FINGERBOARDS MINERAL SANDS PROJECT

Risk treatment plan:

Water quality and hydrology

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Contents

List of tables

1. Scope

This risk treatment plan is for the control of mining hazards that have the potential to adversely affect surface water or groundwater quality and / or water flows. This plan does not describe operating, maintenance or monitoring requirements for engineered water storages ~~or tailings storage structures~~. Individual design reports and operating strategies will be prepared for each dam. Dam operating and maintenance manuals will also include information on dam inspections, monitoring and emergency procedures.

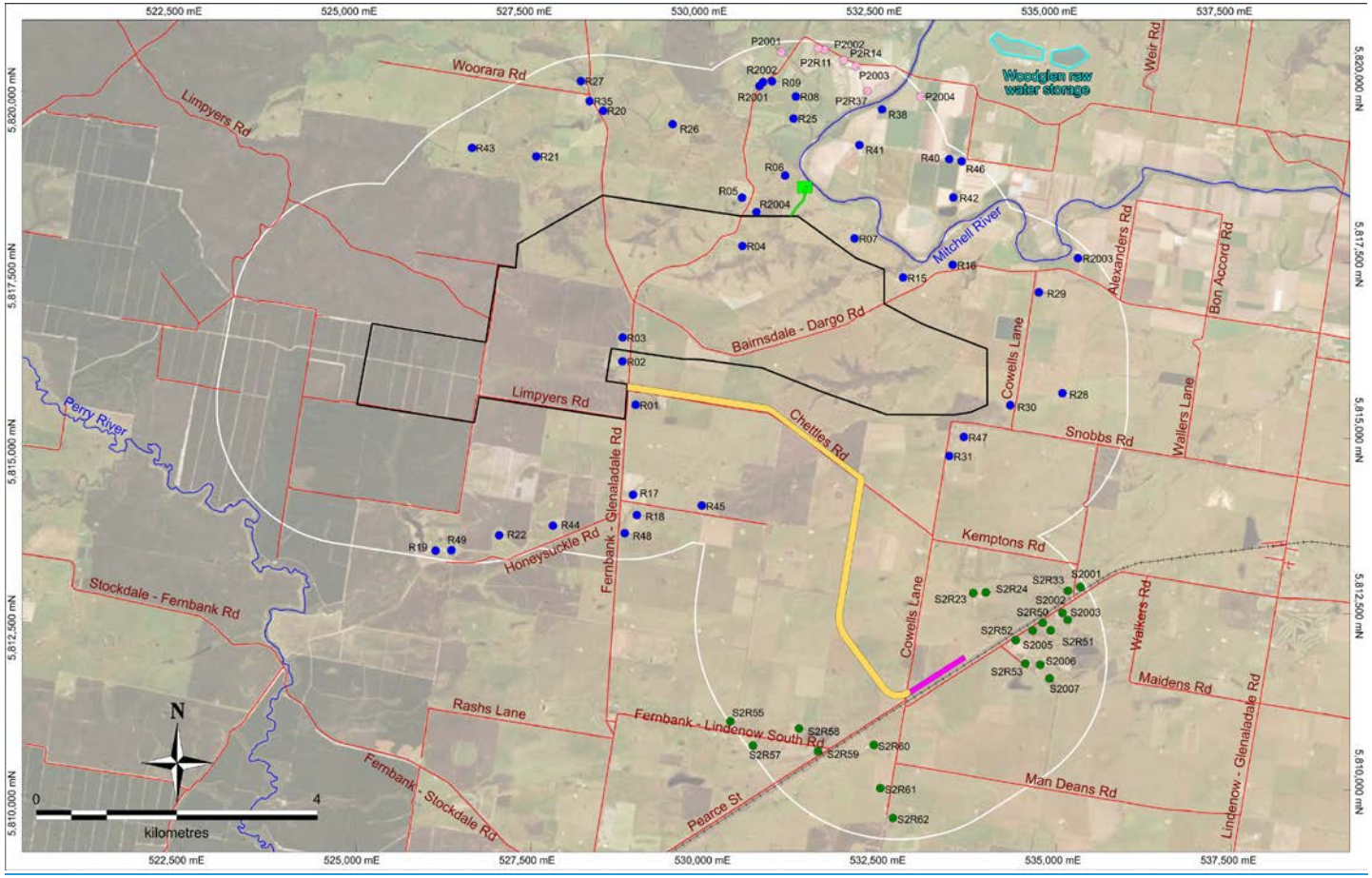
A 'mining hazard' means any mining activity that may pose a risk to the environment, to any member of the public or to land, property or infrastructure in the vicinity of work carried out at the Fingerboards mine at any stage of project implementation (construction, operations, decommissioning and closure).

2. Key sensitive receptors

Key sensitive receptors include the environment, any member of the public or land, property or infrastructure in the vicinity of the mine that may be impacted or put at risk by changes to surface or groundwater quality or to surface water flows as a result of mining activities within the Fingerboard mining licence area. The key sensitive receptors potentially affected by project-related changes to water quality or hydrology are:

- Water quality and biota in the Perry and Mitchell Rivers downstream of the mining licence area and in the Gippsland Lakes;
- Surface water quality and catchment values of existing ponds and dams within the mining licence area;
- Surface water quality and catchment values of tributaries of the Perry and/or Mitchell Rivers that traverse the mining licence area, specifically including Perry Gully; Simpsons Gully; Lucas Creek; Long Marsh Gully; Moilun Creek and an unnamed tributary of Honeysuckle Creek;
- Vegetation in groundwater dependent ecosystems associated the Mitchell or Perry Rivers or their tributaries.
- Existing users of Mitchell River water;
- Groundwater in aquifers beneath or downstream of the Fingerboards mining licence area

The locations of these receptors relative to the mining licence area are shown in Figure 2-1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Limpyers Rd
Bairnsdale - Dargo Rd
Mitchell River
Woodglen raw water storