects on landscape character will be **low.**

Goodwin Road north western end of site (view D)

Goodwin Road, similar to Miller Road is a low use rural farm road with infrequent traffic servicing the surrounding rural properties.

The northwestern end of Goodwin Road near the intersection with Miller Road is located on an elevated point of the topography. A dwelling is located on the west side of the road with views towards site.

From here earthworks within the proposed mine extension area will form a small increase in the amount of visible mine and overburden mounds contained within the existing landuse consent area (red area on photomontage).

The extent of existing mine visible from here is a reasonably small slither of land in the overall view – with the proposed overburden mounds contained within the existing consent area extending earthworks and grassed slopes vertically in the view.

The mine extension will lead to a very small increase of visible mine, with the proposed hedgerow located in the western paddocks screening a portion of this area. This will lead to a **low** visual effect with the most visible portion of the mine largely contained within the existing landuse consent area.

Landscape character will not change significantly, with the existing mining landuse increasing by a small amount into the pastoral landscape.

Goodwin Road western end of site (view E)

From here a very small increase of visible mine will be opened up by removal of the existing hedgerow for native gully plantings and earthworks within the extension area. Some degree of earthworks and mining are already anticipated in this view, so the increase will be a small effect on visual amenity and landscape character.

Goodwin Road southern end of site (view F)

For a stretch of 400m at the southern end of site there are open views to the north into the existing mine pit.

The proposed extension will see extraction works move to the north with the southern end of the pit slowly filled with overburden. As the overburden mound increases in height screening views of the mine to the north there will be an improvement to visual amenity from this viewpoint, eventually leading to a **positive** effect on visual amenity and landscape character from this viewpoint.

Goodwin Road to the south-east (view G)

Goodwin Road dips to a low point past the southeastern end of site and then rises to the south east towards the crest of the hill and Waimumu Road. From here when travelling northwest there are elevated views towards site. Viewpoint G is taken at the crest of the hill and is representative of views from the rural dwelling on the south side of the road.

The existing mine pit is visible with the existing overburden mound in the foreground screening the greater part of the mine from view.

The proposal will see the overburden mound increased in size which will continue to screen views of the proposed mine pit located behind. Over time as the mound increases in size and extraction moves north the mine pit will reduce in visibility from this location. Therefore the proposed extension will lead to **nil** or **slightly positive** visual effect from here as the screening influence of the mound is increased.

Waimumu Road (view H)

Waimumu Road runs along the crest of the topography and at various points views are gained northwest towards the site. Similar to view G the proposed overburden mounds will be located in the foreground and thus there will be **nil** visual effect from here.

Paterson Road (view I)

Paterson Road leads from the elevated intersection at Waimumu Road down the hill towards the eastern end of site. Elevated views of site are possible and similar to views G & H the proposed overburden mounds will be located in the foreground screening views of the mine pit, therefore there will be **nil** effect on visual amenity.

Summary of Effects on Visual Amenity and Landscape Character

Based on the visual assessment and photomontages there will be a greater degree of change evident towards the northern end of site within Miller Road and the northwestern end of Goodwin Road.

On-going native screen planting along the northern boundary (as noted in Section 5) will be roughly 3m in height after 5 years and will screen views into site along the lower section of Miller Road. The planting will provide ecological enhancement and links to existing native planting within the road reserve.

It may take several years before views to the northern section of the mine are opened up, therefore it is anticipated planting will be a reasonably high semi-mature canopy closure once views potential views of the mine area opened up from this location.

From the elevated section of Miller Road and Goodwin Road the eastern slopes of the mine pit will be visible. From here the existing landuse consent area is already visible so a precedent exists whereby mining operations are part of the landscape. Therefore, while the mine area will be expanding the increase in extent will not lead to adverse degradation of landscape character and visual amenity because the landuse is already established within the view.

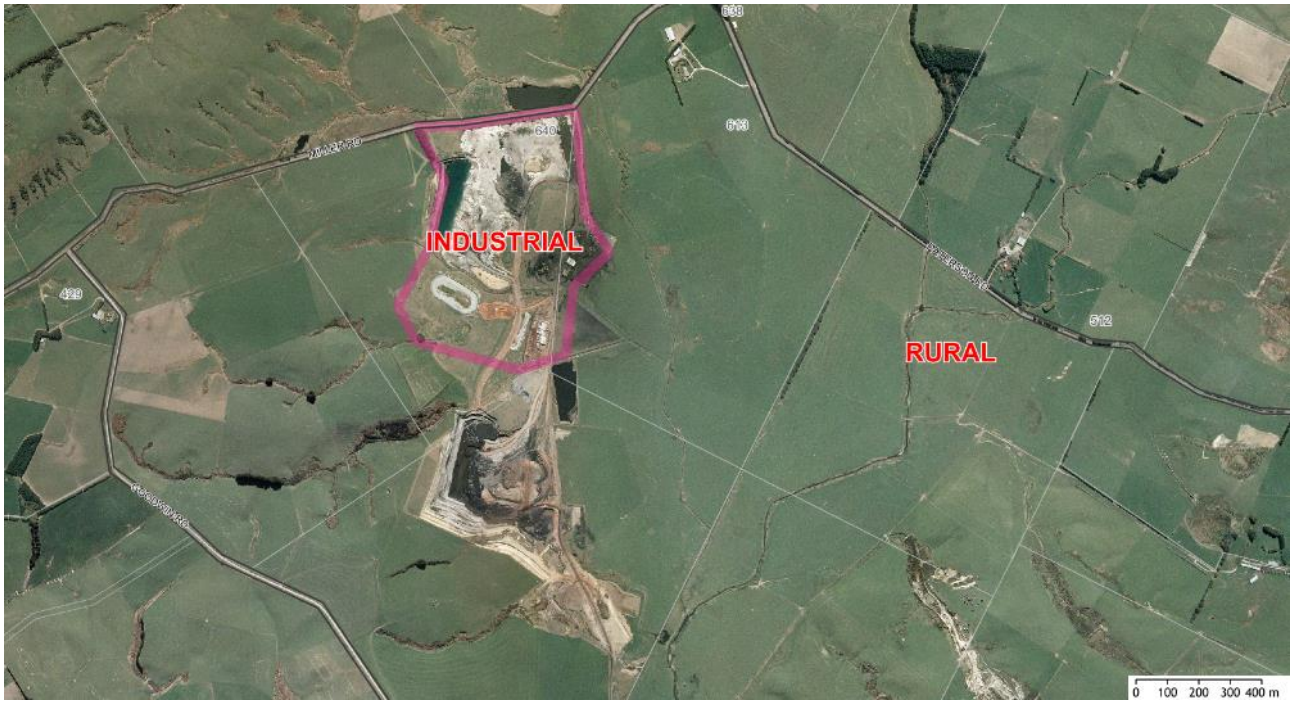
From the south and east of site the proposed overburden mounds contained within the existing landuse consent area will be visible in front of the mine pit leading to minimal or nil change in landscape character, with the mounds appearing a part of the surrounding rolling hills.

In my view the proposal will not lead to adverse cumulative effects on landscape and visual amenity values as the existing activity has already changed the landscape character in the vicinity of site. Furthermore, the activity has an end life where the landscape character will change back to rural once mining is complete and rehabilitation has been carried out.

8.0 Relevant Statutory Context and Assessment

Gore District Plan (GDP)

The site falls within the Rural Zone of the GDP, with the northern portion of the existing mine zoned as Industrial. Mining in the Rural Zone is a non-complying Activity.



GDP Zoning Map

The GDP is largely non-descriptive when it comes to landscape assessment matters for the Rural Zone. Overarching Objectives, listed in Section 3.3 are noted as:

> *(1) Maintain and enhance the amenity values of the various localities within the District whilst respecting the different values and characteristics that exist within each area.*
>
> *(2) Ensure that the effects of land use activities do not adversely affect the quality of the environment and are compatible with the characteristics and amenity values of each locality….*
>
> *(7) Ensure that the effects of earthworks and other land disturbance are avoided, remedied or mitigated.*

Therefore emphasis is placed on amenity values, quality of the environment and effects of earthworks.

The proposal will lead to an increase in extent of an existing land use as defined in the GDP. Visual effects are reasonably well contained within the site and a small area of infrequently used public roads surrounding the site. Proposed planting is intended to mitigate / screen the activity from view where directly visible and ensure visual amenity and scenic values of the rural landscape are retained.

Southland Policy Statement

The Southland Regional Policy Statement 2017 places emphasis on protecting outstanding natural features and landscapes from inappropriate land use and development through identifying Outstanding Natural Landscapes and significant features. It mentions in Chapter 10: Natural Features and Landscapes, Section 10.4:

Establish and maintain provisions in regional plans to: (a) protect outstanding natural features and landscapes from inappropriate land use and development; and (b) manage effects on natural features and landscapes identified as locally distinctive and valued.

The GDP identifies two natural features - the Hokonui Hills and the Mataura River as outstanding landscape features. The proposal and site, while from some viewpoints fall within the viewshed of the Hokonui Hills is not directly related to either of these landscape features. The proposed extension will be largely viewed within a local context and any adverse effects will not spread to include these landscape features.

9.0 Conclusion and Recommendations

The proposal is to expand the existing landuse consent area to include 30Ha of additional land for extraction activities and a further 115ha (approx.) will be used for overburden, temporary stockpiling and site rehabilitation works. The extension will lead to an expansion of the existing mine to the northwest towards the Miller Road boundary and an increase in scale of overburden mounds running along the east of site.

The mine extension will have a high effect on visual amenity from Miller Road where adjacent to the proposed mine pit once extraction occurs to the northern end. With native screen planting in place prior to commencement of mining in this area these effects will be limited to **very low**, with the mining operations being carried out behind a solid wall of native planting running along the boundary.

From higher points on Miller Road and the northeastern end of Goodwin Road there will be a **low** effect on visual amenity and landscape character as the established land use will only be increased by a small amount from what could potentially occur under the current consent.

From southern and eastern viewpoints there will be little change in visual amenity and landscape character for public and private viewpoints, with some possible improvement in the quality of view with an increase in size of overburden mounds screening mining operations to the north.

Any effects of mining operations are anticipated to be for approximately 17 years until the rehabilitation plan is carried out. At this point the site will blend into the rural landscape and lead to a vast improvement in visual amenity. Proposed revegetation areas within gullies and wetlands will have ecological improvements for the wider landscape with improved bird life and water quality.

Recommended Consent Conditions

To ensure effects are kept to a minimum it is recommended that the following is included as conditions of consent:

Mitigation screen planting, noted as H & I on Figure 2: Proposed Rehabilitation Plan, shall be carried out as per the plan and the following specification in the first available planting season following granting of consent:

- *Plants shall be installed at a size of 40 - 50cm;*
- *Planting areas shall be protected from stock with fencing where necessary;*
- *Planting areas shall be prepared by killing weeds and rank grass either by spraying (using appropriate chemicals are per the manufacturer's instructions) or mechanical removal. This is to reduce competition for light and water;*
- *Plants shall be installed so that the base of the plant's stem is level with the adjacent ground and the top layer of rootball soil is lightly covered. All plants are to be firmly placed into the ground. Do not pile excessive soil around the base of plants;*

- *Planting shall be installed with KBC CombiGuards with EcoWool mats or equivalent pest protection system. These shall be installed via the manufacturer's instructions. Guards will protect plants from rabbits, provide shelter and assist with reducing ongoing maintenance;*

- *Three-monthly site inspections of the plants will be undertaken to assess plant maintenance. Weed control around the plants is to be undertaken for a minimum of three years or until canopy closure (i.e. ground cover) has been achieved;*

- *For ongoing control of weeds amongst the new plantings, as identified during the three-monthly site inspections, spot spraying and/or combined with hand and/or mechanical removal of weeds around plantings shall be undertaken when required, i.e. when weeds are starting to suppress the new plantings;*

- *If using chemicals, the manufacturer's instructions shall be followed carefully and recommended safety precautions shall be followed to avoid harming people or contaminating waterways. Spraying shall only be carried out in calm conditions;*

- *Landscape plantings shall be maintained to ensure that at least 90 percent of the planted areas are covered by live plants. Replacement plants shall be established within the next planting season.*

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Green line	Proposed native planting at 10 years growth - approx. 5m high

SITE LANDSCAPE ARCHITECTS

View A: Miller Road northern end of site

New Vale Mine Extension

15.08.23

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Green line	Proposed native planting at 10 years growth - approx. 5m high

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	approx. 100 degrees (panorama image stitch in photoshop no blending);
Date Photo Taken:	15.05.20

Image appears smaller than real view scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);
Green line	Proposed native planting at 10 years growth - approx. 5m high & Existing exotic hedgerow with site (left of view)

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);
Green line	Proposed native planting at 10 years growth - approx. 5m high & Existing exotic hedgerow with site (left of view)

SITE LANDSCAPE ARCHITECTS ^

View C: Miller Road upper section

New Vale Mine Extension

15.08.23

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C

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	approx. 100 degrees (panorama image stitch in photoshop no blending);
Date Photo Taken:	15.05.20

Image appears smaller than real view scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);
Green line	Proposed native planting at 10 years growth - approx. 5m high

SITE LANDSCAPE ARCHITECTS ^

View D1: Goodwin Road north-western end of site (Panormama)

New Vale Mine Extension

15.08.23

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D1

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);
Green line	Proposed native planting at 10 years growth - approx. 5m high

SITE LANDSCAPE ARCHITECTS ^

View D: Goodwin Road north-western end of site

New Vale Mine Extension

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D

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	approx. 100 degrees (panorama image stitch in photoshop no blending);
Date Photo Taken:	15.05.20

Image appears smaller than real view scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level)

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Red	Approximate area where views of mine will be exposed by removal of topography within **mine extension area;**
Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);

SITE LANDSCAPE ARCHITECTS

View E: Goodwin Road western end of site

New Vale Mine Extension

15.08.23

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E

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);

SITE LANDSCAPE ARCHITECTS ^

View G: Goodwin Road to the south-east

New Vale Mine Extension

15.08.23

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);

Photo Notes:

Camera:	Iphone 7;
Focal Length:	28mm
Horizontal FOV:	64 degrees;
Date Photo Taken:	15.05.20

Hold 40cm from A3 page to replcate actual viewing scale

Key:

Orange	Proposed overburden mounds (above existing ground level) & mine side slopes (below existing ground level);

Appendix E: Wetland Delineation Report

New Vale Mine Wetland Delineation and Ecological Assessment

New Vale/Greenbriar Limited

January 2024

Arrow Lane Arrowtown 9302
www.e3scientific.co.nz

New Vale Mine
Wetland Delineation and Ecological Assessment

Document Status

Version	Purpose of Document	Prepared By	Reviewer	Review Date
0.1	Draft for internal review	LSW	GD	18 May 2023
1.0	Draft for client review	LSW	GD	22 May 2023
2.0	FINAL	LSW	GD	10 July 2023
3.0	FINAL	LSW	GD	18 January 2024

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1 Introduction

1.1 Overview

Greenbriar Limited commissioned e3Scientific to investigate a potential wetland located near a planned mine extension development. An e3Scientific hydrologist and ecologist conducted a site visit over two days (7 and 8 March 2023). Field visits included detailed vegetation, soils, and hydrology investigations following prescribed wetland delineation protocols to determine if there is a natural inland wetland in the area and if so to then delineate its boundary. The following report provides documentation of this investigation and determination and mapping of the five natural inland wetlands totalling 48,698 m^2. It was noted that additional wetlands were located within the study area. However, all other areas are either within the current consented mining extent or not within proposed areas of disturbance.

The property extends beyond the focus of this investigation. The study area encompasses the entire SL140/191 property (see Figure 1). However, the focus of this investigation is primarily associated with the extension to the west (see Figure 2).

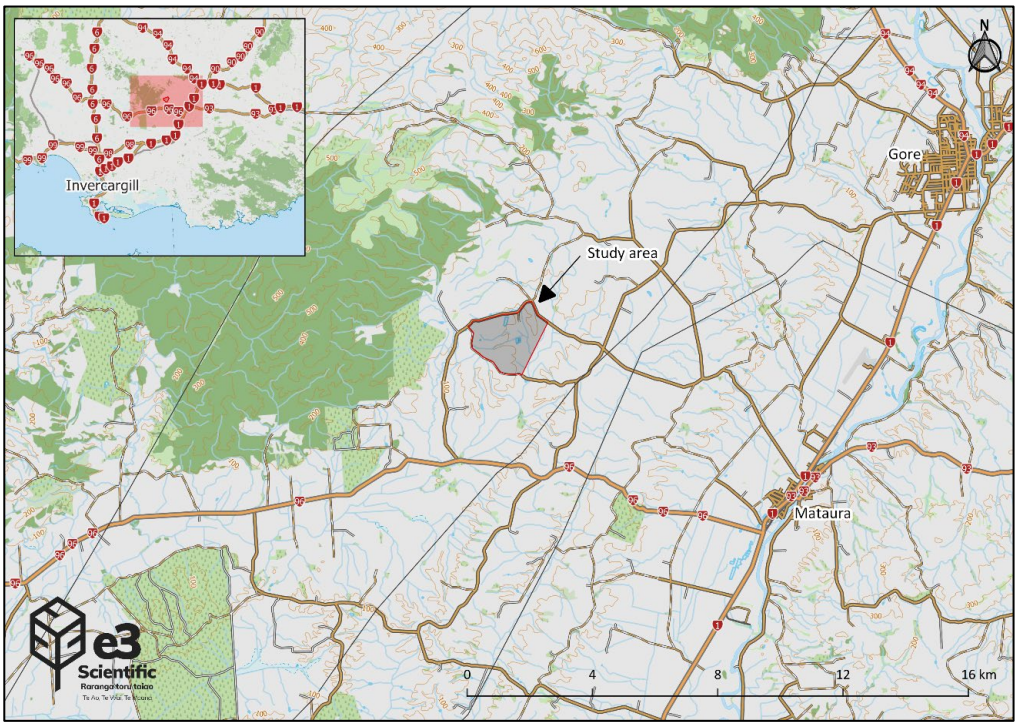

Figure 1: New Vale study area.

1.2 Description of Activity

Greenbriar Ltd currently have consent to operate a mine for purposes of mining/prospecting/exploration within 1,775,000 m^2 (177.5 ha) of SL140/191. Greenbriar propose to extend the excavation extent by 305,609 m^2 (30.56 ha). Vegetation clearance and earthworks will be required within all areas associated with the extension. The activity would result in the disturbance of natural inland wetlands and is therefore subject to the regulations of the NES-F 2020. The total extent of wetland disturbance is calculated to be approximately 9,159 m^2.

Figure 2: Proposed mine extension.

Mitigation and environmental offsetting are proposed by Greenbriar to restore and enhance existing, degraded wetlands onsite resulting in an increase in total functional wetland habitat and indigenous vegetation cover within the study area (see section 6 for further detail).

1.3 Scope of the Report

The ecological assessment is structured as follows:

- Section 2: Wetland/Stream Policies and Regulations;
- Section 3: Site Conditions;
- Section 4: Wetland assessment and delineation;
- Section 5: Existing Environment;
- Section 6: Proposed Offsetting;
- Section 7: Ecological and Hydrological Outcomes;
- Section 8: Summary and Recommendations.

1.4 Limitations

e3Scientific Limited (e3s) performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental science profession. No warranties, express or implied, are made. The confidence in the findings is limited by the Scope of Work, and limited data due to the singular site visit at one time of year. A full range of biota that are present at this site may not have been seen or recorded, however, desktop research was utilised to aid the assessment.

The results of this assessment are based upon site inspections conducted by e3s personnel, and information provided in scientific literature. All conclusions and recommendations regarding the properties are the professional opinions of e3s personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, e3s assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside e3s, or developments resulting from situations outside the scope of this project.

2 Wetland/Stream Policies and Regulations

2.1 Wetland Policies

Wetlands are defined in the Resource Management Act (1991): *"Wetland includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions." (RMA 1991).*

The National Policy Statement – Freshwater Management (NPS-FM 2020) Policy 6 states: "There is no further loss of extent of natural inland wetlands, their values are protected, and their restoration is promoted." The intent of Policy 6 is that the extent of all individual natural inland wetlands is maintained – regardless of their ecological state or size. This is to prevent fragmentation of remaining wetland habitat. Therefore, there is no minimum size for a natural wetland. The NPS-FM (2020) and National Environmental Standards from Freshwater (NES-F 2020) apply to areas of any size that meet the 'natural wetland' and 'natural inland wetland' definitions (respectively). This is because damage or loss of many small wetlands add up to a large net loss.

Natural wetlands include degraded wetlands. The NPS-FM definition of 'natural wetland' applies regardless of wetland condition. Both native/endemic and exotic wetland species are considered when assessing a wetland. However, if an area has been and is currently in active pasture, it can be excluded from wetlands regulations. An updated MfE Pasture exclusion assessment methodology was published in December 2022. This document clearly states *"The purpose of the NPS-FM pasture exclusion clause is to support the continuing use of pasture for grazing purposes. The exclusion is not targeted at pasture being converted for urban development or for other land uses. It does not apply to wetlands in other areas of grassland that are not grazed, (such as in parklands, golf courses, landscaped areas and areas of farmland not used for grazing purposes)."* Therefore, the pasture exclusion does not apply if the wetland in question was not previously in pasture nor if its use is proposed to change from pasture to some other land use.

2.2 Intermittent and Perennial Stream Policies (Rivers under the RMA)

According to the Essential Freshwater Avoiding Loss of Rivers Factsheet (2020) and the Essential Freshwater Milestones (2021):

> *"From 3 September 2020, regional plans need to be amended to include an overarching policy to avoid the loss of river extent and values, unless there is a functional need for the activity in that location and its effects will be managed using the effects management hierarchy. A "river" under the NPS-FM 2020 is the same as is defined in the RMA: "a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; but does not include any artificial watercourse".*
>
> *"Resource consents for activities which result in the loss of extent or values of a river should only be granted if the exception in the regional plan policy is met. This requires that the regional council is satisfied that there is a functional need for the reclamation in that location, and the effects are managed by applying the effects management hierarchy." Note that the NPS-FM 2020 and NES also require consideration of values other than indigenous biodiversity, such as ecosystem health, hydrological functioning, mahinga kai and other Māori freshwater values, and amenity values."*

2.3 Effects Management Hierarchy

The NPS-FM 2020 introduces the effects management hierarchy as the mechanism to avoid the loss of wetland and river extent and values (Figure 3). It does so by dictating that from 3 September 2020, regional plans need to be amended to include an overarching policy to avoid the loss of river extent, values, and natural inland wetlands unless there is a functional need for the activity in that location and its effects will be managed using the effects management hierarchy.

3.21 Definitions relating to wetlands and rivers

(1) In clauses 3.21 to 3.24:

effects management hierarchy, in relation to natural inland wetlands and rivers, means an approach to managing the adverse effects of an activity on the extent or values of a wetland or river (including cumulative effects and loss of potential value) that requires that:

(a) adverse effects are avoided where practicable; and

(b) where adverse effects cannot be avoided, they are minimised where practicable; and

(c) where adverse effects cannot be minimised, they are remedied where practicable; and

(d) where more than minor residual adverse effects cannot be avoided, minimised, or remedied, aquatic offsetting is provided where possible; and

(e) if aquatic offsetting of more than minor residual adverse effects is not possible, aquatic compensation is provided; and

(f) if aquatic compensation is not appropriate, the activity itself is avoided

functional need means the need for a proposal or activity to traverse, locate or operate in a particular environment because the activity can only occur in that environment

Figure 3: NPS-FM 2020 Effects Management Hierarchy that is foundational for wetlands and stream protection.

2.4 Wetland Regulations

2.4.1 NES-F 2020

The National Environmental Standards for Freshwater (NES-F) 2020 wetland rules with regard to extraction of minerals and ancillary activities are outlined in Figure 4, for activities within or within 10m and 100m of natural wetlands.

Extraction of minerals and ancillary activities

Heading: inserted, on 5 January 2023, by regulation 20 of the Resource Management (National Environmental Standards for Freshwater) Amendment Regulations (No 2) 2022 (SL 2022/320).

45D Discretionary activities

(1) Vegetation clearance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of the extraction of minerals and ancillary activities.

(2) Earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of the extraction of minerals and ancillary activities.

(3) Earthworks or land disturbance outside a 10 m, but within a 100 m, setback from a natural inland wetland is a discretionary activity if it—

- (a) is for the purpose of the extraction of minerals and ancillary activities; and
- (b) results, or is likely to result, in the complete or partial drainage of all or part of the wetland.

(4) The taking, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if—

- (a) the activity is for the purpose of the extraction of minerals and ancillary activities; and
- (b) there is a hydrological connection between the taking, use, damming, or diversion and the wetland; and
- (c) the taking, use, damming, or diversion will change, or is likely to change, the water level range or hydrological function of the wetland.

(5) The discharge of water into water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if—

- (a) the discharge is for the purpose of the extraction of minerals and ancillary activities; and
- (b) there is a hydrological connection between the discharge and the wetland; and
- (c) the discharge will enter the wetland; and
- (d) the discharge will change, or is likely to change, the water level range or hydrological function of the wetland.

(6) A resource consent for a discretionary activity under this regulation must not be granted unless the consent authority has first—

- (a) satisfied itself that the extraction of the minerals will provide significant national or regional benefits; and
- (b) satisfied itself that there is a functional need for the extraction of minerals and ancillary activities in that location; and
- (c) applied the effects management hierarchy.

(7) In relation to the extraction of coal and ancillary activities, no person may apply for a consent to carry out any activity under subclauses (1) to (5) unless the activity is for the purpose of the extraction of coal or ancillary activities as part of operating or extending a coal mine that was lawfully established before 5 January 2023.

(8) At the close of 31 December 2030, the extraction of coal (other than coking coal) is excluded from the purposes for which consent may be obtained under this regulation.

Regulation 45D: inserted, on 5 January 2023, by regulation 20 of the Resource Management (National Environmental Standards for Freshwater) Amendment Regulations (No 2) 2022 (SL 2022/320).

Figure 4: National Environmental Standards for Freshwater 2020, regulation 45D.

The NPS-FM 2020 and the NES-F 2020 are interpreted and applied in the context of Te Mana o Te Wai and together these freshwater reforms partially comprise the Essential Freshwater package that forms part of a new national direction to protect and improve our rivers, streams, lakes and wetlands. The Essential Freshwater package aims to: stop further degradation of our freshwater, start making immediate improvements so water quality improves within five years, and reverse past damage to bring our waterways and ecosystems to a healthy state within a generation.

3 Site Conditions

3.1 Climatology

NIWA's study of data from nearby Gore weather station (Macara, 2015) provides the following climate statistics for the site:

- 945 mm average annual rainfall; the wettest months are during summer-autumn;
- The average soil moisture deficit is 112 mm per year, and estimated runoff losses are 238 mm per year. The average annual potential evaporation (PET) is 768 mm per year;
- The site water balance indicates that this is almost equally likely to be an energy or water limited ecosystem on an annual basis, however over shorter durations it is expected to shift with water limitation in summer and likely energy limitation in winter;
- 8.7 °C is the average daily temperature, with 32.9 °C the maximum and –6.5 °C the minimum recorded.

This metrological data indicates that uplands are likely to be dry and water limited in the summer while the topographic redistribution of water would likely lead to locally wet areas in convergent areas, hollows, gullies, and along streams that can be further supported by geologic water flow in fractures and bedding planes. These wet areas are expected to be perennial expand and contract seasonally and with precipitation events and would likely support natural inland wetland development and persistence.

3.2 Site Topography and Geology

The study area exhibits moderate relief with ridges approximately 25 m of local elevation range from valleys to ridges. The local site crosses two geological units described in Table 1 however this difference was not readily observed in the local sampling area.

Table 1. Metadata query from GNS Science's QMAP database (GNS Science, Compiled by D. Heron, 2019).

Simple name	Description	Age
Gore Lignite Measures sandstone	Sandstone with lignite and carbonaceous mudstone; mudstone; claystone and minor conglomerate.	14-27 million years
OIS1 (Holocene) river deposits	Unconsolidated gravel, sand, silt, clay, and minor peat of modern to postglacial flood plains, may be terraced.	0-0.014 million years

3.3 Site Mapped Soils

This sites soil belongs to the Brown soil order of the New Zealand soil classification. Brown Soils have a brown or yellow-brown subsoil below a dark grey-brown topsoil. The brown colour is caused by thin coatings of iron oxides weathered from the parent material. It is formed in a blanket deposit of silt sized windblown materials, from hard sandstone parent material.

The topsoil typically has silt texture and is stoneless. The subsoil has dominantly silt textures, with gravel content of less than 3%. The plant rooting depth extends beyond 1m.

Generally, the soil is imperfectly drained with low vulnerability of water logging in non-irrigated conditions and has high soil water holding capacity. Inherently these soils have a moderate structural vulnerability and a low N leaching potential, which should be accounted for when making land management decisions. (Report generated: 27-Apr-2023 from https://smap.landcareresearch.co.nz)

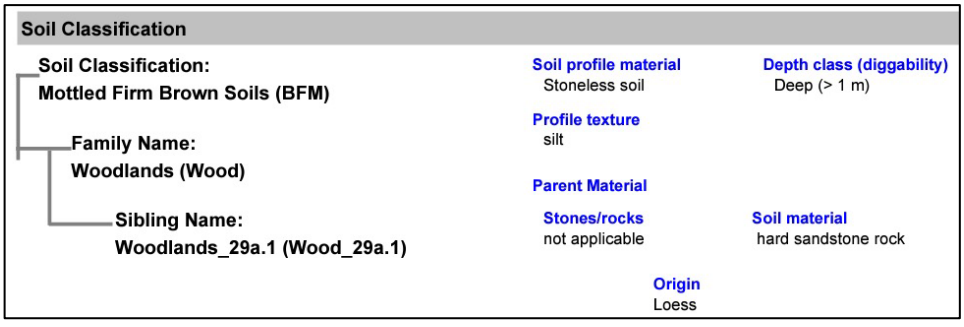

Figure 5: Site soils description from S map (https://smap.landcareresearch.co.nz).

3.4 Site Hydrologic Overview

The catchments drained by the perennial, intermittent, and ephemeral streams in the area are characterised by generally gentle convex hillslope that grade into concave converged hollows associated with the stream network. The hydrology of the streams and associated wetlands is likely comprised of two dominant flow systems with relatively shallow runoff likely superimposed on a local groundwater flow system.

Imperfectly drained (drainage class) shallow soils comprised of moderate permeability soils over slow permeability layers at 50-70 cm and slowest horizon permeability of <4mm/hr m (https://smap.landcareresearch.co.nz) would promote perched lateral throughflow during and following precipitation events. This subsurface runoff into the well-defined riparian wetland and stream drainage network would be likely supported by slower soil water drainage in dry times and sustained groundwater inflows throughout the year. This hydrologic regime would likely support sustained high groundwater levels in riparian wetlands across each of the mapped drainages.

4 Wetland assessment and delineation

An e3Scientific hydrologist/biogeoscientist and an ecologist completed a detailed wetland assessment and delineation in the area on the 7 and 8 March, 2023. The assessment followed the MfE 2020 and 2021 wetland delineation protocols that give a robust method for delineating wetlands based on the United States delineation system in place there since ~1987. This protocol uses three criteria for identifying and delineating wetlands: vegetation, soils, and hydrology. The vegetation and soils components have been adapted to New Zealand conditions and the hydrological component was completed in 2021.

Soils, vegetation, and hydrologic indicators were examined continually along the borders between each wetland and its adjacent upland areas. The rubrics (New Zealand Wetland Delineation Data Forms) were completed in depth at the upland and wetland sampling locations in each wetland once variability across each tributary site was established and characteristic areas could be selected (Figure 6). This resulted in two - five sites being documented at each wetland depending on the size and complexity of the wetland. The site was also assessed following the MfE Pasture exclusion assessment methodology published in December 2022. This methodology clearly states "*The purpose of the NPS-FM pasture exclusion clause is to support the continuing use of pasture for grazing purposes. The exclusion is not targeted at pasture being converted for urban development or for other land uses. It does not apply to wetlands in other areas of grassland that are not grazed, (such as in parklands, golf courses, landscaped areas and areas of farmland not used for grazing purposes)*."

e3Scientific walked the entire area and performed preliminary soils, hydrology and vegetation assessment across each potential wetland before selecting characteristic locations for detailed investigation and documentation. The general site layout and sampling locations are provided in Figure 6. e3s personnel then walked and GPS mapped the boundary of each wetland based on ongoing vegetation, soils, and hydrology indicators resulting in five wetland polygons outlined in Figure 6.

Figure 6: Site layout.

Key components of the analyses in this scope of work included:

1. Analysis of remote sensing/photogrammetry for the property under assessment:
    a. Ascertaining existing vegetation associated with likely perennial streams, intermittent streams, critical source areas, and wetlands;
    b. Examining the site history with respect to water bodies and potential wetlands via available historic remote sensing data.
2. Assessment of the current, consented, and proposed mining areas via GIS analysis and mapping.
3. Field based wetland assessment and delineation:
    a. Field reconnaissance of upland and potential wetland areas associated with the consented and proposed mining areas including upstream areas;
    b. Detailed sampling of soils, vegetation, and hydrology in 2-5 characteristic sampling locations across each of 5 delineated and mapped wetlands;
    c. Completion of New Zealand Wetland Delineation Forms for each sampling site (Appendix C) following the prescribed rubrics and methodologies;

d. The NPS-FM wetland assessment flowchart (Appendix D) was followed to establish whether the location is classified as a natural inland wetland.

The assessment of wetlands presence/absence and their delineation was accomplished with both desktop and field investigations (based on soils, vegetation, and hydrology).

4.1 Northwest Tributary

4.1.1 Upland assessment

Two areas of variable soil, hydrological and vegetation composition were noted within the northwest tributary's upland areas. Two sampling sites were subsequently selected for delineation purposes. Although additional species were present elsewhere, the quadrats were selected as representative of the wider wetland community.

The first upland sampling site (noted with NWT-U1 on Figure 7) was located on high gradient northeast aspect within an actively grazed area of exotic pasture. The second upland sampling point (noted with NWT-U2 on Figure 7) was of predominantly indigenous vegetation composition on a south facing slope directly adjacent the wetland. The area represents an intermediate upland zone whereby water retention is visibly higher than the grazed upland area however, still lower than that of the wetlands. Due to the dominant species being copper tussock (*Chinochloa rubra subps. cuprea*), the vegetation passed the dominance test and was within 0.17 of the passing thresholds of the prevalence test. This is only as a result of copper tussock being a facultative species (equally likely to occur in wetlands or non-wetlands) and comprising 85% of the total vegetation cover. Following the wetland delineation protocols flow chart of steps for hydrophytic (wetland) vegetation determination (MfE, 2020) the area was assessed as containing uncertain hydrophytic vegetation.

4.1.2 Wetland assessment

Due to the size of the tributary and variation in both vegetation cover slope and receiving environment, three sampling locations were selected for delineation purposes as characteristic of the larger wet areas. The first wetland sampling site (noted as NWT-W1 on Figure 7) is situated approximately 100 m upstream of the north and south branch confluence with dominant vegetation being *Juncus effusus* and kneed foxtail (*Alopecurus geniculatus*).

The second wetland sampling site (noted as NWT-W2 on Figure 7) is located adjacent to the main channel of a low-lying depression. Vegetation was dominated by the exotic creeping bent (*Agrostis stolonifera*) and kneed foxtail.

The third wetland sampling site (noted as NWT-W3 on Figure 7) is situated at the toe of the slope on the edge of the wet extent. Vegetation consisted primarily of rautahi (*Carex coriacea*) with scattered tussock and herbaceous weeds.

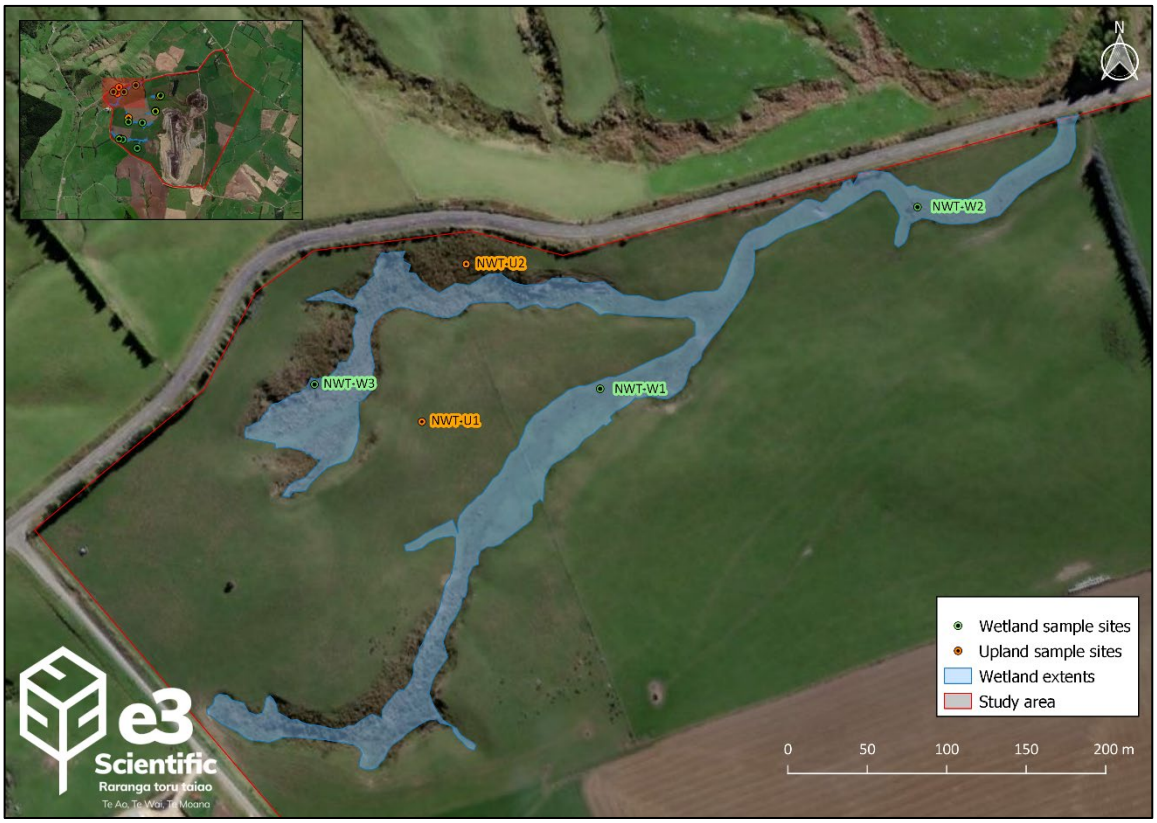

Figure 7: Northwest tributary wetland extent and sampling locations.

4.2 North Tributary

4.2.1 Upland assessment

All areas adjacent the tributary were of similar soil, hydrological and vegetation composition and as such only one sampling site was selected for delineation purposes. The upland sampling site (noted with NT-U on Figure 8) was located on an actively grazed north facing slope approximately 10 m from the boundary of the delineated wetland.

4.2.2 Wetland assessment

The wet areas adjacent to the tributary were of similar soil, hydrological and vegetation composition. Although additional species were present elsewhere, the quadrat was selected as characteristic of the wider wetland community. Therefore, only one sampling site was selected for delineation purposes.

The wetland sampling site (noted with NT-W on Figure 8) was located within copper tussock grassland and pukio (*Carex secta*) sedgeland near the central channel at the base of the lightly sloping gulley. Although the sample location did not pass the rapid vegetation test (due to the high abundance of facultative species), the area passed both the dominance and prevalence tests.

Figure 8: North tributary wetland extent and sampling locations.

4.3 Central Tributary

Two branches of the central tributary are present, with their confluence downstream of the currently consented mining boundary. Although the areas do not join within the investigation area, they are noted to be part of the same continuous system. For the purpose of this assessment the two areas have been assessed separately.

4.3.1 North branch upland assessment

All areas adjacent the north branch of the central tributary were of similar soil, hydrological and vegetation composition therefore only one sampling site has been selected for assessment and delineation purposes. The north branch upland

sampling site (noted with CT-U1 on Figure 9) was located on the southern aspect of a raised spur within the fenced extent of the tributary.

4.3.2 North branch wetland assessment

The wet area of the central tributary's north branch was of similar soil, hydrological and vegetation composition. Although additional species were present elsewhere the quadrat was selected as representative of the wider wetland community. As such, only one sampling site was selected for delineation purposes. The north branch wetland sampling site (noted with CT-W1 on Figure 9) was located within a small basin containing pukio and rautahi sedgeland adjacent the central channel.

4.3.3 South branch upland assessment

All areas adjacent the north branch of the central tributary were of similar soil, hydrological and vegetation composition and as such only one sampling site was selected for delineation purposes. The south branch upland sampling site (noted with CT-U2 on Figure 9) is located on an actively grazed north facing slope approximately 30 m from the nearest boundary of the delineated wetland.

4.3.4 South branch wetland assessment

Two areas of variable soil, hydrological and vegetation composition were noted within the central tributary's south branch. Two sampling sites were subsequently selected for delineation purposes. Although additional species were present elsewhere, the quadrats were selected as representative of the wider wetland community. The first south branch wetland sampling site (noted as CT-W2 on Figure 9) was located within the main channel at the downstream end of the stream branch. Vegetation consisted primarily of pukio and rautahi sedgeland. The second south branch wetland sampling site (noted as CT-W3 on Figure 9) was located within the head of a low order tributary branch. Vegetation consisted primarily of rautahi sedgeland with scattered Edgar's rush (*Juncus edgariae*).

Figure 9: Central tributary wetland extent and sampling locations.

4.4 South Tributary

4.4.1 Upland assessment

All areas adjacent the South tributary were of similar soil, hydrological and vegetation composition and as such only one sampling site has been selected for delineation purposes. The upland sampling site (noted with ST-U on Figure 10) is located on an actively grazed southwest aspect approximately 10 m from the nearest boundary of the delineated wetland.

4.4.2 Wetland assessment

Three areas of variable soil, hydrological and vegetation composition were noted within the central tributary's south branch. Three sampling sites were subsequently selected for delineation purposes. Although additional species were present elsewhere, the quadrats were selected as representative of the wider wetland community.

The first south tributary wetland sampling site (noted as ST-W1 on Figure 10) was located directly adjacent the main channel at the upstream end of the tributary. Vegetation consisted primarily of pukio and rautahi sedgeland with scattered

lotus (*Lotus pedunculatus*) present. The second south tributary wetland sampling site (noted as ST-W2 on Figure 10) was located adjacent the main channel near the central point of the tributary. Vegetation varied significantly compared to other sites within the investigation area being dominated by toetoe (*Austroderia richardii*) and lotus, grading into a denser shrubland vegetation cover.

The third south tributary wetland sampling site (noted as ST-W3 on Figure 10) was located within an actively grazed critical sources area south of the main tributary channel. Vegetation consisted of exotic grassland species. Of the two dominant species present one is unclassified (*Lolium pratense*) under the New Zealand wetland plant indicator status ratings 2021 (Landcare Research, 2021). As the unclassified species accounts for 70% of the total quadrat coverage the vegetation assessment is uncertain when using the New Zealand Wetland Delineation Data Forms. This being said the national wetland plant list (U.S Army Corps of Engineers, 2021) developed in the USA (from which the NZ system is based off) classifies the species as facultative upland (FACU) resulting in a failure of both the dominance and prevalence tests.

Figure 10: South tributary wetland extent and sampling locations.

4.5 Wetland delineation

Delineation of the wetlands was based on reconnaissance of each entire wet landscape feature and many dozens of 30-40 cm soil cores, observations of wetland hydrology (soil saturation and drainage patterns), and observation of vegetation species. This was further supported by in depth analysis at the 16 sampling locations described above. The results of which are detailed in Table 2 below. Based on these findings, the perimeter that demarcated the separation between uplands and each wetland was walked and mapped with a handheld GPS. This boundary was corroborated with aerial photos. The wetland boundaries are included in Figure 6. The total area of wetlands lying outside the existing consent extent is 48,698 m^2. These riparian wetlands do not appear to rely on overland flow of water across the landscape, rather they appear to be predominantly supported by shallow subsurface throughflow and deeper groundwater from the upgradient catchment.

Based on field reconnaissance and desktop analyses, we observed intermittent streams and perennial streams associated with the mapped wetlands. In fact, some parts of both the central and south tributaries stream extents are visible on the LINZ Topographic Base map (Figure 1).

Table 2: Summary of wetland delineation sites.

Tributary	Location	Hydrological Criteria (Pass/Fail)	Hydric soil Criteria (Pass/Fail)	Hydrophytic Vegetation Criteria		Remarks	NES-F Wetland Status
				Dominance test	Prevalence test		
Northwest Tributary	NWT-U1	Fail	Fail	Fail	Fail	Dominated by FACU and UPL species.	Not a wetland
	NWT-U2	Fail	Fail	Pass	Fail	Dominated by FAC species causing uncertainty in vegetation assessments.	Not a Wetland
	NWT-W1	Pass	Pass	Pass	Pass	Dominated by FACW species.	Natural Inland Wetland
	NWT-W2	Pass	Pass	Pass	Pass	Dominated by FACW species.	Natural Inland Wetland
	NWT-W3	Pass	Pass	Pass	Pass	Dominated by FACW species.	Natural Inland Wetland
North Tributary	NT-U	Fail	Fail	Fail	Fail	Dominated by FACU species.	Not a wetland
	NT-W	Pass	Pass	Pass	Pass	Dominated by FAC and OBL species.	Natural Inland Wetland
Central Tributary (North Branch)	CT-U1	Fail	Fail	Fail	Fail	Dominated by FACU species.	Not a wetland
	CT-W1	Pass	Pass	Pass	Pass	Dominated by OBL species.	Natural Inland Wetland

Central Tributary (South Branch)	CT-U2	Fail	Fail	Fail	Fail	Dominated by FACU and UPL species.	Not a wetland
	CT-W2	Pass	Pass	Pass	Pass	Dominated by FACW and OBL species.	Natural Inland Wetland
	CT-W3	Pass	Pass	Pass	Pass	Dominated by FACW and OBL species.	Natural Inland Wetland
South Tributary	ST-U	Fail	Fail	Fail	Fail	Dominated by FACU species.	Not a wetland
	ST-W1	Pass	Pass	Pass	Pass	Dominated by FAC, FACW and OBL species.	Natural Inland Wetland
	ST-W2	Pass	Pass	Pass	Pass	Dominated by FAC species.	Natural Inland Wetland
	ST-W3	Pass	Pass	Uncertain/fail	Uncertain/fail	Species comprising 70% of total vegetation cover is unclassified (under NZ system) and FACU (under U.S system).	Wetland in Pasture

4.6 Assessment of the Wetland Area with Respect to NES-F 2020

Approximately 9,159 m^2 of the mapped wetlands are proposed to be removed entirely as part of mining expansion, with the remaining 39,539 m^2 to be retained. As a result, resource consent is required under the Discretionary activity clauses in NES-F 2020 Regulation 45D (see Figure 4). The proposed mining would remove wetland areas in the downstream sections of the mapped riparian wetlands. The degree to which mining activities impact upstream unmined wetlands will depend on the degree of upstream groundwater dewatering that occurs and part of mining operations. Because the upstream wetlands appear to rely on shallow throughflow and relatively shallow groundwater from the upgradient catchment, it is unlikely that the downstream mining extension into the mapped wetlands will have a significant negative impact on the remaining upstream wetlands. Conditions of consent are recommended to monitor groundwater levels so that adverse effects on upstream wetlands can be mitigated.

Greenbriar propose to stockpile extracted topsoil and subsoil within the western side of the property (see Appendix B for location) to later be used to instate the lake at the end of mine life. To limit the sediment run off and environmental effects of downstream wetlands and freshwater values as well as conserve soil cohesion the stockpile are proposed to be located within close proximity to the final location. The stockpiles are proposed to be outside 10 m but within 100 m of the delineated natural inland wetlands and are therefore subject to the regulation of the NES-F. Provided a sediment and erosion plan is implemented and the proposed stockpiling does not significantly alter the site topography and/or flow paths the proposal is unlikely to adversely affect the wetlands.

Expansion of the Engineered landform (ELF) within the southeast of the property is also proposed. This is all proposed atop previously mined material (see Appendix B for location). The areas is greater than 10m away but within 100 m of areas of highly likely to be characterised as natural inland wetlands. The proposed ELF is highly unlikely to affect the hydrological of any onsite wetlands, given the historic disturbance of the area, no change to the flow direction and catchment area, and the presence of farm ditches buffering the wetlands on the western edge. This being said, a sediment and erosion control plan will be required for the area.

5 Existing Environment

In conjunction with the wetland delineation e3s have undertaken an environmental characterization assessment of the present values within the areas of proposed vegetation clearance to ascertain the impact the proposal will have on the wetland habitat present.

5.1 Environmental Context

The study area is situated within the Gore ecological district of the Gore ecological region. Pre-human vegetation cover would likely have consisted of copper tussock grassland with localised podocarp and podocarp-hardwood forest (McEwan 1987). Canopy species within intermediate and upland areas would have consisted of kahikatea (*Dacrycarpus dacrydioides*), rimu (*Dacrydium cupressinum*), matai (*Prumnopitys taxifolia*), Southern rata (*Metrosiderous umbellata*) and Hall's/thin bark totara (*Podocarpus laetus*).

This is supported by findings of remanent vegetation species within the mapped wetlands of the western study area. The larger open areas containing higher water levels would likely have supported sedgelands grading into copper tussock grassland in locations of lower moisture retention. These areas would likely have occurred in clearings in forest habitat and would have contained extensive shrubland intermixed within locally drier areas. The top of the tributary streams would have supported shrubland and forest species as evident by many shade tolerant species that generally comprise a lower canopy or ground cover within podocarp or beech dominant forests.

5.1.1 Consented ecological enhancement to date

Ecological restoration has already been undertaken within the study area. This restoration is a requirement of alternative consent conditions and are existing features of the study area. Mitigation under active implementation includes riparian planting within the western side of the property. This planting has been undertaken as per the requirements of the current *Galaxias gollumoides* Management Plan. Areas include the central and southern tributary where habitat for the *Galaxias gollumoides* is present.

As per New Vale/Greenbriar's AEE, all the end of mine life waterways are part of an ecological enhancement programme with riparian margins progressively planted out. The eastern wetlands restoration will adjoin a portion of farm stream and will expand the connected area to the western wetlands via these riparian corridors.

5.2 Ecological Values

5.2.1 Vegetation

Pastural land

The majority of the land associated with the proposed mine extension is located within exotic pasture grass that is currently grazed. Species composition includes sweet vernal, cocksfoot, common daisy, red clover, white clover, brown top, meadow fescue and crested dogtail. No native species are present within the community.

Northwest tributary

The northwest tributary is not proposed to be disturbed with regard to the mine expansion, and as such a full species list has not been provided.

The vegetation cover of the north branch is dominated by predominantly copper tussock grassland at the head of the feature particularly on the south facing slopes with patches of soft rush (*Juncus effusus*), *Juncus edgariae* and *Carex coriacea* in the central channel and north facing banks. Also scattered are the exotic lotus and native *Coprosma dumosa*, *Coprosma propinqua*, and *Parsonsia capsularis*. Intermixed in open areas and upland sites are brown top (*Agrostis capillaris*), cocksfoot (*Dactylis glomerata*) and catsear (*Hypochaeris radicata*). The head of the south branch supports scattered shrubland species including wineberry (*Aristotelia serrata*), *Coprosma propinqua*, *Coprosma dumosa*, with an understory of young mountain astelia (*Astelia nervosa*), tree fuchsia (*Fuchsia excorticata*) Gonocarpus aggregatus, Hypolepis millefolium, and *Blechnum minus* grading into toetoe, pukio and harakeke (*Phormium tenax*) nearer the central channel.


Plate 1: Left – North branch tussock grassland. Right – South branch shrubland .

The remaining wetland habitat is scattered with patches of *Juncus edgariae*, sharp spike sedge (*Eleocharis acuta*), pukio and rautahi intermixed with the exotic *Glyceria notata*, creeping buttercup (*Ranunculus repens*), creeping bent, lotus and kneed foxtail becoming more dominant in the low reaches of the tributary.


Plate 2: Main channel exotic grassland and native sedgeland/rushland.

North tributary

The north tributary is planned to be completely removed. The total area of wetland to be lost is approximately 3,266 m^2. The tributary is relatively small in comparison to other tributaries and is of a homogenous vegetation community. Vegetation present is predominantly tussock grassland and sedgeland, grading out to exotic pasture as slope and distance increases away from the central channel. Species present include, *Chinochloa rubra subsp. cuprea*, *Juncus edgariae*, *Carex secta*, *Carex coriacea*, prickly shield fern (*Polystichum vestitum*), *Blechnum minus*, alpine hard fern (*Austroblechnum penna marina sbsp. Alpina*), mountain astelia, *Cranfilla fluviatilis*, *Histiopteris incisa*, *Hypolepis millefolium*, *Acaena anserinifolia*, *Muehlenbeckia australis* and bracken fern (*Pteridium esculentum*). Exotic species include creeping buttercup, red clover (*Trifolium pratense*), browntop (*Agrostis capillaris*), cocksfoot, sweet vernal (*Anthoxanthum*

odoratum), *Juncus effusus*, scotch broom (*Cytisus scoparius*), *Stellaria graminea*, *Stellaria media*, broadleaf dock (*Rumex obtusifolius*), *Solanum dulcamara* and swamp thistle (*Cirsium muticum*).

Plate 3: north tributary tussock grassland.

Central tributary

The Central tributary splits into two branches, for the purpose of this report they have been named the north and south branch (see Figure 9).

The northern branch is planned to be removed completely, accounting for a total loss in wetland habitat of approximately 2,246 m^2. The predominant vegetation within the wetland is indigenous sedgeland within and adjacent the channel and in areas of higher water table. It then grades into into copper tussock grassland with diverse sections of fern land scattered in shaded slopes. Species consist predominantly of *Carex secta*, *Carex coriacea*, copper tussock, prickly shield fern, alpine hard fern, *Muehlenbeckia australis*, mountain astelia, *Blechnum minus*, *Coprosma dumosa*, *Coprosma propinqua, Histiopteris incisa* and *Juncus edgariae*, *Acaena anserinifolia*. Where upland areas are fenced, they are dominated by exotic pasture species including creeping buttercup, cocksfoot, white clover (*Trifolium repens*), scotch thistle (*Onopordum acanthium*), swamp thistle, *Solanum dulcamara*, *Juncus effusus*, catsear, yorkshire fog (*Holcus lanatus*), sweet vernal, lotus, gorse (*Ulex europaeus*), cleaver (*Galium aparine*), and selfheal (*Prunella vulgaris*).

Plate 4: Left – Vegetation within the lower limit of the mapped wetland. Right – Vegetation within the upper limit.

The south branch is proposed to have the lower 440 m of wetlands removed accounting for approximately 3,545 m^2 of wetland habitat. The vegetation across the tributary branch varies greatly due to the change in topography and landforms influencing the availability of water throughout the gully. The lower reaches of the tributary branch contain moderate diversity, being dominated by indigenous vegetation and the increased occurrence of shrubland and larger grasses (toetoe). Upstream of the proposed clearance is still dominated by indigenous species, however, *Carex secta* and copper tussock become scarce and *Carex coriacea* is the dominant species. Species present throughout the wetland habitat include *Carex secta*, *Carex coriacea*, copper tussock, prickly shield fern, alpine hard fern, *Muehlenbeckia australis*, *Blechnum minus*, *Coprosma dumosa*, *Coprosma propinqua*, *Histiopteris incisa*, *Juncus edgariae*, *Hypolepis millefolium* and toetoe. Exotic species present include *Juncus effusus*, creeping buttercup, cocksfoot, white clover, lotus, scotch thistle, swamp thistle, *Solanum dulcamara*, Epilobium ciliatum, Stellaria graminea and broadleaf dock. Also present within the upper extent of the mapped wetland were two stands of elderflower trees (*Sambucus nigra*) and grey willows (*Salix cinerea*).

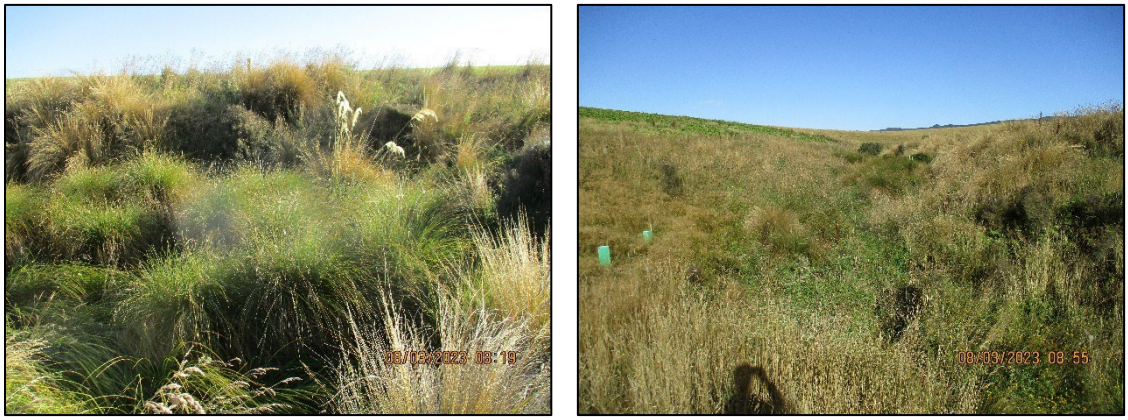

Plate 5: Left – Vegetation within the wetland's lower limit. Right – Vegetation within the upper limit.

South tributary

Greenbriar propose to remove 102 m^2 of wetland habitat within the south tributary. The south tributary is the largest and most diverse of the four mapped tributaries. The vegetation comprises three main communities that are compositionally different. Harakeke and *Carex* sedgelands is the only community being affected by the proposed extension. The species within the proposed extension area include copper tussock, *Carex secta*, *Carex coriacea*, *Coprosma propinqua*, *Juncus edgariae* and harakeke. Also present are a range of exotic species intermixed within the native vegetation. Species include Sweet vernal, cocksfoot, lotus, creeping buttercup, *Juncus effusus*, lotus, *Stellaria graminea* and broadleaf dock.

Plate 6: Area to be removed in the background.

The head of the wetland feature is comprised of dense harakeke and *Carex secta* sedgeland with scattered *Coprosma* species and native climbers. Another two similar communities are present on lower gradients approximately 200 m downstream and at the lower limit of the mapped wetland, the latter of which extends within the area of proposed disturbance. Both lower communities comprise an increased occurrence of *Coprosma propinqua*, *Coprosma dumosa* and extensive coverage of toetoe. In between the shrubland and harakeke dominant vegetation, sedgeland and rushlands prevail. Species within the wider wetland area include all those listed above within the proposed disturbance area as well as prickly shield fern, alpine hard fern, *Muehlenbeckia australis*, *Blechnum minus*, *Coprosma dumosa*, *Coprosma propinqua*, *Histiopteris incisa*, *Juncus edgariae*, *Hypolepis millefolium*, toetoe, *Cranfillia fluviatilis*, mountain astelia, *Lepidosperma australe*, *Anaphaloides bellidioides*, *mānuka* (*Leptosperma scoparium*), *Acaena anverinifolia*, *Senecio minimus*, bush lawyer (*Rubus cissoides*) and crown fern (*Lomaria discolor*). Exotic species present within the wetland area include all those listed within the proposed disturbance area with the addition of Himalayan honeysuckle (*Leycesteria Formosa*), *Cotoneaster franchetii*, cocksfoot, white clover, scotch thistle, swamp thistle, *Solanum dulcamara* and *Epilobium ciliatum*.

Plate 7:Main wetland channel.

A thin branch is present to the south of the main tributary, however, is classified as a wetland in pasture. Species consist of *Lolium pratense* and *Alopecurus geniculatus.*

Plate 8: Wetland in pasture.

5.2.2 Fauna

Invertebrates

No invertebrate assessment has been completed specifically for the proposal. However, two species of spiders (Nursery web spider (*Dolomedes minor*) and green orbweb spider (*Colaranea viridtas*)) were observed within the wetlands during the site visit.

Herpetofauna

No herpetofauna species were observed during the completed field work. Native geckos (*Woodworthia spp.*) are assessed as highly unlikely to be present given a lack of suitable habitat. Habitat is present for two species of skink; the tussock skink (*Oligosoma chionochloescens*) and Cyptic skink (*Oligosoma inconspicuum*).

The likelihood of each species likelihood of occurrence is provided in Table 3 below.

Table 3: Lizard species potentially present at New Vale Mine wetland disturbance areas. Conservation status as per Hitchmough *et al.* (2021).

Common name *Scientific name*	Conservation Status	Likelihood of Occurrence	Notes
Cryptic skink	At Risk – Declining	Low	Have been recorded in a variety of habitats from the lowland right up to at least 1825 m (a.s.l). They exist in habitats such as tussocklands, grasslands, scrublands, herbfields, wetlands, and rocky areas (e.g. rocky beaches, shrubland, screes, tallus, vertical rock walls)
Tussock skink (*Oligosoma chionochloescens*)	At Risk – Declining	Moderate	Common in lowland and montane areas in Otago occupying dry rocky environments, grassland and many other habitats.

Avifauna

The current vegetation and habitat present within the study area is best suited to a range of indigenous passerine species. Species observed during the field work include Australasian harrier (*Circus approximans*), South Island fantail (*Rhipidura fuliginosa fuliginosa*) and grey warbler (*Gerygone igata*). Additional species known to utilise comparable habitat to that of the mapped wetlands include the following:

- Kōtare/New Zealand kingfisher (*Todiramphus sanctus vagans*);
- Pūkeko (*Porphyrio melanotus melanotus*);
- Korimako/bellbird (*Anthornis melanura melanura*);
- Tauhou/silvereye (*Zosterops lateralis lateralis*); and
- Warou/welcome swallow (*Hirundo neoxena neoxena*).

Due to the lack of extensive shrubland or any forest trees as well as the degraded and open nature of the lowland wetlands the areas are unlikely to be utilised by many indigenous wading or forest species, although pūtangitangi/paradise shelducks (*Tadorna variegate*) and Tōrea/South Island pied oystercatcher (*Haematopus finschi*) may utilise cultivated land and sparsely vegetated areas.

6 Proposed Offsetting

Greenbriar propose to offset the loss of natural inland wetlands located on the west side of the study area by providing enhancement and restoration of highly degraded, historic wetlands.

The wetland areas proposed to be disturbed by mining are within the lower limits of gullies on low gradient land. For the purpose of assessing the comparative value of the proposed mitigation and offsetting, the proposed disturbance areas have been classified as lowland wetlands. For the proposal to have no net loss of wetland values, similar habitat should be restored or enhanced. Any areas comprising significantly different landforms are considered additional compensation.

Highly degraded wetlands are present within the east of the study area as a result of continual historic grazing and drainage works. A brief walkthrough of the area identified that the natural channel and lowland areas were dominated by exotic species including *Juncus effusus*, *Juncus articulatus*, broad leaf dock, kneed foxtail and a range of exotic pasture species. The only indigenous vegetation observed within the channel area was *Carex coriacea* that displayed evidence of extensive browsing. Isolated patches of copper tussock grassland are present in critical source areas however, the areas lack diversity and would benefit from diversification with native species and further connection to additional areas.

Plate 9: Left – Natural wetland channel (near northern boundary). Right – *Carex coriacea* with copper tussock grassland in background.

The areas of proposed disturbance are within predominantly indigenous vegetation cover containing remanent vegetation, that is highly representative of the present landforms within the ecological district. The existing vegetation forms a compositional gradient from *Carex* dominated sedgelands in the main channel and low-lying areas to copper tussock grassland with limited shrubland on wetland slopes and fringes. Neighbouring plant proximity within areas of proposed disturbance are in most cases less than one metre apart with multiple species forming different strata.

As the wetlands proposed to be disturbed by mining will result in the permanent loss of wetland habitat, the effects of the proposal cannot be mitigated. Restoration and enhancement offsetting are therefore proposed in order to result in a no net loss or net gain ecological outcome. The eastern wetlands are present, although in a degraded state. Therefore, the offset consideration is not equivalent to a replacement ratio of 1:1.

Given the uncertainty of coal mining, Greenbriar propose replacement ratios that are attributed to each offset measure to be applied where the completion of all excavation and restoration is not feasible. This operates under the conclusion that all areas of proposed indigenous clearance are of equal value. The offset measures will commence in the northwest tributary and progress to the eastern side of the property provided excavation of the proposed areas is still feasible at the time. The rate of restoration is detailed in sections 6.2 and 6.3, and is dependent on the offset measure being applied.

The proposed replacement ratio per offsetting measure and rationale are summarised below in Table 4.

The restoration and enhancement of the proposed offsetting wetland communities on the east side of the study area have been characterised based upon morphological features, hydrological patterns, historic aerials as well as onsite observations (see Figure 11 and Figure 12).

Table 4: Proposed offsetting requirements.

Vegetation Lost	Offset type	Replacement Area (Lost:Gained)	Rationale
Carex sedgeland – copper tussock grassland/coprosma shrubland	Enhancement (Low density planting)	1:22.5	• Enhancement planting within areas of established tussock grassland will not add hydrological function to the wetlands as they contain the key components of the wetland's location, however, lack significant diversity within the community. • Enhancement planting will provide additional biodiversity to the areas and increase ecological value within the established wetlands. • All areas within this community will be planted at ratio of one plant per ten square metres.
	Enhancement (Moderate density planting)	1:10	• Enhancement planting within areas of moderately established tussock grassland will add some hydrological function to the wetlands as they contain most of the key components of the wetland's location. However, the community lacks significant diversity and is present at a density that is not optimising ecosystem function. • Enhancement planting will provide additional biodiversity to the areas and increase ecological value within the area. • All areas within this community will be planted at ratio of one plant per four square metres.
	Restoration (High density planting)	1:2.5	• Areas of proposed restoration already provide some hydrological function to the ecosystem however, due to a lack of vegetation cover and continuous grazing exotic species have prevailed.

			• The necessary wetland restoration timeline would incur a short-term loss in available wetland habitat before restored area are fully established. • A medium time delay in establishment will be observed before different strata and interspecies relationships can develop and additional species are able to self-propagate to a complexity comparable to the proposed disturbance areas. • A greater vegetation gradient will be formed, particularly within the copper tussock grassland – shrubland whereby fringing shrubland will provide additionality by increasing flora biodiversity and increasing/introducing available habitat for a range of fauna and invertebrate species. • Areas within the restoration areas will be planted at one metre spacing.

Figure 11: End of Mine Life (EOML) – eastern potential restoration and enhancement locations.

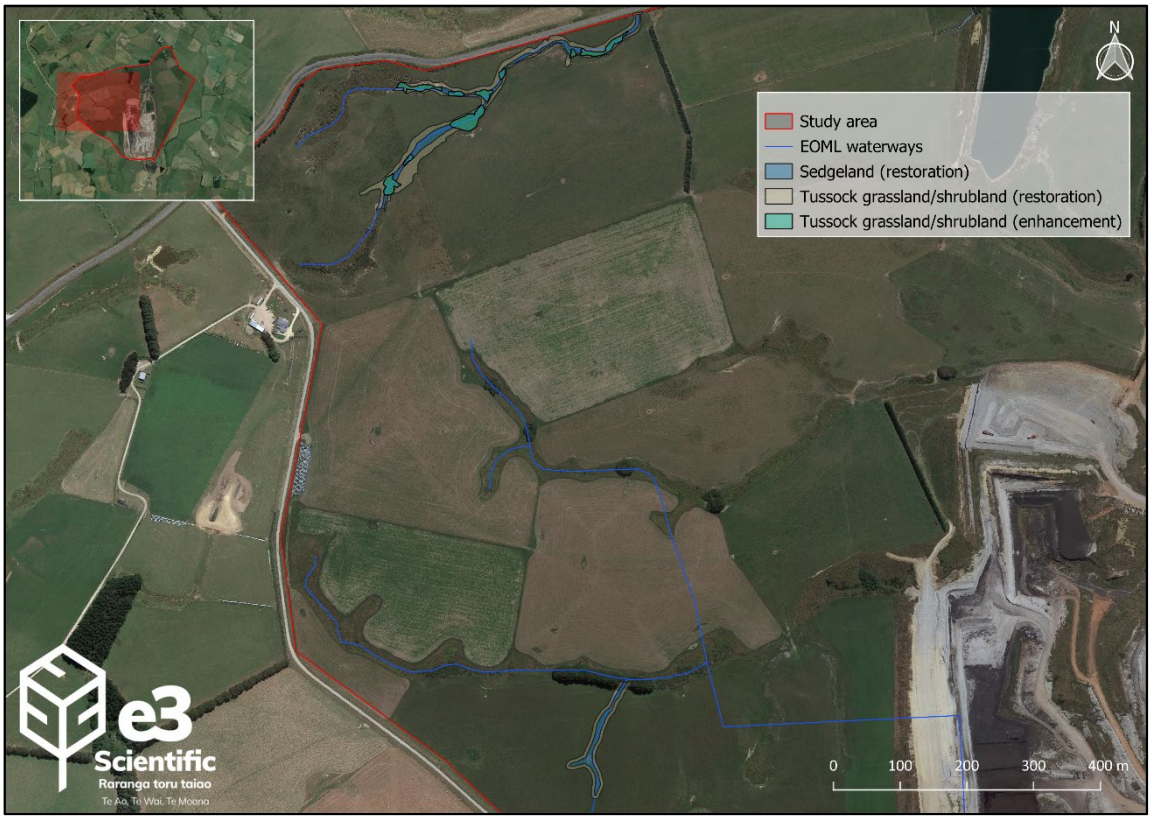

Figure 12: End of Mine Life – western potential restoration and enhancement location.

6.1 Weed management

As additionality to the proposed of the restoration and enhancement offset package all crack willows (*Salix x fragilis*), grey willows, and elderflower stands will be controlled within the study areas and ongoing maintenance and monitoring implemented to eliminate regrowth. This will reduce localised seed sources and reduce further spread of these species. Locations of willow and elderflower stands proposed to be removed are shown on Figure 13.

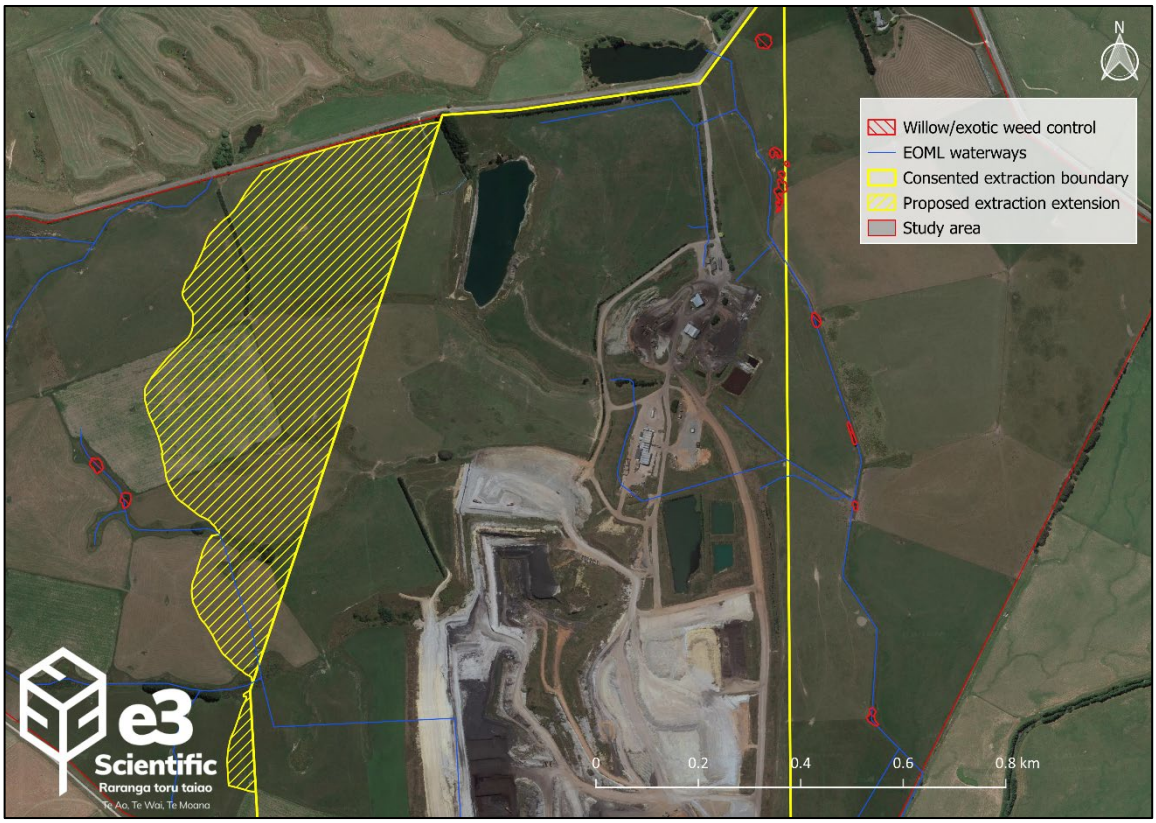

Figure 13: Proposed willow and other exotic weed control.

Additionally, the isolated Himalayan honeysuckle and cotoneaster recorded within the southern tributary are to be removed. This is in line with current efforts by Greenbriar to remove weed species from within wetlands and stream margins. To date isolated grey willow, elderflower, gorse and broom have all been successfully removed and are part of an ongoing maintenance program within the study area.

All species proposed to be removed are located within natural inland wetlands or likely natural inland wetlands and as such are subject to the NES-F 2020

regulations regarding vegetation and earthworks associated with restoration or wetland maintenance.

6.2 Existing wetland enhancement

Approximately 9,121 m^2 of higher density wetland vegetation is present within likely wetlands of the eastern study area. The existing vegetation coverage is variable and incomplete. Therefore, supplementary planting has been allocated for wetland enhancement. All enhancement areas are located within the areas presumed to naturally contain copper tussock grassland, fringing shrubland, and fenlands (see Figure 11).

Areas A1, A2, and A3 are the most densely vegetated areas. Planting within these areas should be completed at a planting density of one plant per nine square metres (three metre centres) for the purpose of adding diversity. All other areas of enhancement planting should be completed at one plant per four square metres (two metre centres). In total approximately 1,914 plants are proposed to be planted within the enhancement locations.

Where possible, species present within the proposed disturbance areas will be translocated to the existing wetlands within the study area.

Forest planting has already commenced within the northwest tributary and primarily contains tree species. Most of the observed planting have been undertaken on wetland fringes or on upland localities providing some visual screening. As part of the package designed to offset the disturbance associated with the proposed mine extension, additional areas within the northwest tributary have been mapped for enhancement in areas where coverage is not as dense or diverse as the upper reaches of the tributary.

6.3 Wetland restoration

Greenbriar propose to restore 20,983 m^2 of existing wetlands by planting them with native vegetation. This includes 5,793 m^2 within the sedgeland areas (areas of higher water availability) and a further 15,190 m^2 of copper tussock grassland and shrubland (see Figure 11 and Figure 12). Due to the degradation and active grazing the area has lost key components of the communities that would otherwise not be reintroduced without the proposed active restoration. All

plantings are to be completed at one metre centres and should be completed at a minimum rate of 2.5 times the rate of which removal of the western wetlands is undertaken. This will result in slight loss of habitat for the establishment period, followed by a net gain in both available habitat and diversity of habitat. Species and allocation are provided in Appendix B.

Where feasible, vegetation from the disturbed wetlands will be relocated to restoration or enhancement areas using a method approved by a suitably qualified person(s).

7 Ecological and Hydrological Outcomes

7.1 Wetland area

The wetlands within the east of the study areas are assessed as having degraded hydrological function due to the area consisting of predominantly exotic pasture and weed species. In its current state the area does not intercept considerable quantities of runoff and provides limited filtration of nutrients. Provided the restoration and enhancement of the wetlands is completed as detailed in Section 6, the proposal will result in 20,985 m^2 of restored wetland habitat and 9,121 of enhanced wetland habitat; increasing the available highly diverse wetland habitat by 20,947 m^2. This is assessed as achieving a Net Gain ecological effect and will disburse wetlands over a larger extent of the study area.

7.2 Hydrology and water quality

The proposal is assessed as unlikely to adversely affect the hydrology of retained upstream wetlands provided drainage of local groundwater does not extend upstream into the remaining riparian wetlands. Upstream streams and riparian wetlands within the central tributary should be monitored for signs of dewatering and any reduction in upstream water tables should be addressed with retaining structures or other drainage inhibiting works to mitigate mining impacts on groundwater levels (see recommendations 10 through 12). The existing consent conditions associated with the *Galaxias Gollumoides* habitat and by extension, the southern tributary waterways, are assessed as effective mitigation to ensure dewatering of this area does not occur.

The wetlands proposed for restoration and enhancement are predominantly located within the natural drainage of the unnamed tributaries feeding into the Hedgehope Stream. The western side off the study area is well established with wetland vegetation and provides a buffer against farmland nutrient runoff and enhancement planting is being undertaken to improve runoff interception and filtration. One critical source area within the western area has already been identified for restoration and will improve water quality entering the southern tributary. Following the restoration of this area all runoff from areas under pastoral use within the west of the study area will pass through functioning wetlands.

The proposed wetland restoration areas in the east of the study area are located adjacent to grazed and cultivated land. The retirement and replanting of the areas will help intercept runoff from a large portion of farmland on the east of the mine. The hydrological and water quality benefits of restoring and enhancing these wetlands include increased water retention and storage, enhanced groundwater recharge, filtering and biogeochemical processing of sediment and nutrients, and decreased downstream water temperature.

7.3 Avifauna

The restoration and enhancement of degraded wetlands within the eastern side of the study area will result in increased habitat for avifauna species. The restoration will reduce current fragmentation of wetland and shrubland habitat and may facilitate species expansion from resident and seasonal populations within the Gore ecological district. All species currently noted to be present will likely benefit from the increase of total habitat and diversification of potential habitat. However, additional species are unlikely to inhabit these areas as the scale of the restoration is unlikely to provide new ecological niches than what is currently present.

The planting of forest communities adjacent to the proposed wetlands restoration/enhancements will provide avifauna species with additional habitat not present within the study area. The benefits resulting from the replanting of the forest community are considered beyond the requirements of the ecological offset package but provide additional benefits to the local ecology. Bird species not already present that may utilise these plantings once established include:

- Tūī (*Prosthemadera novaeseelandiae novaeseelandiae*);

- Pīpipi/brown creeper (*Mohoua novaeseelandiae*);
- Ngirungiru/South Island tomtit (*Petroica macrocephala macrocephala*);
- Kārearea/eastern falcon (*Falco novaeseelandiae novaeseelandiae*);
- Ruru/morepork (*Ninox novaeseelandiae novaeseelandiae*);
- Pīpīwharauroa/shining cuckoo (*Chrysococcyx lucidus lucidus*);
- Kererū/New Zealand pigeon (*Hemiphaga novaeseelandiae*).

8 Summary and Recommendations

Greenbriar Limited propose to expand the mine extent by approximately 305,609 m^2. e3S have identified 9,159 m^2 of wetlands that will be permanently lost as a result of the expansion. In order to offset this loss Greenbriar propose to restore and enhance a total of 30,106 m^2 of highly degraded wetlands. e3S assess the ecological and hydrological effects as having a net gain outcome with additional outcomes including; increased wetland vegetation coverage, increased indigenous diversity, improved water storage and quality, and increased fauna habitat.

The following sets out a suite of recommendations to be conditioned to the resource consent that have been designed to ensure the effective implementation of the mitigation and offset package:

1. Restoration and/or enhancement planting is to commence prior to the disturbance of natural inland wetland identified within the western study area.
2. The rate of which restoration and/or enhancement planting is to be undertaken shall be calculated based upon the disturbance: replacement ratio provided in Table 4. All required offset plantings shall be installed within one year of a disturbance of associated wetland habitat.

   Note: In the context of condition (3), a requirement for restoration and enhancement is defined as the actual disturbance that occurs as a result of the mining works, acknowledging that elements of the proposed disturbance areas may not be viable.
3. Restoration and enhancement planting is to be undertaken in all areas as described in Figure 11and Figure 12 in conjunction with the proposed planting list (Appendix A).
4. Vegetation removal shall not be undertaken during October-February as to not disturb nesting birds. Alternatively, a suitably qualified ecologist or ornithologist must undertake a survey or areas to be disturbed and all recommendation of the survey are to be followed. Where unavoidable disturbance is required within the breeding/nesting season, a permit is required under the Wildlife Act 1953 to disturb or kill indigenous species.
5. Restoration and enhancement planting associated within the onsite wetlands will be planted at densities as detailed in Table 4 and should be

completed at a minimum rate of 2.5 times that of which removal of the western wetlands is undertaken. All plantings should meet a survival rate of 80% five years after installation. Where this is not achieved replacement planting will be undertaken.

6. Annual recording are to be completed for all proposed wetland planting zones (as per Figure 11 and Figure 12) and 3-yearly audits completed until the completion of all required onsite wetland planting. A summary audit will be produced five years after the completion of all wetland planting to assess the overall success of the restoration and enhancement offset plantings.
7. All weed control is to be undertaken using task appropriate herbicide and handheld tools unless otherwise permitted. No machinery is to enter any onsite wetlands for the purposes of weed removal without an approved restoration plan summited under regulation 38 of the NES-F and is compliant with Schedule 2.
8. To ensure no further spread of weeds occur, all machinery used when entering the proposed wetland disturbance areas is clear of weeds or soils that may contain weed species. This includes checking for dirt and foreign material and removing these prior to entering the site on every occasion.
9. If any lizards are observed on site before or during earthworks, work shall cease, and advice be sought from the Department of Conservation regarding permission needed under the Wildlife Act to undertake work in lizard habitat.
10. Monitoring of upstream wetlands should be undertaken at two locations within retained central tributary. The monitoring locations should be established approximately 50 and 100m upstream of the downstream excavation boundary and should consist of a one metre groundwater well installed into the wetlands. Well construction can be completed using a hand auger and a length of PVC screened to within 20 cm of the ground surface.
11. A minimum of hourly data collection should be implemented using a data logger to measure the water level at all monitoring locations.
12. If the water level at any monitoring location drops below 60 cm of the surface level at any point, or the water level is not present within the top 30 cm of the for a minimum two weeks during the growing season (October-April) immediate mitigation shall be implemented to inhibit dewatering. Mitigation may include but is not limited to a ware at upstream EOML

excavation boundary or additional water pumped into the head of the gully.

9 References

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Appendices

Appendix A: Restoration & Enhancement Planting Plan

Wetland restoration and enhancement species list.

Vegetation Community	Species	Scientific Name	Species allocation (%)
Tussock Grassland/Shrubland (Enhancement)	Kahikatea	Dacrycarpus dacrydioides	3
	Copper tussock	Chinocholoa rubra subsp. cuprea	40
	Tree fuchsia	Fuchsia excorticata	3
	Coprosma dumosa	Coprosma dumosa	8
	Mingimingi	Coprosma propinqua	8
	Red Stemmed Coprosma	Coprosma rubra	2
	Coprosma virescens	Coprosma virescens	2
	Hector's tree daisy	Olearia hectorii	5
	Small-leaved Tree daisy	Olearia lineata	4
	Fragant tree daisy	Olearia fragrantissima	3
	Mountain hollyHakeke	Olearia ilicifolia	2
	Olearia bullata	Olearia bullata	3
	Mountain astelia	Astelia nervosa	3
	Cabbage Tree/Tī Kōuka	Cordyline australis	2
	Melicytus flexuosus	Melicytus flexuosus	2
	Heart-leaved kohuhu/Kōhūhū	Pittosporum obcordatum	2
	Kowhai/Kōwhai/Kōhai	Sophora microphylla	3
	Swmap kiokio	Blechnum minus	1
	Mānuka	Leptospermum scoparium	4
	Total:		100
Tussock Grassland/Shrubland (Restoration)	Kahikatea	Dacrycarpus dacrydioides	3
	Copper tussock	Chinocholoa rubra subsp. cuprea	20
	Tree fuchsia	Fuchsia excorticata	3
	Coprosma dumosa	Coprosma dumosa	12
	Mingimingi	Coprosma propinqua	15
	Red Stemmed Coprosma	Coprosma rubra	2
	Coprosma virescens	Coprosma virescens	2
	Hector's tree daisy	Olearia hectorii	8
	Small-leaved Tree daisy	Olearia lineata	8

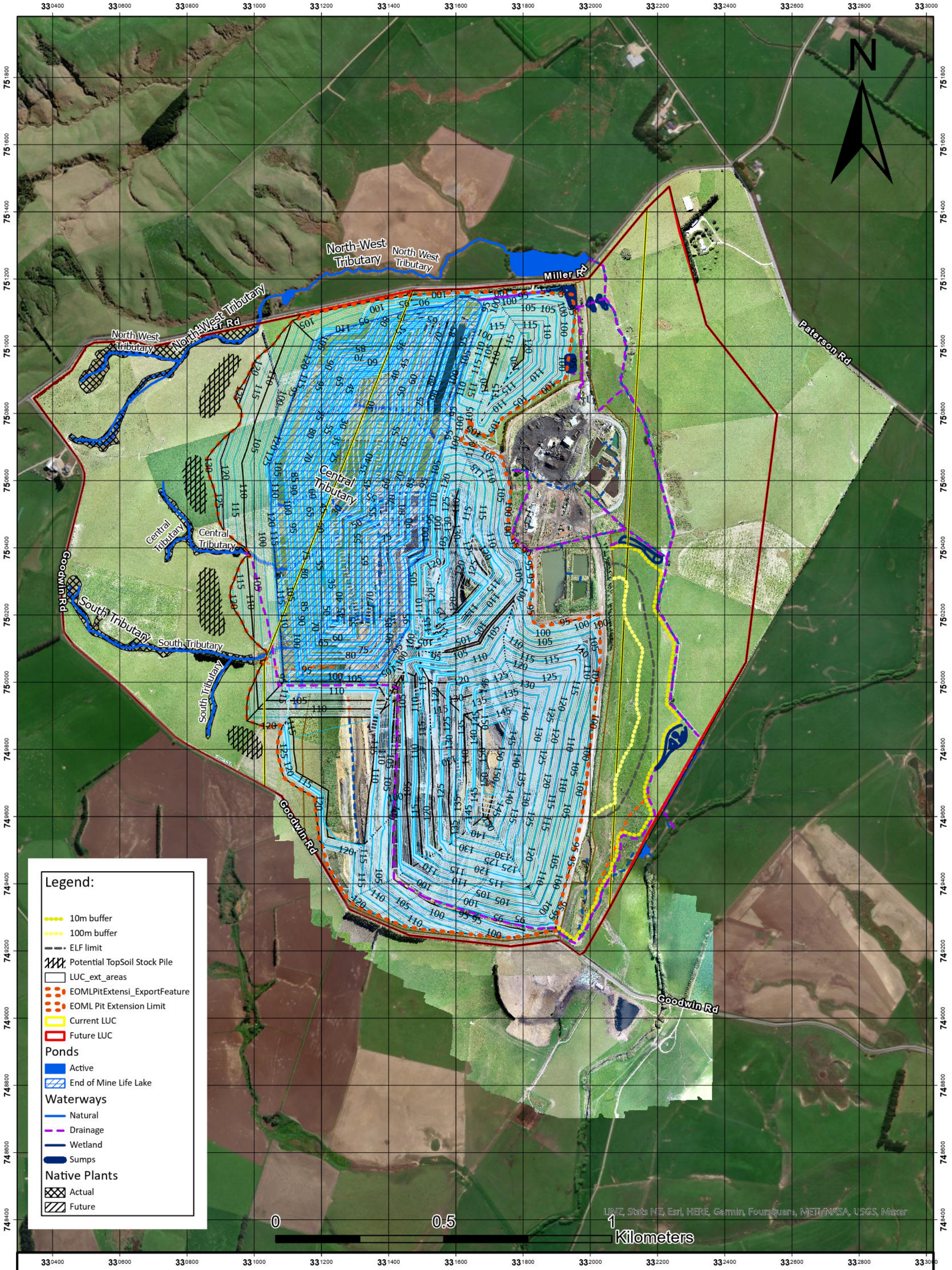
	Fragant tree daisy	Olearia fragrantissima	4
	Mountain hollyHakeke	Olearia ilicifolia	2
	Olearia bullata	Olearia bullata	4
	Mountain astelia	Astelia nervosa	3
	Cabbage Tree/Tī Kōuka	Cordyline australis	2
	Melicytus flexuosus	Melicytus flexuosus	2
	Heart-leaved kohuhu/Kōhūhū	Pittosporum obcordatum	2
	Kowhai/Kōwhai/Kōhai	Sophora microphylla	3
	Swmap kiokio	Blechnum minus	1
	Mānuka	Leptospermum scoparium	4
	Total:		100
Sedgeland/Rushland (Restoration)	Pukio	*Carex secta*	30
	Rautahi	*Carex coriacea*	15
	Sharp spike sedge	*Eleocharis acuta*	5
	Toetoe	*Austroderia richardii*	10
	Harakeke/swamp flax	*Phormium tenax*	10
	Wiwi/Edgar's rush	*Juncus edgariae*	20
	Copper tussock	*Chinocholoa rubra subsp. cuprea*	10
	Total:		100

Forest planting Species list.

Species	Scientific name	Total Cover (%)
Tawai/silver Beech	Lophozonia menzisii	15
Tōtara/Hall's totara	Podocarpus laetus	5
Kahikatea/white pine	Dacrycarpus dacrydioides	3
Rimu/red pine	Dacrydium cupressinum	5
Miro/brown pine	Pectinopitys ferruginea	5
Kāmahi	Pterophylla racemosa	10
Southern Rātā	Metrosiderous umbellata	2
Makomako/wineberry	Aristotelia serrata	2
Hūpiro/stinkwood	Coprosma foetidissima	2
Mānuka	Leptospermum scoparium	5
Pōkākā	Elaeocarpus hookerianus	3
Tarata/lemonwood	Pittosporum eugenioides	5
Rautāwhiri/kōhūhū/black matipo	Pittosporum tenuifolium	2
Manatu/lowland ribbonwood	Plagianthus regius	4
Mingimingi	Coprosma propinqua	3
Mataī/black pine	Prumnopitys taxifolia	3
Mountain wineberry	Aristotelia fruiticosa	2
Punawētā/marble leaf	Carpodetus serratus	3
Red Stemmed Coprosma	Coprosma rubra	2
Coprosma virescens	Coprosma virescens	2
Coprosma wallii	Coprosma wallii	2
Kāpuka/broad Leaf	Griselinia littoralis	2
Koromiko	Veronica salicifolia	3
Māhoe-wao/narrow-leaved mahoe	Melicytus lanceolatus	3
Horoeka/lancewood	Pseudopanax crassifolius	5
Horoeka/fierce lancewood	Pseudopanax ferox	2
Total		**100**

Note: Where species are unavailable alternative species approved by suitably qualified ecologist can be installed.

Appendix B: Proposed Scheme Plans



New Vale Mine
E.O.M. Management Plan

NEW VALE COAL

Document owner: adam.kaluzny@newvale.co.nz

Scale: 1:10,000

Version:

Projection: Bluff 1949

Date: 21-06-2023

Appendix C: New Zealand Wetland Delineation Data Forms

CT-W3

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mire | Region: Southland | Sampling point: Central trib (head w-elana)

Owner: ↑ ↑ ↑ | Date: 08/03/23 | Land use: fenced - excluded

Landform: head of trib. | Local relief: | Land cover: Sedge / Juncus

Is the land drained (circle) YES (NO) | Investigator(s): LSW BM | Soil °C: | Slope°: 5-10°

GPS (NZTM): 1041 | Altitude m: | Photo Nos: # 3054

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) near drought

Are vegetation, soil or hydrology significantly disturbed? (circle) no | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed —

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☒ NO ☐ | **Is the sampled area within a wetland? YES** ☒ **NO** ☐

Hydric soils present? YES ☒ NO ☐

Wetland hydrology present? YES ☒ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Juncus edgar	15%		FACW
2. Carex Coriacea	75%	Y	FACW
3. lotus	25%	Y	FAC
4. cocksfoot	1%		FACU
5. thistle (marsh	5%		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 2

Tot. Dominant Spp. across strata (B) 2

% OBL/FACW/FAC (A/B) 100%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW	95	x 2 =	190
FAC	25	x 3 =	75
FACU	1	x 4 =	4
UPL		x 5 =	
Total	121 (A)		269 (B)

Prevalence Index (B/A) = 2.22

Hydrophytic vegetation indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological adaptations[1] (supporting data in Remarks)
- ☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☒

NO ☐

UNCERTAIN ☐

Remarks:

8/03/23 @ 1020 CT-W3 Central trib upper/head wetland

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-20	10YR 3/1					Peat	fibric to humic peat
20-35	10YR 3/1					Peat	~~Fibric~~ Humic
35→	Gley1 6/5GY					mineral	clayey mineral

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P (VP)

Organic layers:
- [x] Organic soil material
- [x] Litter
- [x] Fibric
- [x] Mesic
- [x] Humic
- [x] Peaty topsoil
- [x] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [ ] Sticky
- [ ] Fluid

Colours: profile form either:
- [x] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat (Valley) Gully Slope

Water table: Depth (cm) ~20cm

(High GW) Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [x] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [ ] Surface water (1A)
- [x] Groundwater <30 cm (1B)
- [x] Soil saturation <30 cm (1C)
- [ ] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [ ] Hydrogen sulphide odour (3A)
- [ ] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

- [ ] Water-stained leaves (2K)
- [x] Drainage patterns (2L)
- [x] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [x] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [x] NO [ ]

Sketch of site/soil:

Remarks: Peat on top of gleyed clay w/ fine gravel

CT-W2

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

downstream Wetland

Site: New Vale mine | Region: Southland | Sampling point: Central trib-Main stream

Owner: ↑ ↑ ↑ | Date: 08/03/25 | Land use: fenced-excluded

Landform: low gulley | Local relief: LSW BM | Land cover: Sedgeland.

Is the land drained (circle) YES (NO) | Investigator(s): ↓ ↓ | Soil °C: | Slope°: < 2°

GPS (NZTM): 972 | Altitude m: | Photo Nos: #3052

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) Drought (mean).

Are vegetation, soil or hydrology significantly disturbed? (circle) no | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☒ NO ☐ | **Is the sampled area within a wetland? YES ☒ NO ☐**

Hydric soils present? YES ☒ NO ☐

Wetland hydrology present? YES ☒ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Carex Secta	50%	Y	OBL
2. Carex Coriacea	20%	Y	FACW
3. Solanum dul	15%		FAC
4. Cocksfoot	10%		FACU
5. Fern ?? Rock fern	<1%		FACU
6. lotus	7%		FAC
7. creeping bullrush	<1%		FAC
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 2

Tot. Dominant Spp. across strata (B) 2

% OBL/FACW/FAC (A/B) 100

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	50	x 1 =	50
FACW	20	x 2 =	40
FAC	23	x 3 =	69
FACU	11	x 4 =	44
UPL		x 5 =	
Total	104 (A)		203 (B)

Prevalence Index (B/A) = 1.95

Hydrophytic vegetation indicators:

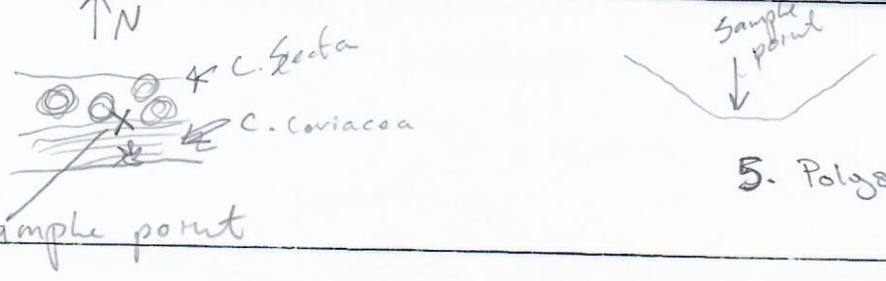
- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological adaptations[1] (supporting data in Remarks)
- ☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☒ NO ☐ UNCERTAIN ☐

Remarks:



8/3/23 @ 945 CT-W2 Central trib main stem wetland

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-20	10YR3/1	–	–	–	–	Peat	fibric to mesic
20-40	10YR 4/1	–	–	–	–	Peat	humic

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- ☑ Organic soil material
- ☑ Litter
- ☑ Fibric
- ☑ Mesic
- ☑ Humic
- ☑ Peaty topsoil
- ☑ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☑ Fluid

Colours: profile form either:
- ☑ Gley OR
- ☐ Mottled

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully Slope

Water table: Depth (cm) 0cm

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

☐ Pugged

Hydric soils present? YES ☑ NO ☐ UNCERTAIN ☐ NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- ☑ Surface water (1A)
- ☑ Groundwater <30 cm (1B)
- ☑ Soil saturation <30 cm (1C)
- ☑ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☑ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

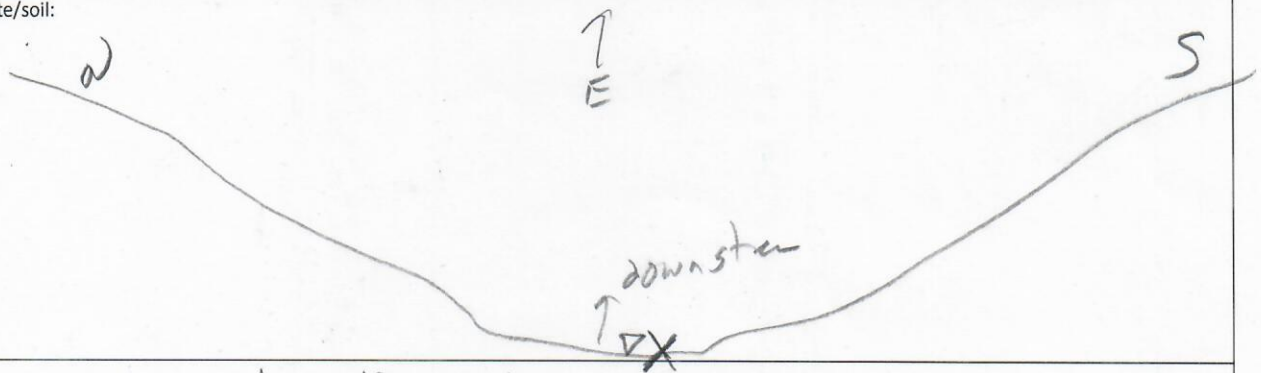
- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☑ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☑ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☑ NO ☐

Sketch of site/soil:



Remarks:

Surface saturated peat wetland w/ hummocks + carex sedge mounds

CT-42

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mine | Region: Southland | Sampling point: Central trib upland

Owner: ↑ ↑ ↑ | Date: 08/03 | Land use: grazing

Landform: upland slope. | Local relief: wetland at toe | Land cover: pasture

Is the land drained (circle) YES NO | Investigator(s): ISCO BM | Soil °C: _____ | Slope°: >5°

GPS (NZTM): 1068 | Altitude m: _____ | Photo Nos: #3055 & 3056

Are climatic/hydrologic conditions on the site typical for this time of year? YES ~~NO~~ (circle appropriate; if NO explain in Remarks) near drought

Are vegetation, soil or hydrology significantly disturbed? (circle) Yes/No | Are 'normal circumstances' present? (circle) ~~YES~~ NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed grazed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☐ ☒ NO

Hydric soils present? YES ☐ ☒ NO

Wetland hydrology present? YES ☐ ☒ NO

Is the sampled area within a wetland? YES ☐ NO ☒

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size: _____)			
1. brown top	60 %	Y	FACU
2. Sweet vernal	5 %		FACU
3. tall grass	30 %	Y	UPL
4. timothy grass	5 %		FACU
5. white clover	3 %		FACU
6. large Hawkweed.	~1 %		FACU
7.			
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 0

Tot. Dominant Spp. across strata (B) 2

% OBL/FACW/FAC (A/B) 0

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	_____	x 1 =	_____
FACW	_____	x 2 =	_____
FAC	_____	x 3 =	_____
FACU	74	x 4 =	292
UPL	30	x 5 =	150
Total	104 (A)		442 (B)

Prevalence Index (B/A) = 4.25

Hydrophytic vegetation indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☐

NO ☒

UNCERTAIN ☐

Remarks:

3. Crested dog tail

6. cats ear (Hypochaeris radicata)

8/03/23 @1040 CT-U2 Central trip upland pasture

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-20	10YR 4/3					mineral	upland soil
20-30	10YR 5/3					mineral	
30-40	10YR 5/6					mineral	dense layer clay

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley OR
- ☐ Mottled

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully (Slope)

Water table: Depth (cm) >50cm

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) 35cm dense silt/clay

Pan Humus Fe-pan (Densi-) Duri- Fragi Ortstein

Layers: Depth (cm) 35

Slow perm argillic

☐ Pugged

Hydric soils present? YES ☐ NO ☑ UNCERTAIN ☐ NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☐ NO ☑

Sketch of site/soil:

Remarks:

upland pasture w/ mineral soil. dense layer @ ~30-40cm w/ clay consistency.

CT-W1

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New vale Mount
Owner: ↑ 4 ↑
Landform: wetland gully
Is the land drained (circle) YES NO
GPS (NZTM): WP 630

Region: Southland
Date: 07/03/23
Local relief:
Investigator(s): CSW BM
Altitude m:

Sampling point: Central N-trib (wetland)
Land use: fenced - excluded
Land cover: sedgelands
Soil °C: Slope°:
Photo Nos: #2982

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) drier drought
Are vegetation, soil or hydrology significantly disturbed? (circle) No
Are 'normal circumstances' present? (circle) (YES) NO
Are vegetation, soil or hydrology naturally problematic? (circle) No
Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☒ NO ☐
Hydric soils present? YES ☒ NO ☐
Wetland hydrology present? YES ☒ NO ☐

Is the sampled area within a wetland? YES ☒ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Carex Secta	80%	Y	OBL
2. Carex Coriacea	15%		FACW
3. Lotus	3%		FAC
4. cocks foot	5%		FACU
5. sweet vernal	1%		FACU
6. Juncus edgariae	3%		FACW
7. little white flower	<1%		FAC
8. ~~Prickly fern~~ fern?	2%		N/a
9. Blechnum P.M	1%		FAC
10.			
11.			
12.			
Total cover =			

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) 1
Tot. Dominant Spp. across strata (B) 1
% OBL/FACW/FAC (A/B) 100

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	80	x 1 =	80
FACW	18	x 2 =	36
FAC	5	x 3 =	15
FACU	6	x 4 =	24
UPL		x 5 =	
Total	109 (A)		155 (B)

Prevalence Index (B/A) = 1.42

Hydrophytic vegetation indicators:
☒ Dominance Test is >50%
☒ Prevalence Index is ≤3.0[1]
☐ Morphological adaptations[1] (supporting data in Remarks)
☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ☒
NO ☐
UNCERTAIN ☐

Remarks: fern sp. 1 (sample) taken.

7. Stichwort (stellaria graminea
8 Hypolepis Millefolium.

CT-W1

Central North trib wetland

7/3/23 @ 1940

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-10	10YR 3/2					peat	fibric w/ roots
10-40	10YR 2/2					peat	humic peat

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P (VP)

Organic layers:
- [✓] Organic soil material
- [ ] Litter
- [✓] Fibric
- [✓] Mesic
- [✓] Humic
- [✓] Peaty topsoil
- [✓] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [✓] Sticky
- [ ] Fluid

Colours: profile form either:
- [ ] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat (Valley) Gully Slope

Water table: Depth (cm) 20cm

(High GW) Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [✓] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [✓] Surface water (1A)
- [✓] Groundwater <30 cm (1B)
- [✓] Soil saturation <30 cm (1C)
- [ ] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [✓] Hydrogen sulphide odour (3A)
- [ ] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

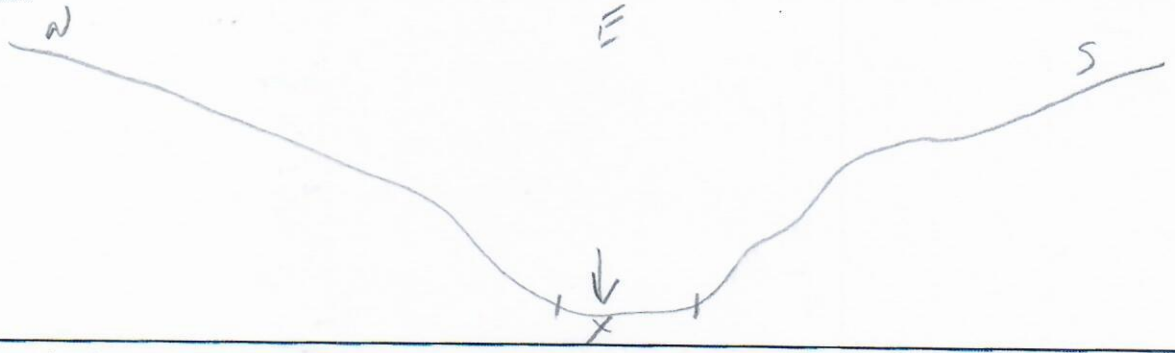
- [ ] Water-stained leaves (2K)
- [✓] Drainage patterns (2L)
- [ ] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [✓] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [✓] NO [ ]

Sketch of site/soil:



Remarks: wetland w/ peat soils + surface + near surface saturation

CT - U1

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mine | Region: Southland | Sampling point: Central North Fold (upland)

Owner: " " " | Date: 07/03/23 | Land use: fenced

Landform: Knoll near gully | Local relief: | Land cover: grassland.

Is the land drained (circle) YES (NO) | Investigator(s): CSW, BM | Soil °C: | Slope°: <5°

GPS (NZTM): WP 629 | Altitude m: | Photo Nos: 2979 - 2980

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) near drought

Are vegetation, soil or hydrology significantly disturbed? (circle) no | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☐ ☒ NO

Hydric soils present? YES ☐ ☒ NO

Wetland hydrology present? YES ☐ ☒ NO

Is the sampled area within a wetland? YES ☐ NO ☒

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. cocksfoot	80 %	Y	FACU
2. procumbent	20 %	Y	FACU
3. yarrow	3 %		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) _____

Tot. Dominant Spp. across strata (B) _____

% OBL/FACW/FAC (A/B) _____

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW		x 2 =	
FAC		x 3 =	
FACU	103	x 4 =	412
UPL		x 5 =	
Total	103 (A)		412 (B)

Prevalence Index (B/A) = 4

Hydrophytic vegetation indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☐

NO ☒

UNCERTAIN ☐

Remarks:

Sample point

7/3/23 CT-11 Central North trib

1930 upland Natural

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-16	10YR 5/4	–	–	–	–	mineral	fine roots
16-40	10YR 6/6	–	–	–	–	–	–

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley OR
- ☐ Mottled

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully (Slope)

Water table: Depth (cm) >50cm

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

☐ Pugged

Hydric soils present? YES ☐ NO ☑ UNCERTAIN ☐ NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

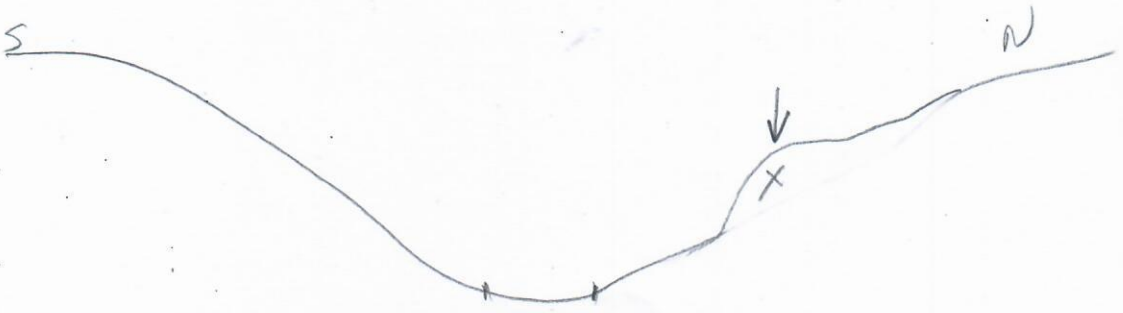
- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☐ NO ☑

Sketch of site/soil:



Remarks: upland site inside riparian fence. Natural Veg.

NT-W

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mine | Region: Southland | Sampling point: North trib Wetland.

Owner: " " " | Date: 07/03/23 | Land use: fenced wetland

Landform: gully wetland. | Local relief: | Land cover: sedges

Is the land drained (circle) YES NO | Investigator(s): CSW BM | Soil °C: | Slope°: <2°

GPS (NZTM): WP 520 | Altitude m: | Photo Nos: #2944 #2945

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) near drought

Are vegetation, soil or hydrology significantly disturbed? (circle) no | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☒ NO ☐ | **Is the sampled area within a wetland?** YES ☒ NO ☐

Hydric soils present? YES ☒ NO ☐

Wetland hydrology present? YES ☒ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Carex Secta	25%	Y	OBL
2. Red fussock	40%	Y	FAC
3. lotus	30%	Y	FAC
4. creeping buttercup	15%		FAC
5. blechnum penna. M	<1%		FAC
6. blechnum minus	<1%		FACW
7. Carex Cor	~2%		FACW
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 3

Tot. Dominant Spp. across strata (B) 3

% OBL/FACW/FAC (A/B) 100%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	25	x 1 =	25
FACW	3	x 2 =	6
FAC	86	x 3 =	258
FACU		x 4 =	
UPL		x 5 =	
Total	114 (A)		289 (B)

Prevalence Index (B/A) = 2.54

Hydrophytic vegetation indicators:

☒ Dominance Test is >50%

☒ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☒

NO ☐

UNCERTAIN ☐

Remarks:

7/3/23 @ 1810

NT-W

North trib wetland

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-8	10YR 3/2					Peaty	mesic peat w/ roots
8-40	10YR 3/1					humic	humic peat
							water table <10cm

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P (VP)

Organic layers:
- [✓] Organic soil material
- [ ] Litter
- [ ] Fibric
- [✓] Mesic
- [✓] Humic
- [✓] Peaty topsoil
- [✓] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [ ] Sticky
- [✓] Fluid

Colours: profile form either:
- [ ] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat (Valley) Gully Slope

Water table: Depth (cm) 10cm

(High GW) Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [✓] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [ ] Surface water (1A)
- [✓] Groundwater <30 cm (1B)
- [✓] Soil saturation <30 cm (1C)
- [ ] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [ ] Hydrogen sulphide odour (3A)
- [ ] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

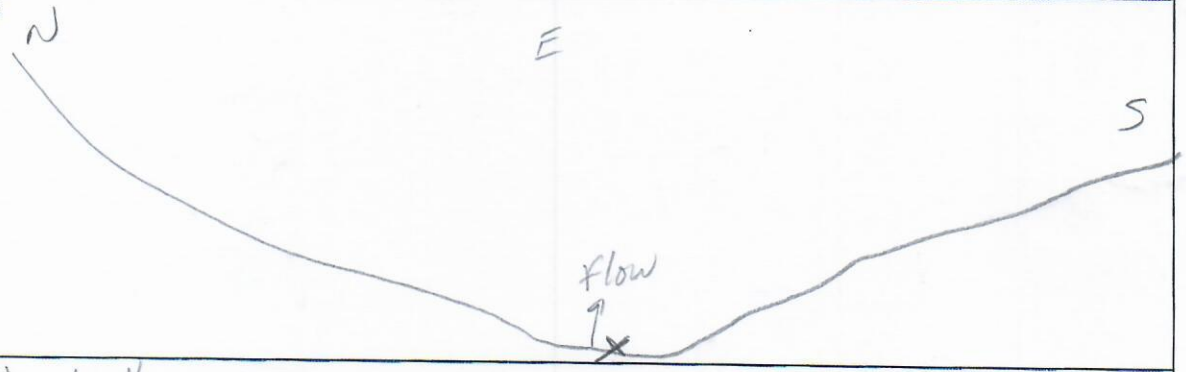
- [ ] Water-stained leaves (2K)
- [✓] Drainage patterns (2L)
- [✓] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [✓] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [✓] NO [ ]

Sketch of site/soil:



Remarks: Valley bottom riparian wetland w/ surface + near surface saturation

NT-11

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mouse | Region: Southland | Sampling point: North trib (upland grazed)

Owner: ? ? ? | Date: 07/03/23 5:45pm | Land use: grazed.

Landform: wetland gully slope | Local relief: | Land cover: pasture

Is the land drained (circle) YES NO | Investigator(s): LSW BM | Soil °C: | Slope°: 5-10°

GPS (NZTM): WP 519 | Altitude m: | Photo Nos: 2134 & 2935 2936 – 2942

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) near drought

Are vegetation, soil or hydrology significantly disturbed? (circle) Yes | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☐ ☒ NO

Hydric soils present? YES ☐ ☒ NO

Wetland hydrology present? YES ☐ ☒ NO

Is the sampled area within a wetland? YES ☐ NO ☒

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. herb sp. 1	<1%		FACU
2. exotic grass sp. 1	2%		UPL
3. narrow leaf plantain	5%		FACU
4. Hawkbit ? (dics)	10%		FACU
5. timothy grass	1%		FACU
6. sheep's sorrel	<1%		FACU.
7. brachiolepis	85%	Y	FACU
8. suckling clover	<1%		UPL
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 0

Tot. Dominant Spp. across strata (B) 1

% OBL/FACW/FAC (A/B) 0%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW		x 2 =	
FAC		x 3 =	
FACU	103	x 4 =	412
UPL	3	x 5 =	15
Total	106 (A)		427 (B)

Prevalence Index (B/A) = 4.02

Hydrophytic vegetation indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☐

NO ☒

UNCERTAIN ☐

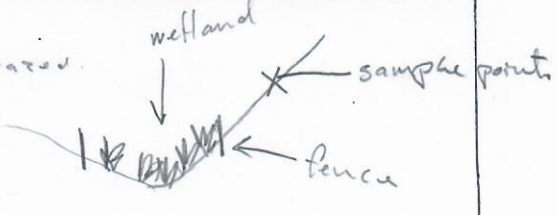
Remarks: herb sp. 1 ⇒ same as NW trib upland grazed.

ox grass sp 1. ⇒ same as NW trib upland grazed.

4. Hypochaeris radicata

8. Tri dub.

2. Crested dogtail



7/3/23 @ 1745 NT-N North trib upland pasture

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-13	2.5Y 6/3	–	–	–	none	mineral	fine roots
13-28	2.5Y 6/6	2.5YR 4/8	2%	2mm	Nodules	mineral	Sparse iron Nodules
28-40	10YR 6/8	2.5YR 4/8	80%	4mm	matrix + nodules	mineral	

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☑ Iron concretions
- ☐ Manganese concretions
- ☑ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley OR
- ☐ Mottled

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully Slope

Water table: Depth (cm) 74 0cm

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

☐ Pugged

Hydric soils present? YES ☐ NO ☑ UNCERTAIN ☐ NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

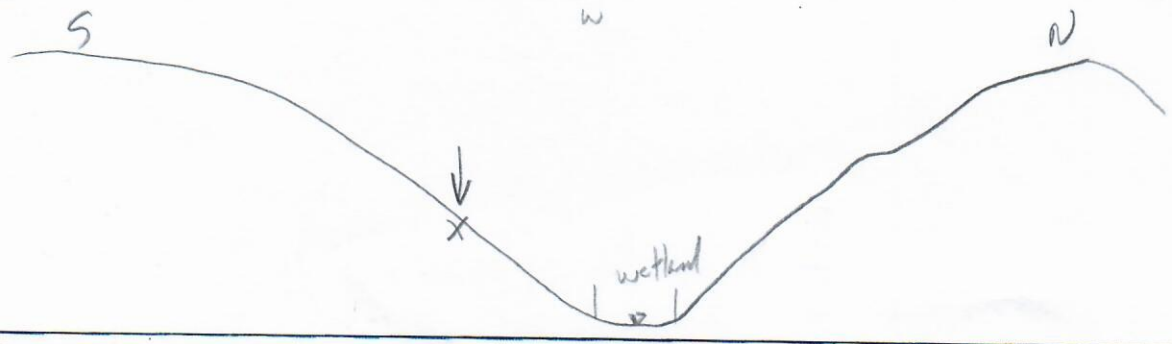
- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☐ NO ☑

Sketch of site/soil:



Remarks: Dry pasture Soil. upland grazing area.

NWT-U1

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mire | Region: Southland | Sampling point: NW Trib (upland grazed)

Owner: ↑ ↑ 9 | Date: 07/03/23 | Land use: grazed

Landform: ~~SE~~ NE Slope. | Local relief: | Land cover: pasture.

Is the land drained (circle) YES NO | Investigator(s): LSW BM | Soil °C: | Slope°: 15-20°

GPS (NZTM): 518 | Altitude m: | Photo Nos: 2932 & 2933

Are climatic/hydrologic conditions on the site typical for this time of year? (YES) NO (circle appropriate; if NO explain in Remarks)

Are vegetation, soil or hydrology significantly disturbed? (circle) Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) No Explain answers in Remarks if needed grazed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☐ ☒ NO

Hydric soils present? YES ☐ ☒ NO

Wetland hydrology present? YES ☐ ☒ NO

Is the sampled area within a wetland? YES ☐ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. brown top	~~70~~	Y	FACU
2. White clover	2 %		FACU
3. Tight thistle.	3 %		FACW
4. Hawksbit ? Hypo Rid	2 %		FACU
5. Creeping buttercup.	5 %		FAC
6. herb 1. (Selfheal).	1 %		FACU
7. lotus	< 1 %		FAC
8. timothy grass	< 1 %		FACU
9. ex grass sp 1.	20 %	Y	UPL
10. ex grass sp 2.	3 %		FACU.
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 0

Tot. Dominant Spp. across strata (B) 2

% OBL/FACW/FAC (A/B) 0%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW	3	x 2 =	6
FAC	6	x 3 =	18
FACU	79	x 4 =	316
UPL	20	x 5 =	100
Total	108 (A)		440 (B)

Prevalence Index (B/A) = 4.07

Hydrophytic vegetation indicators:

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☐

NO ☒

UNCERTAIN ☐

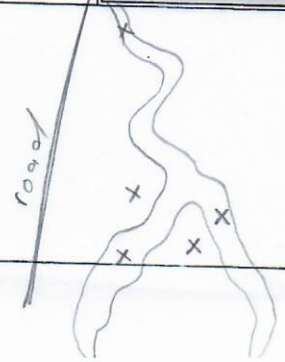
Remarks: GPS 001 - 517 full wetland.

sample point ↓

3. Marsh thistle.

9. Crested dog tail

10. Iolium perenne.



NWT-U1

NW Trib upland grazed

7/3/23 1700

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-20	10YR 4/3	none				mineral	fine roots
20-30	10YR 4/2	10YR 6/6	10%	3mm	matrix + nodules	mineral	
30-50	10YR 6/8	10YR 6/6 nodules	20%	3mm	nodules	mineral	

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle): W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☑ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley OR
- ☐ Mottled

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully (Slope)

Water table: Depth (cm) ___

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

☐ Pugged

Hydric soils present? YES ☐ NO ☑ UNCERTAIN ☐ NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

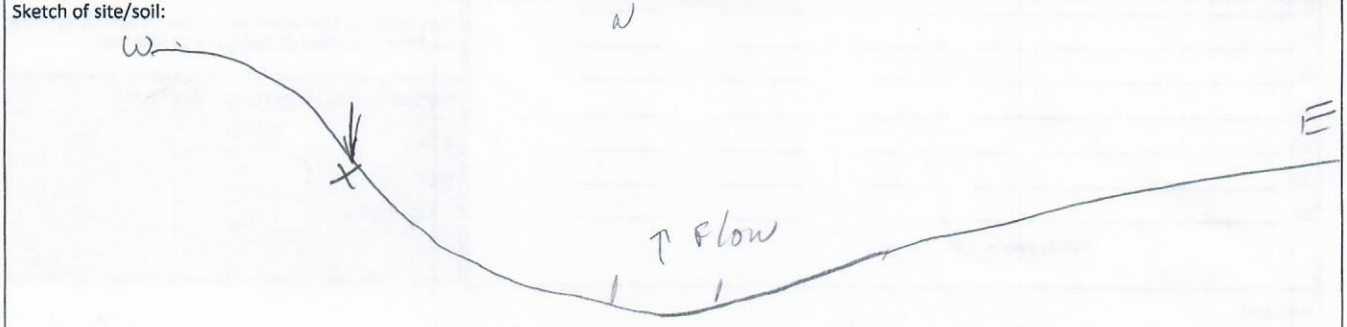
- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☐ NO ☑

Sketch of site/soil:



Remarks:

Dry upland grazed site 1/3 from ridge to valley wetland.

NWT-W1

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New vale Mire (W) Region: Southland Sampling point: Wetland South branch of North west trib

Owner: New vale Date: 07/03/23 Land use: fenced historic grass

Landform: Valley Local relief: Land cover: grassland

Is the land drained (circle) YES NO Investigator(s): CSW BMcG Soil °C: Slope°: <2°

GPS (NZTM): WP 305 Altitude m: Photo Nos: #2921

Are climatic/hydrologic conditions on the site typical for this time of year? YES NO (circle appropriate; if NO explain in Remarks)

Are vegetation, soil or hydrology significantly disturbed? (circle) Are 'normal circumstances' present? (circle) YES NO

Are vegetation, soil or hydrology naturally problematic? (circle) Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☒ NO ☐ **Is the sampled area within a wetland?** YES ☒ NO ☐

Hydric soils present? YES ☒ NO ☐

Wetland hydrology present? YES ☒ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Juncus effusus	30 %	Y	FACW
2. ~~Grass sp not~~ Agrostis gen	40 %	Y	FACW
3. Carex Coriacea	10 %		FACW
4. Cocksfoot	10 %		FACU
5. Carex lepovina	10 %		FACW
6. Jointed rush	~~3~~ %		FACW
7. Sweet vernal	1 %		FACU
8. Creeping buttercup	1 %		FAC
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 2

Tot. Dominant Spp. across strata (B) 2

% OBL/FACW/FAC (A/B) 100

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x1 =	
FACW	97	x2 =	194
FAC		x3 =	
FACU	11	x4 =	44
UPL		x5 =	
Total	108 (A)		238 (B)

Prevalence Index (B/A) = 2.20

Hydrophytic vegetation indicators:

☒ Dominance Test is >50%

☒ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☒

NO ☐

UNCERTAIN ☐

Remarks: GPS 001

South branch of North west trib wetland.

NWT-WI

South branch of NW Trib Wetland

7/3/23 @ 1430

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-25	90% roots + fibric peat	–	–	–		roots & peat	
	10YR 3/2		10%	2mm	roots		
25-40							
	10YR 2/1						
	humic peat	–	–	–	–	humic peat	water table @ 30cm

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P (VP)

Organic layers:
- [✓] Organic soil material
- [ ] Litter
- [✓] Fibric
- [ ] Mesic
- [✓] Humic
- [✓] Peaty topsoil
- [✓] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [ ] Sticky
- [ ] Fluid

Colours: profile form either:
- [ ] Gley OR
- [✓] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat (Valley) Gully Slope

Water table: Depth (cm) 30 cm

(High GW) Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [X] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [ ] Surface water (1A)
- [✓] Groundwater <30 cm (1B)
- [✓] Soil saturation <30 cm (1C)
- [ ] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [ ] Hydrogen sulphide odour (3A)
- [✓] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

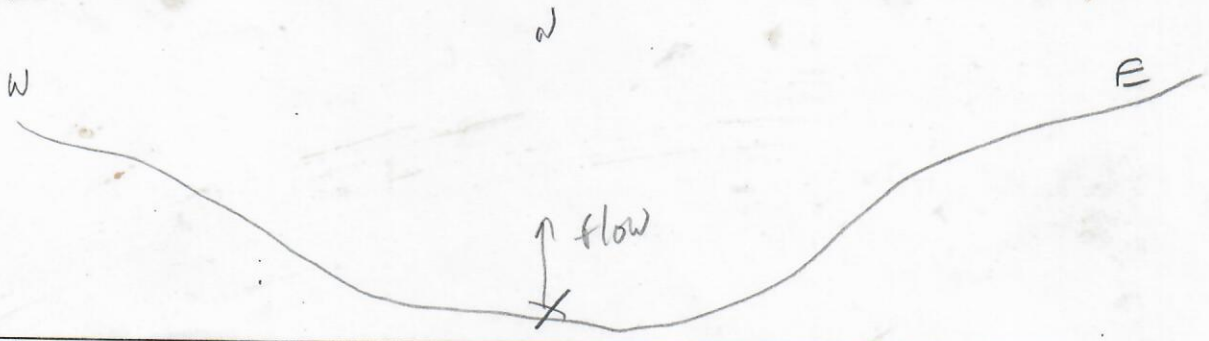
- [ ] Water-stained leaves (2K)
- [✓] Drainage patterns (2L)
- [✓] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [✓] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [✓] NO [ ]

Sketch of site/soil:



Remarks:

water table @ 30-35 cm Fibric peat above. GPS 061

Dry summer conditions - drought

NWT-42

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

NW trib

Site: New vale mine | Region: Southland | Sampling point: Upland (natural)

Owner: New vale mine | Date: 07/03/23 | Land use: fenced

Landform: S-facing slope | Local relief: | Land cover: tussock / grassland

Is the land drained (circle) YES (NO) | Investigator(s): LSW, BM | Soil °C: | Slope°: 5–10°

GPS (NZTM): WP 441 | Altitude m: | Photo Nos: #2924 & 2925 2926 – 2930

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) Drought (unusual)

Are vegetation, soil or hydrology significantly disturbed? (circle) no | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) ? | Explain answers in Remarks if needed possibly planted vege-

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☐ ☒ NO

Hydric soils present? YES ☐ ☒ NO

Wetland hydrology present? YES ☐ ☒ NO

Is the sampled area within a wetland? YES ☐ NO ☒

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Red tussock (sample)	85	Y	FAC
2. Brown top	10		FACU
3. cocksfoot	3 %		FACU
4. sweet vernal	1 %		FACU
5. Blechnum P.M	1 %		FAC
6. Creeping bullwrap	2 %		FAC
7. lotus	2 %		FAC
8. white small flower (herb)	<1%		FAC
9. Hawksbit ? (pics)	5 %		FACU
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 1

Tot. Dominant Spp. across strata (B) 1

% OBL/FACW/FAC (A/B) 100%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW		x 2 =	
FAC	91	x 3 =	273
FACU	19	x 4 =	76
UPL		x 5 =	
Total	110 (A)		349 (B)

Prevalence Index (B/A) = 3.17

Hydrophytic vegetation indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☐

NO ☒

UNCERTAIN ☐

Remarks:

8. Stellaria graminea
9. Hypo Radicata

prevalence only close to 3 due to the Red tussock being the dominant species and is happy growing

NWT-U2

South aspect North Branch NW Trib native upland

7/3/23 @ 1600

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-15cm	7.5YR 2.5/3	—	—	—	—	mineral	
15-35	7.5YR 6/4	5YR 5/8 in Nodules	15%	5mm		mineral	

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W (MW) I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☑ Iron concretions @ 30cm
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley OR
- ☐ Mottled

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully (Slope)

Water table: Depth (cm) >30cm

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

☐ Pugged

Hydric soils present? YES ☐ NO ☑ UNCERTAIN ☐ NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

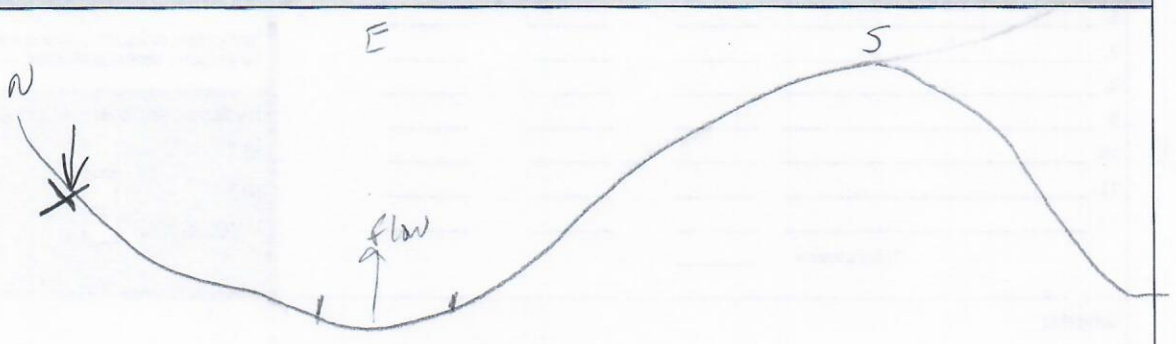
- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☐ NO ☑

Sketch of site/soil:



Remarks: mid slope position dense dry soils, orange to mottled @ >30cm

NWT-W3

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New vale Mine | Region: Southland. | Sampling point: NW trib N Branch (Wetland)

Owner: ↑ ↑ ↑ | Date: 07/03/23 | Land use: Fenced

Landform: near top of gully | Local relief: | Land cover: sedgelands

Is the land drained (circle) YES (NO) | Investigator(s): CSW | Soil °C: | Slope°:

GPS (NZTM): 496 | Altitude m: | Photo Nos: #2931

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) near drought.

Are vegetation, soil or hydrology significantly disturbed? (circle) no | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES [X] NO [ ] | **Is the sampled area within a wetland? YES [ ] NO [ ]**

Hydric soils present? YES [X] NO [ ]

Wetland hydrology present? YES [X] NO [ ]

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Carex coriacea	85%	Y	FACW
2. red tussock ?	15%		FAC
3. lotus	15%		FAC
4. cocksfoot.	2%		FACU
5. gorse (Ulex europaeus)	2%		FACU
6. browntop	<1%		FACU
7. creeping buttercup	<1%		FAC
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 1

Tot. Dominant Spp. across strata (B) 1

% OBL/FACW/FAC (A/B) 100%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW	85	x 2 =	170
FAC	31	x 3 =	91
FACU	5	x 4 =	20
UPL		x 5 =	
Total	121 (A)		281 (B)

Prevalence Index (B/A) = 2.32

Hydrophytic vegetation indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological adaptations[1] (supporting data in Remarks)
- [ ] Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES [X] NO [ ] UNCERTAIN [ ]

Remarks:

7/3/23 @ 1640

NWT - W3

North branch wetland NW Trib

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-10						roots	roots + fibric peat
						fibric	
10-25	10YR 3/1					humic	
25-40	5Gy1 5/10Y	–	–	–	–	mineral	gleyed soil

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P (VP)

Organic layers:
- [x] Organic soil material
- [ ] Litter
- [x] Fibric
- [ ] Mesic
- [x] Humic
- [x] Peaty topsoil
- [x] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [ ] Sticky
- [ ] Fluid

Colours: profile form either:
- [x] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [x] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat (Valley) Gully (Slope)

Water table: Depth (cm) ~40cm

(High GW) Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [X] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [ ] Surface water (1A)
- [ ] Groundwater <30 cm (1B)
- [x] Soil saturation <30 cm (1C)
- [ ] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [ ] Hydrogen sulphide odour (3A)
- [ ] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

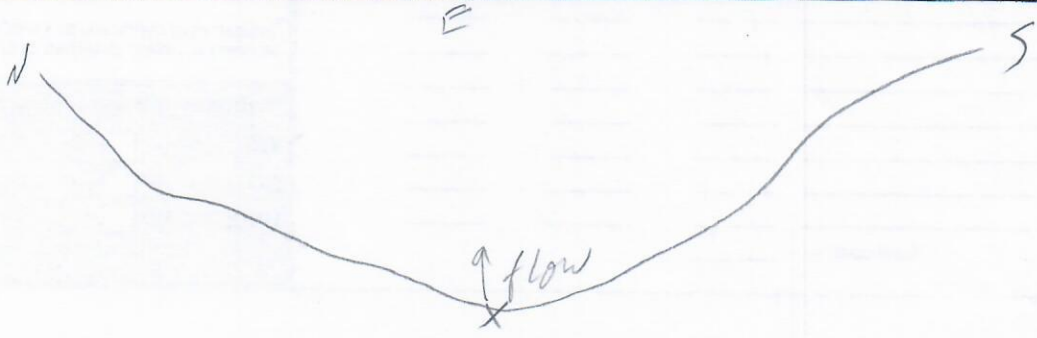
- [ ] Water-stained leaves (2K)
- [x] Drainage patterns (2L)
- [x] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [x] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [x] NO [ ]

Sketch of site/soil:



Remarks: wetland site w/ peat over gleyed sub soil

NWT-W2

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mouth Region: Southland Sampling point: Main channel ~~trib~~ wetland

Owner: New Vale Date: 07/03/23 Land use: fenced - excluded.

Landform: Main channel Local relief: _____ Land cover: Juncus, sedge, grass.

Is the land drained (circle) YES NO Investigator(s): KSW BM Soil °C: _____ Slope°: _____

GPS (NZTM): 384 _____ Altitude m: _____ Photo Nos: #2922 & 2923

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) near drought

Are vegetation, soil or hydrology significantly disturbed? (circle) no Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☒ NO ☐ **Is the sampled area within a wetland?** YES ☒ NO ☐

Hydric soils present? YES ☒ NO ☐

Wetland hydrology present? YES ☒ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size: _____)			
1. C. Coriacea	15%		FACW
2. Creeping bent	60%	Y	FACW
3. Alopa gen.	10%		FACW
4. sharp spike sedge	13%		OBL
5. J. edgariae	5%		FACW
6. Creeping buttercup	2%		FAC
7. ox grass ~~+++~~	3%		OBL
8.			
9.			
10.			
11.			
12.			
Total cover =			

maybe same (sample)

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 1

Tot. Dominant Spp. across strata (B) 1

% OBL/FACW/FAC (A/B) 100

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	16	x 1 =	16
FACW	90	x 2 =	180
FAC	2	x 3 =	6
FACU		x 4 =	
UPL		x 5 =	
Total	108 (A)		202 (B)

Prevalence Index (B/A) = 1.87

Hydrophytic vegetation indicators:

☒ Dominance Test is >50%

☒ Prevalence Index is ≤3.0[1]

☐ Morphological adaptations[1] (supporting data in Remarks)

☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES ☒

NO ☐

UNCERTAIN ☐

Remarks:

2. Agrostis stolonifera.
7. Glyceria plicata
3. Alopecurus geniculatus
4. Eleocharis acuta.

New Vale NWT-W2 Main stem NW Trib

SECTION C – SOIL AND HYDROLOGY 7/3/23 @ 1530

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-25	Humic + Fibric Peat					organic	water table
	10YR 3/2					humic	@ <10cm
25-40	humic Peat					humic	All peat profile
	10YR 3/1						

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P (VP)

Organic layers:
- [✓] Organic soil material
- [✓] Litter
- [ ] Fibric
- [✓] Mesic
- [✓] Humic
- [✓] Peaty topsoil
- [✓] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [ ] Sticky
- [✓] Fluid

Colours: profile form either:
- [ ] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat (Valley) Gully Slope

Water table: Depth (cm) 0 cm

(High GW) Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [✓] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [✓] Surface water (1A)
- [✓] Groundwater <30 cm (1B)
- [✓] Soil saturation <30 cm (1C)
- [✓] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [✓] Hydrogen sulphide odour (3A)
- [ ] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

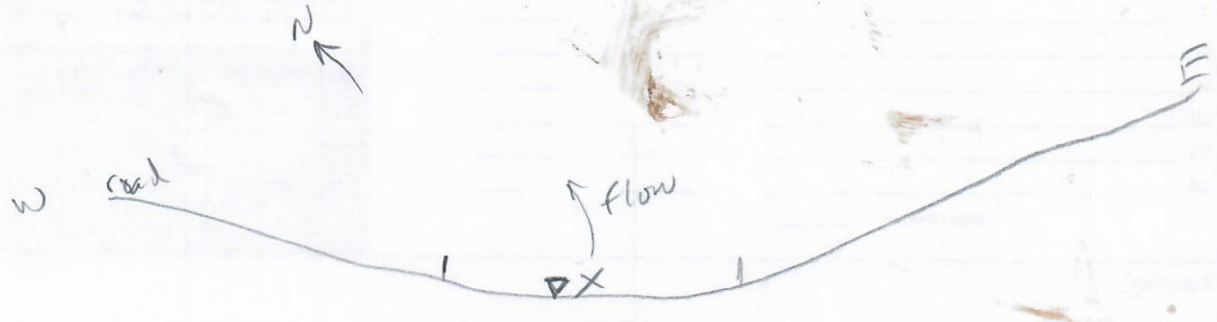
- [ ] Water-stained leaves (2K)
- [✓] Drainage patterns (2L)
- [✓] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [✓] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [✓] NO [ ]

Sketch of site/soil:



Remarks: Humic Peat, saturation to surface, boggy floating veg. Near drought conditions

ST-W1

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New vale mine | Region: Southland | Sampling point: South Fwb Wetland upper

Owner: ↑ ↑ ↑ | Date: 08/03/23 | Land use: sedgeland fenced

Landform: gully wetland | Local relief: | Land cover: Sedgeland

Is the land drained (circle) YES (NO) | Investigator(s): LSW BM | Soil °C: | Slope°:

GPS (NZTM): ~~1669~~ 1669 | Altitude m: | Photo Nos: #3062 163

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) new drought

Are vegetation, soil or hydrology significantly disturbed? (circle) no | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) no | Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES [X] NO [ ]

Hydric soils present? YES [X] NO [ ]

Wetland hydrology present? YES [X] NO [ ]

Is the sampled area within a wetland? YES [X] NO [ ]

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. red tussock	5%		FAC
2. Carex Secta	55%	Y	OBL
3. Carex Coriacea	30%	Y	FACW
4. smooth fern	3%		FAC
5. lotus	25%	Y	FAC
6. creeping buttercup	7%		FAC
7. brown top	<1%		FACU
8. cocksfoot	<1%		FACU
9. bracken	~1%		FACU
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 3

Tot. Dominant Spp. across strata (B) 3

% OBL/FACW/FAC (A/B) 100%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	55	x 1 =	55
FACW	30	x 2 =	60
FAC	40	x 3 =	120
FACU	3	x 4 =	12
UPL		x 5 =	
Total	128 (A)		247 (B)

Prevalence Index (B/A) = 1.73

Hydrophytic vegetation indicators:

- [X] Dominance Test is >50%
- [X] Prevalence Index is ≤3.0[1]
- [ ] Morphological adaptations[1] (supporting data in Remarks)
- [ ] Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES [X]

NO [ ]

UNCERTAIN [ ]

Remarks: smooth fern → same as day before

4. Histiopteris incisa

08/03/23 @ 1140 ST-W1 South trib seasc wetl upper

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-10	10YR3/2					Peat	dense roots +
						Peat	fibric peat
10-30	10YR3/2					Peat	fibric + humic
30-50	10YR3/2						fibric + humic

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P (VP)

Organic layers:
- [x] Organic soil material
- [x] Litter
- [x] Fibric
- [x] Mesic
- [ ] Humic
- [ ] Peaty topsoil
- [ ] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [x] Sticky
- [ ] Fluid

Colours: profile form either:
- [ ] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully Slope

Water table: Depth (cm) <10 m

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [x] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [x] Surface water (1A)
- [x] Groundwater <30 cm (1B)
- [x] Soil saturation <30 cm (1C)
- [ ] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [ ] Hydrogen sulphide odour (3A)
- [ ] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

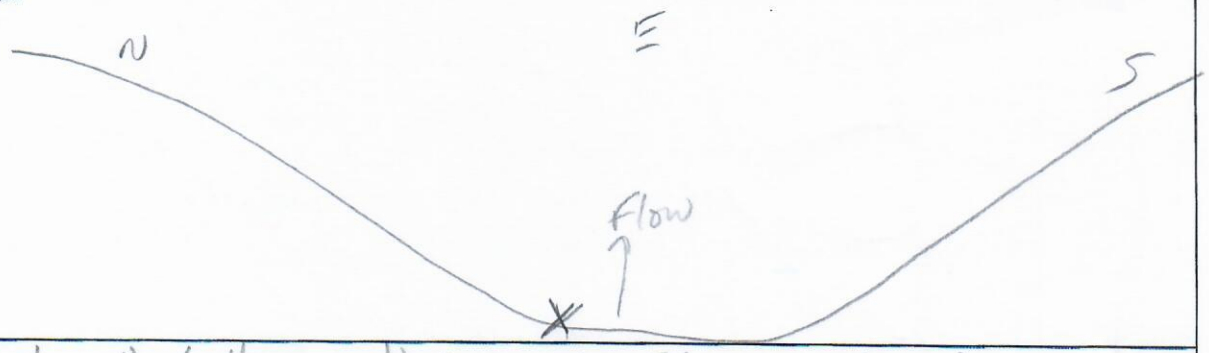
- [ ] Water-stained leaves (2K)
- [x] Drainage patterns (2L)
- [x] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [x] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [x] NO [ ]

Sketch of site/soil:



Remarks: Peat valley bottom wetland with flowing water stream. Thick vegetation. water table at or close to surface.

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale mine
Owner: ↑ ↑ ↑
Landform: gulley wetland
Is the land drained (circle) YES NO
GPS (NZTM): 1070

Region: Southland
Date: 08/03/23
Local relief: downstream
Investigator(s): ISW BM
Altitude m:

Sampling point: South trib downstream wetland
Land use: fenced excluded wetland,
Land cover: Sedge/harakeke/cop
Soil °C: Slope°: <2°
Photo Nos: # 3066 & 3067

Are climatic/hydrologic conditions on the site typical for this time of year? YES (NO) (circle appropriate; if NO explain in Remarks) mean drought
Are vegetation, soil or hydrology significantly disturbed? (circle) no
Are 'normal circumstances' present? (circle) YES NO
Are vegetation, soil or hydrology naturally problematic? (circle) no
Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☒ NO ☐
Hydric soils present? YES ☒ NO ☐
Wetland hydrology present? YES ☒ NO ☐

Is the sampled area within a wetland? YES ☒ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size: 5x5)			
1. cop prop	10%		
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:)			
1. Juncus edgar	5%		FACW
2. red tussock	17%		FAC
3. harakeke	7%		FACW
4. toetoe	45%	Y	FAC
5. Thistle Cat 2 swamp	10%		FACW
6. carex secta	3%		OBL
7. lotus pedunculatus.	20%	Y	FAC
8. buttercup creep	4%		FAC
9. Mue Ans	2%		FACU
10. C. Caviacea	7%		FACW
11. cocksfoot	<1%		FACU
12. Blech BM	<1%		FAC
Total cover =			

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) 2
Tot. Dominant Spp. across strata (B) 2
% OBL/FACW/FAC (A/B) 100%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	3	x1 =	3
FACW	29	x2 =	58
FAC	87	x3 =	261
FACU	3	x4 =	12
UPL		x5 =	
Total	122 (A)		334 (B)

Prevalence Index (B/A) = 2.74

Hydrophytic vegetation indicators:
☒ Dominance Test is >50%
☒ Prevalence Index is ≤3.0[1]
☐ Morphological adaptations[1] (supporting data in Remarks)
☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ☒
NO ☐
UNCERTAIN ☐

Remarks: alot of ex cotoneaster nearby.

2. C. Rub subsp Cuprea
3. Pho Ten
4. Ans Ric
5. Cirsium Palustre (Marsh thistle).

04/03/23 1200

South trib Lower wetland

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-10	10YR 4/3					mineral/organic	
10-30	10YR 3/2					Peat	mesic/fibric
30-50	10YR 2/2					Peat	humic/fibric

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- [x] Organic soil material
- [x] Litter
- [x] Fibric
- [x] Mesic
- [x] Humic
- [x] Peaty topsoil
- [x] Peaty subsoil

Concretions:
- [ ] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [x] Sticky
- [ ] Fluid

Colours: profile form either:
- [ ] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully Slope

Water table: Depth (cm) ~25cm

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [ ] Pugged

Hydric soils present? YES [x] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [ ] Surface water (1A)
- [x] Groundwater <30 cm (1B)
- [x] Soil saturation <30 cm (1C)
- [ ] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [ ] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [ ] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [x] Hydrogen sulphide odour (3A)
- [ ] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [ ] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

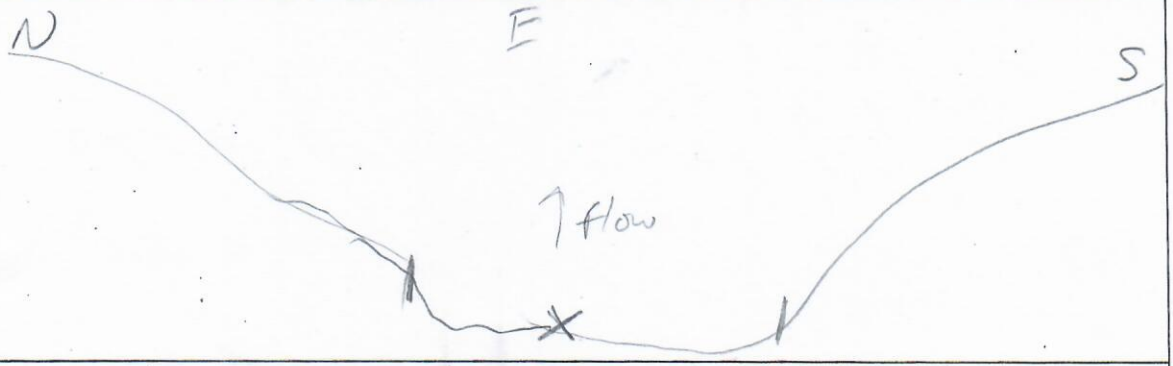
- [ ] Water-stained leaves (2K)
- [x] Drainage patterns (2L)
- [x] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [x] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [x] NO [ ]

Sketch of site/soil:



Remarks: Peat wetland (riparian) w/ large/tall vegetation. Water table below surface but near saturated surface peat

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mouse
Owner: ↑ ↑ ↑
Landform: slope.
Is the land drained (circle) YES NO
GPS (NZTM): 1071

Region: Southland.
Date: 08/03/23
Local relief: wetland at toe
Investigator(s): LSW BM
Altitude m:

Sampling point: South trib upland.
Land use: grazed.
Land cover: pasture.
Soil °C: Slope°: ~5-10°
Photo Nos: 3070 & 71
3072 +

Are climatic/hydrologic conditions on the site typical for this time of year? YES NO (circle appropriate; if NO explain in Remarks)
Are vegetation, soil or hydrology significantly disturbed? (circle) Are 'normal circumstances' present? (circle) YES NO
Are vegetation, soil or hydrology naturally problematic? (circle) Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES ☐ ☒ NO
Hydric soils present? YES ☐ ☒ NO
Wetland hydrology present? YES ☐ ☒ NO

Is the sampled area within a wetland? YES ☐ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. narrow leaf plantain	10%		FACU
2. white clover	20%	Y	FACU
3. Catsear	10%		FACU
4. rye grass (sample)	65%	Y	FACU
5. lawn daisy (s)	1%		FACU
6. Selfheal	3%		FACU
7. crested dog tail	2%		UPL
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) 0
Tot. Dominant Spp. across strata (B) 2
% OBL/FACW/FAC (A/B) 0

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x1 =	
FACW		x2 =	
FAC		x3 =	
FACU	109	x4 =	436
UPL	2	x5 =	10
Total	111 (A)		446 (B)

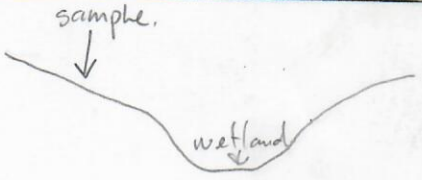
Prevalence Index (B/A) = 4.02

Hydrophytic vegetation indicators:
☐ Dominance Test is >50%
☐ Prevalence Index is ≤3.0[1]
☐ Morphological adaptations[1] (supporting data in Remarks)
☐ Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ☐
NO ☐
UNCERTAIN ☐

Remarks:



4. Lolium perenne
5. bellis perennis
3. Hypochaeris sp. (maybe radicata)
6. prunella vulgaris.

08/03/23

@ 1220

South trib upland pasture

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-15	10YR 5/4					mineral	Dense mine soil
15-25	10YR 5/6					↓	↓
25-40	10YR 6/8						
40-60	10YR 5/8						

Dense hard soil

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley OR
- ☐ Mottled

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully Slope

Water table: Depth (cm) >60cm

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) 28cm

Slow perm argillic

☐ Pugged

Hydric soils present? YES ☐ NO ☑ UNCERTAIN ☐ NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

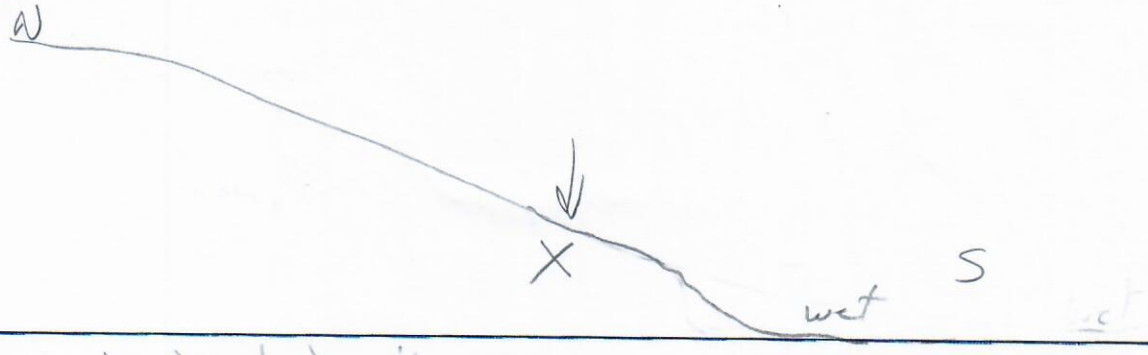
- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☐ NO ☑

Sketch of site/soil:



Remarks:

Dense hard upland soil dry when sampled strong profile change @ 28cm.

NEW ZEALAND WETLAND DELINEATION DATA FORM

SECTION A – SITE INFORMATION

Site: New Vale Mine | Region: Southland | Sampling point: South trib stream wetland branch

Owner: ↑ ↑ ↑ | Date: 08/03/23 | Land use: grazed

Landform: drainage path | Local relief: Wetland-South trib | Land cover: pasture.

Is the land drained (circle) YES NO | Investigator(s): LSW BM | Soil °C: | Slope°: <2°

GPS (NZTM): 1301 | Altitude m: — | Photo Nos: #3104-3106

Are climatic/hydrologic conditions on the site typical for this time of year? (YES) NO (circle appropriate; if NO explain in Remarks)

Are vegetation, soil or hydrology significantly disturbed? (circle) Yes. | Are 'normal circumstances' present? (circle) (YES) NO

Are vegetation, soil or hydrology naturally problematic? (circle) No | Explain answers in Remarks if needed grazed-Mowed.

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Hydrophytic vegetation present? YES [—] NO [—] **Is the sampled area within a wetland?** YES [X]

Hydric soils present? YES [X] NO [ ] NO [ ]

Wetland hydrology present? YES [X] NO [ ]

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
Total cover =			
Sapling/Shrub Stratum (Plot size:_____)			
1.			
2.			
3.			
4.			
5.			
Total cover =			
Herb Stratum (Plot size:_____)			
1. Alopecurus geniculatus.	40 %	Y	FACW
2. Festuca pratensis.	50 %	Y	N/a
3. bare ground	10 %	—	N/a
4. broad leaf dock.	<2 %	—	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
Total cover =			

Dominance Test:

No. Dominant Spp. OBL/FACW/FAC (A) 1

Tot. Dominant Spp. across strata (B) 2

% OBL/FACW/FAC (A/B) 50%

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW	40	x 2 =	80
FAC	2	x 3 =	6
FACU	50	x 4 =	200
UPL		x 5 =	
Total	92 (A)		286 (B)

Prevalence Index (B/A) = 3.10.

Hydrophytic vegetation indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological adaptations[1] (supporting data in Remarks)
- [X] Problematic hydrophytic vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?

YES [ ]

NO [ ]

UNCERTAIN [X] → Dom species (likely unclassified wetland species.)

Remarks: ex grass sp. 1 (sample) collected. → festuca pratensis.

Alopecurus geniculatus

2. lolium pratense

festuca pratensis / lolium pratense is known as a species that inhabits wetland however

South trib stream branch wetland.

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-15cm	2.5y 4/2	—	—				
15-30	gley 1 4/5GY	10YR 5/8	~20%				
30+	gley 1 4/5GY	—	—				

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- [ ] Organic soil material
- [ ] Litter
- [ ] Fibric
- [ ] Mesic
- [ ] Humic
- [ ] Peaty topsoil
- [ ] Peaty subsoil

Concretions:
- [x] Iron concretions
- [ ] Manganese concretions
- [ ] Nodular

Consistence:
- [ ] Plastic
- [ ] Sticky
- [ ] Fluid

Colours: profile form either:
- [ ] Gley OR
- [ ] Mottled

Horizon:
- [ ] Reductimorphic
- [ ] Redox mottled
- [ ] Redox segregations
- [ ] Perch-gley features

Cause of wetness (circle appropriate):

Location: Depression Flat Valley Gully Slope

Water table: Depth (cm) ____

High GW Perched Seepage Tidal Lithic

Pans: Depth (cm) _____

Pan Humus Fe-pan Densi- Duri- Fragi Ortstein

Layers: Depth (cm) _____

Slow perm argillic

- [x] Pugged

Hydric soils present? YES [x] NO [ ] UNCERTAIN [ ] NZSC subgroup _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply

- [ ] Surface water (1A)
- [ ] Groundwater <30 cm (1B)
- [ ] Soil saturation <30 cm (1C)
- [x] Water marks (2A)
- [ ] Sediment deposits (2B)
- [ ] Drift deposits (2C)
- [ ] Algal mat/crust (2D)
- [x] Iron deposits (2E)
- [ ] Surface soil cracks (2F)
- [ ] Inundation on aerial imagery (2G)
- [x] Sparsely vegetated concave surface (2H)
- [ ] Salt crust (2I)
- [ ] Aquatic invertebrates (2J)
- [ ] Hydrogen sulphide odour (3A)
- [x] Oxidised rhizosphere on roots (3B)
- [ ] Reduced iron (3C)
- [ ] Reduced iron in tilled soil (3D)
- [x] High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

- [ ] Water-stained leaves (2K)
- [x] Drainage patterns (2L)
- [ ] Dry-season water table (3E)
- [ ] Saturation in aerial imagery (3F)
- [x] Geomorphic position (4B)
- [ ] Shallow aquitard (4C)
- [ ] FAC-neutral test (4D)
- [ ] Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

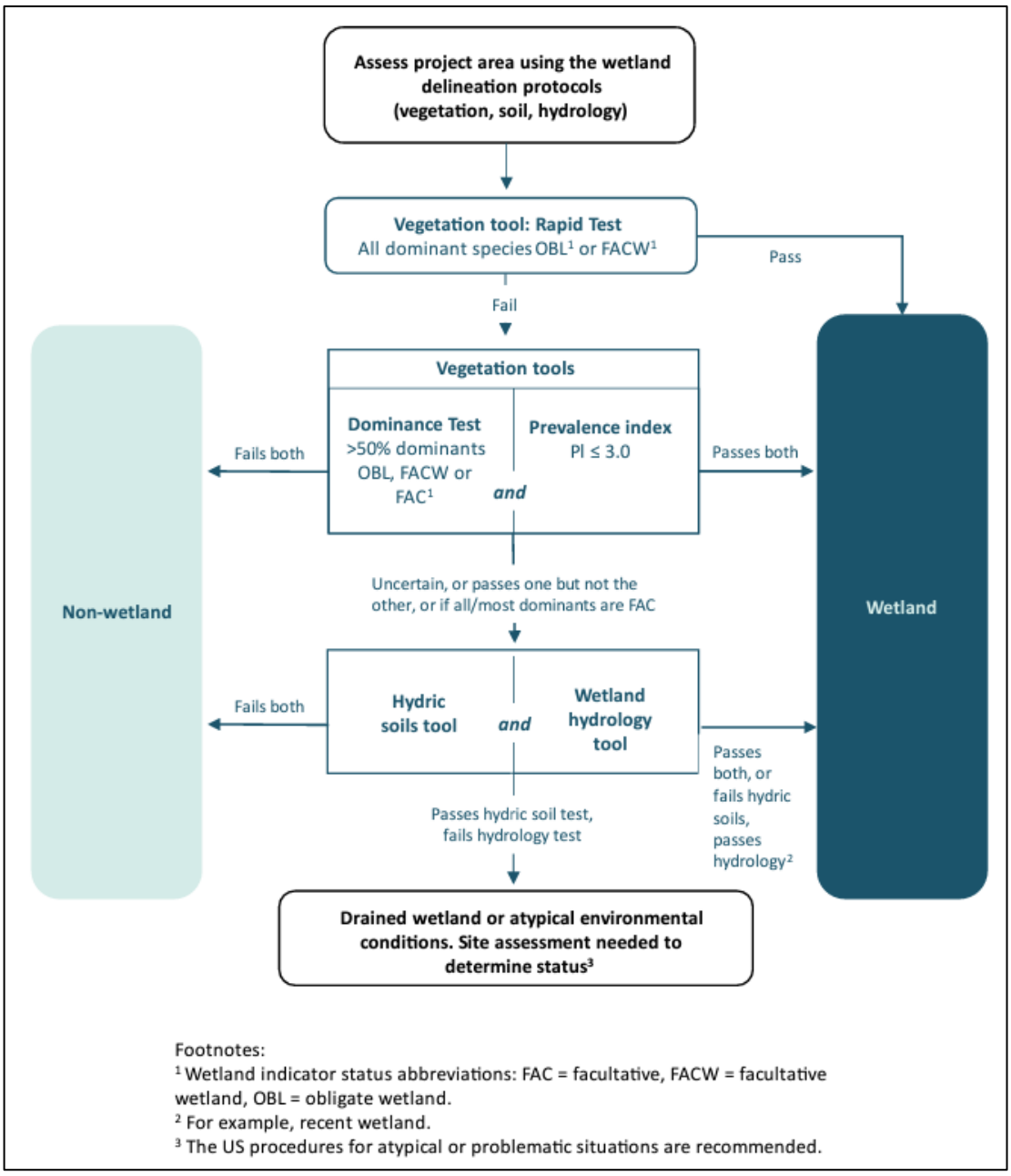
1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES [x] NO [ ]

Sketch of site/soil:

Remarks:

Appendix D: NPS-FM 2020 Wetland Assessment flowcharts



Footnotes:
[1] Wetland indicator status abbreviations: FAC = facultative, FACW = facultative wetland, OBL = obligate wetland.
[2] For example, recent wetland.
[3] The US procedures for atypical or problematic situations are recommended.

Appendix F: Economic Impact Analysis

New Vale mine extension

Economic impact analysis

12 February 2024

SENSE PARTNERS
DATA LOGIC ACTION

Key points

Greenbriar Ltd is seeking an expansion to its mining operation

- Greenbriar Ltd is seeking resource consent for an expansion to its mining operation at New Vale, in Gore District. Depending on customer demand, this will extend the mine's current operating life by approximately four years to 2038.
- The mine is on land classified as land use class 3 under the National Policy Statement on Highly Productive Land (NPS-HPL). This means that an expansion of activity has to meet the tests set out in the NPS-HPL.
- We have been engaged by Greenbriar Ltd to provide an economic impact analysis that tests whether the mine:

  Provides a significant national public benefit that could not otherwise be achieved using resources within New Zealand.

New Vale provides a $7.4m boost to local GDP

- The mine at New Vale supplied nearly 276,700 tonnes of coal, resulting in a $7.4m gross value added (GVA) in 2023, equivalent of 0.7% of Gore district's GDP.
- The mine supports 64 jobs in the local economy. This includes 39 people employed on site, and a further 25 jobs supported through a $6m local spend on inputs – 1.12% of jobs in Gore district.
- New Vale paid an average wage of $74,250. Median wages in the mining sector at $78,045 are the second highest in the Southland region, 42% above the region-wide median.

The mine supports a further $501m in economic activity

- The agriculture sector is a major employer across the lower South Island. Meat and Dairy processors rely on coal to transform primary sector outputs into products for local consumption and export.
- By providing this coal, New Vale supports jobs and economic activity in the dairy and meat processing sectors across the Lower South Island.
- New Vale's customers are likely to remain reliant on coal for some time. The Climate Change Commission has based its emissions pathways on the phase-out of coal in food processing by 2040.[1]
- Based on the mine's estimated market share, we estimate the mine enables 5,094 jobs and $501m in GDP across the dairy and meat processing sectors.

[1] Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa*. Pp. 114. Para 7.5.66

New Vale is the only operating source of low-cost coal in Southland

- We have based our assessment on alternative, consented sources of thermal coal. Customers are transitioning away from coal. However, this will take some time in the food processing industry.[2] In the interim, customers are reliant on coal.
- Users of coal tend to demand large quantities, making transportation a considerable expense. The viability of alternative sources of coal is highly sensitive to transport costs.
- Local alternatives may come at a **19% price increase**. However, regulatory constraints may mean that local supply cannot meet demand from New Vale customers.
- Alternative sources of coal on the West Coast are typically exported and are expensive to transport to Southland. We estimate if New Vale customers had to source coal from the West Coast instead, they would face an **average 148.4% increase in per-GJ energy costs**.
- Constraints in other Southland sources mean that the next cheapest available alternative is imported coal from Indonesia. This would still impose an **average per-GJ cost increase of 118%.**

The extension provides a significant national public benefit

- We estimate that the extension is a more productive use of land than the current sheep and beef operations it sustains. Given this, and the scale of employment and economic impacts in the context of Gore district, we consider that **the extension constitutes a significant public benefit**.
- The mine plays a role in providing key energy inputs into the food processing sectors across three regions. On this basis, we consider the benefit qualifies as a **national benefit.**
- Given the cost of and constraints facing local operating coal alternatives, we consider **it is likely these benefits would not otherwise be achieved using resources within New Zealand**.

[2] The Climate Change Commission's emissions pathways are based on a phaseout of coal in food processing by 2040. See: Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa.* Pp. 114. Para 7.5.66.

1. Purpose

1.1. Greenbriar Ltd aims to expand the New Vale mine

Greenbriar Ltd is seeking resource consent for an expansion to its mining operation at New Vale, in Gore District. This will increase the mine operation's current footprint from 178 ha to 323 ha.

Depending on customer demand, this expansion will extend the mine's current operating life by approximately four years to 2038. Our assessment is based on consistent customer demand, with the extension of the mine's current annual benefits for an additional four years.

1.2. Our analysis focuses on regulatory tests

The focus of our analysis is testing whether the mine *provides a significant national public benefit that could not otherwise be achieved using resources within New Zealand.* This test is set out in the National Policy Statement for Highly Productive Land (NPS-HPL), clause 3.9(2)(iii).

However, the NPS-HPL does not provide an explicit definition of what constitutes a "significant" benefit, a "national" benefit, nor a "public" benefit. It is not clear, for example, how large or certain a benefit needs to be to qualify as significant.

To address this, we split our analysis into two parts.

First, we assess whether the mine extension delivers a significant national public benefit. Here, we focus on measuring the direct and indirect economic contribution that the mine operation brings to the economy. We also look at the role the mine plays in providing inputs into the wider economy.

We propose that the mine's contribution toward economic activity and employment constitute a significant public benefit. We propose that the enabling role the mine plays in providing inputs into the food processing sector across three regions constitutes a national benefit.

Second, we test whether this benefit could otherwise be achieved using resources within New Zealand. To make the test tractable, we focus on alternative sources of coal which already have resource consent. This excludes consideration of:

- Unconsented sources of coal. There are other deposits of coal in New Zealand. Determining which sources would be realisable (or commercially viable) within New Zealand's resource management regulatory framework is a major undertaking.
- Other sources of energy. A transition away from coal is underway, but this will take time for various reasons.[3] The proposed extension of the mining operation to 2038 aligns with the Climate Change Commission's phaseout of coal in food processing by 2040.

[3] The Climate Change Commission's emissions pathways are based on a phaseout of coal in food processing by 2040. See: Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa.* Pp. 114. Para 7.5.66

2. Economic contribution

2.1. We demonstrate a significant public benefit

The mine at New Vale delivers a significant national public benefit to the economy. This can be viewed from two perspectives.

One, mining outputs **increase GDP** and the mine has a **direct impact on the local economy** through hiring staff and purchasing goods and services from other local businesses. This creates both job and business opportunities for local families and firms.

Two, as a supplier of coal, New Vale is an **important enabler of other economic activity**. The agricultural sector is energy intensive and relies on affordable access to energy. By providing such access, New Vale plays a role in supporting economic activity across the region.

2.2. New Vale is an important source of well-paid jobs

New Vale boosts Gore district's GDP by $7.4m each year

A key measure of the mine's direct economic contribution is its contribution to gross domestic product (GDP). We can measure this by looking at the business' gross value added (GVA). This is the sum of compensation of employees (i.e. wages, the return to labour), and gross operating surplus[4] (return to capital).

The mine at New Vale supplied nearly 276,700 tonnes of coal in the 12 months to June 2023, generating $17.99m in revenue.[5] Based on financial data provided by New Vale, this resulted in a $7.4m GVA.

We estimate Gore district, where the mine is located, had a GDP of $1,018m in the year to March 2023.[6] This means the mine directly contributed an equivalent of 0.7% of the district's GDP.

The mine at present has supply to last through to 2034, depending on customer demand. With an extension of the mine, this economic contribution will be sustained for an additional four years to 2038. That's an extra $29.5m in economic activity over four years.

On top of this, the mine will be rehabilitated once operations cease. This work includes removal of site infrastructure and the processing plant, and the restoration of much of the site to useable agricultural land. The mine pit will be filled with water to leave a lake.

Much of the rehabilitation will be carried out alongside the mine's operation. The balance may take an additional 6 months, employing approximately 6 people full time, with ad hoc

[4] EBITDA is a good accounting equivalent. The measure is earnings before taxes and depreciation.
[5] Data on revenue, employment, wages, and supplier spend was all provided by New Vale.
[6] We estimate this using StatsNZ GDP(E) estimates for NZ, apportioned to the territorial authority level using shares of StatsNZ LEED employment (both employees and self-employed).

contractor support.[7] As well as providing a short increase to the site's employment benefits (assessed below), this rehabilitation will bring environmental benefits as discussed below.

New Vale supports 64 jobs in the local economy

The direct contribution of the mine can also be assessed by looking at employment. While this is a component of GVA (via wages), it gives a good sense of the opportunities that the mine brings to the people of the region.

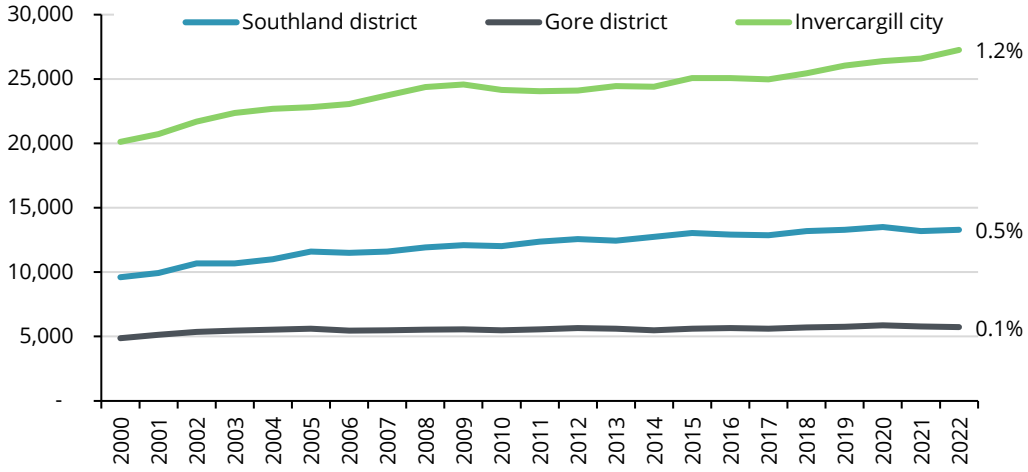
The operation at New Vale directly employs 39 people on site and in support roles. In addition, the $5.98m in spending on goods and services locally[8] helps to support a further 25 jobs across the economy.[9]

Large components of the spend are on imported equipment, like excavators and heavy machinery. Yet these are typically purchased through local suppliers, who may also provide maintenance and support services. This intermediary role means imports also generate local economic activity and jobs.

The closest urban areas, Mataura and Gore, are both within Gore District. As these are the areas local employees are most likely to live, we can look at mine employment in the context of Gore District employment. Based on data from Statistics New Zealand[10], the 64 jobs, what we term "core" employment, represent 1.12% of the ~5,700 jobs in Gore district.

This is a material contribution in a district that has seen slow growth in employment over the past decade. Between 2012 and 2022, employment in the Gore district grew at an average annual rate of just 0.1%. Invercargill, by contrast, achieved a 1.2% annual growth rate.

FIGURE 1: JOBS BY TERRITORIAL AUTHORITY, YEAR TO JUNE, (CAGR 2012-2022)



Source: StatsNZ; Sense Partners estimates

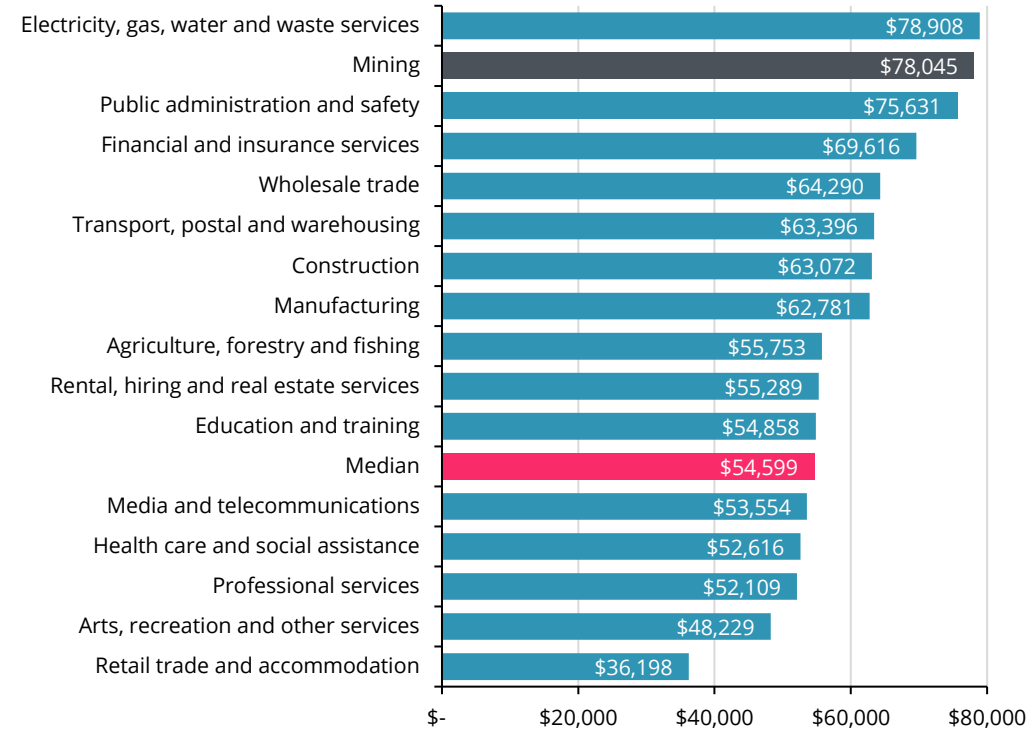
[7] Advice given by New Vale. Email communication dated 30/01/2024.
[8] Data on expenditure was provided by New Vale.
[9] We estimate this using an average cost of employment of 22.7% of output (from StatsNZ Input-Output tables 2020) and a median wage of $54,599 (from StatsNZ LEED data for 2021, inflated to 2023 using the StatsNZ labour cost index.).
[10] Statistics New Zealand (2023) *Linked Employer-Employee Database*.

Mining offers high median wages, meaning well paid jobs for locals

The jobs at the mine are also well-paid. The average employee compensation at New Vale was $76,400 in the 2023 financial year. The median wage across Southland region in 2023 was just $54,599.[11] Sustaining these well-paid jobs at New Vale will make a material contribution to local economic wellbeing.

Well-paid jobs are characteristic of the mining sector. As Figure 2 below shows, the 2023 median wage in mining, at $70,045, is the second highest by sector across Southland region.[12] This is 42% above the economy-wide median of $54,599 for the Southland region in 2023.

FIGURE 2: MEDIAN WAGES BY SECTOR, SOUTHLAND, 2023



Source: StatsNZ; Sense Partners estimates

The value of New Vale more than offsets any impacts to farming

In all economic activities, there is a trade-off to be made in the form of an opportunity cost. When looking at the direct net contribution of New Vale, we need to net-off the opportunity cost. In the case of this extension, the primary economic cost is in the form of lost farm land.

[11] We estimate this median wage of $54,599 from StatsNZ LEED data for 2021, inflated to 2023 using the StatsNZ labour cost index.

[12] Where available, we draw on data at the Gore district level. For comparative measures, like median wages, the data is only available at the regional level. Comprehensive wage data, that includes self-employed persons, is only available through to 2021, but we use the StatsNZ labour cost index to update this to 2023.

The land the extension is looking to use is currently used for sheep and beef farming.[13] Data from Beef + Lamb New Zealand indicates that sheep and beef farms yielded an average of $717 per hectare in the 2022/23 financial year.[14]

The extension at New Vale will draw on two parcels. One is an 89ha parcel to the North West, where the physical extraction will take place. In addition, a 56ha parcel to the east will be used for a wetland and engineered land fill (ELF).[15] This implies a total temporary reduction in farm land of 145ha.

With this reduction, we can expect a loss of $103,900 per annum in sheep and beef farming revenue. This is considerably lower than the $18m in revenue the mine will generate each year for the four additional years of operation the extension will provide.[16]

In addition to being a small loss, much of this is also likely to be a temporary loss. The land used for the ELF will have its topsoil and subsoil removed and set aside. Once completed, this will be replaced, and the land returned to productive farming. The western parcel will also be returned to productive farmland.

The only permanent losses of farmland will be due to the construction of the wetland (6ha), and the creating of a lake in the mine pit (48ha). The wetland will help to improve water quality and biodiversity. While a technical loss of farming revenue, such improvements provide valuable but unquantified ongoing environmental services, and are increasingly seen as an important part of more sustainable farming practices.[17]

2.3. New Vale is an important economic enabler

New Vale customers are in economically important sectors

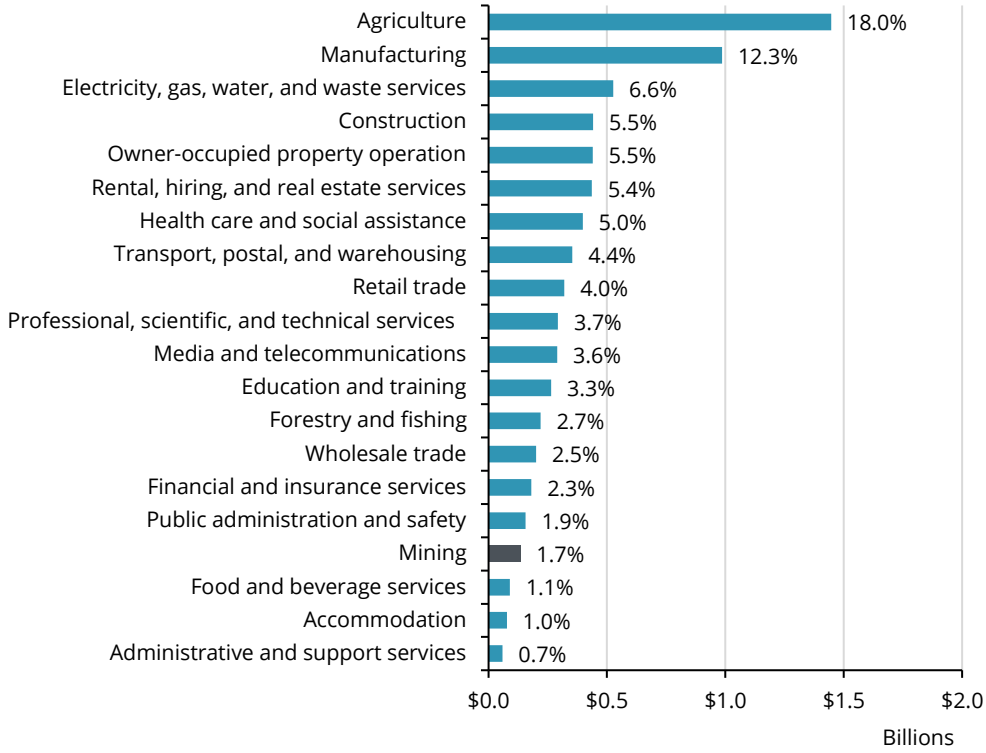
The core business of New Vale is the supply of thermal coal. In the 2023 financial year, the mine supplied 276,700 tonnes of coal to five major customers across Southland, Otago, and Canterbury. These customers are in the agricultural processing sector and include dairy and meat processing plants.

As Figure 3 below shows, mining itself is a small component of the Southland economy. The customers supported by New Vale are in food processing, part of the manufacturing sector. For Southland, manufacturing is the second largest sector, with a 12.3% share of GDP.

A similar pattern is repeated across Otago and Canterbury, shown in Figure 4 and Figure 5 below. In each region, mining itself is a small component of GDP, but the customers the sector supports make up a material portion of the whole.

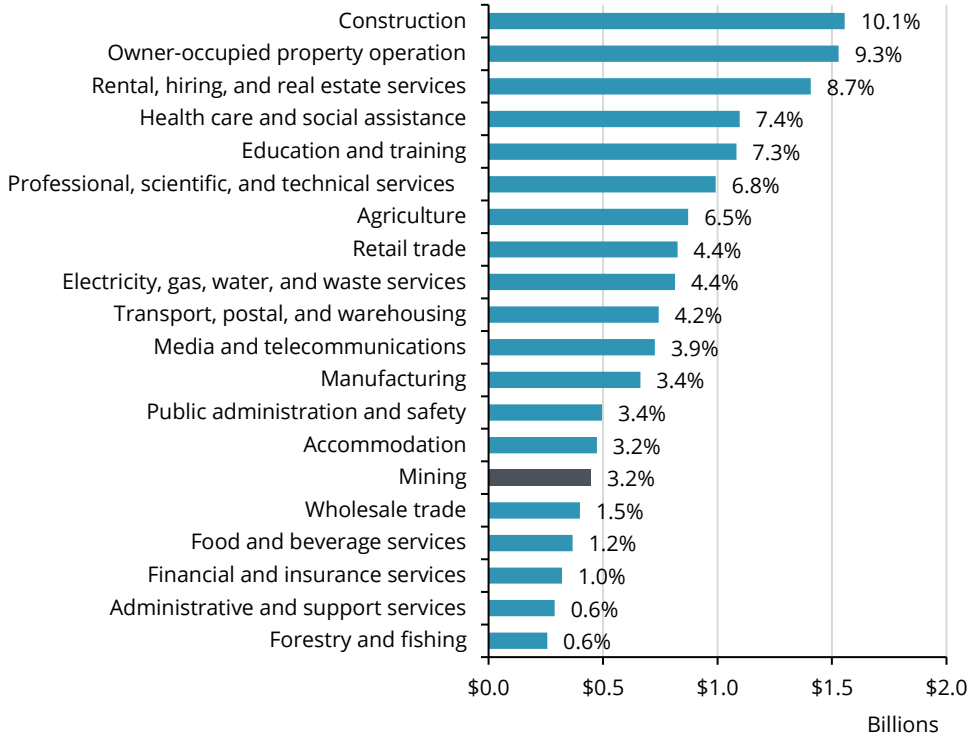
[13] Advised by New Vale. Emal communication dated 7/11/2023.
[14] Beef + Lamb New Zealand Economic Service (2023) "Class 9 All Classes - Otago-Southland: $ Per Hectare Analysis," in *Sheep and Beef Farm Survey*
[15] Taylor Planning (2023) *01a Brief for Economist 6.9.23.*
[16] This revenue figure excludes the wider economic impacts set out in this report.
[17] DairyNZ (2023) *Environment topics: Wetlands*.

FIGURE 3: GDP BY SECTOR IN SOUTHLAND REGION, YEAR TO MARCH 2023



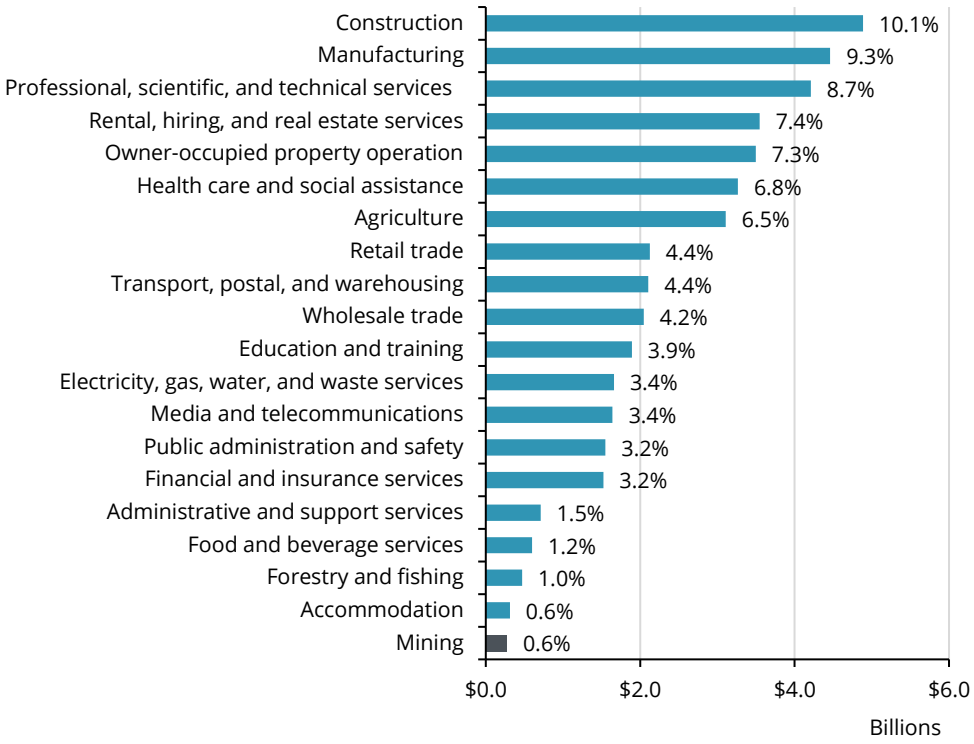
Source: StatsNZ; Sense Partners estimates

FIGURE 4: GDP BY SECTOR IN OTAGO REGION, YEAR TO MARCH 2023



Source: StatsNZ; Sense Partners estimates

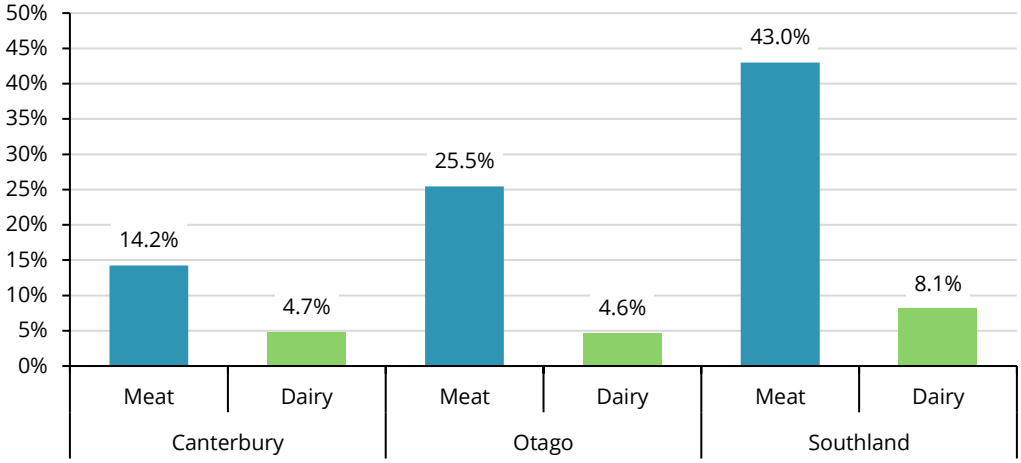
FIGURE 5: GDP BY SECTOR IN CANTERBURY REGION, YEAR TO MARCH 2023



Source: StatsNZ; Sense Partners estimates

When looking at employment, we see that across the three regions, the customers supplied by New Vale are in sectors that make up substantial portions of manufacturing activity. We use this employment data to estimate GDP for each subsector of manufacturing.

FIGURE 6: SHARE OF MANUFACTURING JOBS IN MEAT AND DAIRY PROCESSING, 2021



Source: StatsNZ[18]

[18] LEED data provides the best picture of employment by sector as it includes self-employed individuals. However, the data is released with a considerable lag – the latest available is for the 2021 tax year (as at February 2021).

Pastoral agriculture is a valuable component of regional economies

By supplying coal to processors, New Vale is enabling jobs and activity in these sectors. The processors are, in turn, enhancing the on-farm value of agricultural products. They achieve this by transforming farm produce into export-ready products.

Understanding the role of agriculture and food processors is therefore an important part of measuring the economic contribution made by New Vale.

TABLE 2: AGRICULTURE AND FOODS PROCESSING IN THE LOWER SOUTH ISLAND

Region	Agriculture	Dairy farming	Sheep+beef farming	Dairy processing	Meat processing
Southland	$1,450m (18% of GDP)	$953m (66% of Ag.)	$430m (30% of Ag.)	$180m	$253m
Otago	$872m (5.2% GDP)	$418m (48% of Ag.)	$315m (36% of Ag.)	$139m	$181m
Canterbury	$3,100m (6.5% GDP)	$1,810m (54% of Ag.)	$901m (29% of Ag.)	$594m	$373m

Source: StatsNZ; Sense Partners estimates

The agricultural processing sectors are well paying employers

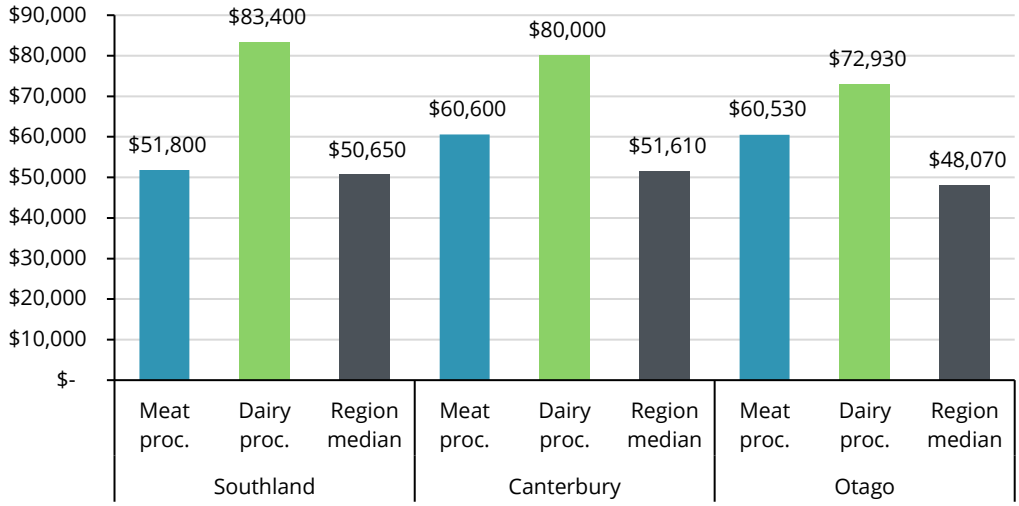
The meat and dairy processing sectors, supported by New Vale, are significant sources of employment in the regions.

- In Canterbury, 5,390 were employed in meat processing in 2021, while 2,650 people were employed in dairy processing.
- In Otago, 2,620 people were employed in meat processing and 620 people were employed in dairy processing.
- In Southland, the meat processing sector employed 3,660 people, while dairy processing employed 820.

Jobs in both sectors, but particularly dairy, enjoy high median wages relative to other jobs in the region (Figure 7).[19]

[19] Several meat processing companies have their head offices in Dunedin and Christchurch. This explains why meat processing median wages in these regions are higher than in Southland.

FIGURE 7: MEDIAN WAGE BY SECTOR AND REGION, 2021



Source: StatsNZ; Sense Partners estimates

New Vale supports their customers' own economic contributions

Information provided by New Vale indicates the company supplies approximately 85% of the coal market in Southland, where its largest customers are based. This includes dominant roles in providing energy to the dairy and meat processing sectors in the region.

In Otago, New Vale serves a number of customers in the meat processing industry. These customers make up approximately 38% of the meat processing market in the region. And in Canterbury, the mine's customers in dairy processing make up approximately 11% of the sector's employment.

Using these shares, we estimate that New Vale's major customers make up **5,094 jobs across the lower South Island**. Up to **$501m in annual economic activity** is generated by these customers. By providing energy, New Vale plays a role in enabling this economic activity.

3. Alternatives assessment

3.1. There are few viable domestic alternatives

Under the National Policy Statement on Highly Productive Land (NPS-HPL), mineral extraction must provide a "significant national public benefit that could not otherwise be achieved using resources within New Zealand".[20] This section focuses on the second part of that test.

We demonstrate that due to transport costs, alternatives to New Vale lignite would impose a **substantial cost increase on users**. Supply constraints and high domestic transport costs mean **customers are likely to resort to imports**, rather than domestic alternatives.

Given this, we conclude that the benefit we estimate in Section 2 would be lower and **likely would not be achieved using resources within New Zealand.**

3.2. We focus our analysis on existing sources of coal

Customers are planning for decarbonisation

New Vale's major customers in the region are planning their transition away from coal towards renewable energy sources, but this will take time. Woody biomass is the most likely carbon neutral alternative.[21] However, much like coal, the viability of this energy source depends on proximity to supply.

The Climate Change Commission's demonstration pathway is based on the elimination of coal for food processing before 2040.[22] Their analysis acknowledges that, due to the cost, time must be given to allow food processors to make the transition.[23] A sudden stop, as noted by the Commission, would run the risk of putting manufacturers out of business. We expect such an impact on food processors would reverberate along the supply chain, impacting both agricultural producers and downstream consumers.

For dairy processors, there is a short window of time each year during the off-season in which a transition can be implemented. During the milking season, plants are typically running at full capacity, and disruption cannot be tolerated.[24] Combined with the complexity of transitioning a plant, this limits the speed at which the sector can decarbonise.

In addition, to the extent that woody biomass is the most likely carbon neutral alternative for process heat, it will take time for woody biomass supply chains to be established at sufficient scale to reliably meet the energy needs for New Vale customers. [25]

[20] Ministry for the Environment (2022) *National Policy Statement for Highly Productive Land 2022*. Section 3.9 Subclause (2)(j)(iii).
[21] Fonterra (2021) Submission: Climate Change Commission 2021 Draft Advice for Consultation.
[22] Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa.* Pp. 114. Para 7.5.66
[23] Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa.* Pp. 363. Para 22.1.2.27
[24] Fonterra (2021) Submission: Climate Change Commission 2021 Draft Advice for Consultation.
[25] Climate Change Commission (2021) *Ināia tonu nei: a low emissions future for Aotearoa.* Pp. 363. Para 22.1.2.27

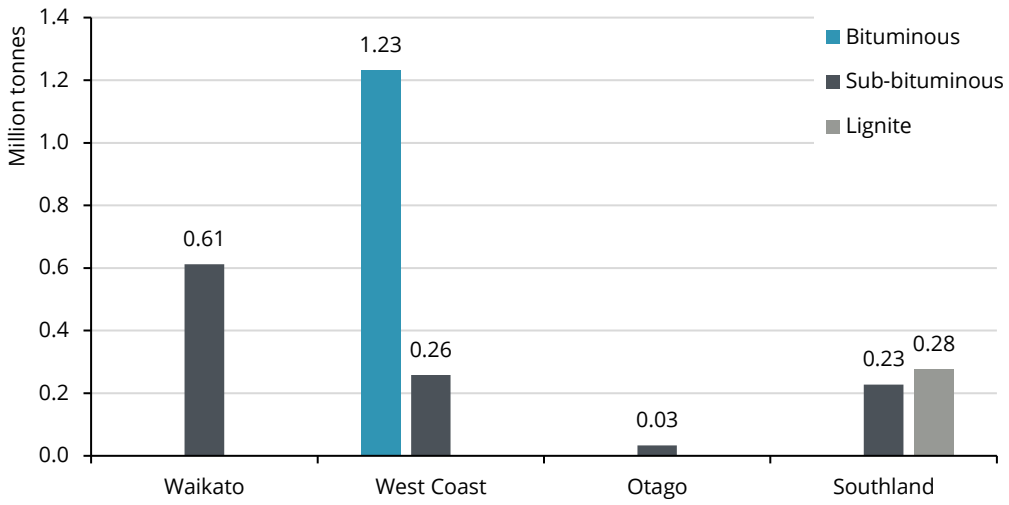
The proposed extension could sustain current output for an additional four years to 2038. This broadly coincides with proposed timelines for a phaseout of coal by 2040. Given this, the extension could play a role in sustaining affordable access to energy while decarbonisation initiatives are implemented.

3.3. New Zealand is a net exporter of coal

The majority of domestic coal is exported for metallurgical uses

In 2022, there were 14 operating coal mines in New Zealand.[26] Collectively, they produced over 2.6m tonnes of coal. Production was a mix of bituminous, sub-bituminous, and lignite ranked coal.

FIGURE 8: PRODUCTION BY REGION AND COAL RANK, 2022



Source: MBIE

Bituminous coal is the highest grade of coal produced in New Zealand. It is highly valued in export markets for low ash and sulphur content, as well as high swelling, fluidity, and reactivity. [27] As a result, bituminous coal is almost exclusively exported and is not available as a substitute for thermal energy.

Given this, we exclude sources of bituminous coal from our analysis of alternative sources of coal.

Sub-bituminous coal has a lower energy content than bituminous coal. It is typically used for thermal energy, meaning it is a potential alternative to lignite. We include sources of sub-bituminous coal on the West Coast and in Southland in our analysis of alternatives.

[26] New Zealand Petroleum & Minerals (2023) *Operating coal mine production figures*.
[27] Ministry of Business, Innovation & Employment (2023) *Coal Statistics*.

Southland has large deposits of coal and lignite

In New Zealand, deposits of lignite are concentrated in Southland and Otago. Over 9 billion tonnes of lignite are contained in 10 major deposits across the two regions.[28] These deposits constitute between 80% – 85% of New Zealand's total coal resources.[29]

Production statistics for 2022, shown in Figure 8 above, indicate that the only mined lignite deposits are in Southland. The only producing mine in Otago, at Castle Hill/Kaitangata[30], extracts sub-bituminous coal. Of the two operating lignite mines in Southland, New Vale and Waituna, only New Vale produces lignite for thermal uses.[31]

3.4. There are few economically feasible alternatives

Transport costs limit the alternatives

A core factor in determining viable alternative supply is the cost of transporting the coal. Industrial users consume high volumes of coal and need secure and reliable supply to ensure smooth operations. Most users will favour nearby sources of coal, and proximity to the fuel source is a major determinant of where industrial users choose to locate.[32]

The total cost of transport is primarily a function of quantity and distance.[33] Coal that is close by ensures lower transportation costs. Shorter supply lines also minimise the risk of disruption to supply. An alternative supply further away may involve higher warehousing costs as a larger on-site reserve would need to be kept to insure against disruption.

Lignite is particularly sensitive to transport costs, as it has a lower energy density compared to sub-bituminous coal. Lignite from New Vale typically contains 15 GJ of energy per tonne. Sub-bituminous coal is more energy-dense although this varies. Sub-bituminous coal from Rotowaro, in the Waikato, averages 21.08 GJ/t. Australian coal averages 27.6 GJ/t. Indonesian coal 24 GJ/t.[34]

Transport costs are incurred on a per tonne basis. This means that over longer distances, it will become more cost effective to switch to higher energy sub-bituminous coal over lignite. The higher energy content of the former means that a lower tonnage can be shipped for the same energy content, lowering total transport costs.

Early market research by New Vale indicates that 70% of their market lies within a 28km radius of the mine.[35] Data from MBIE shows that no lignite is exported from New Zealand, and only

[28] New Zealand Petroleum & Minerals (2017) *Regional Coal Resources: South Island lignite resources.*
[29] Royal Commission on the Pike River Coal Mine Tragedy (2012) *Volume 2, Chapter 19: Coal mining in New Zealand*.
[30] NZPAM data labels the mine itself as Castle Hill, and the wider coalfield as Kaitangata. Castle Hill is the only currently operating mine on the coalfield.
[31] Waituna produces lignite, however its value is in the level of humates. Humate is an organic material dense in carbon, humus, humic, and fulvic acids. This makes the product a valuable fertiliser, and not suitable for use as a thermal coal. Advice given by New Vale. Email communication dated 24/10/2023.
[32] COVEC (2014) *Coal Prices in New Zealand Markets: 2013 Update*. Page 12.
[33] Button, K. (2022) *Transport Economics, 4th ed.*
[34] COVEC (2014) Coal Prices in New Zealand Markets: 2013 Update. Page 8.
[35] New Vale marketing research.

trivial amounts are imported (61 tonnes in 2022, 0.008% of imports).[36] This is due to the higher transport costs making the product uncompetitive outside of a local catchment.

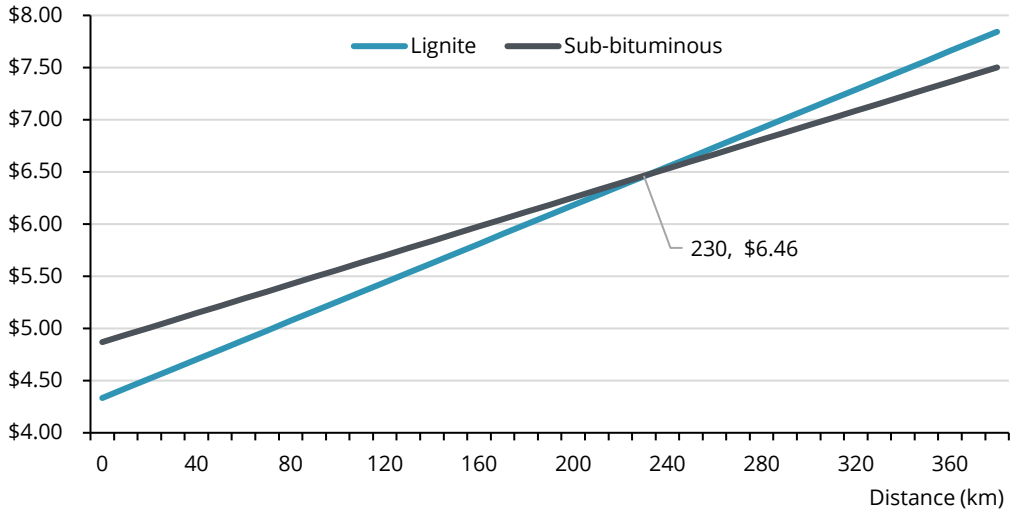
Lignite has a cost advantage over shorter distances

Data on transport costs is commercially sensitive, making it hard to find. Previous studies have used a rule-of-thumb of $0.11/tonne/km.[37] This is based on case studies of coal transport primarily by rail, with the coal mine serviced directly by rail and additional trans-shipment costs of trucking from the rail head to the customer.[38]

Based on relative prices of lignite and sub-bituminous coal, we use this transport cost to estimate the point at which a consumer is better off purchasing sub-bituminous coal.[39] We estimate the crossover point is approximately 230km. At this point, the price per GJ of energy, inclusive of transport costs, is equal between lignite and sub-bituminous coal, at $6.46/GJ.

Within this distance, the lower price of lignite relative to sub-bituminous is enough to compensate for the higher per-GJ transport costs. Beyond this distance, the higher energy content of sub-bituminous coal means the lower per-GJ transport cost outweighs the higher base price.[40]

FIGURE 9: BASE + TRANSPORT COSTS OVER DISTANCE, 2023 ESTIMATE



Source: Sense Partners

[36] Ministry of Business, Innovation & Employment (2023) "2 – Annual Coal Supply, Transformation, & Consumption" in Coal data tables.
[37] COVEC (2009) Coal Prices in New Zealand Markets. Prepared for the Ministry of Economic Development.
[38] This cost includes fixed costs which do not vary over distances. This means the cost would likely fall over longer distances. Due to transport data being commercially sensitive, it is difficult to come by in the public domain. As a result, we don't have a breakdown of the fixed and variable costs.
[39] Using the StatsNZ Producers Price Index for road transport, we inflate this to a 2023 value of $0.14/t/km.
[40] Another complexity is the boilers being used. Boilers are generally designed to burn a particular rank of coal. That is not to say that they cannot burn a range of coal, just that it may affect the boiler life and require a skilled boilerman to operate the boiler efficiently. Blending is also a consideration. Some customers require a blend of New Vale/West Coast coals due to the design of their boiler.

Sourcing from the West Coast would double energy costs

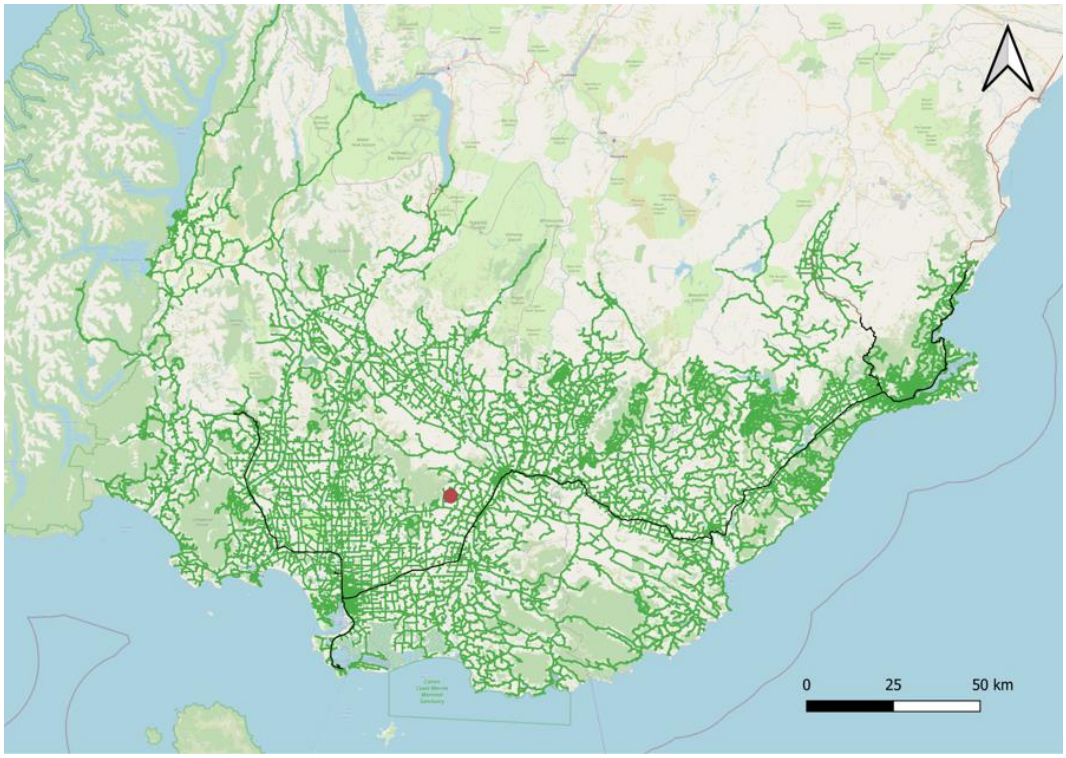
Using our estimated transport cost curve, we can explore the feasibility of alternative sources of fuel via land routes. We start by looking at mines on the West Coast producing sub-bituminous coal in 2022. We exclude bituminous sources, as this is typically exported for metallurgical uses.[41]

The distance between West Coast mines and Southland customers ranges between 688km and 812km via the road network. The distance between those customers and New Vale, in comparison, ranges between 24km and 90km. Given this, switching to a West Coast supplier would entail a large increase in transport costs.

We estimate this **cost increase would range between 127.6% and 172.3% per GJ.** The six largest customers of New Vale consume 91.3% of the mine's output. For these customers, the **average cost increase per GJ, weighted by their consumption, would be 148.4%**. That's a more than **doubling of energy costs.**

Consented alternatives within Southland are costly

FIGURE 10: THE NEW VALE CATCHMENT – 230KM BY ROAD (GREEN) AND RAIL (BLACK)



Source: LINZ, Open Street Map; Sense Partners estimates

[41] Some coal is classified as lower grades of bituminous coal and is used as thermal coal. Approximately 7.5% of bituminous coal was used as thermal coal in 2022. However, the supply is irregular or incidental. Bituminous coal mined with the intent of being exported may occasionally fail to meet export specifications. On these occasions it will be shifted toward thermal uses, but this is not consistent enough to act as an alternative supply source for industry.

Our transport cost curve indicates that within 230km of transport distance, lignite has the cost advantage. We can use this to map out an approximate catchment for the New Vale mine, shown in Figure 10 above. Within this catchment lignite is generally cheaper.

Sub-bituminous coal is more expensive than lignite.[42] Within Southland, it is only in areas in close proximity to Takatimu that the lower transport cost is sufficient to compensate for the higher price. None of New Vale's major customers, making up 91.3% of demand, are close enough to Takatimu to achieve this.

If the New Vale mine closes, then New Vale's customers in this catchment will need to pay a higher price for a sub-bituminous coal alternative.[43] The only remaining domestic and consented alternative to New Vale currently operating is the Takatimu mine in Southland, which produces sub-bituminous coal.

The Castle Hill/Kaitangata mine in Otago produces coal which is not suited to New Vale customers. This is due to the sulphur content of the coal, which means it cannot be burned without exceeding air discharge permits held by coal users.[44]

Switching to supply from Takatimu would result in a cost increase. For Southland customers, we estimate a weighted average **19.4% increase in per-GJ energy costs**.[45] This adds to approximately **$2.6m in increased energy costs** across New Vale's largest Southland customers.

Across New Vale's six largest customers, including those in Otago and Canterbury, the weighted average **increase is 16.3%.** This totals **$2.9m per year** across these six customers.

Regulatory constraints may limit supply from Takatimu

We estimate Takatimu is currently the lowest cost existing alternative to New Vale lignite. However, we understand the mine is subject to regulatory constraints that may limit future supply.[46] These include the possibility of resource consents being required pursuant to the National Environmental Standards for Freshwater and provisions in the National Policy Statement for Indigenous Biodiversity.[47]

A potentially binding constraint is the National Policy Statement for Indigenous Biodiversity.[48] Thermal coal mines will be prohibited from expanding into significant natural areas (SNAs)

[42] We use an estimate of $4.87 per GJ ($97.38/tonne) for Southland sub-bituminous coal, compared to $4.33 per GJ ($65/tonne) for lignite.
[43] The other alternative would be to find a new source of lignite in the vicinity. However, without substantial further analysis across a range of disciplines, it is not clear which sites would prove acceptable within New Zealand's resource management framework.
[44] Advice given by New Vale. Email communication dated 30/01/2024.
[45] This jump in prices to the next alternative raises the question of why New Vale does not raise prices to take advantage of a strong market position. The likely cause is the implied competition from non-operating and unconsented sources of lignite in Southland. As they are unconsented, and their viability under the resource management framework is unknown, we have excluded these from our analysis.
[46] Advice given by New Vale. Email communication dated 20/11/2023.
[47] Advice given by Taylor Planning. Email communication dated 30/01/2024.
[48] Advice given by Taylor Planning. Email communication dated 30/01/2023.

after 31 December 2030.[49] At present, Southland District has not published details of any SNAs in the district,[50] and so we cannot be certain of the effects on Takatimu.

We have been advised that as a result of these and other regulatory and infrastructure constraints, no expansion of mining operations at or near Takatimu is being pursued at this time.[51] As a result, we have to consider other alternative sources of thermal coal.

The next cheapest alternative is likely imported coal

Given the potentially constrained supply from Takatimu, customers may need to look further afield for an alternative to New Vale. The nearest alternative within New Zealand, the West Coast, may increase energy costs by more than double. The next likely alternative is imports.

As with domestic transport costs, international transport costs can be difficult to obtain. We compare export data, which gives free-on-board (fob) value, to import data, which gives cost, insurance, and freight value. [52] The former excludes transport costs, the latter includes them.

For imports from Indonesia, we estimate a transport cost of $0.009/tonne/km (a maritime distance of 7,843km) to Port Chalmers. From Australia, we estimate coal transport is $0.0175/tonne/km (a maritime distance of 2,435km).[53] These are similar to past estimates for shipping between Singapore and Auckland of $0.005/tonne/km (a maritime distance of 9,255km).[54]

The maritime shipping costs makes imports of coal from Indonesia a competitive alternative to West Coast supply. We include the land transport cost of moving coal from Port Chalmers, Dunedin. New Vale's **Southland and Otago customers could save between 14% and 20% compared to West Coast sources**. For Canterbury customers, the cost is almost the same.[55]

This means that if New Vale ceased to operate, Southland customers would likely resort to imports. This would still impose **potentially onerous cost increases, averaging 118%** compared to New Vale lignite.

Higher energy costs may lower investment and reduce employment

A comprehensive estimate of the impact of higher energy costs would require general equilibrium modelling, a costly endeavour and beyond the scope of this assessment. However, we can get a sense of the potential implications by looking at StatsNZ's Input-Output tables.

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[49] Ministry for the Environment (2023) *National Policy Statement for Indigenous Biodiversity*. Clause 3.11(1)(a)(iv)
[50] As at 11:03am 30/01/2024, neither the Operative nor Draft District plans for Southland District identify any SNAs. The Southland District Council website states that full mapping work is yet to be undertaken: https://www.southlanddc.govt.nz/environment/significant-natural-areas/
[51] Advice given by New Vale. Email communication dated 30/01/2024.
[52] A complication is that data on trade with our largest coal supplier, Indonesia, is not publicly available. A small number of NZ purchasers of Indonesian coal, possibly a single purchaser, mean it is commercially sensitive and withheld. To overcome this, we use data on Indonesian exports of coal, paired with import data for all other markets, to determine average tonne/km transport costs ex Indonesia.
[53] The cost per tonne/km is decreasing in distance. This is because a large portion is the fixed costs of loading/unloading at either end of the journey. The variable cost is much smaller.
[54] Ministry of Transport (2011) *Understanding Transport Costs and Charges: 2011 Freight Charge Comparison Report*.
[55] Depending on the mine, we estimate West Coast sources may be between 2% more expensive and 1% cheaper.

In 2020, energy costs made up between 1.6% and 2.0% of total input costs for the meat and dairy processing sectors, respectively.[56] With a weighted average increase in energy costs of 118%, when importing coal, these shares would rise to 3.5% and 4.5% respectively.

This seems low, but an important consideration is the ability for each industry to pass these costs on to consumers. Meat and dairy producers compete in a global market, and have little ability to influence prices. If they cannot pass on price increases, then the higher energy costs will need to be absorbed entirely by the operating surplus (i.e., profits).

The operating surplus is between 2.8% and 3.2% of total output for the meat and dairy processing sectors respectively. A 118% rise in energy costs would reduce the operating surplus by 36% for meat and 47% for dairy.[57]

Over time, these sectors may adapt to this cost rise by reducing investment, lowering employment, and passing costs back to farmers. There will also be some adaptation in the wider economy that could offset the cost. For example, redundant workers may seek employment in other sectors, giving those sectors a boost.

Given the economic prominence of agriculture, particularly in Southland, the negative effect may not be fully offset by changes in other sectors.

[56] Author's estimates using Statistics New Zealand Input-Output tables 2020.
[57] We estimate this by increasing the energy cost by 118%, and subtracting the increase from operating surplus for each sector.

4. Summary

4.1. The extension meets the key regulatory test

New Vale makes a valuable economic and employment contribution

- The mine at New Vale supplied nearly 276,700 tonnes of coal, resulting in a $7.4m gross value added (GVA). This is equivalent to 0.8% of Gore district's GDP.
- The mine supports 64 jobs in the local economy. This includes 39 people employed on site, and a further 25 jobs supported through a $6m local spend on inputs – 1.12% of jobs in Gore district.
- The mine represents a more economically productive use of land than the current sheep and beef operation carried out at the expansion site. Mine revenue of $18m per annum outstrips the $103,900 in revenue generated by sheep and beef operations.
- The mine supports $501m in annual economic activity in the region and over 5,000 jobs in the agricultural processing sector.

Domestic alternatives are costly and likely constrained by regulation

- Coal is highly sensitive to transportation costs. This limits the feasibility of alternative supplies, both domestic and imports.
- Local alternatives to New Vale's lignite in Southland could come at a **cost increase of 19%.** This is the cheapest alternative. However, regulatory constraints mean that these local sources may not be able to meet demand.
- The next available source is likely the West Coast, though West Coast coal is typically exported and transportation costs would increase New Vale customers' energy cost by an **average 148.4%**.

Imports are the most likely alternative

- The significant national public benefit that New Vale provides likely cannot be provided using resources within New Zealand.
- Costly domestic alternatives mean suppliers would likely switch to imports. The cheapest source of coal is likely Indonesia, though this would still impose **a cost rise of 118%, on average**.
- Switching to imports would see the mine's direct economic benefits, measured through GVA and employment benefits in section 2 of our report, largely shifted overseas.

The extension provides a significant national public benefit

- Our analysis has focused on regulatory tests set out in the NPS-HPL. Mining is a more productive use of the land and brings jobs and economic activity. Given this, we consider the extension constitutes a significant public benefit.
- The mine plays a role in providing key energy inputs into the food processing sectors across three regions. On this basis, we propose the benefit qualifies as a **national benefit.**
- Given the cost of and constraints facing local operating coal alternatives, we consider **it is likely these benefits would not otherwise be achieved using resources within New Zealand**.

SENSE PARTNERS

DATA LOGIC ACTION

NEW VALE COAL MINE

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 1

INTRODUCTION AND OBJECTIVES OF SEMP
LICENCES, CONSENTS AND AGREEMENTS

18 July 2023 Review

1. INTRODUCTION

Greenbriar Limited owns and operates New Vale and Goodwin Coal Mines (here after known as New Vale Mine) in the Gore District.

New Vale Coal Company requires a Site Environmental Management Plan (**"SEMP"**) that sets out the management of all mining activities and operations in relation to the Life of Mine and Closure Plans. This document, comprising of sections 1-9 is the SEMP for New Vale Mine.

1. OBJECTIVES OF THE SEMP

The objectives of the SEMP are:

- To provide a comprehensive and integrated approach to the operation and ultimate closure of New Vale Coal Mine.
- To set out the framework by which the operation will manage all environmental matters.
- To ensure progressive rehabilitation of the mine to allow Greenbriar Limited to exit the site with an agreed and quantified level of liability and to this end achieves business sustainability.
- To meet all legislative requirements during operation and closure of the mine.

2. LICENCES, CONSENTS AND AGREEMENTS

Existing land use consents are currently held for the site. Land use consents have been granted by the Gore District Council.

~~The current mining activities operate under the existing use provisions of Section 10 of the RMA 'Existing Use Rights'.~~

Mining activities on the site were established well before introduction of the Town and Country Planning Act 1978 and the Resource Management Act 1991 and hence meet the Existing Use Provisions of Section 10 of the RMA.

Coal Mining Licences were in place covering much of the New Vale Mine area, and all the Leased Goodwin Mine area. These are licence numbers 37-042 and 37-024. Licence 37-042 covering New Vale has recently expired. The area covered by the CML has been included in a Landuse consent.

The mine presently occupies an area of 77 Ha on a total site area of 354 Ha. A Land Use consent LU2006/13 issued by Gore District Council on 16/2/2007 has added approximately 106 Ha to the operational area. This consent area will need to be extended soon.

Table 1 - details the existing consents from Gore District Council and Environment Southland.

Approval Type	Approval Number	Purpose	Location	Administered by	Date Issued	Expiry Date
Coal Mining Licence	CML 37024	For Coal Mining Purposes	Goodwin	MBIE	10/1/1983	19/2/2062
Resource Consent	LUC2006-13	Land use consent to conduct a discretionary activity, being the operation of the Waimumu coal mine.	New Vale	Gore District Council	16/2/2007	NĀ
Resource consent	LU2007 24	To erect two signs at the intersection of Waimumu and Paterson Roads	New Vale	Gore District Council	31/3/2008	NĀ
Resource Consent	LU 2009/06 s127	Land use consent for activities for fuel tanks.	New Vale	Gore District Council	25/5/2009	NA
Resource Consent	20158148-01-V1	To discharge surface runoff and groundwater from New Vale	New Vale	Southland Regional Council	01/12/2015	01/12/2030
Resource Consent	20158148-03 and 04	To take surface and groundwater from New Vale & Goodwin Coal Mines respectively	New Vale & Goodwin	Southland Regional Council	01/12/2015	01/12/2030
Resource Consent	201709	To discharge contaminants to the air from two opencast mine operations	New Vale	Southland Regional Council	13/11/2007	31/1/2028
Resource Consent	AUTH-20191218	To discharge ash to land	New Vale	Southland Regional Council	25/11/2019	25/11/2034
Resource Consent	AUTH-20222206-03	To discharge contaminants to water from bed disturbance activities	New Vale	Southland Regional Council	20/10/22	20/10/47
Resource Consent	AUTH-20222206-01	To disturb the beds of three unnamed tributaries of the Hedgehope Stream in order to dam and divert the tributaries, including the discharge of cleanfill	New Vale	Southland Regional Council	20/10/22	20/10/47
Resource Consent	AUTH-20222206-02	To divert the water of three unnamed tributaries of the Hedgehope Stream	New Vale	Southland Regional Council	20/10/22	20/10/47
Permission	Authorisation No 104851-OTH	Freshwater Fisheries regulations 1983 – fish passage – construct a fish barrier	New Vale	Department of Conservation	May 2023	May 2026
Authorisation	Authorisation pursuant to section 26ZM(2)(a) of the	Native Fish Transfer	New Vale	Fisheries New Zealand	04 April 2023	31 March 2028

	Conservation Act 1987 NFT 405					

Table 2 - details monitoring and reporting requirements

Authority	Monitoring Parameter			
	Parameter	**Sites**	**Sampling Frequency**	**Compliance Limit**
RC20158148-01-V1 New Vale Water Discharge	Flow (volume)	50 m downstream of S1	Monthly	< 26,623 m^3 daily
	Suspended Solids	S1; S2: S3	Monthly	S1- 90th% based on 10 rolling samples <20g/m^3 S2 & S3- Surveillance
	pH	S1; S2: S3	Monthly	Range 6.5 - 9
	Temperature	S1; S2: S3	Monthly	>23°C S3 < S2 + 3°C
	Electrical Conductivity	S1; S2: S3	Monthly	Surveillance
	Clarity	S2; S3	Monthly	S3 > S2 * 0.7
	Dissolved B & Al	S1	Monthly	0.37mg/L Boron 0.055mg/L Aluminium
RC20158148-03 New Vale Water Take	Flow (volume)	Intake from pit water pump to first out of pit settling pond	Telemetered	< 56,223 m**3** daily; <811,030 m3 annually
AUTH-20191218	Tonnage of Coal Ash discharged to ground	New Vale		5% to 95% of overburden. Coal sourced from other mines: • Business the ash is sourced • Business type • Amount of ash • Potential effects, inc; Paste pH, Leachate characteristics, as specified by the

				Synthetic Precipitation Leaching Procedure
201709-New Vale & Goodwin Air Discharge	Dust	8 Dust Deposition Gauges around mine site boundary	Monthly	Surveillance (Internal compliance is <4 g/m2/30 days greater than upwind baseline dust deposition gauge)
		8 Dust Deposition Gauges around mine site boundary	Annually	Submit annual report
AUTH-20222206-02	Divert Water	Galaxias Gollumoides Management Plan	When updated	Submit within 2 months following granting of the consent
	Galaxais Gollumoides Monitoring as per method from Fresh Water Ecologist	Southern Tributary	Quarterly	Submit to Department of Conservation annually as per
	Notify Southland Regional Council	Southern and Central Tributaries	As required	Must notify no more than three days prior and commencing and three days after completion of any works.
AUTH-20222206-01	Record of Activities	Southern and Central Tributaries	As required	Shall include: date and time of activity, incidents and /or complaints, photographs of remedial action, completion date of works.
Authorisation No 104851-OTH	All monitoring associated with the fish barrier	Southern Tributary	Annually	Report to the Department of Conservation's Invercargill Office within 3 months of exercising this approval, and then annually thereafter, via invercargill@doc.govt.nz about all monitoring work incidental to this proposal.

				Monitor storm water on two occasions during the period November to March and analysed for Boron (<0.37g/m^3)

NEW VALE OPENCAST OPERATIONS

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 2 – HERITAGE

JULY 2023 REVIEW

New Vale Opencast Operations
Site Environmental Management Plan
Section 2 – Heritage

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2.1 Introduction

The Gore District Plan has not identified any archaeological sites of significance to Mana Whenua within the New Vale Mine's site. Archaeological sites are important because they provide a visible reminder in the landscape of our history and heritage. Past events have played a part in shaping the environment that surrounds us, in the same way our way of life causes change. An archaeological site is a place where there are physical remains of human activity that happened in the past. This could be the foundations of buildings or structures, features constructed from earth, such as ditches and banks, or even things that have been thrown away, such as leftover food, household items and rubbish. Often what can be seen on the ground surface is only a small part of the site, and there will be much more that has become buried underneath.

There are at least two natural features, being the Hokonui Hills and the Mataura River, that are outstanding landscape features located in the Gore District. Section 6 of the RMA requires that these features be recognised and protected from inappropriate subdivision, use and development. These two features lie outside of the New Vale mine site.

The Gore District Plan has not identified any significant trees within the New Vale mine site.

There are relationships between cultural, historic, and natural heritage. Not all heritage sites can be simply contained within one of the three definitions. Cultural sites have a strong relationship with historic sites, and some natural sites are considered as a part of the district's natural heritage not only for their ecological values, but also for their associated cultural or historic values. Therefore, it is important to recognise that many sites have a combination cultural, historic, and natural heritage values.

2.2 Objectives and Targets

Should any koiwi (human remains), or other sites of cultural significance be found (Waahi Taonga/Tapu), then all work in that area shall cease immediately. The Gore District Council and Te Ao Marama Inc (Murihiku Resource Management Consultants) and Hokonui Rūnanga shall be notified and no additional work may be carried out in that area until authorized by the Chief Executive Officer of the Gore District Council.

In the event of any Waahi Taonga/Tapu being found Te Ao Marama Inc and Hokonui Rūnanga representatives will arrange a site inspection by the appropriate takata whenua and their advisors, including statutory agencies, who will determine whether this find is likely to be extensive and whether a thorough site investigation is required. Material found will be handled and removed by Iwi responsible for the tikanga appropriate to their removal or preservation.

Taonga or artifact material (e.g. pounamu/greenstone artifacts) other than Koiwi will be treated in a similar manner so that their importance can be determined, and the environment recorded by qualified archaeologists alongside the appropriate takata whenua.

For further detail, refer to the Archaeological Site Accidental Discovery Procedure in appendix 1.

2.3 Responsibilities

Every person on site is responsible for stopping work and reporting to line management should a heritage sites be identified on site. Line management are responsible for ceasing operations in that area once a site is identified and notifying the Mine Manager. The Mine Manager is responsible for notifying the Gore District Council, Senior Management and Te Ao Marama Inc (Murihiku Resource Management Consultants) and Hokonui Rūnanga representative on receipt of any information that a heritage site has been identified.

APPENDIX 1

Protocol in the Event of a discovery, or suspected discovery, of a site of cultural importance (Waahi Taonga/Tapu)

HERITAGE SITE DISCOVERY

1 PURPOSE

The Gore District Plan has not identified any archaeological sites of significance to Mana Whenua within the New Vale Mine Site. Archaeological sites are important because they provide a visible reminder in the landscape of our history and heritage. Past events have played a part in shaping the environment that surrounds us, in the same way our life causes change. An archaeological site is a place where there are physical remains of human activity that happened in the past. This could be the foundations of buildings, features constructed from earth, such as ditches and banks, or even things that have been thrown away. Often what can be seen on the ground surface is only a small part of the site, and there will be much more that has become buried underneath.

2 SCOPE

Within the New Vale Mine site any koiwi [human remains] or other sites of cultural significance be found, then all work in that area shall cease immediately. The Southland District Council and Te Ao Marama Inc [Murihiku Resource Management Consultants] Hokonui runanga representative shall be notified and no additional work may be carried out in that area until authorised by the Chief Executive Officer of the Gore District Council.

3 REFERENCES

New Vale Operations Site Environmental Management Plan

4 DEFINITIONS

Koiwi – human remains

Taonga – treasure, anything consider value

Mana Whenua – authority over the land

5 DOCUMENTATION AND RECORDS

Site Environmental Management Plan [SEMP]

6 PROCEDURE FOR COAL MINE WORKERS

In the event of discovering historical and cultural artefacts, and/or skeletal remains, or in the unlikely event a site is disturbed inadvertently, the following procedure is implemented;

- Cease work immediately
- Cordon off area
- Notify your Greenbriar Supervisor immediately
- Assist the Supervisor with any investigation
- Only after appropriate action has been taken and written authorised consent from the Supervisor has been received should work proceed.

7 PROCEDURE FOR THE MINE MANAGER

a. Kōiwi tangata accidental discovery

If Kōiwi tangata (human skeletal remains) are discovered, then work shall stop immediately and the New Zealand police, Heritage New Zealand (details below) and Te Ao Marama Inc (Ngai Tahu (Murihiku) Resource Management Consultants) shall be advised. Contact details for Te Ao Marama Inc are as follows:

Te Ao Marama Inc
Murihiku Marae, 408 Tramway Road, Invercargill
P.O. Box 7078, South Invercargill 9844
Phone: (03) 931 1242

And

Hokonui Rūnanga
140 Charlton Road, Gore 9774
Phone: (30) 2087954
Email: hokonui@xtra.co.nz

Te Ao marama Inc will arrange a site inspection by appropriate Tangata Whenua and their advisers, including statutory agencies, who will determine how the situation will need to be managed in accordance with tikanga maori.

b. Archaeological Sites

Archaeological sites are protected under the Heritage New Zealand Pouhere Trust Act 2014, and approval is required from heritage New Zealand before archaeological sites can be modified, damaged or destroyed.

Not all archaeological sites are known or recorded precisely. Where an archaeological site is inadvertently disturbed or discovered, further disturbance must cease until approval to continue is obtained from Heritage New Zealand. As stated above, the New Zealand Police and Te Ao Marama Inc. also need to be advised if the discovery includes Kōiwi tangata/human remains.

Heritage New Zealand c/o Regional Archaeologist Otago/Southland

P.O. Box 5467, Dunedin

Phone: (03) 477 9871 Mobile: 027 240 8715 infodeepsouth@heritage.org.nz

c. Taonga or artefact accidental discovery

If taonga or artefact material (e.g. pounamu/greenstone artefacts) other than koiwi tangata is discovered, disturbance of the site shall cease immediately and Southland museum and Te Ao Marama inc shall be notified of the discovery by the finder or site archaeologist in accordance with the Protected Objects Act 1975. All taonga tuturu are important for their cultural, historical, and technical value and are the property of the Crown until ownership is resolved.

d. In- situ (natural state) pounamu/greenstone accidental discovery

Pursuant to the Ngai Tahu (Pounamu Vesting) Act 1997, all natural state pounamu/greenstone in the Ngai Tahu tribal area is owned by Te Runanga o Ngai Tahu Pounamu Management plans provide for the following measures:

- Any in-situ (natural state) pounamu/greenstone accidentally discovered should be reported to Te Runanga o Ngai Tahu staff as soon as is reasonably practicable. Te Runanga o Ngai Tahu staff will in turn contact the appropriate Kaitiaki Papatipu Runanga;
- In the event that the finder considers the pounamu is at immediate risk of loss such as erosion, animal damage to the site or theft, the pounamu/greenstone should be carefully covered over and /or the relocated to the nearest safe ground.

The find should then be notified immediately to the Programme Leader – Ohanga, at Te Runanga o Ngai Tahu. Their details are as follows:

Te Runaga o Ngai Tahu

c/- Programme Leader – Ohanga

Te Whare o Te Wai Pounamu

15 Show Place, P.O. Box 13-046, Otautahi/Christchurch 8021

Phone: (03) 366 4344 Web: www.ngaitahu.iwi.nz

END OF PROCEDURE

NEW VALE OPENCAST OPERATIONS

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There are at least two natural features, being the Hokonui Hills and the Mataura River, that are outstanding landscape features located in the Gore District. Section 6 of the RMA requires that these features be recognised and protected from inappropriate subdivision, use and development. These two features lie outside of the New Vale mine site.

The Gore District Plan has not identified any significant trees within the New Vale mine site.

There are relationships between cultural, historic, and natural heritage. Not all heritage sites can be simply contained within one of the three definitions. Cultural sites have a strong relationship with historic sites, and some natural sites are considered as a part of the district's natural heritage not only for their ecological values, but also for their associated cultural or historic values. Therefore, it is important to recognise that many sites have a combination cultural, historic, and natural heritage values.

2.2 Objectives and Targets

Should any koiwi (human remains), or other sites of cultural significance be found (Waahi Taonga/Tapu), then all work in that area shall cease immediately. The Gore District Council and Te Ao Marama Inc (Murihiku Resource Management Consultants) and Hokonui Rūnanga shall be notified and no additional work may be carried out in that area until authorized by the Chief Executive Officer of the Gore District Council.

In the event of any Waahi Taonga/Tapu being found Te Ao Marama Inc and Hokonui Rūnanga representatives will arrange a site inspection by the appropriate takata whenua and their advisors, including statutory agencies, who will determine whether this find is likely to be extensive and whether a thorough site investigation is required. Material found will be handled and removed by Iwi responsible for the tikanga appropriate to their removal or preservation.

Taonga or artifact material (e.g. pounamu/greenstone artifacts) other than Koiwi will be treated in a similar manner so that their importance can be determined, and the environment recorded by qualified archaeologists alongside the appropriate takata whenua.

For further detail, refer to the Archaeological Site Accidental Discovery Procedure in appendix 1.

2.3 Responsibilities

Every person on site is responsible for stopping work and reporting to line management should a heritage sites be identified on site. Line management are responsible for ceasing operations in that area once a site is identified and notifying the Mine Manager. The Mine Manager is responsible for notifying the Gore District Council, Senior Management and Te Ao Marama Inc (Murihiku Resource Management Consultants) and Hokonui Rūnanga representative on receipt of any information that a heritage site has been identified.

APPENDIX 1

Protocol in the Event of a discovery, or suspected discovery, of a site of cultural importance (Waahi Taonga/Tapu)

HERITAGE SITE DISCOVERY

1 PURPOSE

The Gore District Plan has not identified any archaeological sites of significance to Mana Whenua within the New Vale Mine Site. Archaeological sites are important because they provide a visible reminder in the landscape of our history and heritage. Past events have played a part in shaping the environment that surrounds us, in the same way our life causes change. An archaeological site is a place where there are physical remains of human activity that happened in the past. This could be the foundations of buildings, features constructed from earth, such as ditches and banks, or even things that have been thrown away. Often what can be seen on the ground surface is only a small part of the site, and there will be much more that has become buried underneath.

2 SCOPE

Within the New Vale Mine site any koiwi [human remains] or other sites of cultural significance be found, then all work in that area shall cease immediately. The Southland District Council and Te Ao Marama Inc [Murihiku Resource Management Consultants] Hokonui runanga representative shall be notified and no additional work may be carried out in that area until authorised by the Chief Executive Officer of the Gore District Council.

3 REFERENCES

New Vale Operations Site Environmental Management Plan

4 DEFINITIONS

Koiwi – human remains

Taonga – treasure, anything consider value

Mana Whenua – authority over the land

5 DOCUMENTATION AND RECORDS

Site Environmental Management Plan [SEMP]

6 PROCEDURE FOR COAL MINE WORKERS

In the event of discovering historical and cultural artefacts, and/or skeletal remains, or in the unlikely event a site is disturbed inadvertently, the following procedure is implemented;

- Cease work immediately
- Cordon off area
- Notify your Greenbriar Supervisor immediately
- Assist the Supervisor with any investigation
- Only after appropriate action has been taken and written authorised consent from the Supervisor has been received should work proceed.

7 PROCEDURE FOR THE MINE MANAGER

a. Kōiwi tangata accidental discovery

If Kōiwi tangata (human skeletal remains) are discovered, then work shall stop immediately and the New Zealand police, Heritage New Zealand (details below) and Te Ao Marama Inc (Ngai Tahu (Murihiku) Resource Management Consultants) shall be advised. Contact details for Te Ao Marama Inc are as follows:

Te Ao Marama Inc
Murihiku Marae, 408 Tramway Road, Invercargill
P.O. Box 7078, South Invercargill 9844
Phone: (03) 931 1242

And

Hokonui Rūnanga
140 Charlton Road, Gore 9774
Phone: (30) 2087954
Email: hokonui@xtra.co.nz

Te Ao marama Inc will arrange a site inspection by appropriate Tangata Whenua and their advisers, including statutory agencies, who will determine how the situation will need to be managed in accordance with tikanga maori.

b. Archaeological Sites

Archaeological sites are protected under the Heritage New Zealand Pouhere Trust Act 2014, and approval is required from heritage New Zealand before archaeological sites can be modified, damaged or destroyed.

Not all archaeological sites are known or recorded precisely. Where an archaeological site is inadvertently disturbed or discovered, further disturbance must cease until approval to continue is obtained from Heritage New Zealand. As stated above, the New Zealand Police and Te Ao Marama Inc. also need to be advised if the discovery includes Kōiwi tangata/human remains.

Heritage New Zealand c/o Regional Archaeologist Otago/Southland

P.O. Box 5467, Dunedin

Phone: (03) 477 9871 Mobile: 027 240 8715 infodeepsouth@heritage.org.nz

c. Taonga or artefact accidental discovery

If taonga or artefact material (e.g. pounamu/greenstone artefacts) other than koiwi tangata is discovered, disturbance of the site shall cease immediately and Southland museum and Te Ao Marama inc shall be notified of the discovery by the finder or site archaeologist in accordance with the Protected Objects Act 1975. All taonga tuturu are important for their cultural, historical, and technical value and are the property of the Crown until ownership is resolved.

d. In- situ (natural state) pounamu/greenstone accidental discovery

Pursuant to the Ngai Tahu (Pounamu Vesting) Act 1997, all natural state pounamu/greenstone in the Ngai Tahu tribal area is owned by Te Runanga o Ngai Tahu Pounamu Management plans provide for the following measures:

- Any in-situ (natural state) pounamu/greenstone accidentally discovered should be reported to Te Runanga o Ngai Tahu staff as soon as is reasonably practicable. Te Runanga o Ngai Tahu staff will in turn contact the appropriate Kaitiaki Papatipu Runanga;
- In the event that the finder considers the pounamu is at immediate risk of loss such as erosion, animal damage to the site or theft, the pounamu/greenstone should be carefully covered over and /or the relocated to the nearest safe ground.

The find should then be notified immediately to the Programme Leader – Ohanga, at Te Runanga o Ngai Tahu. Their details are as follows:

Te Runaga o Ngai Tahu

c/- Programme Leader – Ohanga

Te Whare o Te Wai Pounamu

15 Show Place, P.O. Box 13-046, Otautahi/Christchurch 8021

Phone: (03) 366 4344 Web: www.ngaitahu.iwi.nz

END OF PROCEDURE

NEW VALE OPENCAST OPERATIONS

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 3 – NOISE EMISSIONS MANAGEMENT

MAY 2023 REVIEW

New Vale Opencast Operations
Site Environmental Management Plan
Section 3 - Noise Emissions Management

Table of Contents

3.1 INTRODUCTION

This Noise Management Plan forms Section 3 of the New Vale Site Environmental Management Plan (SEMP). It outlines the risks of production of noise and nuisance noise from site operations, and the operational procedures that are in place to control the production of noise from site.

3.2 SITE CONTEXT

Noise will be generated as an unavoidable result of the transport, handling and loading out of coal, overburden stripping and disposal, and associated site works. If not managed adequately noise from these activities has the potential to be a nuisance to adjoining property owners.

Potential sources of noise that could cause a nuisance to adjoining owners include:

- Reverse warning alarms on dump trucks.
- Engine noise from earthmoving machinery.
- Horns on earthmoving machinery.
- Tailgates closing on road truck
- Track noise from Bulldozers.
- Turbochargers on earthmoving equipment.

Blasting or explosives can be a source of noise at mines. Neither blasting nor explosives are required as part of the extraction of coal at the New Vale Mine.

The production of nuisance noise is influenced by climatic factors, and the potential from the sources listed above is highest during clear frosty nights. Wind direction also has a significant effect on the amount of noise that a receptor is exposed too.

There is no requirement for Noise Management Plans in the New Vale and Goodwin CML's or New Vale's land use resource consent.

Marshall Day Acoustics was engaged to perform a preliminary analysis of noise emissions from New Vale mine for the Base Case and Industrial Case operational scenarios.

Predicted worst-case noise levels were determined at seven neighbouring dwellings. No acoustic screening for overburden removal was factored into the model which made the predictions rather conservative and actual noise levels up to around 10dBA lower could be experienced. The results suggest that mining can take place between 7:00a.m. to 10:00p.m. with no acoustic screening. A more detailed assessment would be required to establish whether mining operations would meet noise limits between 10:00p.m. and 7:00a.m. with no acoustic screening or other noise mitigation measures.

Despite no requirements for acoustic screening steps have to be taken to further reduce noise emissions. The Hastie residence was identified by Marshall Day as a sensitive residence due to its proximity to the mine and the topography between this residence and the mining operations. A central ELF has continuously been under construction for some years. This screens the Hastie residence from noise emissions from our pit. In addition, Goodwin Mine has now been rehabilitated, so not coal processing or mobile plant is represent at this site any longer. The Goodwin Mine was responsible for significant emissions at the Hastie residence. Particularly, noise associated with coal processing. Now coal processing is wholly undertaken within the New Vale Mine site. New Vale Mine has progressively eliminated the use of Pit Trucks (Nissan Road Trucks). The fleet of seven pit trucks were replaced with two rigid dump trucks (CAT 773). This eliminated the slamming of tailgates and reduced the traffic movements between the pit and coal processing plant.

A noise station was placed outside the Hasties residence for so years. Unfortunately, it was on the road verge and was exposed to road traffic, so the results became difficult to differentiate road noise from noise emissions from the mine.

To date there have not been any complaints concerning noise from New Vale's neighbours.

3.3 LEGAL REQUIREMENTS

Noise limits imposed on the New Vale operation are specified in Condition 4 of land use consent LU2006_13, and are as follows:

4. Noise from operations on the site shall not exceed:
   (i) 55 dBA L_{eq} 7:00am to 10:00pm.
   (ii) 40 dBA L_{eq} 10:00pm to 7:00am.
   (iii) 75 dBA L_{max} 10:00pm to 7:00am.
   Measured at any point in the notional boundary of any noise sensitive activity

For the purposes of this condition:

"Notional boundary" means a line 20 metres from the façade of a building containing a noise sensitive activity, or the legal boundary where this is closer to the building.

"Noise sensitive activities" means buildings or parts of buildings used for, or able to be used for the following purposes: Residential activity; Visitor accommodation; Residential care activity; Day care activity; and Marae activity.

The land use consent does not specify any noise monitoring.

There is no noise limits associated with the Goodwin Coal Mining Licence Area however it is considered best practise to meet the limits contained in the New Vale land use consent as this is also consistent with the Gore District Plan.

Activities at the site will be managed to achieve the following vibration standards:

- AS 2670.2-1990 Evaluation of human exposure to whole-body vibration - Continuous and shock induced vibration in buildings (1 to 80 Hz).
- DIN 4150-3:1999 Effects of vibration on structures.

3.4 OPERATIONAL NOISE MANAGEMENT

3.4.1 Operational Hours

Operations, i.e. coal winning and overburden removal and coal processing take place on one of two schedules.

The summer schedule of Overburden Operation has operations running from 6:00am to 6:00pm Monday to Friday, and on some Saturdays as required to keep up with peak demand, and from 7:00am to 4:30pm during the winter schedule.

The site is however, able to operate 24 hours per day, seven days per week.

3.4.2 Coal and Overburden Haulage

The mine is required to comply with the noise limits imposed by the District Plan and the relevant provisions of the Noise Management Plan.

Specific requirements to be met include:

1. All plant will be selected and adequately maintained to minimise noise during operation, and in particular:
   a. Exhaust/muffler systems will be inspected and kept fully operational at all times

b. Exhaust outlets shall be kept as low as practicable
c. The trucks shall be maintained in good order
d. Maintenance shall as far as practicable be carried out in a designated workshop using best practicable options to minimise noise emissions, and be undertaken during daylight hours
e. Where practicable plant with low noise emission levels will be selected and used in preference to noisier plant

The co-ordination of these requirements is the responsibility of the Workshops Supervisor.

2. All plant will be operated so that:
    a. Tailgates where present are properly secured
    b. Trucks are not accelerated unnecessarily
    c. The use of exhaust brakes is minimised, especially outside of the hours 7:00am – 10:00pm.
    d. Road speed limits are observed at all times
    e. As far as practicable stockpiles will be operated to minimise vehicle movements
    f. Only the minimum cartage necessary is undertaken at night and on Sundays.
    g. Reversing alarms are removed from dump trucks during night operations.
    h. Equipment operations are planned to reduce noise level (ie. Place diggers in lowest point in pit possible to muffle noise).
3. The environment is modified to control noise:
    a. Engineered Landforms (ELFs) constructed to screen noise emissions from neighbours.
    b. Shelter belts planted to screen noise

These requirements will be incorporated into site operating procedures, which all drivers will be required to read and abide by.

3.4.3 Loading Out Coal

The provisions for coal and waste rock haulage will apply. Where a loader is used to load trucks the above provisions in 1a-e and 2a-g will apply, and the loader is not to be revved unnecessarily

All road surfaces will be regularly maintained to ensure a smooth surface for vehicles. Field-testing will assess the need for speed limits and where appropriate these will be established, signposted and be required to be observed.

3.4.4 Responsibilities

Compliance Target	Measurement	Responsibility	Timeframe
Noise monitoring	Report from Marshall Day Acoustics	Environment Technician	As Required
Mobile Plant maintenance to minimise noise emissions	Report from Marshall Day Acoustics and Occupational Monitoring	Maintenance Supervisor	As Required
Fixed Plant Maintenance to minimise noise emissions	Report from Marshall Day Acoustics and Occupational Monitoring	Health, Safety & Environment Manager	Ongoing
Plant selection to minimise noise emissions	Report from Marshall Day Acoustics and Occupational Monitoring	Mine Manager	Ongoing
Operator compliance (inc. withdrawal of failed plant)	Report from Marshall Day Acoustics and Occupational	Mine Manager	Ongoing

	Monitoring		
Complaints registration	Complaints Register	Mine Manager and Health, Safety & Environment Manager	Ongoing

3.5 NOISE MONITORING

Environmental noise monitoring is not required to be carried out, however, a noise meter, was located at New Vale's meteorological station measured and recorded instantaneous sound pressure level. A second noise meter was located outside of Hastie property. The noise meters can be reinstalled if required to resolve matters relating to any complaints.

There is currently no noise monitoring stations active.

3.6 COMPLAINTS PROCEDURE

3.6.1 Policy

In the event of any complaints from members of the public the following policy is followed:

1. The complaint is acknowledged and an incident report form is completed
2. The incident is copied to the relevant senior management as directed on the form
3. The incident form is entered into the MyOSH database (where it remains live until marked as completed)
4. The complaint is investigated, and the complainant is informed of the investigation findings, this may include further monitoring by appropriate New Vale Coal staff or specialists.
5. Appropriate mitigation measures are agreed with the complainant and implemented
6. Once the incident is satisfactorily resolved it is marked as completed with MyOSH, where a record of the incident and incident management process is retained.

Land use consent 2006_13 requires a complaints register containing the following is to be maintained.

a) Details of any complaints received, including those relating to activities undertaken on the site and the movement of vehicles to and from the site. Such details shall include the time and date of the incident subject to the complaint and the name and contact details of the complainant;
b) An assessment of the incident subject to the complaint; and
c) Any action taken by the consent holder

This register shall be available for inspection by Gore District Council staff at any time. No later than January 31 each year New Vale Coal is required to advise the Gore District Council of any complaints received during the previous calendar year and include appropriate details from the complaints register.

3.6.2 Contact Details

Telephone contact details for complaints are:

New Vale Coal New Vale Office – 03 208 8600

New Vale General Manager – 021 318 569

Health, Safety and Environment Manager – 027 207 6372

NEW VALE OPENCAST OPERATIONS

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 4 – AIR QUALITY

MAY 2018 REVIEW

New Vale Opencast Operations
Site Environmental Management Plan
Section 4 – Air Quality

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4.1 INTRODUCTION

This Air Quality Management Plan forms Section 4 of the New Vale Site Environmental Management Plan (SEMP). It outlines the risks of production of dust and airborne contaminants from site operations, and the operational procedures that are in place to control the production of dust from site.

4.2 SITE CONTENT

Dust will be generated as an unavoidable result of the transport, handling and loading out of coal, overburden stripping and disposal, ash disposal and associated site works. If not managed adequately dust from these activities has the potential to be a nuisance to adjoining property owners.

Potential sources of dust that could cause a nuisance to adjoining owners include:

- Coal dust generated from the coal screening/processing plants.
- Coal dust/sediment from use of access/haul roads.
- Dust/sediment generated from Overburden Stripping for the purposes of rehabilitation.
- Unblended ash stockpiles.

The production of dust is influenced by climatic factors, and the potential from the sources listed above is greatest during high velocity wind events\periods originating from the Northwest.

There is no requirement for Dust Management Plans in the CML, however resource consent 201709 requires the production of a dust management plan for New Vale operations. This section of the SEMP fulfils that obligation.

4.3 AIR QUALITY

The table below details the sources of dust at the site, methods of control and the Regional Plan and/or District Plan provisions in place which permit these activities.

Table 4.1: *Air Discharge Sources and Controls*

Source	Method of Control	District & Regional Plan Provisions
Venting of exhausts from trucks and plant	• Regular maintenance of equipment (WOF/COF or equivalent).	N/A
Coal dust generated within the crushing/screening plants	• Regular maintenance of plant. • Reticulated Sprinklers on plant • Regular wash down of plant • Enclosure of transfer points • New plant is located a greater distance from the boundary	ES Consent 201709:Air Discharge Permit
Coal dust/ sediments on mine roads and ROM	• Wetting of the roads by sprinklers and/or water cart during dry periods • Annual spreading of road metal aggregate on mine roads. • Regular grading of mine roads • Trees as a shelter belt from prevailing winds	ES Consent 201709:Air Discharge Permit
Coal Ash Tip Head	• Ensure coal ash tip head is located away from site boundaries and is not exposed to either prevailing (NE) or high velocity (NW) winds. • Ensure any ash stockpiles do	ES Consent 201709:Air Discharge Permit ES Consent 202596:Ash Discharge Permit

	not exist for longer than 30 days.	
Overburden Stripping	• Establishment of farm shelter belts upwind of high velocity (NW) winds. • Grass areas of mine over summer that will not be disturb for a period of time. • Rehabilitate mining footprint in a timely manner.	ES Consent 201709:Air Discharge Permit
Superdirt Manufacture	• Minimize stockpiles of coal fines • Mix coal fines to start composting of superdirt as soon as is possible.	ES Consent 201709:Air Discharge Permit

4.3.1 Legal Requirements

The discharge of dust from site is controlled by the following resource consent (Appendix C):

201709 *to discharge contaminants into the air from two opencast mine operations* (New Vale and Goodwin).

4.3.2 Monitoring and Reporting

There are no specific quantified targets for the management of dust discharged from the site. Rather the conditions request that the site adopts the best practicable option to minimise dust discharges, which include the use of water as a dust suppressant on stockpiles, crushing plants and mining roads.

Nine deposited particulate dust monitors have been installed on either the New Vale site boundary or the Goodwin CML boundary. Refer to Appendix 1 *New Vale Dust Monitoring Plan*. These dust pots measure fugitive dust that travels at the boundaries.

The self imposed target for the site is to discharge less than 4g/m^2/30 days (less the amount recorded at the control site (DP1)). The sites deposited dust target comes from the *Ministry for the Environments Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions*. Monthly dust pot changes are dispatched to the Eurofins Invercargill for analysis.

The results of this monitoring are held in the environmental files. The results are entered directly by the Environmental Technician.

There is a requirement under the consent to keep a dust complaints diary. Section 7 of the consent states:

The consent holder shall maintain a dust complaints diary. The diary shall record the date and time of each complaint, weather conditions (such as wind direction, approximate wind speed, temperature, whether it's raining or not), location of the complaint, and nature and intensity of the dust emission. The consent holder shall also record in the diary the action taken in response to the complaint. The consent holder shall provide a record of the complaints diary to the Southland Regional Council on request. Records will be filed in the mines incident management system, MyOSH.

New Vale provides an annual report to Environment Southland on Fugitive dust controls, results of dust deposition gauges and the nature of any complaints received. This is a requirement of condition 5 of the air discharge permit and must be provided by 1st February.

The Southland Regional Council is more commonly known as Environment Southland (ES).

4.3.3 Road Dust Suppression

The Mine Manager are responsible for dust suppression of mine roads with the water cart. They are also responsible for dust suppression of stockpiles and lignite crushing plants. The Reactive Dust Suppressant procedure has been developed to support both of the Mine Manager in administering their responsibilities. This procedure covers reviewing weather forecasts, stop work directives, reductions of vehicle speed limits that may reduce fugitive dust to acceptable emission levels.

The site Electrician is responsible for maintaining the reticulated road dust suppression sprinkler system at the New Vale entrance.

Seasonally from August to March inclusive, are the high-risk periods for fugitive dust emissions from the site. This is based on analysis of dust results reported to date. The causative factors are higher temperatures and wind speeds, and lower rainfall. The prevailing wind comes from the Southeast however the high velocity winds originate from the Northwest. The Northwest winds cause the greatest mobilisation of fugitive dust on site. This is due to a combination of:

- its higher velocity,
- higher temperature,
- site topography,
- direction of sensitive downwind receptors and
- distance from dust sources to our boundaries.

In addition to the above controls annual spreading of road aggregate further reduces the mobilization.

4.3.4 Fixed Plant and Stockpile Dust Suppression

The site Electrician is also responsible for the maintenance of reticulated sprinklers on the fixed plant. The mine manager is responsible for ensuring prior approval is obtained from Environment Southland's General Manager or Director of Environmental Management should any alteration to any plant or process that would substantially change the nature, or increase the quantity, of emissions to the atmosphere. Significant changes to the emissions may require, amendment of the sites discharge to air permit, or a new resource consent.
The Mine Manager is responsible for ensuring that the operators utilise dust suppression systems on fixed plant and stockpiles.

4.3.5 Overburden Dumps Dust Suppression

In early spring, the Mine Manager is responsible for identifying disturbed areas in the mine that will be unworked during the high risk (August to March) period and arrange for these areas to be sown in grass. Typically these areas will be topsoil stockpiles and tip heads/overburden dumps.

4.4 OPERATIONAL AIR MANAGEMENT

4.4.1 Operational Hours

Operational hours are 12 hours/day.06:00 – 06:30 for summer hours and 9 hours/day, 07:00 – 16:00 for winter hours, Monday to Friday and Saturdays as required.

4.4.2 Coal and Waste Rock Haulage

New Vale staff carry out coal and overburden haulage. New Vale Coal is required to comply with the dust limits imposed in its Dust Management Plan.

Specific requirements to be met include:

1. All plant will be selected and adequately maintained to minimise the generation of dust and air emissions during operation, and in particular:
    a. Exhaust/muffler systems will be inspected and kept fully operational at all times
    b. Exhaust outlets shall be kept as low as practicable

c. All trucks shall be maintained in good order
d. Maintenance shall as far as practicable be carried out in a designated workshop using best practicable options to minimise air and dust emissions.

2. All plant will be operated so that:
   a. Tailgates where present are properly secured
   b. All loads are covered before leaving the site boundary
   c. Road speed limits are observed at all times
   d. As far as practicable stockpiles will be operated so as the stockpile does not result in the discharge of dust or air emissions into nearby properties.
   e. Equipment operations are planned to reduce dust or air discharges (ie. Place diggers at the furthest point from the boundary or lowest point in the pit that is practicable to reduce dust and air emissions).

These requirements will be incorporated into site operating procedures, which all drivers will be required to read and abide by.

4.4.3 Loading Out Coal

The provisions for coal and overburden haulage will apply. Where a loader is used to load trucks the above provisions in 1a-d and 2a-e will apply.

All road surfaces will be regularly maintained to ensure a smooth surface for vehicles. Field observation will assess the need for speed limits and where appropriate these will be established, signposted and be required to be observed.

4.5 COMPLAINTS PROCEDURE, DUST

4.5.1 Policy

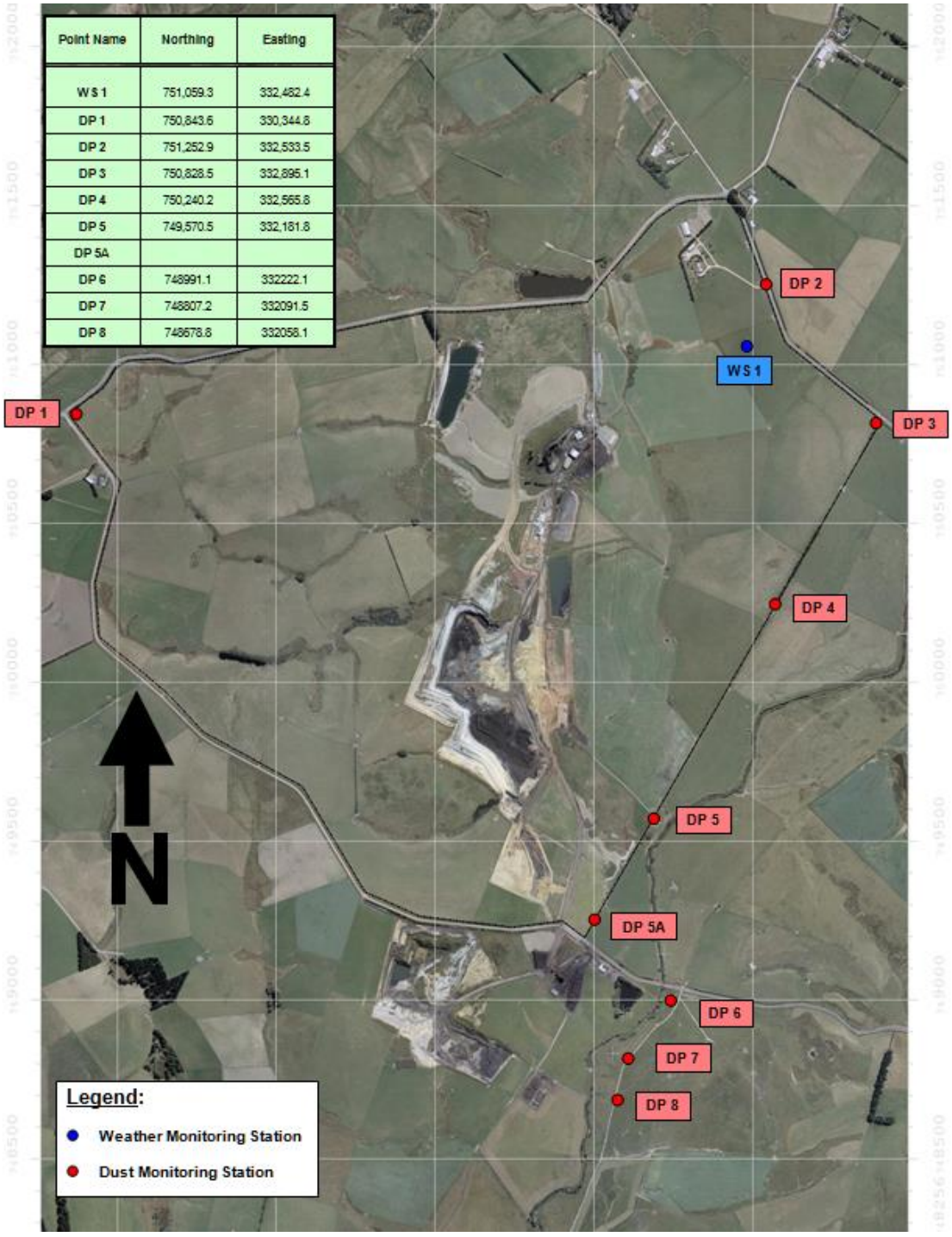
In the event of any complaints from members of the public the following policy is followed:
1. The complaint is acknowledged and an incident report form (GR-HS-FORM-016) is completed
2. GR-HS-FORM-016 Incident Investigation Report Form is copied to the relevant senior management as directed on the form
3. The incident form is entered onto the Hazmate database (where it remains live until marked as closed)
4. The complaint is investigated and the results of the investigation are shared with the complainant, this may include further monitoring by appropriate staff or specialists.
5. Appropriate mitigation measures are agreed with the complainant and implemented
6. Once the incident is satisfactorily resolved it is marked as completed in MyOSH, where a record of the incident and incident management process is retained.

4.6 RESPONSIBILITIES

Compliance Target	Measurement	Responsibility	Timeframe
Dust Monitoring Changes	Entry into the Environment File	Environmental Technician	Monthly
Reporting significant dust monitoring results to line management	Meeting Minutes	HS&E Manager	When significant results are recorded
Operator utilisation of reticulated sprinkler systems	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	Mine Manager	Ongoing
Ensure that the resources	Under 4g/m2/30 days	Mine Manager	Ongoing

are made available to control dust	dust deposition gauges, visual inspections and complaints		
Regular Maintenance of fixed plant	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	Mine Electricain	Ongoing
Wetting of the roads by sprinklers and/or water cart during dry periods. Regular grading of mine roads	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	Mine Manager	Ongoing
Ensure coal ash tip head is located away from site boundaries and is not exposed to either prevailing (NE) or high velocity (NW) winds. Ensure any ash stockpiles do not exist for longer than 30 days.	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	Mine Manager	Ongoing
Establishment of farm shelter belts upwind of high velocity (NW) winds.	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	HS&E Manager	Project based annual review.
Grass areas of mine over summer that will not be disturbed over dry periods of time.	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	Mine Manager	Annually
Rehabilitate mining footprint in a timely manner.	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	Mine Manager	Ongoing
Minimise stockpiles of coal fines and mix coal fines to start composting of superdirt as soon as is possible.	Under 4g/m2/30 days dust deposition gauges, visual inspections and complaints	Mine Manager	Ongoing
Annual Report to Environment Southland	Acceptable to Environment Southland	HS&E Manager	Annual

Appendix 1 – Newvale Dust Monitoring Plan



NEW VALE OPENCAST OPERATIONS

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 5 – WATER MANAGEMENT

JULY 2023 REVIEW

Contents

5.1 INTRODUCTION

5.1.1 General

The Water Management Plan forms the basis for all aspects of site water management at the New Vale Mine. It describes the water management standards and monitoring set out in resource consents, provides information about the water management infrastructure, and describes the context within which New Vale Mine operates its Water Management Plan. It outlines the practices and procedures to be adopted to ensure compliance with the conditions of the New Vale water-related resource consents.

New Vale Mine uses water for staff facilities, firefighting and dust suppression.

Clean drainage are diverted around the site to avoid contamination with sediment laden water. Water draining from the mine area needs to be disposed of in a manner that protects water quality and aquatic habitats in the receiving environment. One of the key aquatic values of the catchments upstream of the mine was the discovery in 2010 the fish species *Gollum galaxias*. In response to this discovery Solid Energy fenced off significant lengths of the headwater streams. Previously these streams were in a very poor state due to cattle damage and nitrate runoff, prior to a two wire fence (2011).

It is intended that the Plan be an evolving document which responds to changing conditions, to progress within the mining schedule and with experience gained from mining. The Plan will be updated as required to capture such information and ensure the management of water around the mine is focused, relevant and achieves the set objectives to the highest possible level.

5.1.2 Mine expansion plans

The mine has a stable long term domestic market base and a detailed mine plan out to 2040. This mine plan has the New Vale pit developing to the west and north and progressive rehabilitation of the existing southern end of the pit. This is shown in *Appendix 1*.

The expansion continues to mine the current coal seams along an incline that dips away from the mine. Hence, increased groundwater flows entering the pit are relatively minimal.

There are 3 small tributaries (Northern, Central, Southern) to the west of the pit that had their catchment area reduced by the pit excavation since the 1950s. By 2023 the mine's expansion to the west and north has required that the Southern Tributary has been diverted around the Northern edge of the mine development. The need to provide habitat for *Gollum galaxias* will require the need of stream diversions to the southern end of the rehabilitated mine area. The discharge to the farm drain/stream shall continue via their current discharge points.

New Vale Mine has acquired three resource consents for this work and has required two authorisations. The resource consents pertain to the diversions. One authorisation was from the Department of Conservation to install a fish barrier to protect the *Gollum galaxias* from predation and another to transfer fish from the Central Tributary to the Southern Tributary.

5.2 AIM AND OBJECTIVES

5.2.1 Aim

The aim of the Water Management Plan is to ensure compliance with New Vale's consent conditions, as stated in the following Environment Southland (ES) resource consents.

- CML 37024 – Goodwin Coal Mining Licence
- ES Consent 20158148-01-V1 – To discharge treated groundwater, stormwater and surface water from the New Vale mine into a tributary of the Hedgehope Stream
- ES Consent 20158148-03 – To take groundwater and surface water for mining purposes
- ES Consent AUTH-20191218 - To discharge ash to land
- ES Consent AUTH-20222206-03 - To discharge contaminants to water from bed disturbance activities.
- ES Consent AUTH- 20222206-01- To disturb the beds of three unnamed tributaries of the Hedgehope Stream in order to dam and divert the tributaries, including the discharge of cleanfill
- ES Consent AUTH-20222206-02 - To divert the water of three unnamed tributaries of the Hedgehope Stream

5.2.2 Objective

The objectives of the water management plan are to ensure that:

- There is sufficient water of adequate quality available for all mining, processing and ancillary operations at all times.
- The effect of the mine operations on the groundwater quality and the surface water quality of the surrounding streams is minimised as far as is practicable and aquatic values in these receiving waters are not significantly adversely affected.
- Water quality performance standards imposed by resource consent conditions are complied with at all times.
- The water quality of the waters downstream of the mixing zone is assessed on an on-going basis by regular monitoring to ensure that all resource consent reporting requirements are met.
- Provide consenting authorities with a clear framework stating how each consent, relating to water is being met;
- Ensure appropriate mitigation is in place for any potential impacts; and
- Demonstrate that best practice is being adopted and that experience from previous years is being used to refine and improve on the best practice as the mine develops.
- Ensure that at the end of mine life the water management system is conducive with other land use such as farming.

5.3 COAL MINING LICENCE CONDITIONS

The Goodwin Coal Mining Licences (CML) contain the following specific water management conditions:

- The damming of any river or stream, the taking, diversion or use of natural water, the discharging of natural water or waste into natural water, and the discharging of natural water containing waste onto land or into the ground, shall not occur except in terms of a right of authorisation granted by the Southland Catchment Board (now consents from Environment Southland).
- All surface drainings from areas disturbed during coal winning operations, including the overburden dump, stockpiles and rehabilitated land, shall be passed through a sedimentation pond or series of sedimentation ponds before leaving the property,
- Sedimentation ponds and other treatment facilities shall be maintained until the disturbed areas have been rehabilitated and revegetated to the approval of the Southland Catchment Board (now Environment Southland).
- Sediment shall be removed from sedimentation ponds when the volume of sediment accumulates to 60% of the design sediment storage volume.
- The licensee shall ensure that all holes, pits, trenches, shafts and other disturbances made to the surface of the land while mining shall be plugged and filled in immediately after mining operations have been completed to the satisfaction of the Inspector of Coal Mines.

There are other related CML conditions that are less directly specific water management conditions, in particular conditions relating to rehabilitation criteria. While Greenbriar Ltd still holds the Coal Mining Licence, it has rehabilitated the Goodwin Mine. Greenbriar Ltd has sort authorisation to keep the Sedimentation Pond and rehabilitate the edges with plantings.

5.5 CONSENT COMPLIANCE CONDITIONS

20158148-01-V1 - New Vale discharge to water

- The discharge shall not exceed
  - (i) 308 litres per second; and
  - (ii) 26,623 cubic metres per day

- The total suspended solids concentration of the discharge as measured in accordance with Condition 3(a):
  - (a) shall not exceed 50 milligrams per litre; and
  - (b) shall not exceed 20 milligrams per litre for 90% of any ten consecutive samples.

  Dissolved Boron shall not exceed 0.37 milligrams per litre; and
  Dissolved Aluminium shall not exceed 0.055 milligrams per litre.

- The discharge shall not result in the following effects in the tributary of the Hedgehope Stream outside the zone of reasonable mixing:
  - (a) a decrease of more than 30% in visual clarity
  - (b) exceedance of the water quality standards for “Lowland Softbed” water bodies (Appendix 1).

(i) In particular, the visual clarity of the tributary shall not be reduced to less than 1.3 metres when both the following circumstances arise:

i. visual clarity of the tributary upstream of the discharge is greater than 1.3 metres: and

ii. flow in the Makarewa River at the Consent Authority's Counsell Road flow monitoring site is less than 7.723 cubic metres per second.

20158148-03 – New Vale water take

- The rate of abstraction shall not exceed:
  A. 56,223 cubic metres per day; and
  B. 811030 cubic metres per year.

- By 31 March 2016, the consent holder shall install a water meter to record the water take, within an error accuracy range of +/-5% over the meter's nominal flow range, and datalogger with at least 24 months data storage capacity and a telemetry unit to record the rate and volume of take, and the date and time this water was taken.

- The consent holder shall record adequate data to demonstrate compliance with Condition 2. Data from the datalogger shall be provided once daily to the Consent Authority by means of telemetry. The consent holder shall ensure data is compatible with the Consent Authority's time-series database.

AUTH-20191218 – Discharge ash to land

- There shall be no direct discharge of ash into water or onto the bed of a river or lake, or a modified river.
- on two occasions during the period November to March grab samples of the discharge shall be taken and analysed for boron concentration.

  Note: this may occur concurrently with monitoring in accordance with Resource Consents AUTH-20158148-01-V1 and AUTH-20158148-02 or successor resource consents for stormwater and/or minewater discharges from the sites.

- The concentration of boron in the stormwater and/or minewater discharges monitored in accordance with Condition 7 shall not exceed 0.37 g/m3.
- The consent holder shall ensure that mine water and stormwater are diverted away from ash stockpile locations and any discharge from the ash stockpiles is contained to ensure that neither the discharge, nor any contaminants arising from the discharge, are able to enter any surface water body.

5.6 WATER MANAGEMENT STRATEGY

The aim is to ensure that mining operations do not impact upon the key values of the surrounding local environment.

Achieving this aim will reduce the risk of non-compliance of the agreed consents and reduce the risk of environmental harm through anticipation and resolution of adverse impacts before they occur.

The Water Management Strategy has been developed to manage all waters in and around mining operations such that the conditions set out in the consents can be met. Where

practicable the strategy seeks to use passive management techniques (mainly through settlement ponds) and best practice techniques to manage consent compliance. Where passive techniques are insufficient or impracticable then there is the ability to assist the settlement process by utilising more active treatment techniques, in particular the use of flocculants or coagulants.

The key risk from the coal mining operation is the potential to produce sediment and coal fines contaminated water and release this to the Hedgehope Stream or its tributaries. The potential risk of the site producing mine water of a depressed pH and/or elevated metals concentrations is considered very low. The risk of elevated contaminants from other activities such as ash disposal and *superdirt* production (a compost made with a mixture of paunch grass and coal fines) is considered low if appropriate control measures are followed. The water management system is designed to ensure that any adverse effects resulting from the above are mitigated, protecting the aquatic environment of the Hedgehope stream catchment.

The water management system at New Vale differentiates only two water types – either clean water or dirty water, Table 1.

Table 1: Definition of Water Types

Type	Meaning
Clean water	Runoff generated by areas undisturbed by mining and generally of 'natural' quality
Dirty water	Runoff generated by areas disturbed by mining such as active coal pits, haul roads, stockpiles, processing areas, ROM, overburden placement areas

The management of these water types at New Vale centres around two main principles: the first is to prevent clean water from around the perimeter of the disturbed area entering the operational mine areas. The second is to ensure that dirty water is contained and treated to an appropriate standard before it is discharged.

The water management system is composed of a number of elements. Water management at the New Vale mine site will include:

- Diversion of clean water around all mining operations and disturbed ground via surface drains. These include the Northern, Central and Southern clean water drains;
- Good water management practices on roads, disturbed areas and filled areas to control runoff at source and minimise erosion (including but not limited to vehicle washes, careful filling of trucks to prevent loss of material during transport, selection of low-erosion running course);
- Provision of collection drains and settlement ponds to mitigate potential impacts of dirty water; and
- Use of coagulants and flocculants where required to aid settling.

Together, these provisions form the Water Management Strategy.

The mine and its surrounds have been divided into various clean water and dirty water sub-catchment areas. Each can then be assessed for compliance with the water management strategy. These sub-catchment areas are shown on Figure 1 below and are described in more detail in the next sections.

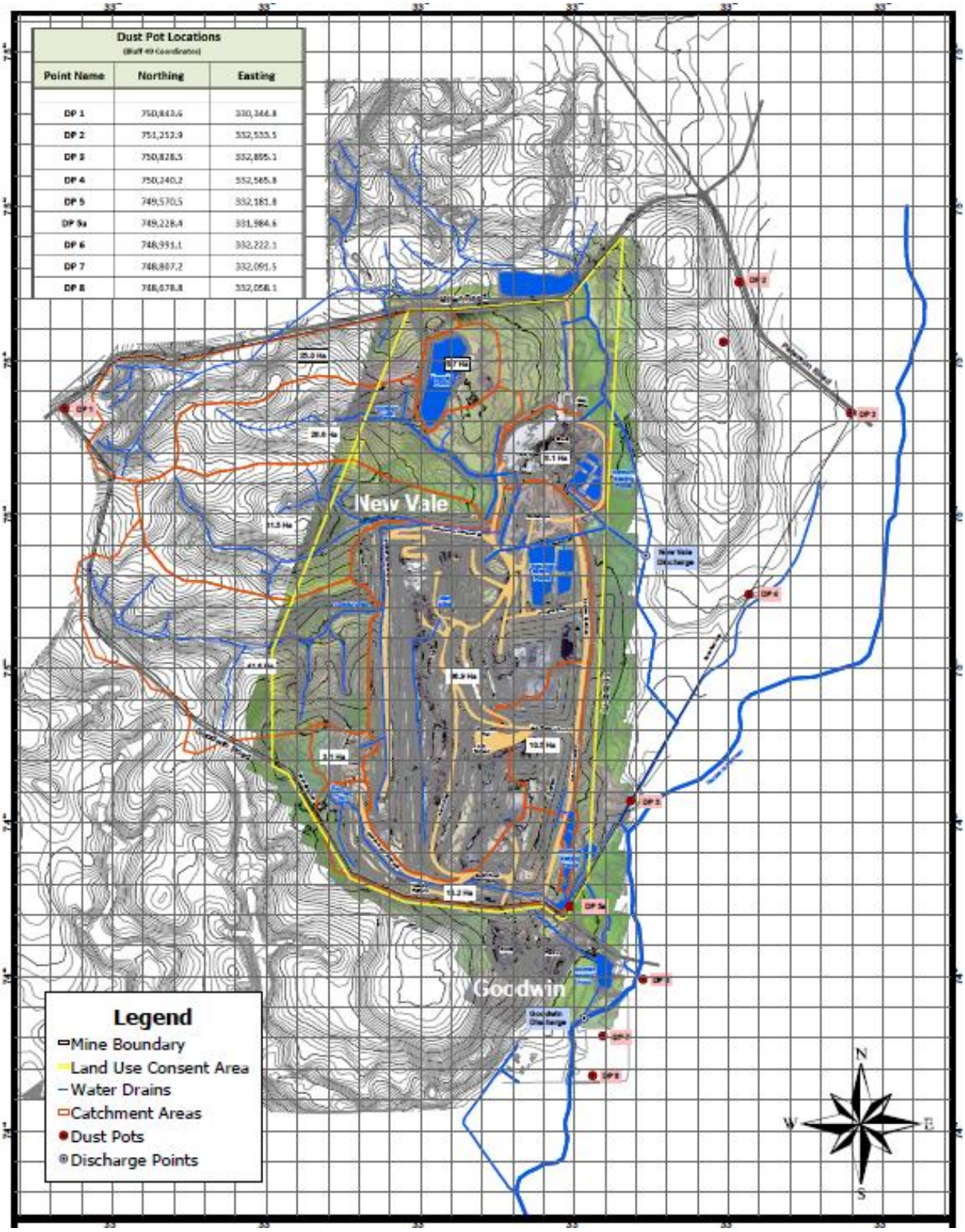


Figure 1: Catchment Area Plan.

5.7 CLEAN WATER SYSTEM

5.7.1 Aim

The aim of the Clean Water Management System is to prevent, where practicable, the ingress of clean water into areas / systems impacted by the mining operations whilst maintaining flow paths and catchments as close to their natural state as practicable.

To achieve the stated aim for the clean water system a network of cut-off drains around the edges of the operational areas will ensure that all clean water is diverted around the mining areas, returning back to the natural course as closely as can be practicably achieved. This is important for two reasons:

1. Minimise the volume of water which is adversely impacted by the mine; and
2. Reduce as far as is practicable the load placed on the treatment infrastructure, designed to mitigate any adverse effects caused by mining.

5.7.2 System Description

The clean water system has a number of different elements, these are:

- Diversion drains cut to collect and divert surface / near-surface flows around operational areas;
- Culverts provided to convey flows below linear operational areas (roads);

The clean water infrastructure will be set up in advance of the operational areas it is designed to protect.

It is recommended that the diversion channels be designed to convey a 10 % Annual Exceedance Probability (AEP) flow (1 in 10 year event) without overtopping. Other AEP's may be used depending on the accepted risk tolerance. Rainfall depth duration frequency results for New Vale from NIWA's online HIRDS system are presented in *Appendix 3*. Estimated catchment water yields and peak flow rates in litres/second/hectare are presented in *Appendix 4*.

The cleanwater infrastructure is designed to carry only clean water, and will not include measures to mitigate the effects of mine related water, other than basic erosion control measures. Due to the difficulty in maintaining drainage benches, drainage pipes, or controlling surface run-off in rainfall events, or due to limitations of pump capacity, there may be periods of time during the operational life of the mine when separation of clean water cannot be achieved or maintained. During such time periods, all water will be treated through the mine water system. Such an occasion would be is a clean water drain over toppled and spilled into the dirty water drains below.

The main cleanwater system components (sub-catchments) are :-

1. Northern Drain
2. Central Drain
3. Southern Drain

Northern Drain
The Northern Drain takes cleanwater from farmland to the northwest of the site in a south-easterly direction through the mine site. Cleanwater is also diverted from the West of the

workshop and processing/ROM area. While there is no identifiable discharge point from the Emerald Pond, it is likely that any storm water into the pond equalises with ground water. The Northern Drain and the Central Drain (see description below) converge just to the north-west of the main settling ponds and flow into the “Unnamed Tributary” of Hedgehope stream. This tributary flows into the Hedgehope Stream approximately 500m upstream of the Goodwin road bridge. This tributary receives treated water from two settling pond locations. One is treated water from the mine pit and run off from the workshops. The other is treated run off from the Coal Processing Plant.

Central Drain
The Central Drain takes clean water from the farmland to the west of the site in an easterly direction through the mine site. The Central Drain and the Northern Drain converge just to the north-west of the main settling ponds and flow into the “Unnamed Tributary” of Hedgehope stream. This tributary flows into the Hedgehope Stream approximately 500m upstream of the Goodwin road bridge.

Southern Drain
The Southern Drain takes clean water from an area of farmland to the west of the site in an Easterly direction through the mine site. Although it is mainly a clean water runoff diversion drain, it passes through some disturbed ground including previously rehabilitated land and collects some incidental road run-off. It has the added contingency of passing through the Southern Settling Ponds before flowing into Hedgehope stream approximately 400m upstream of the Goodwin Road bridge.

5.7.3 Mitigation Measures

The following measures are incorporated into the design of the clean water system to minimise the risk to sensitive receptors from non-standard operation of the system.

- Avoiding the discharge of any contaminated water into the clean water system;
- Regular inspections to ensure only clean water is present; and
- Signage may be used as appropriate to highlight clean water infrastructure on site.

5.8 DIRTY WATER SYSTEM

5.8.1 Aim

The aim of the Dirty Water Management System is to limit the entrainment of contaminates into runoff and to prevent the discharge of contaminated mine water into the environment prior to treatment within the Water Management System.

5.8.2 System Description

To achieve the stated aim for the dirty water system, a network of collection drains, bunds, sediment sumps, and ponds are well established. This system will manage the runoff from mine disturbed areas and operational work areas. This is important for two reasons:

1. To collect storm water; and
2. To convey storm water to retention structures where it can be treated prior to release to the environment.

The dirty water system has a number of different elements, these are:

- Best management practices to reduce sediment generation at source;
- Collection drains throughout operational area to route dirty water runoff to sump(s
- Sump pump and conveyance drains to transport water to ponds;
- Main pit sumps/ponds for collection of mine water;
- Pump(s) for pumping of mine water;
- Sedimentation ponds to provide treatment prior to release to environment.
- Flocculent dosing (as required) to improve settling

The main dirty water system components (sub-catchments) are :-

1. Plant 19 and ROM area
2. Main office
3. Workshops, diesel tank area – includes hydrocarbon interceptor system
4. Truck park, Weighbridge area
5. Main Pit – includes water from ash tiphead, and overburden backfill to the south.

Plant 19 and ROM
Dirty water from this area shall be collected and dosed with PAC coagulant; rainfall dependent, prior to entering the Northern Settling Ponds which discharge to an unnamed tributary that combines the Northern and Central Drains.

Sheds and Public Sales
Water from this area is diverted to a separate section of the Northern Settling Ponds than the Plant 19 and ROM dirty water. This water is then combined with the Plant 19 and ROM dirty water and discharged to an unnamed tributary that combines the Northern and Central Drains.

Workshops, diesel tank area
Water from this area is collected in a primary sump pit to the south of the workshops, before passing through a further sediment and two hydrocarbon interceptor sumps (see *Appendix 5*). Water is then piped across to the north-west corner of the main New Vale settling pond where it is discharged to the settling pond.

The New Vale settling pond discharges through two discharge pipes to the combined northern and central drains. The main discharge pipe had a flow meter installed but it often became fouled by water weed vegetation brought to the pond from water foul. To prevent the flow meter from blocking the vane was removed. These two discharge points have control valves installed so it can be isolated should a spill occur.

Sewage system
There are two separate sewerage systems. The Goodwin holding tank has been excavated as part of the site rehabilitation. The New Vale administration area has a septic tank. One is a septic tank located at the New Vale smoko room; the field for this tank is shown in *Appendix*

5. The septic tank discharge is a permitted activity within the Proposed Southland Water and Land Plan. These tanks are emptied on an annual basis.

Truck park/Weighbridge area
This is a hardstand area immediately to the east of the workshops, used as a park up area for heavy vehicles. It has no particular water treatment system as water tends to just soak away into the surrounding area. It is not a high sediment generating area and is considered a low risk site. If it was found in the future that contaminated water was getting as far as the Northern or Central drains then the drainage could be directed through a sediment sump.

Eastern Haulroad

Runoff from the eastern haul road is directed north and south depend on which way the ground slopes. The northern end is diverted to the New Vale Settling Ponds and the southern end is diverted through the Southern Settling Ponds. All Eastern Haul Road dirty water is then discharged to the Hedgehope Stream and its tributary.

Main Pit(s)
The Main Pit area which includes water from the tiphead and the overburden backfill to the south is the largest site area contributing dirty water. All water from these areas are directed into sumps and ponds within the pit where the water receives initial settlement prior to pumping from the northern end of the pit to the main New Vale settling ponds. A 200mm water meter was installed in this 200mm line as per Consent 20158148-03.

Rehabilitated Goodwin ROM and Plant 4 area
This area has been rehabilitated for some years now. The landuse for this area is now farmland. The settling pond was not filled but fenced and planted as a pond. The water from the slopes directly behind the pond drain towards the pond, hence continue to protect the receiving environment by removing any sediment.

5.8.3 Mitigation Measures

The following measures are proposed to minimise the risk to sensitive receptors from non-standard operation of the system.

- Avoiding the discharge of any dirty water into the clean water system;
- Regular inspections and maintenance of the drains, sumps, and settlement ponds will also assist in maintaining the engineering integrity of the system.
- Signage may be used to highlight storm water infrastructure on site.
- During any new construction activities localised best management practices should be employed to prevent construction sediment being flushed into adjacent water courses.
- Coagulant dosing facility to settle fine sediment that would otherwise pass through the settlement ponds.

Capacities of the in-pit sump will be largely governed by operational requirements. Some Total Suspended Solids settlement will occur within the sump which will assist the performance of the overall system. The settlement ability of the sump is to be maximised as operational activities allow. The size and pumping rates of the in-pit pumps will depend on the size of the pit and the catchment area of area feeding them. In-pit water is pumped to settlement basins with the aim to remove suspended sediment, coal fines and precipitated metals. Flocculants may be used as required to assist this process. The sumps are regularly cleaned out and the material is incorporated in the overburden.

Accidental release of dirty water represents the most acute risk to local receptors, in particular the aquatic ecology of Hedgehope Stream. Notwithstanding this, however, the likelihood of an accidental discharge from the in-pit pumping system is low. This is by virtue of the fact that the working pit, the source of the majority of mine water, is set below ground level. This means that should there be an issue in the mine water system, pumps can be turned off and mine water can (indefinitely) be collected in the pit bottom until the issue is rectified. Although presenting operational issues, this method limits the volume of untreated mine water which could be released to the environment during mine operation, with water released to the environment being limited to that held within the pipe work and the settlement ponds at the time of failure.

During operation the key risks are:

- Rupture of water pipe between pit and the ponds;
- Power failure on site;
- Failure to use coagulant or flocculant when it was needed; or
- Failure of the settlement ponds.

The failure of the in-pit pumps, although serious from an operational point of view, would not result in the release of contaminated water to the environment and is therefore not a significant risk to the environment which required consideration under this analysis. The key mitigation measure to limit the above risks will be active monitoring of the pumps and flocculant treatment system. Regular inspections and maintenance of the pumps, sumps, pipelines and settlement ponds will also assist in maintaining the engineering integrity of the system.

5.9 MONITORING

5.9.1 Monitoring locations and frequency

Regular monitoring/samlping is undertaken at the following three locations (shown in *Appendix 6*), being the main discharge and upstream and downstream of the receiving waters for that discharge:

1. New Vale discharge
2. New Vale upstream
3. New Vale downstream

Table 2: Monitoring Frequencies

Sites	Parameters	Frequency required by Resource consent
New Vale discharge	pH electrical conductivity temperature total suspended solids boron[1] aluminium[1]	Monthly

1 -required twice a year at Goodwin as per consent 20158148-02

Compliance limits regarding concentrations of contaminants have been summarised in the earlier consent compliance conditions section of this management plan.

5.9.2 Methodologies

Sample collection, preservation and analysis shall be carried out in accordance with the most recent edition of APHA "Standard Methods for the Examination of Water and Wastewater". The laboratory undertaking the analysis shall be IANZ accredited or as agreed in writing by the consenting authority.

Monthly samples and field measurements (eg pH, clarity tube) are undertaken by the site's Environmental Technician who is familiar with the relevant sampling procedures.

5.10 REPORTING

Monthly monitoring results are to be forwarded to the Compliance Department, Southland Regional Council, every quarter. This agreement is by mutual discussion with the compliance officer for the New Vale mine and New Vale staff. Annual reports are supplied as required AUTH 20158148-01-V1.

A water management section is included in the site's annual work programme.

5.11 RESPONSIBILITIES

The following positions are defined explicitly in reference to the Water Management Strategy.

The **Mine Manager** is responsible for:

- Achieving the objectives of the Water Management Plan and ensuring that they remain core operating imperatives.
- Managing risk to ensure site standards can be met.
- Ensuring that the Water Management Plan is incorporated into mine plans at all levels, including any Annual Work Plan(s).

The **Environmental Technician** is responsible for:

- Monitor surface water and groundwater at specified locations at specified intervals;
- Manage the contract and performance of the laboratory contractor;

- Undertake regular audits of all water management infrastructure and sediment control devices to assist water quality performance; *and*
- Manage the monitoring data and report performance against targets and compliance limits.

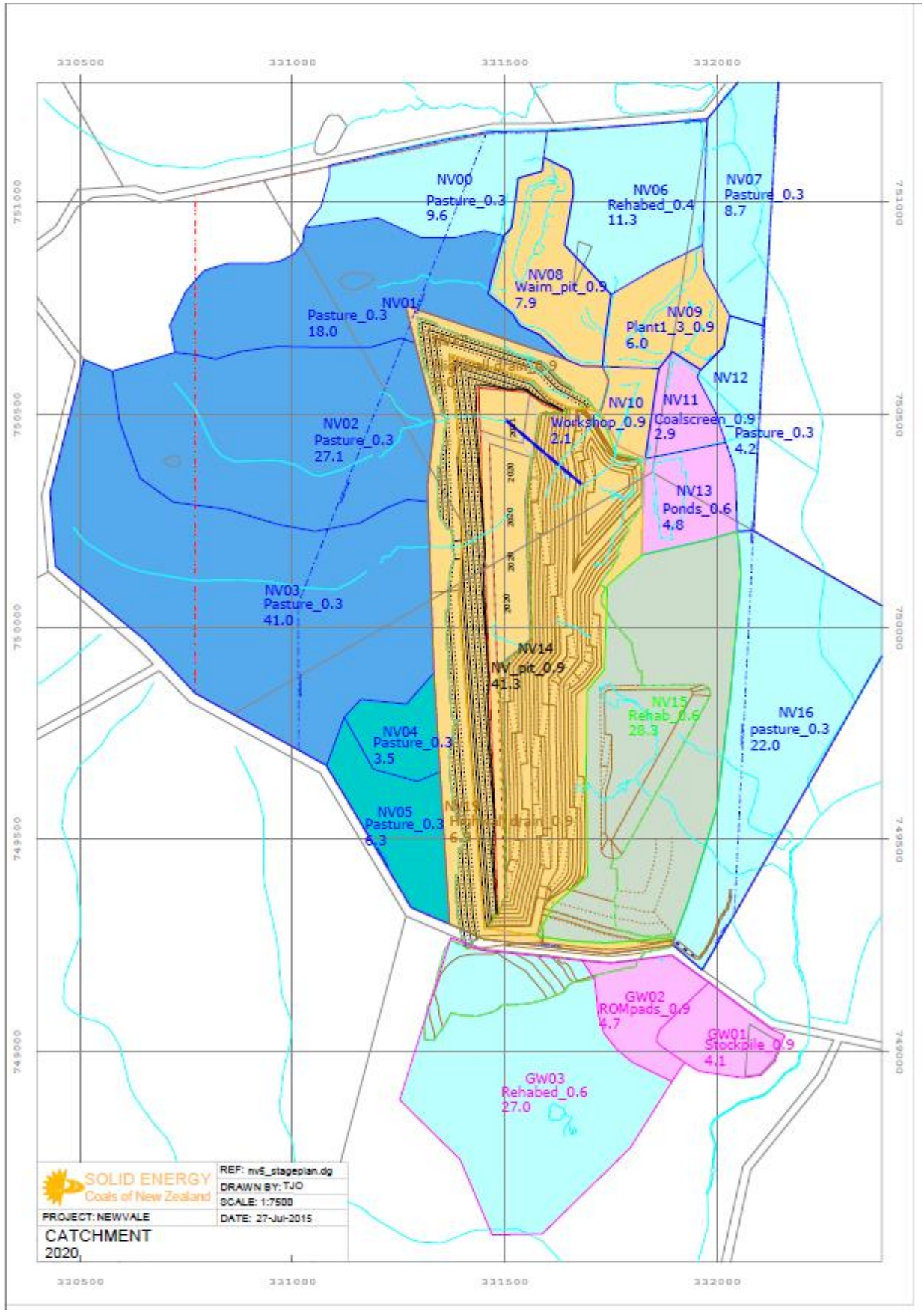
The **HS&E Manager** is responsible for:

- Reporting to Environment Southland
- Ensuring the Resource Consents are maintained and current.
- Assisting the Environment Technician in resolving problems.

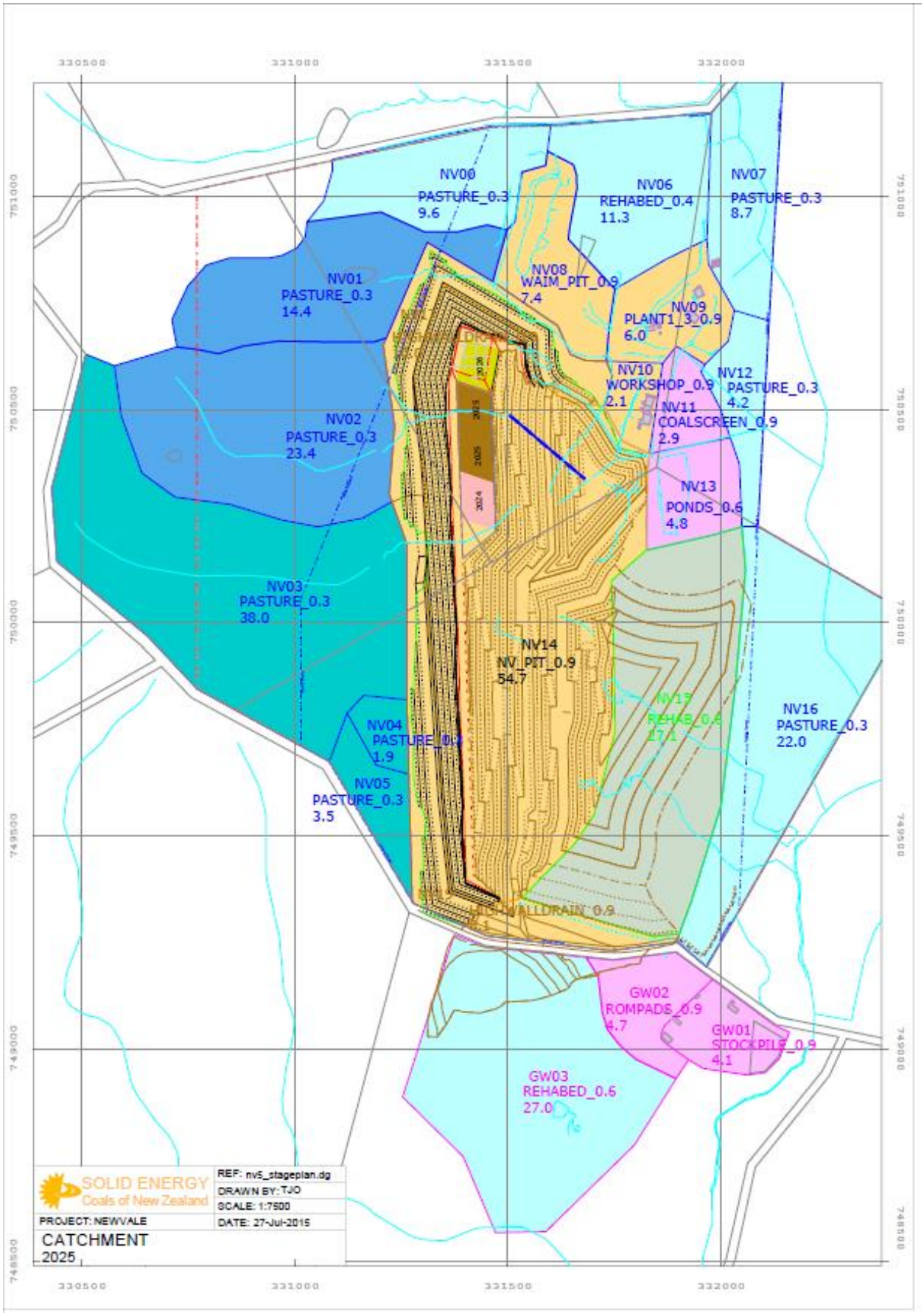
All site personnel are responsible for:

- Contributing to the achievement of the Water Management Plan objectives in whatever way their role defines.
- Reporting any water issue that they perceive presents a risk to site performance and/or reputation.

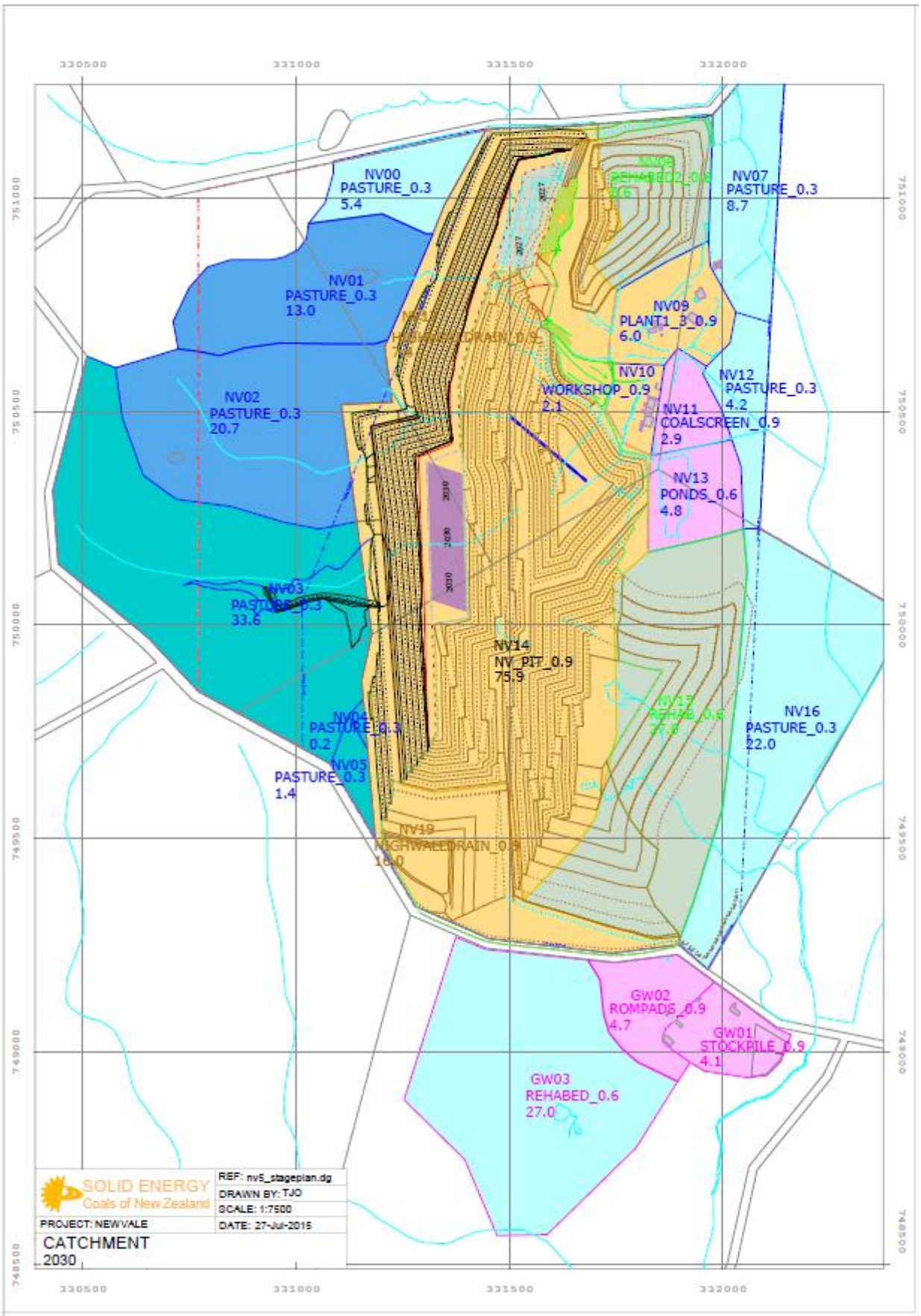
Appendix 1 –Mine plan and catchments schematics 2020 - 2030



New Vale Mine Plan and Catchments – 2020



New Vale Mine Plan and Catchments – 2025



New Vale Mine Plan and Catchments – 2030

Appendix 2 - Long-term average monthly and annual rainfall

Long-term average annual rainfall at the nearest long-term rainfall site (Waimumu, Glendhu NIWA Station ID I68171). This rainfall station is located approximately 3km north of the New Vale Mine at an elevation of 183m. It operated (whole years) from 1953 to 1987. Given its slightly higher elevation and closer proximity to the Hokonui Hills it would be expected to slightly overestimate the rainfall at New Vale.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
119	88	109	116	130	106	81	74	89	99	96	107	1214

Appendix 3 - Rainfall depth duration frequency results (From NIWA's online HIRDS system)

- Sitename:- **New Vale (**produced on Friday 25th of September 2015)
- Coordinate system: NZMG Easting: 2182000 Northing: 5443000

Rainfall depths (mm)

		Duration									
ARI (y)	**aep**	**10 min**	**20 min**	**30 min**	**60 min**	**2hr**	**6hr**	**12hr**	**24hr**	**48hr**	**72hr**
1.58	0.633	4.0	5.8	7.1	10.2	14.1	23.7	32.9	45.6	56.5	64.0
2.00	0.500	4.5	6.5	7.9	11.4	15.6	25.8	35.5	48.7	60.3	68.4
5.00	0.200	6.4	9.1	11.2	16.0	21.3	33.6	44.8	59.7	74.0	83.8
10.00	0.100	8.0	11.4	14.1	20.1	26.2	40.0	52.3	68.3	84.6	95.9
20.00	0.050	10.0	14.2	17.5	25.0	32.0	47.4	60.7	77.8	96.3	109.1
30.00	0.033	11.3	16.1	19.8	28.3	35.8	52.2	66.1	83.8	103.7	117.5
40.00	0.025	12.3	17.6	21.7	30.9	38.8	55.8	70.2	88.3	109.3	123.8
50.00	0.020	13.2	18.8	23.2	33.1	41.3	58.9	73.5	91.9	113.8	128.9
60.00	0.017	14.0	19.9	24.5	35.0	43.5	61.4	76.4	95.0	117.6	133.3
80.00	0.012	15.2	21.7	26.8	38.2	47.1	65.7	81.1	100.1	123.9	140.4
100.00	0.010	16.3	23.3	28.7	40.9	50.1	69.3	84.9	104.2	129.0	146.2

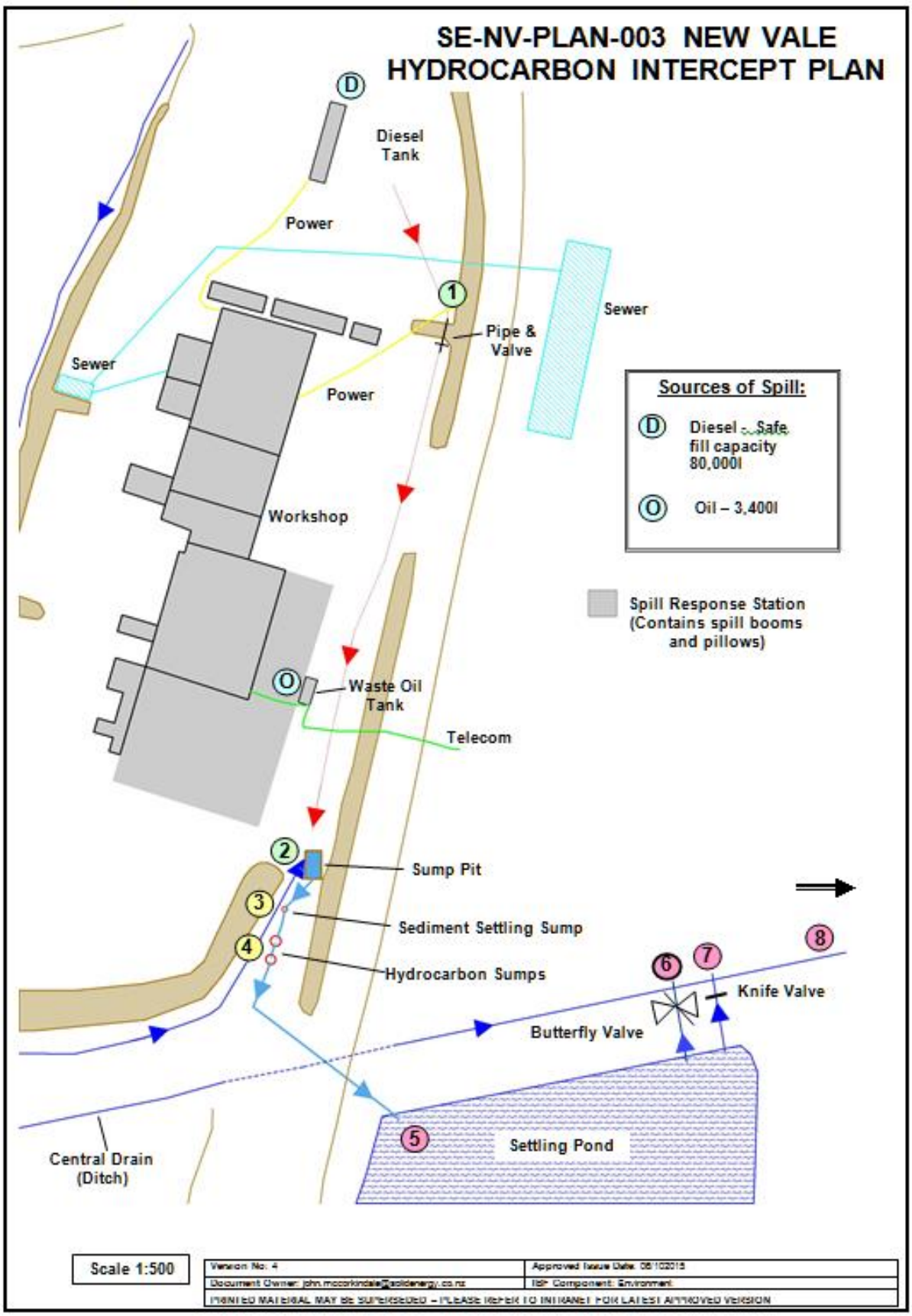
Appendix 4 - Estimated catchment water yields and peak flow rates in litres/second/hectare

	Reference rainfall (mm)	Undisturbed pasture catchment, final rehabilitated land with good vegetation cover		Disturbed, bare ground (pit, roads, stockpile area	
		Runoff coefficient	**Runoff rate (l/s/ha)**	Runoff coefficient	**Runoff rate (l/s/ha)**
Long-term average water yield	1214	0.45	**0.17**	0.8	**0.31**
Annual maximum daily water yield	45.6	0.3	**1.6**	0.7	**3.7**
10 year ARI maximum daily water yield	68.3	0.3	**2.4**	0.7	**5.5**
Annual instantaneous peak flow	10.2 (1 hour) 7.1 (30 min)	0.2	**5.7**	0.5	**20**
10 year ARI instantaneous peak flow	20.1 (1 hour) 14.1 (30 min)	0.25	**14**	0.6	**47**

Runoff coefficients have been estimated from land surface recharge modelling done as part of Southland Water Resource Study (2003) and from catchment factors from a rationale approach to estimating mean annual flood flows (Griffths and McKerchar 2012)

For the instantaneous flow estimates a time of concentration of 1 hour has been assumed for undisturbed catchment s and 30 minutes for disturbed catchments differentiating between the expected speed of runoff response for the two catchment types. These flow rates are indicative only. The peak flow runoff rates in particular will depend on the specific characteristics of the catchment being assessed.

Appendix 5 – Location of hydrocarbon interceptor system

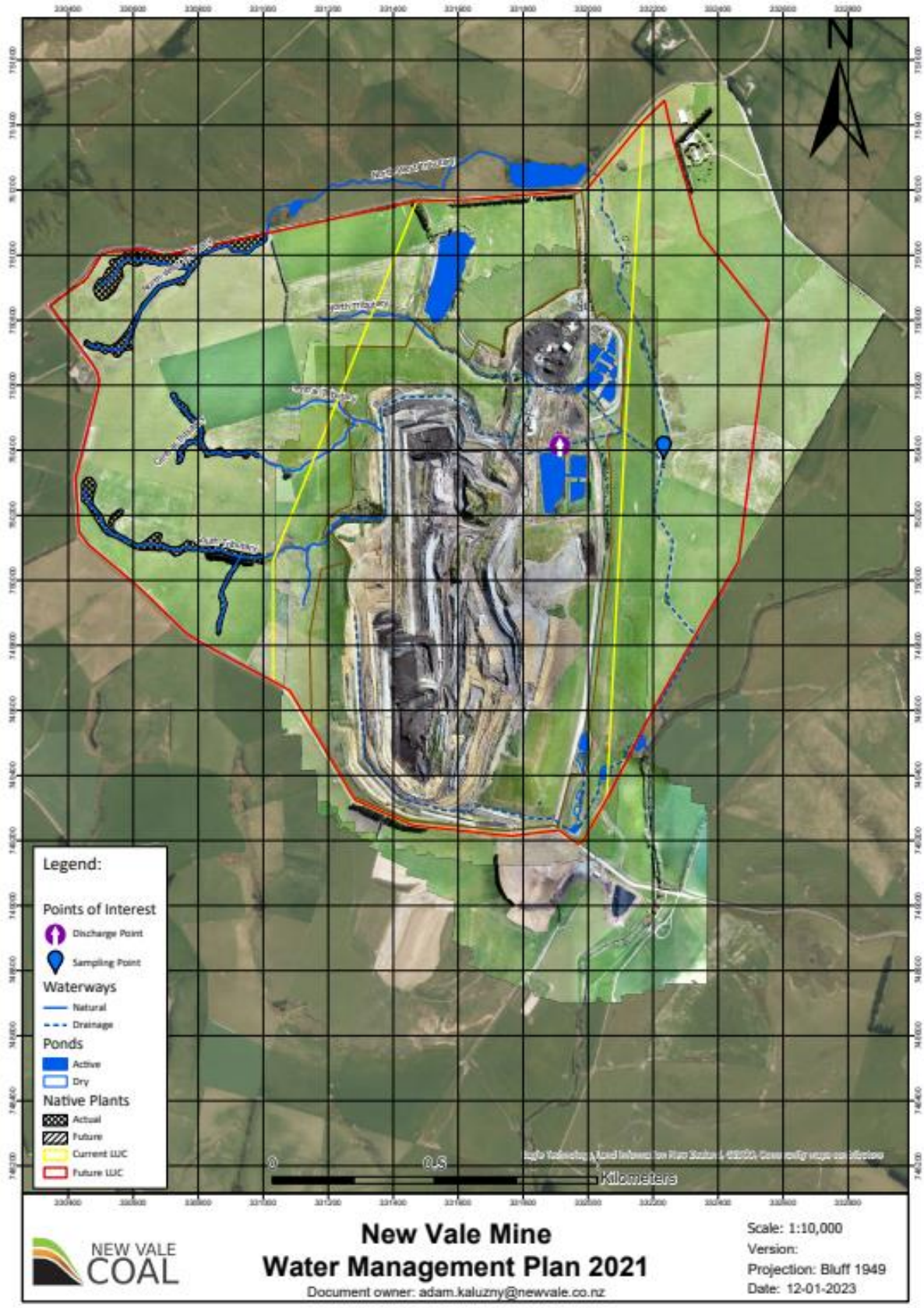


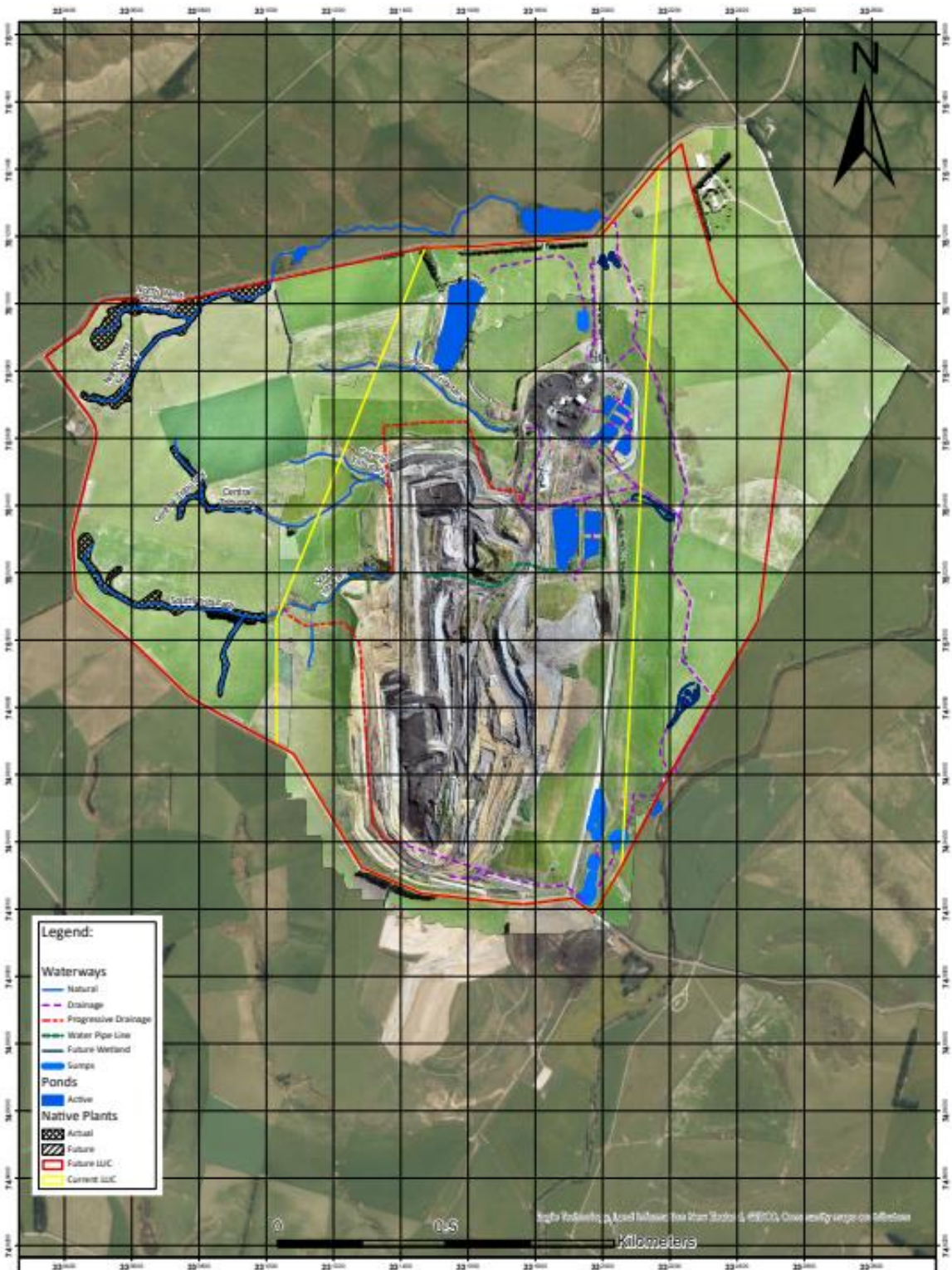
Appendix 6 – water sampling locations

1 Goodwin

2 New Vale

Appendix 6 – Water Management progression plans





New Vale Mine
Intermediate Water Management Plan

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NEW VALE COAL

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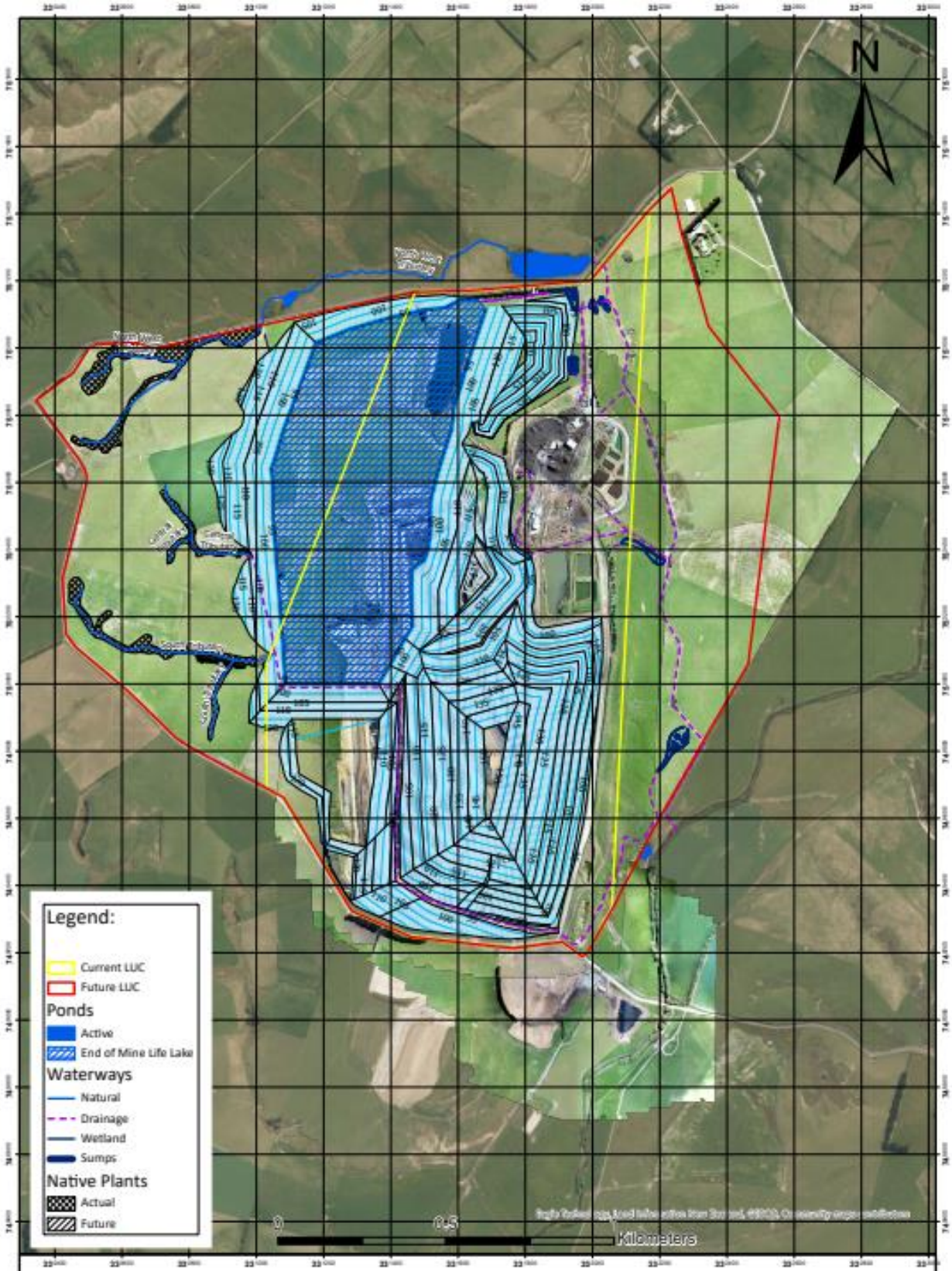

NEW VALE COAL

New Vale Mine
E.O.M. Water Management Plan

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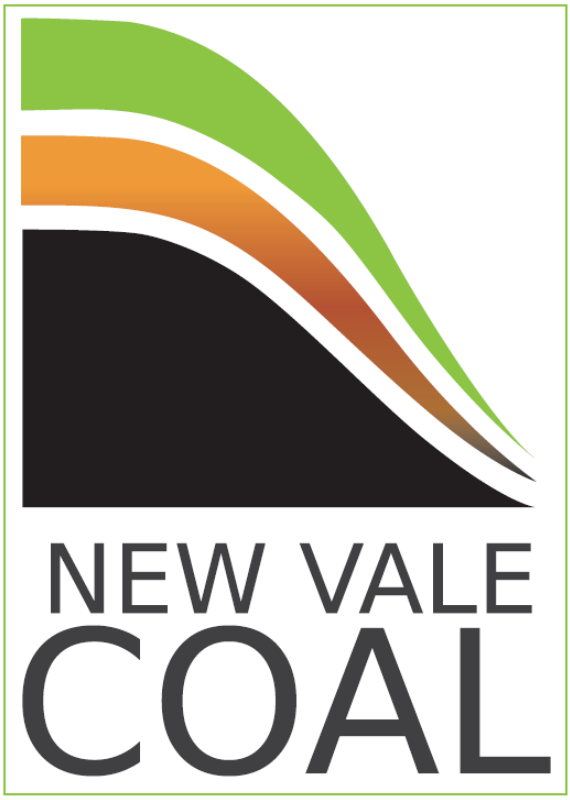

NEW VALE OPENCAST OPERATIONS

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 6 – HAZARDOUS SUBSTANCES

JULY 2023 REVIEW

New Vale Opencast Operations
Site Environmental Management Plan
Section 6 - Hazardous Substances Management

Table of Contents

6.1 INTRODUCTION

This document forms Section 6 of the New Vale Mine Opencast Site Environmental Management Plan (SEMP). In running the operations at New Vale Coal and their contractors utilise numerous substances that are classified as having hazardous properties.

This document describes the methods by which the risks associated with these substances are managed.

6.2 OBJECTIVES AND TARGETS

Overall objectives and targets for environmental management are laid out in the Overview Section of the SEMP.

The following targets relate specifically to the management of hazardous substances as defined by the Health and Safety at Work (Hazardous Substances) Regulations 2017 (HS Regs).

Target	Measurement	Responsibility
Produce a drawing highlighting areas where hazardous substances are stored on site. Make this available to the Fire Service and on site in event of an incident. **(Appendix One)**	Regular updating of the New Vale Hazardous Management Plan Details are recorded in the SEMP.	Environment Technician
1. Provide Location test certificate for the Class 3 (Petrol) 2. Provide Compliance Certificate test certificate for Class 3 (flammable liquids - Diesel) that is stored on site.	Compliance with HS Regs requirements	Environment Technician Maintenance Supervisor
Site Environmental Management Plan implemented including Hazardous Substances register, availability of SDS and Hazardous Substance Inventory.	Audited and updated regularly	Environment Technician
Ensure that the New Vale Site complies with requirements of the HSAW(Hazardous Substances) Regs 2017 and the HSWA Act 2015, particularly with respect to the requirements for a PCBU, Compliance Certificates and Fire Extinguisher requirements, Signage, Labelling, Safety Data Sheets and Emergency Management procedures for hazardous substances on site.	Compliance with HS Regs requirements Details are recorded in the SEMP.	Mine Manager Mobile Plant Supervisor

6.3 REQUIREMENTS

6.3.1 Health and Safety at Work (Hazardous Substance) Regulations 2017

The Health and Safety at Work (Hazardous Substance) Regulations 2017 (HS Regs) came into force on the 1 December 2018 and sets performance-based controls on hazardous substances. In terms of hazardous substances, it's predecessor, the Hazardous Substances and New Organisms replaced the Dangerous Goods Act, Explosives Act, Toxic Substances Act, and portions of the Pesticides Act. From 1 December 2017 the rules around managing hazardous substances that affect human health and safety in the workplace have been transferred from HSNO the Health and Safety at Work

(Hazardous Substances) Regulations under the HSWA.The purpose of the HS Regs is set out the rules for work-related activities involving hazardous substances.

6.3.2 The Health and Safety at Work Act 2015 (HSWA)

The Health and Safety at Work Act 2015 also imposes duties in relation to the management of hazardous substances. This is performance based legislation as contrasted with the regulated legislation discussed above. In other words, the plant may comply with all of the regulations but if it is not adhering to best practice and due to that an individual is injured, then the Health and Safety at Work Act 2015 may be applied and it may be determined that New Vale Mine failed to take all practicable steps to prevent that harm

Safe Work Instruments (SWIs) are subordinate legislation of the HSWA. Relevant SWIs may include and are not exclusive to:

1. Markings for pipework connected to above ground stationary tanks
2. Reduced secondary containment for certain above ground stationary tanks

6.3.3 Definition of Hazardous Substances

A substance is defined under the HS Regs as hazardous if it has one or more hazardous properties that exceed specific thresholds (termed “minimum degrees of hazard”). These properties are, respectively:

- explosiveness
- flammability[1]
- ability to oxidise (i.e. accelerate a fire)
- human toxicity (acute or chronic)
- corrosiveness (to human tissue or metal)
- ecotoxicity (harmful to organisms in the environment)

The HS Regs is thus designed so that each hazardous substance at a site is assessed and managed in terms of its overall risk to persons and to the environment.

The HS Regs consist of two types of control requirements with respect to hazardous substances; these are hazardous property controls, and life cycle controls, respectively.

Hazardous property controls are set for each of the intrinsic hazardous properties which a substance may exhibit; viz. explosiveness, flammability, the capacity to oxidise, corrosiveness and ecotoxicity.

Life cycle controls cover matters such as labelling, documentation, packaging, emergency management, tracking (of certain substances over their life cycle) and disposal.

HS Regs also has controls for compressed gases including nitrogen, argon etc.

6.3.4 Other Legislation

It must be noted that the HS Regs does not cover all substances that that are regarded as having hazardous properties. For instance, substances that have radioactive properties are regulated for under the Radiation Protection Act 1965 and the associated Radiation Protection Regulations 1982.

Another substance that may have hazardous properties is Asbestos. Again, the HS Regs do not regulate this substance. It is regulated for under the Health and Safety at Work (Asbestos) Regulations 2016. On updating these SEMP the presence of asbestos substances on site was believed to be eliminated after surveys were conducted and asbestos removed by an authorised contractor.

[1] If a liquid has a closed cup flash point of 93^0C or less is considered flammable; above this flash point, it is not flammable.

6.4 HEALTH AND SAFETY AT WORK (HAZARDOUS SUBSTANCES) REGULATIONS AND THE RESOURCE MANAGEMENT ACT

The HS Regs sets controls on hazardous substances that apply irrespective of location. The Worksafe NZ administers the HS Regs. In contrast, the Resource Management Act (RMA) allows local authorities to manage the effects of the use of hazardous substances in specific locations in relation to sensitive environments or conditions.

The Ministry for the Environment published land use planning guidelines for hazardous substances in 2002. These provide the basis for local authorities to develop rules and methods to manage activities involving hazardous substances, including (particularly) the location of such facilities, with respect to land use.

A city or district council imposes conditions under the RMA. These may be stricter than (but must not be less strict than) the minimum requirements under the HS Regs. The Gore District Council requires a Land Use Consent for the storage of diesel at New Vale Mine. This requirement is set out under Rule 6.9 of the District Plan, if the above ground storage of diesel (80,000l capacity) exceeds 5000L in an industrial zone then that activity is a discretionary activity and requires consent. New Vale Mine holds consent with the Gore District Council for the storage of Diesel at New Vale Mine. The consent is LUC 2009_06.

6.5 CERTIFICATION REQUIREMENTS OF THE HSNO ACT

6.5.1 Compliance Certificates

Locations that store hazardous substances above certain trigger quantities will require a Location Compliance Certificate. A Location Compliance Certificate is issued to show that the HS Regs requirements are met for that site. They replace Dangerous Goods Licences, Stationary Container Certificates and Test Certificates. A Location Compliance Certificate is obtained from an independent third party that has been approved by Worksafe NZ called a Compliance Certifier. Compliance Certifiers have limited approvals to issue specific certificates for substances with specific properties.

6.5.2 Complaince Certificates

A Location Compliance Certificates (issued by a Compliance Certifier) are needed whenever you have a hazardous substance location at your site.

What is a hazardous substance location?

A hazardous substance location exists where flammable, oxidising, toxic or corrosive substances are stored or used and the quantity exceeds the thresholds specified in the legislation.

We check whether a location compliance certificate is required for the substances search in the Worksafe Hazardous Substances Calculator for controls find out whether a Location Compliance Certificate is required.

6.5.3 Stationary Container Systems

A Stationary Container Systems such as New Vale Mines Diesel Storage (80,000L above ground storage tank) triggers the requirement for secondary containment as the 3.1D requires secondary containment if the quality is over 10,000L. This requires a compliance certicate.

6.5.4 Location Compliance Certificate

A location compliance certificate certifies that the hazardous substance location (HSL) where the substances are used and stored is safely managed, according to the rules. We have the capacity to store 750L of Petrol in single location (dedicated store). We require a compliance certificate for this location.

6.5.4 Certification of people

You may need to obtain a test certificate from a test certifier if you handle or store hazardous substances. The test certificate can be required for people as well as locations or equipment.

People handling or managing very hazardous substances are required to be certified as certified handlers to ensure they have the training, knowledge and skills to manage the substances safely. People filling compressed gas containers are required to be certified fillers. We have not identified any requirements at New Vale Mine for a Certified Handler.

Certified fillers

Anyone filling compressed gas containers with gas must be an approved filler. This requirement applies to all compressed gases, including air.

For detail on the HS Regs refer to the Worksafe NZ website:
https://www.hazardoussubstances.govt.nz/calculator#

6.6 RESPONSIBILITES

Hazardous substances stored and handled at the New Vale Opencast Operations are in generally associated with the operations. These procedures include but are not limited to:

Table 1 Responsibilities Register for the New Vale Opencast Operations

Obligations	Review Period	Responsibility
Maintenance of a "Hazardous Substances Register", including details of storage areas, volumes stored, and suppliers.	Six monthly or as new substances arrive.	Environment Technician
Maintenance of Safety Data Sheets (16 header format) compliant with the HSNO approved code of practice for each hazardous substance and available within 10 minutes.	Six monthly or as new substances arrive.	Environment Technician
Diesel Tank Site Standard for the Storage and Use of Flammable Substances.	Annually	HS&E Manager
Spill response procedure and exercise	Biannually	HS&E Manager
Training of personnel involved with the handling of hazardous substances, and gaining of approved handler status for diesel (even though it does not trigger it), petrol and agrichemicals.	Annually	Maintenance Supervisor (Flammables) HS&E Manager (Agrichemicals)
Maintaining a Stationary Container System for Diesel for the Site Maintaining a Location Compliance Certificate for Petrol for the Site	Annually	HS&E Manager
Waste Oil storage, transport, handling and recycling.	Annually	Mobile Plant Supervisor

6.7 RELATED DOCUMENTATION

The following documentation is related to hazardous substances management:

- Hazardous Substances Register including, MSDS and Inventory
- Chemical / Oil / Fuel Spill Response Plan
- SEMP Section 1 – Overview
- GR-NV-PCP-04 Emergency Management Control Plan
- GR-HS-FHMC-S04 Fire and Explosion (Hot Work) Management Standard
- Hydrocarbon Control Plan

Appendix One - Plan of the Location of Hazardous Substances

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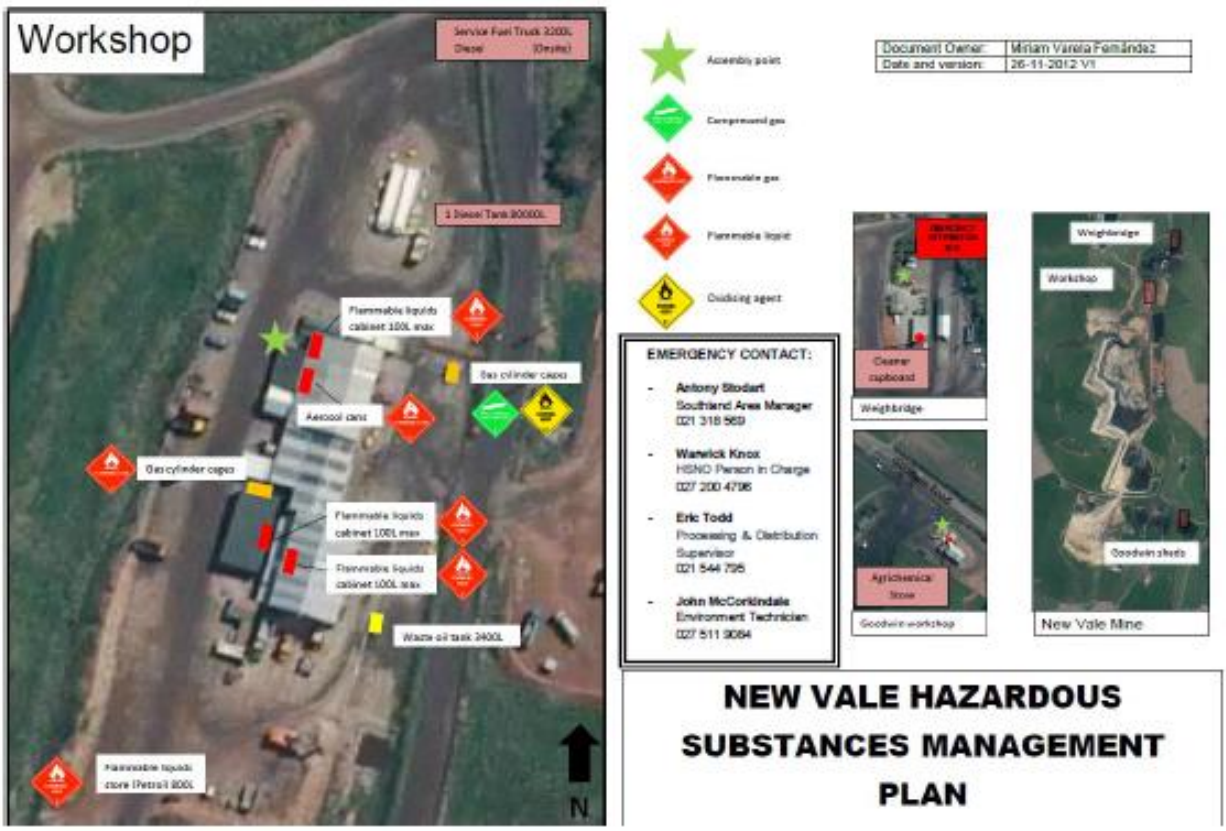

NEW VALE COAL MINE

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 7

WEED AND PEST CONTROL PLAN

APRIL 2020 Review

New Vale Coal Mine
Site Environmental Plan
Section 7 – Weed and Pest Control Plan

Table of Contents

7.1 INTRODUCTION

New Vale Coal has produced this Weed and Pest Control Plan to facilitate control of pest and weed species within the vicinity of the mine and its immediate environment. The plan describes the management measures to avoid or minimise the spread of weeds and pests within the mine area and the responsibilities of those who are to undertake this role.

The control of pest plants is also specifically mentioned under condition ten of the New Vale Mine's Land Use Consent 2006/13. Specifically, it states; All stockpiles of material on the site shall be kept free of pest plants.

The site is aware of the Environment Southland's (ES) Southland Regional Pest Management Plan (SRPMP) 2019-2029.

This section of the SEMP attempts a simplification of the information relating to the control of pest plants and animals within the SRPMP.

The SEMP takes the classification of Pest Plants and Animals from Environment Southland's Southland Regional Pest Management Plan 2019-2029.

7.2 OBJECTIVES AND TARGETS- PEST ANIMAL CONTROL

- To minimise the introduction and spread of weeds on both disturbed and undisturbed areas.
- To reduce the distribution and abundance of weeds at the site.
- To eliminate exotic weeds that if left unchecked may dominate from native plantings

To monitor, and control if necessary, the number of animal predators and browsers on the mine site.

Magpies, hares, rabbits, cats, and rodents have been noted on site.

Possums, wasps, pigeons and mustelids have a minor presence on site.

In the context of pest animal control the SRPMP does not impose difficult obligations on the site.

The only species that may trigger a SRPMP obligation would be if a significant increase in rabbit numbers occurred in the foreseeable future. Monitoring of the rabbit population will be in reference to the Modified McLean Scale

Wasp, rodent, pigeon and possum control is foreseeable but due to Health and Safety Management rather than SRPMP obligations.

Outside of the pest animals mentioned above there are others that appear in the SRPMP. For example, seasonally deer may visit the site overnight but return to other properties during the day. The site will be monitored to ensure that they are not present. If identified on site, they will be added to the site's SEMP.

Outside of the SRPMP hares and rabbits pose a significant risk to new plants that may occur as part of the mine rehabilitation. The HS&E Manager is responsible for ensuring that a reputable pest control contractor manages that hare and rabbit population through a destruction programme. Possums and cats may be added to the contractors brief. This destruction programme will be co-ordinated in consultation with the lessee of the farmland.

7.3 PEST PLANT CONTROL MEASURES AND PROGRAMMES

The site is aware of the Environment Southland's (ES) Southland Regional Pest Management Plan (SRPMP) 2019-2029, and a simplification of the information relating to the control of pest plants within the SRPMP follows.

Surveillance for pest plants will be undertaken by the Environmental Technician.

7.3.1 SOUTHLAND REGIONAL PEST MANAGEMENT PLAN STRATEGY (SRPMP) 2019-2029

The intermediate outcomes for five pest managment programmes are described below:

1. **Exclusion programme**: to prevent the establishment of the subject, or an organism being spread by the subject, that is present in New Zealand but not yet established in an area.
2. **Eradication programme:** to reduce the infestation level of the subject, or an organism being spread by the subject, to zero levels in an area in the short to medium term.
3. **Progressive containment programme:** to contain or reduce the geographic distribution of the subject, or an organism being spread by the subject, to an area over time.
4. **Sustained control programme:** to provide for ongoing control of the subject, or an organism being spread by the subject, to reduce its impacts on values and spread to other properties.
5. **Protecting values in places (site-led) programme:** that the subject, or an organism being spread by the subject, that is capable of causing damage to a place, is excluded or eradicated from that place, or is contained, reduced, or controlled within the place to an extent that protects the values of that place.

7.3.2 PEST MANAGEMENT MEASURES

The measures that may be used to meet the objectives of the SRPMP are summarised into four categories as follows:

1. Requirement to act

Land owners and/or occupiers or other persons may be required to act where SRPMP rules dictate:

(a) pests are to be controlled;
(b) management plans are to be prepared and submitted;
(c) the presence of the pest is to be reported;
(d) actions are to be reported (type, quantity, frequency, location, programme completion); or
(e) pests are not to be spread (propagated, sold, distributed), and pathways are to be managed (e.g. machinery, gravel, animals).

2. Council inspection

Inspection by Council may include staff:

(a) visiting properties or doing surveys to determine whether pests are present, or rules and management programmes are complied with, or to identify areas that control programmes will apply to (places of value, exclusion zones, movement control areas);
(b) managing compliance with regulations (rule enforcement, action on default, prosecution, exemptions);
(c) taking limited control actions, where doing so is effective and cost efficient; or
(d) monitoring effectiveness of control.

3. Service delivery

Council may deliver the service:

(a) where it is funded to do so;
(b) on a user pays basis;
(c) by providing control tools, including sourcing and distributing biological control agents, or provisions (e.g. traps, baits, chemicals).

4. Advocacy and education

Council may:

(a) provide general purpose education, advice, awareness and publicity activities to land owners and/or occupiers and the public about pests and pathways (and control of them);
(b) encourage land owners and/or occupiers to control pests;
(c) facilitate or fund community and land owners and/or occupier self-help groups and committees;

(d) help other agencies with control, advocacy, and the sharing or sourcing of funding;
(e) promote industry requirements and best practice to contractors and land owners and/or occupiers,
(f) encourage land owners and/or occupiers and other persons to report any pests they find or to control them; or
(g) facilitate or commission research.

The classification of a pest will determine the most appropriate management methods that should be applied.

Southland Regional Pest Management Plan (SRPMP) 2019-2029 has five intermediate outcomes for pest management programmes.

The intermediate outcomes for five pest management programmes are described below:

1. **Exclusion programme:** to prevent the establishment of the subject, or an organism being spread by the subject, that is present in New Zealand but not yet established in an area.
2. **Eradication programme:** to reduce the infestation level of the subject, or an organism being spread by the subject, to zero levels in an area in the short to medium term.
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5. **Protecting values in places (site-led) programme:** that the subject, or an organism being spread by the subject, that is capable of causing damage to a place, is excluded or eradicated from that place, or is contained, reduced, or controlled within the place to an extent that protects the values of that place.

7.4 PEST PLANT CLASSIFICATIONS

The only pests observed on site and named in the SRPMP as organisms specified as pests are:

- Gorse – Sustained Control
- Broom – Sustained Control
- Ragwort – Sustained Control
- Grey Willow – Site-led
- Possum – Sustained Control
- Rabbit – Sustained Control
- Cat – Sit-led
- Rat – Site-led
- Mustelids – Site-led

Currently, gorse, broom, ragwort and gey willow are actively targeted for elimination. While not included in the SRPMP, hares are actively targeted for control as they threaten our native plantings.

7.5 REGIONAL PEST MANAGEMENT PLAN 2019-2029 OBLIGATIONS

All Gorse and Broom on site must be destroyed

- On land that is within 10 metres of any open drain or watercourse that extends or discharges beyond the boundary.
- within 10 metres of a property boundary where the neighbouring property is clear of Gorse within 10 metres of that boundary

New Vale Mine's strategy for Gorse and Broom is to ensure that an annual eradication of readily identifiable specimens. This is a more cost-effective strategy long-term than just managing the pest at out boundaries. In 2009 a ground spraying unit was purchased and a program was initiated to control the pest plants using Mine employees.

The SRPMP places no obligations on the site to control Californian Thistle, Elderberry, Scotch Thistle, Wild Turnip, Himalayan Honeysuckle, Blackberry or Hemlock. These pest plants will be monitored to ensure that they do not become more widespread than they are on neighbouring properties. Where they threaten native plantings they will be eliminated.

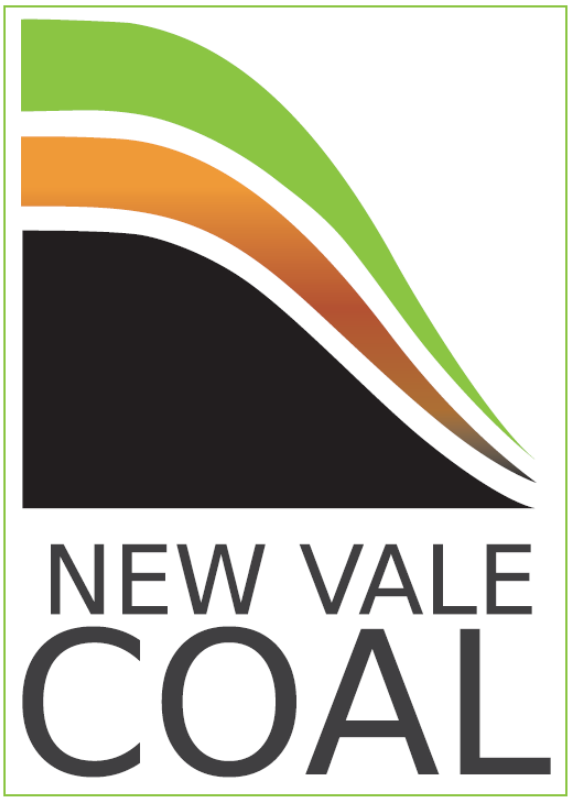
All Ragwort must be destroyed before seeding on land they occupy within 50 metres of boundaries including watercourses. The presence of ragwort is intermittent on site and will be easily managed by simply including them in the annual gorse and broom spray programme or by simply removing from the ground by hand.

Outside of the above mentioned pest plants there are others that appear in the SRPMP. The site will informally monitor to ensure that they are not present. If identified on site they will be added to the site's SEMP.

7.6 RESPONSIBILITIES

The HS&E Manager shall:

- Ensure that weed spraying is carried out on a regular basis along the mine roads and disturbed areas and ensure that weed colonies away from the roads are monitored and controlled by spraying.
- Monitor the effectiveness of spraying.
- Monitor the effect of animal pest species on the revegetation areas and on natural areas and instigate control measures as necessary.
- Ensure that all staff using sprays have been properly trained (e.g., "Growsafe") and are familiar with the NZ Standard Code of Practice for the Management of Agrichemicals NZS 8409:2004.



NEW VALE COAL MINE

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 8

WASTE MANAGEMENT

JULY 2023 REVIEW

New Vale Mine
Site Environmental Management Plan
Section 7 - Waste Management

Table of Contents

7.1 INTRODUCTION

This document forms section 8 of the New Vale Site Environmental Management Plan. It describes the waste management processes and procedures at the mine.

7.2 OBJECTIVES AND TARGETS

The overall objective of this waste management plan is to promote waste minimisation, recycling and the reduction of solid waste through improved management of products that have a potential waste component. The aim is to minimise waste.

Target	Measurement	Responsibility	Timeframe
To set up a designated waste collection area within the Ohai Mine site that can be divided or partitioned so that each waste stream can have designated collection areas. This site needs to be located so that both onsite workers and outside contractors can access the area easily.	Site Audit	New Vale Mine Manager	Ongoing
That at least one person is provided with support and authority to establish the systems required that ensure the success of this plan.	Site Audit	New Vale Mine Manager	Ongoing
Reduce the amount of waste material being landfilled by finding other uses for waste.	Site Audit	Environmental Technician	Ongoing
Undertake toolbox training relating to waste management at the site once the provisions of this plan have been installed.	Training records	HS&E Manager	Ongoing
Establish an area for sorting waste prior to disposal or recycling.	Site Audit	New Vale Mine Manager	Ongoing

7.3 STATUTORY REQUIREMENTS

7.3.1 Gore District Council

The Gore District Council uses their Solid Waste Bylaw to handle waste within their boundary.

7.3.2 Proposed Southland Water and Land Plan

If new consents are applied for provisions in the Proposed Southland Water and Land Plan would need to be considered. Of most relevance are the rules of the Discharge Rules Section, particularly the following:

Rule 42 – Cleanfill sites

((i) the total amount of cleanfill discharged at all cleanfill sites on a landholding does not exceed 500 cubic metres per calendar year, except for a formed road reserve or a rail corridor in which case no limit applies; and
(ii) the discharge does not occur within:

(1) the bed of a lake or river; or
(2) 50 metres of a lake, river, artificial watercourse, modified watercourse, natural wetland, the coastal marine area or landholding boundary; or
(3) 50 metres of the main stems of the Waiau, Aparima, Ōreti or Mataura rivers, or inside flood banks of the main stems of these rivers (if flood banks are present); or
(4) 100 metres of any authorised water abstraction point; and

(iv) stormwater is directed away from the discharge site.

(b) The discharge of cleanfill into or onto land at a cleanfill site in circumstances where contaminants may enter water that does not meet one or more of the conditions of Rule 42(a) is a restricted discretionary activity.

Clean fill is defined as:

> Any material that when discharged into or onto land will have no or minimal adverse environmental effects, and includes virgin natural matter (e.g. clay, soil, sand, gravel or rock) and other inert products from construction or demolition activities (e.g. concrete or brick) that are free of:
> (a) combustible, putrescible, degradable, compostable or leachable components (e.g. animal carcasses, green/garden waste, timber, bark, cork, tree roots, new asphalt);
> (b) hazardous substances (e.g. coal tar, or asbestos);
> (c) products or materials derived from the treatment, stabilisation or disposal of hazardous waste; and
> (d) materials of risk to human or animal health (e.g. medical or clinical waste); and
> (e) liquid waste (including sludges).

Rule 45 – Landfills
Except as provided for elsewhere in this Plan, the discharge of contaminants from a landfill into or onto land in circumstances where that contaminant may enter water is a discretionary activity.

A landfill is defined as:

> A site that is used for the permanent disposal of waste but excludes a cleanfill site, earthworks associated with any road, driveway or track, and any area within a road reserve containing a formed road that is used for the deposition of roading material.

7.3.3 National Guidelines

The MfE cleanfill guidelines provide a national bottom line for what is able to be disposed of at cleanfill and landfill sites. This is important, as the typical management and consenting requirements for cleanfills are generally less stringent than for landfills.

7.4 RESPONSIBILITIES

It is the responsibility of **all employees** to ensure that all waste is handled according to the provisions in this plan.

New Vale Mine Manager	▪ Raise awareness of all site personnel and contractors about the requirement to work in accordance with the provisions in this plan. ▪ Undertake site waste audits every 3 months to ensure that waste does not accumulate on site. ▪ Implementation of a waste sorting and storage area. ▪ Maintenance of the waste sorting and storage area. ▪ Ensure that Contractors follow appropriate waste disposal practices. ▪ Liaison with waste disposal contractors ▪ Assist with disposal options for unusual waste ▪ Maintaining a record of all materials disposed in any cleanfill area on site and the position of any cleanfill areas.
Environmental Technician	▪ Ensure that waste minimisation strategies are developed, supported and managed.
Contractors	▪ Manages and appropriately disposes of their own waste.

7.5 WASTE TYPES

7.5.1 General

The table below contains a list of the types of waste produced at the site, and the disposal options as indicated by the Regional Plan / MfE Guidelines. Best practice is hi-lighted.

Material	Recycling / Scrap Contractor	On site cleanfill*	Off site cleanfill	Off site landfill ***
Steel	Yes	No	No	Yes
Empty drums	Return to manufacturer	No	No	Yes **
Cast iron	Yes	No	No	Yes
Corrugated iron	Yes	No	No	Yes
Galvanised iron	Yes	No	No	Yes
Galvanised pipes	Yes	No	No	Yes
Wire rope	Yes	No	No	Yes
Aluminium	Yes	No	No	Yes
Oil Filters	Yes	No	No	No
Batteries	Yes	No	No	No
Timber	Yes	No	No	Yes
Tanalised timber	Yes	No	No	Yes
Vehicle tyres	Yes	No	No	Yes
Rubber hose	No	No	Yes****	Yes
Plastic wrapping	No	No	Yes****	Yes
Coal bags	No	No	Yes****	Yes
Batts(insulation)	No	No	Yes****	Yes
Conveyor belts	No	No	Yes****	Yes
Concrete	No	No	Yes****	Yes

* - Approval or Consent required
** - May be classified as hazardous so need to go to a registered landfill
*** - Certain hazardous substances can only be accepted at Class A landfills
**** - Conditions apply as per MfE Guidelines

7.5.2.Onsite Cleanfill

Small amounts of cleanfill can be disposed of onsite, see section 7.3.2 of this document for details. All waste shall be sorted onsite and placed in the appropriate bins for collection. These bins will then be transferred to Landfill or for recycling by an approved contractor.

7.5.3 Landfill

Where wastes cannot be recycled, an organised collection by a licensed waste disposal contractor is required. The contractor will provide a skip or other container for waste to be collected at regular intervals.

It is the responsibility of the Health and Safety Manager to ensure that the contractor is registered to dispose of the range of wastes that will be collected in a manner that conforms to the regional plans.

7.6 RELATED DOCUMENTATION

	Ohai Mine SEMP Section 1 - Overview
	Ohai Mine SEMP Section 9– Hazardous Substances
	Hazardous Substances Register

NEW VALE OPENCAST OPERATIONS

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 10 - REHABILITATION AND CLOSURE PLAN

JULY 2023 REVIEW

New Vale Opencast Operations
Site Environmental Management Plan
Section 6 - Rehabilitation and Closure Plan

Table of Contents

10.1 INTRODUCTION

This document forms Section 10 of the New Vale Site Environmental Management Plan and lays out the general plans for the operational rehabilitation of New Vale opencast operations and conceptual design for closure. A final Closure Plan will be produced when there is certainty on date of closure.

10.2 REGULATORY REQUIREMENTS

10.2.1 Resource Consents

Resource consents for the current operations are in place and new consents have been acquired for the longer term. Work carried out under the rehabilitation plan will be largely covered under the current license approvals although some planned activity may require additional consents. Any new consents applied for are likely to have conditions relating to final design.

10.2.2 CML Requirements

New Vale once held two Coal Mine Licenses (CMLs). One covering a portion of New Vale Mine and one covering the Goodwin Mine. The New Vale CML was covered with a Land Use Consent (LUC). This CML was allowed to expire in 2019.

Goodwin Mine has been rehabilitated and there are several conditions in the CML that related to rehabilitation. These requirements can be summarised as follows:

- The licensee shall ensure that all restoration of the licence area is carried out on a progressive basis.
- The licensee shall ensure that all holes, pits, trenches, shafts and other disturbances made to the surface of the land while mining shall be plugged and filled in immediately after mining operations have been completed to the satisfaction of the Inspector of Coal mines.
- The licensee shall not leave any debris, chemicals, litter, rubbish or other dangerous or unsightly matter within the licence area and upon expiration of this licence or upon completion of the mining operations shall leave the area in a clean and tidy condition.
- During mining operation, the topsoil shall be removed and stored separately for later use in rehabilitation or land where coal winning is completed.
- The licensee shall on completion of the mining operations, or upon the expiry of the licence, remove from the area covered by this licence all implements, machinery, buildings or associated equipment used in the mining operations unless otherwise directed by the Inspector of Coal Mines.
- The licensee shall ensure that overburden shall be replaced and graded so as to conform to existing slopes in the area with a maximum permitted slope of one vertical in five horizontal. If required by Southland Catchment Board, in order to limit runoff velocities across restored slopes, watertables shall be cut across slope at the required interval.

During the rehabilitation of Goodwin Mine there were several approvals sort. Worksafe, Gore District Council, Environment Southland and Ministry of Business, Innovation and Employment approved:

- Retaining two settling ponds, if it was planted in natives and fenced for safety.
- Retaining the old concrete pad, where Superdirt was manufactured, as a hardstand for livestock feed storage.
- Retaining some of the gravel handstand where the coal distribution yard existed. This is now a hard stand for Agriculture Machinery and livestock feed storage.
- Retaining the old workshop building as an agricultural implement shed.

The landowner supported these outcomes.

10.2.3 LUC Requirements

In 2007 New Vale Mine was issued a Land Use Consent (LUC) that also covered the existing CML. The CML expired in 2019. New Vale Mine is progressively being rehabilitated and there are several conditions in the LUC that relate to rehabilitation. These requirements can be summarised as follows:

- All excavated material stockpiled at the site shall be located clear of property boundaries and watercourses and shall be well compacted and otherwise maintained in order to minimise the risk of dust generation.
- All stockpiles of material on the site shall be kept free of pest plants.
- Rehabilitation of disturbed land shall be carried out in terms of a Site Rehabilitation Plan. The purpose of this plan shall be:
    a. to provide for the rehabilitation of excavated areas as soon as practicable after the completion of operations in that area;
    b. to create landforms that are in a stable and safe conditions; and
    c. to provide for rehabilitated land to be suitable for farming purposes.
- No later than 1 February each year, the consent holder shall advise the Chief Executive Officer in writing and plan form, details of:
    a. The volumes of material removed from the site
    b. The areas of land disturbed over the previous twelve months
    c. The areas of rehabilitation undertaken in the previous twelve months
    d. The areas currently disturbed or being worked

10.3 REHABILITATION AIMS

Rehabilitation of the New Vale opencast site will be undertaken with the following aims:

10.3.1 Final Rehabilitation Objectives

- Rehabilitation of opencast void and development of an overall topography that is consistent with the surrounding landscape.
- Development of a final vegetation cover that includes pasture and areas of native and exotic vegetation
- Ensuring that the previous habitat potential and production values of the site are rehabilitated to a level that is equal to or exceeds that of the pre mining condition, which is taken to be that of the surrounding agricultural landscape. Current approximations for rehabilitation re-vegetation include:
    - Establishment of native corridors from the foothills of the Hokonui Hills down to the Hedgehope Stream.
    - Fence off degraded wetland areas and plant out with natives.
    - Establishment of shelter belts for a visual screen of mining activities that later will act as Livestock shelter at the end of mine life.
    - Establish new wetland areas.
- Rehabilitation and improvements to stream habitat to a standard above background levels; modified by earlier land use (farming practices). Riparian planting is developed to support Galaxias Gollumoides habitat. Refer to the Galaxias Gollumoides Management Plan for detail.
- Ensure that the safety of the public or future owners of the land is not compromised.
- To provide an area that is an asset to the community, that could be used for recreation and amenity purposes.

10.3.2 Operational Aspects

- Wherever possible, rehabilitation will be progressed with the operation, following directly after completion of fill placement.
- Minimise the operation and maintenance requirements at the site
- High priority is to be placed on the conservation of topsoil from stripped areas

10.4 RESPONSIBILITIES

The following responsibilities are in place to manage the progression of rehabilitation of New Vale Opencast Operations.

10.4.1 Southland Area Manager/Mine Manager

- Recovery of topsoil and subsoil
- Placement of overburden
- Placement of topsoil and subsoil
- Supervision of works towards final landforms
- Contract management for final rehabilitation (land treatments and revegetation)
- Final drainage scheme to be designed and constructed based on final closure design produced by New Vale Mine Engineer.

10.4.2 HS&E Manager

- Identification of the need for new resource consents, or alteration to conditions of consent in liaison with the Technical Services Manager, New Vale Operations Manager and other staff
- Providing technical assistance and advice to operations staff on environmental matters
- Annual review of the rehabilitation plans and any work being undertaken towards the final sites' rehabilitation
- Communication and involvement with the local community and consulting with stakeholders, including Fish & Game, DOC, Environment Southland, Southland District Council and local Iwi.
- Application for necessary resource consents.
- Maintenance of the SEMP
- Ensuring that the mine plan and rehabilitation plan is in line with the SEMP, resource consent conditions and CML conditions

10.4.3 Environment Technician

- Responsible for planting programme and weed and pest control

10.5 REHABILITATION CONCEPT

10.5.1 General

Wherever possible, rehabilitation (i.e. the creation of final landforms, addition of topsoil / growing media and planting of vegetation cover) will be progressed with the operation, following directly after completion of fill placement.

The following criteria have been set up to judge the success of the final rehabilitation of New Vale Opencast Mine:

10.5.2 Public Health and Safety

At the end of mine life the site shall be made safe for visitors, to the extent that historic mining operations will not threaten the publics safety. However, it is likely to be an operational farm and it will be up to the discretion of the future owner/occupier whether the public have access to the property.

10.5.3 Stakeholder consultation

The neighbours and other stakeholders (such as Department of Conservation, Fish & Game) shall be consulted on final rehabilitation plans and their opinions and ideas considered during the planning of final site rehabilitation. We have an MOU with Hokonui Runanga and they are consulted in end of mine life design.

10.5.4 Final Landform Design

- The site shall be contoured to ensure slope stability
- Slopes shall be designed and revegetated to minimise the risks of degradation in site water quality (and eventual slope instability) due to erosion and contour drains shall be installed if necessary

10.5.6 Water Quality

- Water quality discharged from the rehabilitated mine site shall comply with the classification for Lowland Soft Bed.
- These criteria shall be met through passive treatment of the water, including ponds and wetlands on the surface.

10.5.7 Water Management

- Sediment traps or sediment detention ponds shall be used to hold and store sediment laden runoff water. Primarily sediment should be captured in the mine pit as far practicable before entering ponds. Active treatment with flocculent may be considered as required.

10.5.8 Land Use and Plantings

- The land shall be rehabilitated to mixed pasture and native and exotic plantings. The mix of land uses will be consulted upon and fixed with respect to the landowner/stakeholder requirements and constraints placed on agricultural potential due to slope angles and modern agricultural practices.
- Riparian area areas will be planted with native species.
- As far as practical pest animals and pest plants will be controlled.

10.5.9 Recreational and Amenity Use

- The land shall be rehabilitated to a standard where it is safe for public use and with the aim of maintaining the industrial heritage.

10.6 REVEGETATION

10.6.1 Riparian Planting

The existing vegetation along the stream edges will be native vegetation. Following the diversion of the Southern and Central Tributaries a new streambed and banks will be constructed and riparian planting undertaken with the intention of providing improved habitat for native fish species, Galaxias Gollum. The native planting will vary between wetland species, to tussock scrubland to tree species. This approach is consistent with the requirements of the coal mining licence.

Riparian plantings should be at least 10-20 meters in width across the stream valley to allow self-sustenance of riparian vegetation regrowth.

10.6.2 Pastoral Land

Generally returning disturbed land to pastoral farming is relatively straightforward and economically attractive. These areas may require significant earthworks to achieve appropriate topography and will require surface cultivation, seeding, fencing and fertiliser application. Weed (gorse, broom) infestation will be less of a problem where un-infested soil is utilised. Once established it is the responsibility of the land leasee to maintain all pastoral land.

10.6.3 Exotic Forestry

It is not the intent to establish exotic forestry at New Vale beyond in the short term. Gullies unsuitable for pasture will be planted in native plants to improve diversity on the property and freshwater habitat.

10.6.4 Native Forestry

Steep, inaccessible gullies are generally spring feed and there is an incentive to exclude livestock from these freshwater streams. The Southern and Central Tributary contain threatened native fish, Galaxius Gollum. There are plant species that will be planted out in Southern, Central and North-West Tributaries. These areas require large numbers of native plant species. Some areas already have native plants but lack diversity. Other areas are predominantly in pasture and will require significant planting.

Species selection for areas to be returned to native vegetation will be made on a case-by-case basis and in consultation with a Terrestrial Ecologist, Iwi, Nurseries and other authorities. Local nurseries can be contacted to grow plants for rehabilitation purposes. The following are drivers for plant selection:

- Establish rare and threatened plants from Southland.

- Select plants that are or support traditional foods Ngai Tahu (Mahinga Kai) in consultation with Hokonui Rūnanga.
- Minimise eutrophication with wide riparian margins and wetland plants that will process nitrogen
- Select plants such as wetland species that would have traditionally occupied the streams.
- Provide Gollum Galaxias with shade and protection from predatory birds
- Improve Gollum Galaxias habitat for spawning
- Minimise siltation by planting riparian margins.

10.6.5 The Lake

One large lake is planned for New Vale at the end of mine life. The riparian margins of the lake will be planted with native vegetation, and the lake allowed to gradually fill from the surrounding groundwater and surface water resources. Riparian plantings should be at least 10-20 meters wide around the lake's edge to allow self-sustenance of riparian vegetation regrowth. Fortunately, the site has not experienced any significant acid mine drainage, so it is anticipated that water quality should be good at the end of mine life.

10.6.6 Weed and Pest Control

Weed and pest control will be an integral part of the rehabilitation process to ensure that species such as gorse and broom do not dominate the vegetation. It is critical for the long term success of the native plants that we continuously control weeds species so that seed is eliminated in the topsoil. Refer to Section 7, Weed and Pest Management.

10.6.7 Recreation

It is not the intent of the rehabilitation to create an environment for recreational activities. The mine is under no obligation to do so. The primary intention is to create a landuse consistent with farming and to improve the biodiversity on the property and protect waterways. Boat access may be considered to the pit lake, but no more than what a landowner may use.

10.7 MONITORING AND REPORTING

Monitoring of rehabilitation is an essential component of any rehabilitation plan. These records will include details of the site works, time and date of planting out, species planted and stocking rates, fertilisers applied and application rates, animal control measures adopted and any other relevant details. This will allow the success or otherwise of the rehabilitation to be assessed and changes made to future rehabilitation programmes. In particular, growth and spread of vegetation cover will be monitored with sequential photographs recording changes. Specific rehabilitation areas will be designated for photographic documentation as rehabilitation proceeds.

10.8 DOCUMENTATION AND DRAWINGS

10.8.1 Documentation

SEMP Section1 - Overview

APPENDIX

Appendix A - Surface Lowland Soft Bed Waterbodies

The temperature of the water:

- shall not exceed 23°C
- the daily maximum ambient water temperature shall not be increased by more than 3°C when the natural or existing water temperature is 16°C or less, as a result of any discharge. If the natural or existing water temperature is above 16°C, the natural or existing water temperature shall not be exceeded by more than 1°C as a result of any discharge.

The pH of the water shall be within the range 6.5 to 9, and there shall be no pH change in water due to a discharge that results in a loss of biological diversity or a change in community abundance and composition.

The concentration of dissolved oxygen in water shall exceed 80% of saturation concentration.

There shall be no bacterial or fungal slime growths visible to the naked eye as obvious plumose growths or mats. Note that this standard also applies to within the zone of reasonable mixing for a discharge.

When the flow is below the median flow, the visual clarity of the water shall not be less than 1.3 metres.

The concentration of total ammonia shall not exceed the values specified in Table 1 “Ammonia standards for Lowland and Hill surface water bodies”.

The concentration of faecal coliforms shall not exceed 1,000 coliforms per 100 millilitres, except for popular bathing sites, defined in Appendix K “Popular Bathing Sites” and within 1 km immediately upstream of these sites, where the concentration of Escherichia coli shall not exceed 130 E. coli per 100 millilitres.

The Macroinvertebrate Community Index shall exceed 80 and the Semi- Quantitative Macroinvertebrate Community Index shall exceed 3.5.

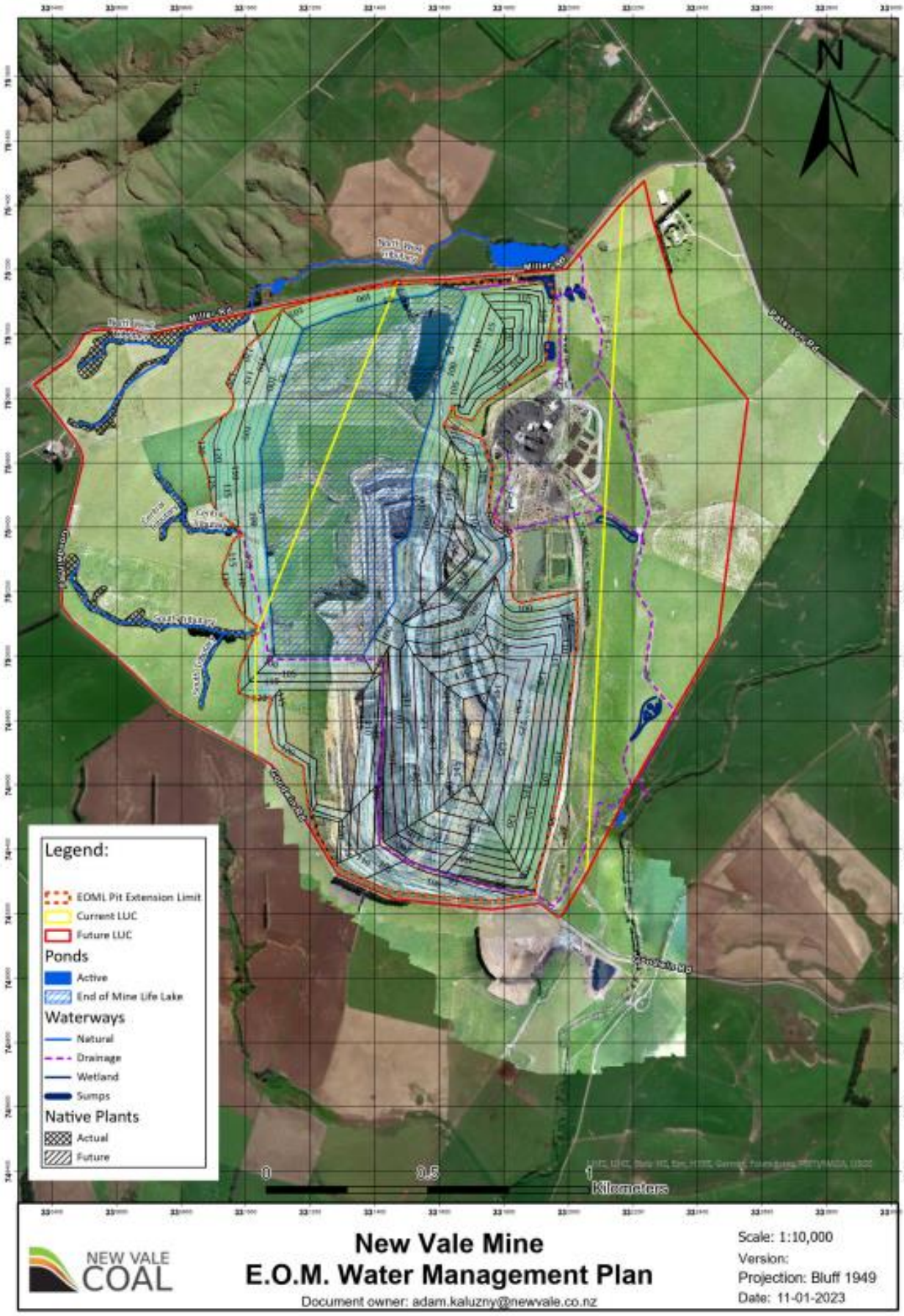
Fish shall not be rendered unsuitable for human consumption by the presence of contaminants.

Table 1 “Ammonia standards for Lowland and Hill surface water bodies”

Total Ammoniacal Nitrogen in mg/m3 at different pH	
pH	NH4+-N + NH3-N mg/m3
6.0	2570
6.1	2555
6.2	2540
6.3	2520
6.4	2490
6.5	2460
6.6	2430
6.7	2380
6.8	2330
6.9	2260
7.0	2180
7.1	2090
7.2	1990
7.3	1880
7.4	1750
7.5	1610
7.6	1470
7.7	1320
7.8	1180
7.9	1030
8.0	900
8.1	780
8.2	660
8.3	560
8.4	480
8.5	400
8.6	340
8.7	290
8.8	240
8.9	210
9.0	180

Appendix B – Plan of planting and waterways

Appendix C – End of Mine Life Plan



NEW VALE COAL MINE

SITE ENVIRONMENTAL MANAGEMENT PLAN

SECTION 9

GALAXIAS GOLLUMOIDES

Date 04 May 2023

New Vale Coal Mine
Site Environmental Plan
Section 10 – *Galaxias gollumoides* Population Management Plan

Table of Contents

7.1 INTRODUCTION

Gollum galaxias (Galaxias gollumoides) can be found in a wide range of habitats. These range from lowland wetlands near sea level to small headwater streams in high country tussocklands. They exist up to 1100 m above sea level. This species does not carry out lifecycle migrations (non-diadromous).

They are distributed throughout Southland with population present in the tributaries of the Mataura, Oreti, Waiau, Aparima, Catlins, Ōwaka rivers and Stewart Island.

Their main threats are habitat loss from land development and water abstraction, and predation by introduced fish species such as trout.

Other threats include livestock access to streams, reduction of native vegetation, and forest harvesting.

In 2011, Solid Energy NZ Ltd owned/operated New Vale Mine. Solid Energy commissioned an assessment to meet the obligation under the Resource Management Act 1991, Section 92. This was an assessment by a qualified person, of the fish present in a stream that may be diverted. Solid Energy NZ Ltd engaged Golders Associates (Richard Allibone) to conduct a fish survey on tributaries to the northwest of the New Vale Coal Mine Pit. In short, the survey concluded the presence of *Galaxias gollumoides* in three of the tributaries.

In 2012, the land around these tributaries were occupied by a farm lessee. Tributaries were not fenced off from livestock. The livestock (sheep and particularly cattle) were grazing and degrading the banks of the tributaries. In response the findings in the Golders report Solid Energy installed a livestock water supply system and fenced off the tributaries with a two-wire electrical fence.

In 2019, Greenbriar Ltd engaged Water Way Consulting Ltd (Richard Allibone), to conduct another survey for the *Galaxias gollumoides*.

In 2021, Greenbriar Ltd engaged e3 Scientific (Bryony Miller) to undertake a fish a survey and produce a report for recommendations for mitigation strategies to protect the *Galaxias gollumoides* population during proposed dam and divert activities associated with mining activities. This was undertaken in consultation with Water Way Consulting Ltd (Richard Allibone).

In 2022, the dam and divert activities were authorised under the RMA. This inclined the introduction to make up water the Southern Tributary. The last tributary was fenced with improved nine wire including two hot wires.

In 2023, all main tributaries have native plantings in them. Quarterly monitoring of fish is being undertaken by Hokonui Rūnanga. A Fish Barrier has been authorised by the Department of

Conservation and MPI have authorised that fish are transferred from the central tributary to the Southern Tributary.

7.2 OBJECTIVES

The primary objective of this plan is to meet Condition 9 of the New Vale Mine Discharge Consent (AUTH-20158148-01-V1). It states:

The consent holder shall develop a management plan to ensure no net loss of Galaxias gollumoides and their habitat within the property Part Lots 73 and 75 DP 177 and Lots 72 and 74 DP 177. The plan shall specify how this is to be achieved and how the effectiveness of the measures to preserve the Galaxias gollumoides and their habitat will be monitored. The consent holder shall provide a copy of this plan to the Consent Authority by 31 December 2020.

The plan details other objectives that support the intent of this condition. These objectives protect the existing population and leave a legacy of native habitat the end of mine life:

- Cease the destruction of riparian vegetation due to livestock grazing.
- Cease the modification of riparian margins (erosion of banks) from livestock access
- Prevent siltation by planting riparian margins. This is supported by pest control and plant maintenance.
- Minimise eutrophication with wide riparian margins
- Plant corridors of diverse riparian vegetation along banks. The corridors should be as extensive as possible, effectively running from the NW property boundary (near Hokonui Hills) to the SE property boundary (near the Hedgehope Stream).
- Exclude livestock from riparian areas by improved and extensive fencing.
- Construct culverts at the end of mine life that allow fish passage and farm access.
- Manage or prevent advise effects of water abstraction from critical habitat areas.
- Transfer fish from Central Tributary to the Southern Tributary. Transfer fish from downstream of dam and divert to upstream.

To ensure our plan is effective the plan will outline monitoring (verification) options:

- We have already undertaken surveys to identify fisheries values and species.
- Repeating fish surveys every two years to ascertain whether *Galaxias gollumoides* are still present, health of population and distribution.
- Liaise with DOC and Hokonui Rūnanga about fish survey.
- Share findings to Hokonui Rūnanga.
- Periodic checks of riparian margins to ensure compliance with management plan objectives.
- Quarterly monitoring of fish populations. Hokonui Rūnanga trained and contracted to undertake this work.

7.3 NET LOSS OF HABITAT

The objective of this *Galaxias gollumoides* Management Plan is to facilitate the works required to ensure no net loss of *Galaxias gollumoides* or their habitat within to New Vale Coal mine site at end of mine life. This involves:

- Improvement of the habitat of *Galaxias gollumoides* over the short and medium term

- creating habitat post mine rehabilitation suitable for recolonization by the resident population.
- sustaining and protecting the resident population
- monitoring the population and habitat improvement initiatives for effectiveness.

In April 2019, Water Ways Consulting Ltd conducted a *Galaxias gollumoides* (*Gollum Galaxias)* survey. The Consultant, Richard Allibone had significant difficulty conducting the survey in some of the overgrown riparian areas. He concluded that to meet the requirement of consent condition 9 for no net loss of the *Galaxias gollumoides* it is recommended that 1300m of second and third order streams with *Galaxias gollumoides* present is required. These fish will require protection until new habitat is created suitable for re-population.

Please refer to the plan in figure 1 - End of Mine *Galaxias gollumoides* habitat. It outlines how streams two and three will be restored with native plantings and how stream 3 will be diverted to the south to flow to a wetland near the Hedgehope Stream.

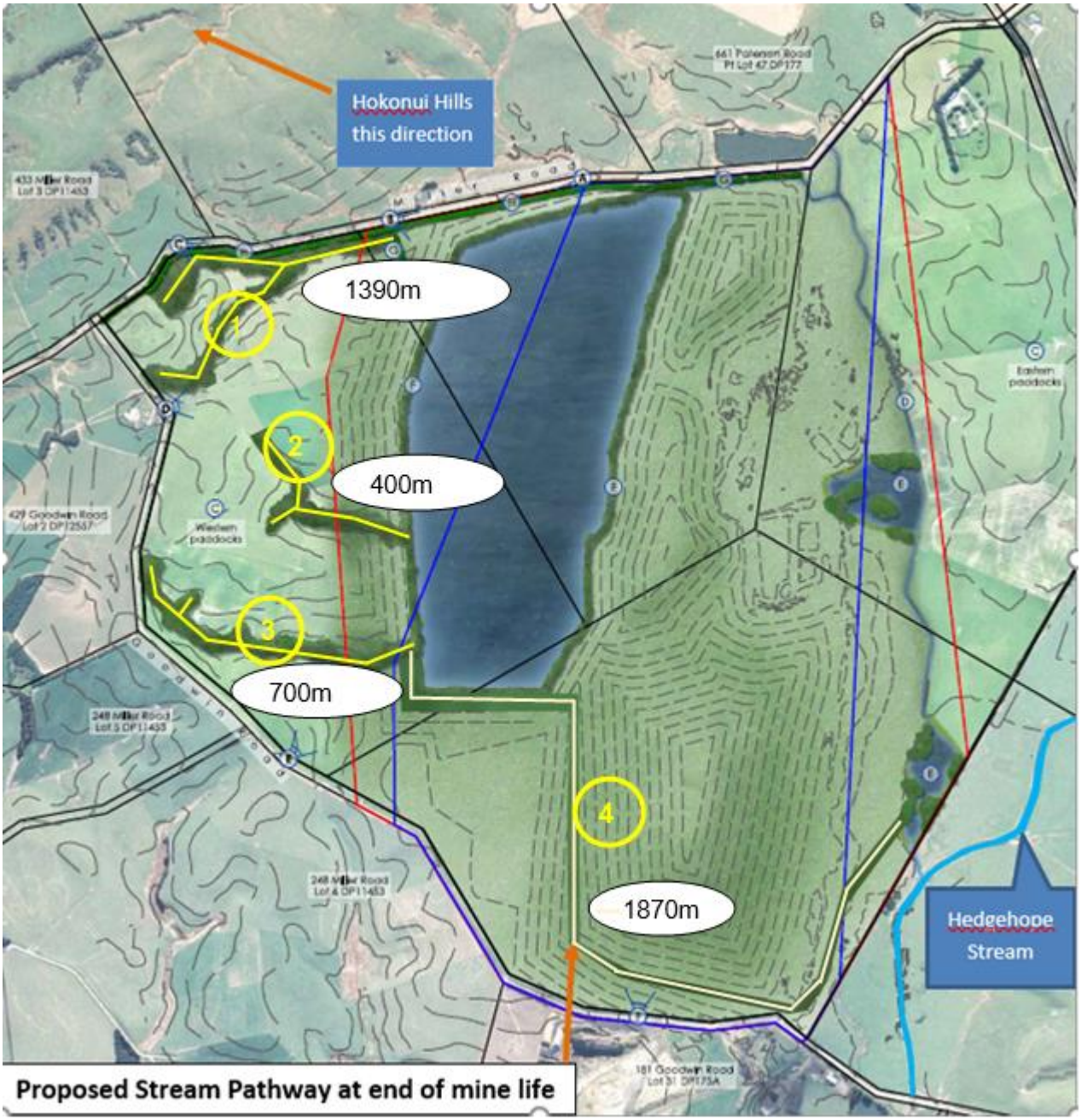


Figure 1 – End of Mine *Galaxias gollumoides* habitat

The final land use will be pastoral farming. Improved fencing will ensure stock exclusion and buffer areas to filter runoff. *Galaxias gollumoides* are present in streams 2 and 3. 1,100 m of these two streams will be unaffected directly by mining. These areas are subject to new fencing and riparian planting (refer to section 7.4 Habitat Improvement). At the End of Mine Life the habitat provided for the resident population will be at least 2,970m. This exceeds the minimum 1300m of second and third order streams recommended for the existing *Galaxias gollumoides*.

7.4 HABITAT IMPROVEMENT

7.4.1 Improving Riparian fencing

The report into the 2011 fish survey stated: *At New Vale it is apparent the habitat modification is already significant with widespread damage to the riparian and instream habitat by cattle and loss of native riparian vegetation along all the water courses*. In response to the 2011 fish survey, 4.75 hectares of riparian margins were fenced as part of a New Vale Coal initiative. The objective was to:

- Cease the destruction of riparian vegetation due to livestock grazing.
- Cease the modification of riparian margins (erosion of banks) from cattle access.
- Prevent siltation by allowing riparian margins to recover.
- Minimise eutrophication with wide riparian margins.

Since 2011, we have observed significant regeneration of native plants in the fenced margins. Unfortunately, the area lacked plant diversity due to grazing by sheep and cattle for many years. The fencing consisted of two wire electric fencing to exclude cattle from the riparian areas. While it has significantly controlled damage caused by cattle around the stream margins it had not always excluded young cattle and intermittently cattle had to be removed for the riparian areas.

Commencing in 2020, New Vale Coal has developed a three-year planting and fencing program. Refer to Figure -2 Three-year Planting and Fencing Program. Area 1 shows an area that has not previously been fenced (no *Galaxias gollumoides* detected). Area 2 & 3 will have two wire electric fences replaced with nine wire fencing including two electric wires.

In short, New Vale Coal has now enclosed approximately 10 hectares with approximately 4.8 kilometres of nine wire fencing including two electric wires.

Some fencing, 3,170 metres will replace existing fencing in Area 2 & 3 (approximately 4.8 hectares). While 1,685 metres will fence a tributary (refer to Area 1, in Figure 2) that has not been fenced before. This will enclose approximately 5.2 hectares total.

Currently, area 1 (figure 2) has no *Gollum Galaxias* detected. It does drain to the other side of Miller Road and into a Neighbouring property where *Gollum Galaxias* are present. If the habitat is improved, it is currently unknown if it will sustain a population but restoring the area with fenced riparian planting will at the very least improve the water quality downstream in *Galaxias gollumoides* habitat.

	Area 1	Area 2	Area 3	Total
Fencing	1685	1500	1670	4855

(metres)				
Area (hectares)	5.22	2	2.8	10
Stream length (metres)	1390	400	700	2490

Table 1 – Three-year fencing Program

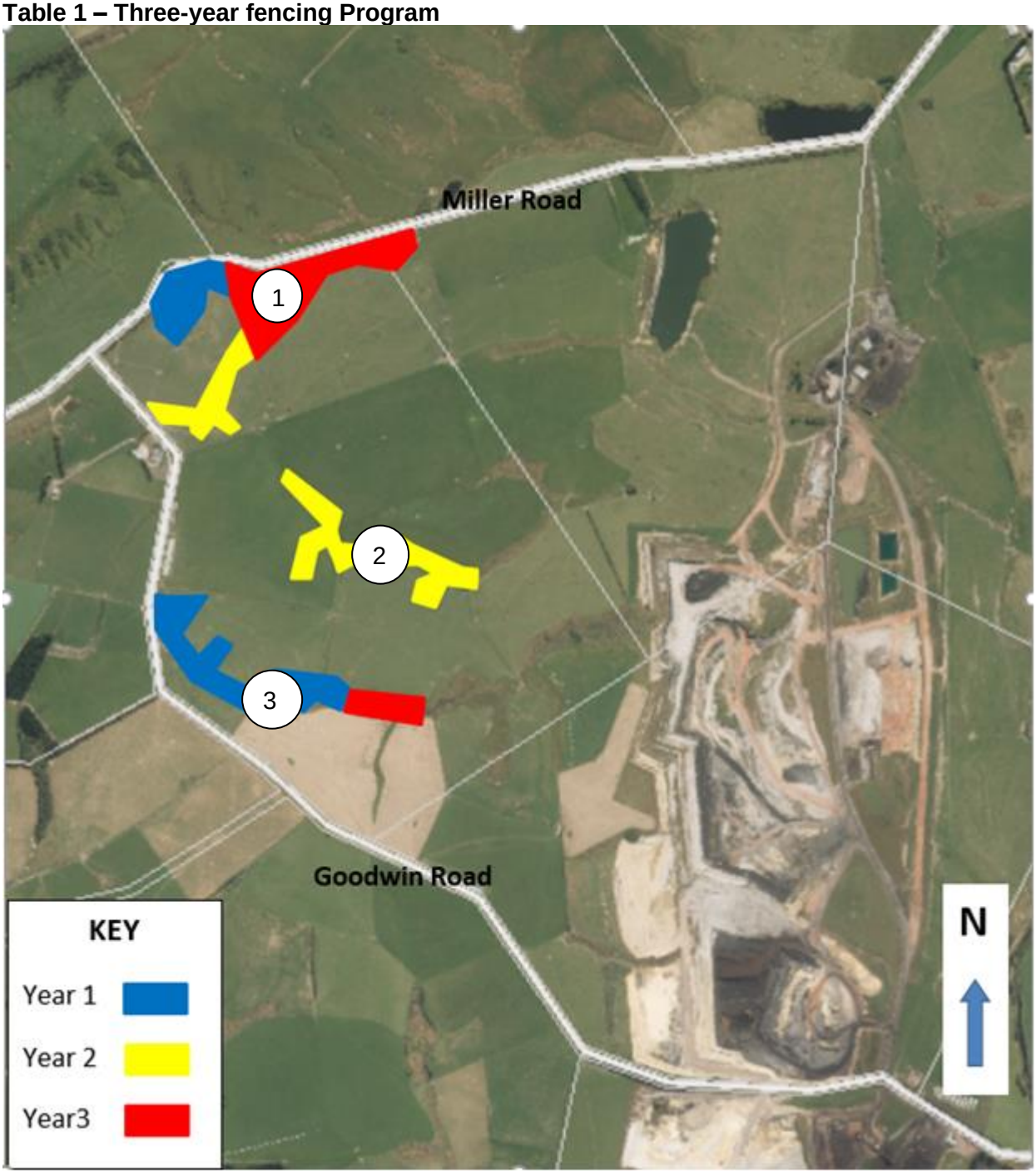


Figure -2 Three-year Planting and Fencing Program.

7.4.2 Restorative planting

Richard Allibone provided additional recommendations after the 2011 *Gollum Galaxias* (*Galaxias gollumoides*) survey at New Vale Coal Mine. Richard Allibone provided a letter to Phil Lindsay. One recommendation was the addition of native plantings to shade the stream around ponds. This controls water temperature, prevents sedimentation and protects the fish from predation. New Vale Coal has worked with the Hokonui Rūnanga to develop a joint Memorandum of Understanding. The representatives of the Rūnanga highlighted that they wished to see a corridor of native plants connecting the Hokonui Hills to the Hedgehope Stream (Tatakura). A plant list had been submitted to Hokonui Rūnanga for approval.

A planting list had been developed for the Three-year Planting (and Fencing Program.) Nothing excludes plants species being added or deleted from the list. It had been developed in consultation with:

- Hokonui Rūnanga
- Pukerau Nursery
- Southland Community Nursery

The planting plan has been developed having reference to the Ngāi Tahu Claims Settlement Act 1998 -Schedule 97 - Taonga species.

Refer to the planting list below:

	PLANTING LIST		
	Latin	**Common**	**Maori**
1.	*Aristotelia fruticosa*	Mountain wineberry	
2.	*Aristotelia serrata*	Wineberry	Makomako
3.	*Austroderia richardii*	South Island Toetoe	Toetoe
4.	*Astelia nervosa*	Mountain Astelia	
5.	*Carex Secta Forest Sedge*	Forest Sedge	Makura
6.	*Carpodetus serratus*	Marbleleaf	Punawētā
7.	*Coprosma dumosa*		
8.	*Coprosma lucida*	Shining karamu	Karamū
9.	*Coprosma propinqua*	Mingimingi	Mingimingi
10.	*Coprosma rubra*	Red Stemmed Coprosma	
11.	*Coprosma virescens*		
12.	*Coprosma wallii*		
13.	*Cordyline australis*	Cabbage Tree	Tī Kōuka
14.	*Dacrycarpus dacrydioides*	White Pine	Kahikatea
15.	*Elaneocarpus hookerianus*	Pokaka	Pōkākā
16.	*Griselinia littoralis*	Broad Leaf	Kāpuka
17.	*Hebe salicifolia*	Koromiko	Koromiko
18.	*Leptospermum scoparium*	Manuka	Mānuka
19.	*Melicytus flexuosus*		
20.	*Melicytus lanceolatus*	Narrow-leaved māhoe	Māhoe-wao
21.	*Nothofagus fusca*	Red Beech	Hututawai
22.	*Nothofagus menziesii*	Silver Beech	Tawai
23.	*Olearia bullata*		
24.	*Olearia fragrantissima*	Fragrant tree daisy	
25.	*Olearia hectorii*	Deciduous tree daisy	
26.	*Olearia ilicifolia*		

27.	*Olearia lineata*	Small-leaved Tree Daisy	
28.	*Pittosporum eugenioides*	Lemonwood	Tarata
29.	*Pittosporum obcordatum*	Heart-leaved kohuhu	Kōhūhū
30.	*Pittosporum tenuifolium*	Black Matipo	Rautāwhiri/Kōhūhū
31.	*Plagianthus regius*	Lowland ribbonwood	Manatu
32.	*Podocarpus hallii*	Hall's Totara	Tōtara
33.	*Pseudopanax craaifolius*	Lancewood	Horoeka
34.	*Pseudopanax ferox*	Fierce Lancewood	Horoeka
35.	*Sophora microphylla*	Kowhai	Kōwhai/Kōhai
36.	*Weinmannia racemosa*	Kamahi	Kāmihi
		Denotes threatened plants appropriate for the area.	

Table 2 – Planting List.

Due to historic grazing of the stream margins the area had poor plant diversity. The predominant species are Flax, Mingimingi, tussocks (*Chionochloa spp.*) and sedges (*Carex spp.*). These plants are less palatable to livestock so have survived years of grazing. This planting program should have the following outcomes:

- Introduce diversity back into the riparian margins.
- Provide habitat for native birds and insects.
- Reverse the habitat modification and widespread damage to the riparian and instream habitat by cattle.
- Provide *Gollum Galaxias* with shade and protection from predatory birds
- Improve Gollum Galaxias habitat for spawning
- Provide a reserve for native plants
- Minimise siltation by planting riparian margins.
- Minimise eutrophication with wide riparian margins

7.4.3 Instream habitat restoration / channel creation

On the advice of Richard Allibone, Waterways Consulting Ltd there are two instream structures that can improve habitat for the *Galaxias gollumoides*.

Some channels are currently choked with rank pastural grass. No work on channel creation will be undertaken in the areas to be fenced and planted. Once the plantings mature, they will shade this rank grass causing die back and natural channels will develop under the protection of the native plantings. Improved channels will favour *Galaxias gollumoides* habitat. Too date we have observe significant channelisation since the exclusion of cattle.

Richard Allibone also recommended that small ponds (2X2m) are dug. The purpose of these small ponds is to provide refugia for instream fauna during periods of low water flow (drought). He has recommended that these are planted out to provide shade and protection as discussed earlier. We have observed that the *Galaxias gollumoides* concentrate in these pool during drought periods of low flow. Due to their success these ponds will likely be incorporated in the rehabilitation design of the streams.

As part of the End of Mine Life Plan a stream flowing to the south of the mine will be designed to provide suitable habitat for *Galaxias gollumoides*. This stream will have riparian plantings listed in Table 2 – Planting List.

7.4.4 Low water level mitigation

Traditionally, *Galaxias gollumoides* have been able to move downstream during periods of low flow in summer. As the mine progresses upstream it will limit the ability for the fish to move downstream during low flow. As the stream is diverted habit will be temporarily lost. On the advice of two Fresh Water Ecologists, Bryony Miller, e3 Scientific and Richard Allibone, Waterways Consulting Ltd the mine has provided additional water at a rate not less than 1 L/sec into the head of the Southern Tributary. Addition of flow to the stream will increase the available habitat during the temporary diversion of the tributary.

Miller and Allibone have further recommended that during the drier months, i.e. November to March, additional 'flush' events occur if there has been a period of two or more weeks without rainfall. A 'flush' event should comprise a flow rate between 3-5L/sec for at least 4 hours. A 'flush' event effectively provides a water change for the creek and is particularly important for water has been low for a number of consecutive days (i.e. 7-14 days) as it helps increase dissolved oxygen levels and reduces stress on the aquatic species present within the stream.

7.4.5 Introduced fish exclusion/ removal

It is not proposed to remove introduced fish (i.e. Brown Trout) from the streams containing *Galaxias gollumoides* as much of the stream is too small to support introduced species. No trout have been trapped or observed in the stream. Drains that are connected to Hedgehope Stream tributaries will have culverts installed as a permitted activity as per Rule 59 of the Southland Water and Land Plan Part A, 2018, Decisions Version. Hence, there is always a potential for brown trout to enter the site. The Department of Conservation required a Fish Barrier to be installed to exclude trout. New Vale Mine has constructed a fish barrier near the Hedgehope Stream and obtained a Permit under the Fisheries Act from the Department of Conservation for this structure. Refer to Appendices.

7.4.5 Moving population to another site

An area adjacent to Miller Road is fenced and planted as discussed above (refer to Figure -2 Three-year Planting and Fencing Program, Area 1). The water flowing from this area was surveyed by Richard Allibone and found no *Galaxias gollumoides* present. This area may be suitable for transfer of *Galaxias gollumoides* after a period of greater than ten years after planting. Much of the stream bed has been trampled by cattle, severely damaging any channel. It is possible that after the ten-year period sediment levels will reduce and the waterflow may recreate a channel down to a hard bed that could be a suitable area to transfer *Galaxias gollumoides.* Currently, we do not know if this habitat will be suitable so not plans have been made to transfer a *Galaxias gollumoides* population.

We have authorisation from MPI (Ministry of Primary Industries) and the Department of Conservation to transfer *Galaxias gollumoides.* The Department of Conservation have authorised the transfer of fish upstream in the Southern Tributary, above the dam and divert intercept. They have also authorised the transfer of *Galaxias gollumoides* from the Central Tributary to the Southern Tributary, as the Central Tributary is at risk of drying out during times of summer drought. The mine requires a permit from MPI to transfer fish between tributaries. The mine has obtained a permit from MPI for this transfer. Refer to the consents and MPI permit in the appendices. All transfer must be under the direction of a Fresh Water Ecologist. We have engaged the expertise of Richard Allibone for this purpose.

7.4.6 Restoration of Streams

Approximately 1870m of stream to be rehabilitated so it may provide a suitable habitat for *Galaxias gollumoides.* It will be planted in plants that are listed in Table 2 – Planting List. The mine will seek a report from Miller and/or Allibone (or similar expert) prior to the final design of

stream beds. The design and planting of the wetland area will be sympathetic to *Galaxias gollumoides.*

Miller provides a brief outline for design. “Generally, as a stream descends from the headwaters the gradient, or slope, of the stream decreases. In this instance, the gradient of the stream will be dictated somewhat by the underlying topography of the current site. However, if possible, the gradient would be best to mimic the South Tributary upstream of the proposed diversion location where Gollum galaxiids currently reside. If the topography is significantly steeper in the rehabilitated section (i.e., greater than 10%), increased stream meanderings would assist in reducing the potential for stream erosion and sediment mobilisation. These recommendations are also relevant to the proposed section of the Central Tributary which will join with the South Tributary to flow south at end of mine life.”

“Streams do not naturally form straight lines and therefore it is also recommended that the Mine Engineer’s stream design include gentle meanderings (bends) to assist in habitat provision, water velocity variety, and reducing sedimentation and erosion.”

“All stream benthic substrate should consist of a mixture of gravels and cobbles with occasional larger rocks and boulders which will provide spawning habitat for the *Galaxias gollumoides*. All benthic substrate should be certified clean fill.”

Consent conditions reflect Miller’s statements.

7.5 BIOSECURITY

Aquatic biosecurity measures are required to prevent any aquatic pests being introduced into tributaries. These include equipment inspection and cleaning prior to and after entering all inwater sites to avoid the introduction and spread of unwanted aquatic organisms such as didymo from both machinery and personnel. Particular attention will need to be paid to fish monitoring equipment.

7.6 MAINTENANCE

Maintenance will include work on:

- Grass relief around plantings
- Fence maintenance, including herbicide spraying on electric fencing
- Pest plant (broom, gorse) and animal management (rabbits, hares, possums)
- Blanking dead plantings
- Pumping systems and reticulation associated with makeup water in the head of the Southern tributary.

7.7 VERIFICATION

Surveys have been completed in March 2011 and 2019, respectively. The 2011 survey discovered resident population of *Galaxias gollumoides* in three streams. The 2019 survey found *Galaxias gollumoides* were now extinct in one stream. The loss of population in one stream is likely due to natural causes, possibly drought conditions and not unexpected (Allibone 2019). No mining was undertaken in the area where the population loss occurred.

Every two years from 1 January 2021 (2023, 2025…) or after an extreme event, a survey will be conducted by a suitably qualified person (Freshwater Ecologist) to assess to population and health of *Galaxias gollumoides*.

Regular informal inspections will be made of instream works. This will verify that the fencing improvements and planting have been effective. There is regular maintenance required along electric fences, releasing of planting, checks on water supply and pest control.

The Water Permit AUTH-20222206-02, condition 8, requires the mine to ensure that quarterly monitoring is undertaken on the *Galaxias gollumoides*. Quarterly fish population monitoring will verify that our controls are effective in protecting a resident population of *Galaxias gollumoides* in the Southern Tributary. The Hokonui Rūnanga are a key stakeholder and partner in this rehabilitation project. They have received training in fish monitoring and surveying from Richard Allibone. In October 2022, Allibone and Miller determined sites for monitoring and techniques to determine the most effective method. Allibone provided a methodology for monitoring and training for Hokonui Rūnanga and New Vale Mine. New Vale Mine have engaged the Hokonui Rūnanga to undertake the quarterly monitoring and provide the data to New Vale Mine. The spawning season for *Galaxias gollumoides* is between August and September, so quarterly monitoring shall avoid any disturbance of population during this time.

Richard Allibone of Waterways Consulting Ltd was involved with the 2011, 2019 and 2021 fish surveys. He has provided expert advice on habitat restoration and assessment of current and potential improvement measures that we have used while restoring the habitat.

7.8 OTHER SIGNIFICANT INSTREAM SPECIES

During fish surveys and regular observations, the following species have been recorded:

- Freshwater crayfish, Kēwai (*Paranephrops zealandicus*) – now, no longer present.
- Longfin eels, Tuna (*Anguilla dieffenbachii*)

7.9 HOKONUI RŪNANGA - STAKEHOLDER

The fish species addressed in this plan may also be considered as descendants of tangaroa (nga uri o tangaroa) and, as such, are nga taonga tuku iho o nga tupuna matua (treasures handed down to us from our ancestors). They are regarded by Iwi as an integral component of the freshwater food web, a component that must be conserved and sustainably managed.

New Vale Coal has ratified a Memorandum of Understanding with Hokonui Rūnanga. One objective from the Memorandum of Understanding with the Hokonui Runanga is to establish governance arrangements that reflect tino rangatiratanga and build a collaborative approach to managing the New Vale Mine.

Hokonui Rūnanga have provided advice regarding riparian management, wetland restoration and management and indigenous vegetation relevant to cultural values, including natural character, mahinga kai, rongoā, rāranga and what is known of the history of flora and fauna in the area, utilising tribal resources to assist. New Vale Mine in partnership with Hokonui Rūnanga will manage site rehabilitation to support indigenous biodiversity and mahinga kai. Together we shall ensure a plan is in place for the end of coal mining at the New Vale mine, in terms of future land use, future employment options and assessing the impact on local communities.

Hokonui Rūnanga have been trained in fish survey/monitoring methodologies. New Vale Coal have been contracted to utilise these skills on site. Hokonui Rūnanga will perform our quarterly monitoring program.

7.10 OTHER STAKEHOLDERS

- Department of Conservation
- Environment Southland
- Ministry of Primary Industries

7.11 RESPONSIBILITIES

Role	Responsibilities
General Manager	• Provide resources to protect the resident *Galaxias gollumoides* population in keeping with this plan. • Ensure mine planning does not contravene the objectives of this plan. • Ensure mine planning is sympathetic with the outcomes of this plan.
Mine Engineer	• Design stream diversions that met the brief from the freshwater Ecologist.
Health, Safety and Environment Manager	• Co-ordinate the pest animal control contractor • Co-ordinate the control of pest plants • Co-ordinate the fencing contractor. • Co-ordinator fish surveys and transfers, monitoring and reports • Verify that the controls in this plan are effective (inspections). • Co-ordinate the staged rehabilitation of the tributaries. • Organise the procurement of native plants • Co-ordinate the planting and plant maintenance, whether utilising mine workers or a planting contractor • Liaise with stakeholders
Environment Technician	• Participate in fish transfers and monitoring. • Undertake pest plant control. • Undertake native planting and maintenance. • Undertake inspections and report to HS&E Manager
Fresh Water Ecologist	• Supervise fish transfers • Undertake fish surveys every two years • Provide expert advice on the management of *Galaxias gollumoides*
Mine Electrician	• Maintain the water pumps to ensure we have sufficient make-up water in the head of the Southern Tributary.
Mine Workers	• Do not undertake any activity that contravenes this plan. • Do not operate machinery outside of the Permit to Dig area without the authority of the General Manager or HS&E Manager.
Lessee (Farmer)	• Control sediment run off into streams. • Ensure fence damage/effectiveness is reported to the HS&E Manager. • Remove any livestock that enter the riparian planting immediately and report to the HS&E Manager.

7.12 REPORTING

From 2nd May 2023, the Freshwater Fisheries Regulations Approval for the Fish Barrier now requires New Vale Mine to report the Department of Conservation's Invercargill Office within 3 months of exercising this approval, and then annually thereafter, via invercargill@doc.govt.nz about all monitoring work incidental to this proposal.

7.13 REFERENCES

- Department of Conservation, New Zealand Non-migratory Galaxiid Fishes Recovery Plan.
- Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan 2008, The Cry of the People Te Tangi a Tauira
- Letter from Richard Allibone, Golders Associates to Philip Lindsay, National Environmental Operations Manager, Solid Energy New Zealand Ltd - Gollum Galaxias Management Options for New Vale - 7 April 2011 Document No. 1078405296
- Gollum Galaxias (*Galaxias gollumoides*) survey at New Vale Coal Mine, Southland, Date: April 2019, Report Number: 73-2019 prepared by Water Ways Consulting Ltd
- New Vale Coal Mine Fish Survey – April 2011 – Report number 1078405296-A – Golder Associates.
- New Vale Coal Mine, Freshwater Ecological Impact Assessment – February 2022 – Document ID: 21175 – prepared by e3 Scientific

7.13 APPENDICES

1. Quarterly Monitoring – Monitoring Method
2. New Vale Coal Mine Freshwater Ecological Impact Assessment – Prepared for New Vale by e3 Scientific – February 2022
3. Water Permit – AUTH-202222206-02
4. Land Use Consent Bed Disturbance – AUTH-20222206-01
5. Freshwater Fisheries Regulations Approval – Fish Barrier – Department of Conservation
6. Authorisation pursuant to section 26ZM(2)(a) of the Conservation Act 1987 – Fisheries New Zealand – Ministry of Primary Industries.

Appendix G: Cultural Report prepared on behalf of te Rūnanga o Hokonui Inc

Māruawai Environmental Ltd

Hokonui Rūnanga Kaupapa Taiao

Cultural Statement Prepared on Behalf of Hokonui Runanga Inc

In relation to

Resource Consent Applications

By

Greenbriar Ltd

For

New Vale Mine

22nd May 2024

Report prepared by: Louise Dennison BSc: Louise.Dennison@hokonuirunanga.org.nz
Peer reviewed by: Lynda Murchison PhD. MA (hons) MNZPI Lynda@hokonuirunanga.org.nz

Contents

Introduction

Greenbriar Ltd. is seeking resource consents from Gore District Council and Environment Southland to extend the site of its mining operations at the New Vale Mine and to undertake ecological enhancement works at the site.

Land use consent is required from the Gore District Council to expand the mining operation area of the New Vale Mine. A resource consent under the National Environmental Standards for Freshwater is required from Environment Southland due to the proposed extraction works (within the extension area) impacting existing natural inland wetlands at the site.

A resource consent from Environment Southland has already been obtained to dam and divert unnamed tributaries of the Hedgehope Stream impacted by the proposed extension to the extraction area, and associated discharges of contaminants to water from bed disturbance activities.

Purpose of this statement

The purpose of this statement is for Hokonui Rūnanga Inc. to provide Greenbriar Ltd. with its position on the proposed activities, including identifying cultural values associated with the site, and positive and adverse effects on cultural values from the proposed activities.

Hokonui Runanga Inc. is the modern assemblage which represents those who hold mana whenua (customary authority) over the Hokonui Region, including the site of New Vale Mine.

Consultation with Hokonui Rūnanga Inc

Greenbriar Ltd has an established relationship with Hokonui Rūnanga Inc. in relation to the New Vale Mine. The two parties have worked together closely to develop mitigation and ecological enhancement plans in recent years.

Aukaha (1997) Ltd conducted a cultural impact assessment (CIA) on behalf of Hokonui Rūnanga Inc. at the New Vale site in 2019. This CIA focused on the proposed continuation of discharge to land of coal ash at the mine site – as this was required by a consent renewal at the time.

The 2019 CIA produced 3 key recommendations.

1. Proceed with developing a proposed Memorandum Of Understanding (MOU) between Greenbriar Ltd and Hokonui Rūnanga Inc. to strengthen the relationship and progress the other recommendations outside of potential consent conditions.

2. Greenbriar Ltd. will undertake further investigations into the effects on groundwater that may be associated with heavy metal leachate from the discharge of ash into the ground. This will help determine whether leachate accumulates in groundwater beneath the site or migrates into nearby drains and streams.

3. Greenbriar Ltd. and Hokonui Rūnanga Inc. will explore the potential for land-based discharges and site rehabilitation that supports mana whenua objectives for mahinga kai and indigenous biodiversity.

Greenbriar Ltd. entered an MOU with Hokonui Rūnanga Inc. in 2020. Both parties have ratified the MOU. It outlines how Greenbriar Ltd. and Hokonui Rūnanga Inc. will work together to ensure that the management of the New Vale Mine site addresses Ngāi Tahu rights, interests, and values associated with the area. The intent of the MOU was to establish a good faith relationship that would ensure environmental, social, cultural, and economic benefits arise from the management of activities at the New Vale Mine.

Greenbriar Ltd. also developed a three-year rehabilitation and ecological enhancement plan in conjunction with Hokonui Rūnanga Inc. This plan included the improvement of fencing around the key tributaries on-site and the planting of native vegetation across multiple areas on the mine site. This work has proved to be very successful and creates part of a native plant corridor connecting the Hokonui Hills to the Hedgehope Stream.

Hokonui Rūnanga Inc. is also involved with ongoing monitoring work in conjunction with Greenbriar Ltd. at the New Vale Mine site. Staff work alongside each other on projects such as the ongoing *Gollum galaxias* programme that includes regular on-site monitoring.

The relationship that has developed between Greenbriar Ltd and Hokonui Rūnanga Inc is an example of active kaitiakitanga; mana whenua working alongside people who are using, developing, or protecting natural resources within the takiwā to help them to minimize environmental impacts and utilize opportunities to restore or enhance the mauri of sites and mahinga kai. This is a preferred approach for Hokonui Rūnanga Inc. to exercise kaitiakitanga within the Hokonui takiwā.

Mana Whenua

Te Rūnanga o Ngāi Tahu is the tribal representative body of Ngāi Tahu whānui, as established under the Te Rūnanga o Ngāi Tahu Act 1996. It is the iwi authority and overall representative governing body of Ngāi Tahu Whānui; being descendants of the Ngāi Tahu, Ngāti Mamoe and

Waitaha tribes. Te Rūnanga o Ngāi Tahu receives and manages assets returned to it through Treaty settlements and participates in Resource Management Act 1991 (RMA) matters as a mandated iwi authority.

There are 18 Papatipu Rūnanga that constitute the membership of Te Rūnanga o Ngāi Tahu. The Te Rūnanga o Ngāi Tahu Act 1996 and the Ngāi Tahu Claims Settlement Act 1998 give recognition of the status of Papatipu Rūnanga as the repositories of the kaitiaki and mana whenua status of Ngāi Tahu Whānui over the natural resources within their takiwā boundaries. Under s15 of the Te Rūnanga o Ngāi Tahu Act 1996, the iwi authority must consult with papatipu rūnanga before forming a view on any matter and cannot act in ways that are contrary to the position of papatipu rūnanga, unless it is necessary for the overall benefit of Ngāi Tahu Whānui. In practice, Te Rūnanga defers to and supports the position of Papatipu Rūnanga in matters of local interest or governance.

In Murihiku there are four papatipu rūnanga whose members hold mana whenua status within the region. These four papatipu rūnanga are listed below as follows:

- Te Rūnaka o Waihopai
- Te Rūnanga o Awarua
- Te Rūnanga o Ōraka Aparima
- Hokonui Rūnanga Inc.

Each papatipu rūnanga has a takiwā (area of customary authority), parts of which may overlap with the takiwā of other rūnanga. The takiwā of each papatipu rūnanga is described in the Ngāi Tahu (Declaration of Membership) Order 2001. The takiwā of Hokonui Rūnanga Inc centres on Māruawai – the floodplains of the Mataura River, encompassing the modern-day township of Gore and includes shared interests in the lakes and mountains between Whakatipu-Waitai (near Martins Bay) and Tawhitarere with those from Waihemo south.

The purpose of Hokonui Rūnanga Inc. is to provide for the well-being of members through the guidance and management of members' needs encompassing spiritual, cultural, educational, social, and economic affairs, within a framework of ensuring the hauora/health of te taiao/natural environment. In addition, Hokonui Rūnanga Inc. exists to ensure a safe and secure future for subsequent generations.

Hokonui Rūnanga Inc. mandates its environmental company to protect and advance mana whenua rights and interests within Kaupapa Taiao (natural resources and environment). At the time of writing this mandate is being transferred from Hokonui Rūnanga Floriculture Ltd,

trading as Hokonui Rūnanga Kaupapa Taiao; to a new specialist environmental company Māruawai Environmental Ltd.

Surrounding area

The New Vale Mine site is within the catchment area of the Hedgehope Stream, with tributaries of the stream running through the site. The Hedgehope Stream is a tributary of the Makarewa River, which is a tributary of the Ōreti River on Te Rā a Takitimu (the Southland Plains). Historic written records indicate that the Hedgehope Stream was called Tatakura by tūpuna and was named after a species of duck.

Wetlands

Wetlands are a significant resource for Ngāi Tahu Whānui, particularly in terms of their association with mahinga kai. Mahinga kai is defined in s167 of the Ngāi Tahu Claims Settlement Act 1998 as, *"*mahinga kai *means, for the purposes of a joint management plan, the customary gathering of food and natural materials and the places where those resources are gathered."*

Mahinga kai is an all-encompassing term used to describe the resources used to sustain society, the places those resources are found, the processes of procurement and use, and the associated mātauranga (knowledge), tikanga (practices), and social structure and systems.

Mahinga kai is a taonga and guaranteed to Ngāi Tahu in Article 2 of Te Tiriti o Waitangi/Treaty of Waitangi and formed the ninth 'tall tree' of Te Kerēme – the Ngāi Tahu land claim (the eight other 'tall trees' pertained to land loss).

The removal of wetlands across Southland since European settlement, and associated loss of mahinga kai, is of significant concern to mana whenua. A core component of active kaitiakitanga today is encouraging the retention, restoration, and enhancement of wetlands.

The proposed mine extension at New Vale will result in the loss of 9,159m^2 of wetland habitat. At face value, this would be of concern to mana whenua. However, Greenbriar Ltd is proposing a significant net increase in overall wetland values on-site to offset this loss, as proposed in consent conditions. This offset includes restoring or enhancing 20,983 m^2 of existing wetland habitat, including native planting, which will create a significant net increase in wetland habitat on-site. If developed effectively, this restoration project will create significant habitat for taonga species and enhance ecosystem functioning at the site.

These actions follow on from the indigenous planting and wetland restoration areas already carried out at New Vale Mine under Greenbriar Ltd's current resource consents. These actions have resulted in an environment with improved mauri and mahinga kai values compared with those which would have ensued had the site been restored as pasture.

Considerations for mana whenua

The following excerpts from *Te Kawa o Te Taiao* and *Te Tangi a Tauira* detail important considerations to Hokonui Rūnanga Inc. and shape the position of mana whenua in relation to the management of wai māori/freshwater, ngā whenua/land, and the restoration and enhancement of mauri and mahinga kai. This section also refers to the application of the concept of Te Mana o Te Wai in the Hokonui takiwā as set out in Te Kawa o Te Taiao.

Te Kawa o te Taiao

Te Kawa o te Taiao is a high-level document that strategically considers the district's resources through Hokonui Rūnanga Inc. kawa and tikanga-based perspectives.

Wai Māori - Water

Mana whenua's primary concerns for water relate to quality and quantity in awa (lakes and rivers) across the takiwā, the loss of wetlands and waipuna (springs), and the discharge of pollutants into groundwater, waterways, and wetlands.

Hokonui Rūnanga Inc. champions an improvement in the management of water in the takiwā, reflecting the paramount importance of water to all life; and its importance both physically and spiritually to mana whenua.

Te Kawa of te Taiao identifies success for mana whenua as:

- Waterways, wetlands, and groundwater have improved water quality and quantity which is regularly reported on.
- Ngāi Tahu have increased access to, and safe use of, mahinga kai for harvesting and consuming kai, materials, waters, and rongoā.
- Land management practices are enhanced by best practice, and the adoption of ki uta ki tai as a management concept.
- Hokonui Rūnanga Inc. is actively involved in water management, from decision-making with Local Authorities through to education and monitoring.
- Water users and managers are innovative in their practices to conserve use, reduce waste, and stop inappropriate treatment of water.

- Wastewater point source discharges to water are removed and replaced with improved treatment technologies to land rather than water, in ways that are acceptable to Hokonui Rūnanga Inc.

The proposed resource consent applications by Greenbriar Ltd. will enable the enhancement of indigenous biodiversity and mahinga kai on-site. It will also enable mana whenua to be actively involved in environmental restoration and monitoring.

Te Mana o Te Wai

Te Mana o Te Wai is the fundamental concept which underpins freshwater management in New Zealand as set out in the National Policy Statement for Freshwater 2020. It is a water-centric concept that includes six principles for water management and a set of objectives which prioritises the health/hauora of the waterbody above any other use.

To achieve te mana o te wai, a systems change is required in the way water is considered and managed across the takiwā including:

- Reducing and removing direct and diffuse sources of pollution
- Restoration and protection of biodiversity in waterways and wetlands
- Enhancing mahinga kai
- Understanding and protecting the mauri of water
- Putting the Hauora/health of the waterbody first.

Te Tangi a Tauira

Te Tangi a Tauira is the Ngāi Tahu ki Murihiku Natural Resource and Environmental Iwi Management Plan, published in 2008. It is an iwi management plan recognized by Te Rūnanga o Ngai Tahu as the iwi authority, and therefore a document to be taken into account when preparing regional and district plans under the RMA, and is a relevant matter when considering resource consent applications under s104(1)(c) of the RMA,

Section 3.5.9 - Mining

This section recognises that there are extensive deposits of coal across the Murihiku plains, accessed via opencast mining. Opencast mining involves removing overburden to access coal deposits from the surface. Ngāi Tahu ki Murihiku believes mining will continue to be an important activity in Murihiku, particularly lignite mining. We intend to be proactive in terms of ensuring future mining developments do not compromise the natural environment, particularly water.

Issues

- *Cumulative and historical effects of mining*
- *Impacts on natural landscape values; 'scars' on the landscape*
- *Runoff of heavy metals and other contaminants into water and the impacts on waterway health and instream life*
- *Unknowns about future effects*
- *Discharge of contaminants to air*
- *Loss of indigenous vegetation through clearance or damage*
- *Location and design of mine waste disposal facilities*
- *Restoration of mining sites*.

Policies

3. *Require that, as a condition of consent, mine development plans include provisions for:*

   a. *site beautification, including landscaping with native plants;*
   b. *restoration of mining site to pre-mining states, or, where appropriate, an improved or enhanced state;*
   c. *opportunities to enhance cultural values;*
   d. *continued monitoring of mine site post-rehabilitation*.

4. Require that the responsibility of a mining company in avoiding and managing adverse effects on a mining site extends beyond the lifetime of the mine. Monitoring of mine sites is required for at least 5 years after mine closure, to ensure that all adverse effects associated with mine operation are addressed by the company.

7. Avoid adverse effects on land, water, mahinga kai resources and places as a result of mining.

9. Avoid any discharge of contaminated water (e.g. stormwater) to surface or groundwater as a result of mining activity.

10. Require robust monitoring of any consent activity relating to mining, to detect non-compliance with consent conditions and best practice. Non-compliance must result in appropriate enforcement action to discourage further non-compliance.

These provisions in *Te Tangi* describe a position whereby Ngāi Tahu ki Murihiku recognises coal as a natural resource of the takiwā and that there will be demand for its extraction and use. Therefore, the focus is on how both extraction and site rehabilitation are managed to:

- Minimize environmental effects, particularly on wai māori/freshwater;
- Ensure the land is rehabilitated in a way that enhances indigenous biodiversity and mana whenua values including restoring mauri and mahinga kai; and

- Appropriate measures are put in place to ensure on-going responsibility for managing the site once mining has finished.

Position

Hokonui Rūnanga Inc. has not provided written approval to the application because it would like to ensure any potential effects on Ngāi Tahu cultural values are considered as part of this application.

However, Hokonui Rūnanga Inc. supports the site rehabilitation and remediation work, and associated ecological enhancement, that Greenbriar Ltd is undertaking on its New Vale mine site. These actions are leaving the site with higher ecological and biodiversity values, and enhanced mauri and mahinga kai values, from those that existed on the site prior to the mining operation.

Greenbriar Ltd. has proposed resource consent conditions that will allow for successful environmental restoration and enhancement across the extended site, particularly with regard to wetlands. The indigenous species list that will be used for the planting on site is comprehensive, with a variety of indigenous plant species that will create different areas of enhanced wetland habitat.

The issue of the use of coal and other fossil fuels and associated impacts on Greenhouse Gas Emissions is complex and of concern to mana whenua. Under s7(i) of the RMA effects on climate change are a matter to have particular regard to in achieving the purpose of the RMA, but in our view, it is unclear how this matter is assessed under the RMA consenting regime compared with other legislation designed specifically to deal with GHG emissions such as the Climate Change Response (0 Carbon) Amendment Act 2020.

Therefore, this cultural statement has focused on the effects of the proposed activity on Ngāi Tahu values associated with wai māori/freshwater, nga whenua/land on-site and associated ecosystems on site, and the efficacy of proposed mitigation measures and site rehabilitation as mining ceases.

Recommendations

Hokonui Rūnanga Inc. supports the inclusion of the conditions proposed in the consent application. In addition, we suggest the following conditions:

(i) The continued management of taonga species present in tributaries that are required to be moved as part of the mine extension. This includes the continuation of the

gollum galaxias management plan as required by the conditions of resource consent AUTH 20222206-02. It is critical to ensure any taonga species that are required to be moved are handled and transferred appropriately.

(ii) The continued ongoing monitoring of gollum galaxias and other taonga species on site after they have been relocated. This will be done using the already established methods of fish surveys and other monitoring techniques as provided for in the conditions of resource consent AUTH-20222206-02.

(iii) A requirement in consultation with Hokonui Runanga Inc to assess the feasibility of options to replace remaining discharges of water and contaminants to water from the New Vale Mine site, to options to discharge to land.

Continuous Improvement in Managing Discharges

Discharges to water and land where it may enter water are a significant area of concern to mana whenua. This is due to the impacts that contaminants such as those contained in stormwater and runoff can have on water quality and the surrounding environment.

Hokonui Rūnanga Inc. supports the discharge management measures that Greenbriar Ltd. have taken to reduce potential discharges to water to date, including the discharge of ash to land. We also note that a permit to discharge treated surface runoff and groundwater to the Hedgehope Stream has been surrendered.

We suggest Greenbriar Ltd. look for further opportunities to move away from discharging contaminants directly into water on the New Vale Mine site. This would help to protect the quality and mauri of both the on-site wetlands and also the surrounding tributary streams that flow through the site. Hokonui Rūnanga Inc. would be willing to work alongside Greenbriar Ltd. to assess options for this as these consents come up for renewal. For example, the discharge permit to discharge treated groundwater, stormwater, and surface water into a tributary of the Hedgehope Stream is up for renewal in 2030.

Conclusion

Hokonui Rūnanga Inc. and Greenbriar Ltd have developed a positive working relationship around the planting, restoration, and rehabilitation of areas of the New Vale Mine site. In keeping with that relationship, this statement details the ways in which Hokonui Rūnanga Inc. supports the site rehabilitation and remediation work at the New Vale mine site, and the associated improvements in the mauri and mahinga kai values on-site. It is a working

example of how collaboration with the private sector in resource use and development can enable active kaitiakitanga within our takiwā.

This statement outlines Hokonui Rūnanga Inc.'s position on the proposed activities and consent conditions; as well as suggestions for additional conditions that we hope Greenbriar Ltd. may consider including in this resource consent application.

Hokonui Rūnanga Inc. looks forward to continuing to foster the relationship with Greenbriar Ltd., and to continue working on areas of shared interest together into the future.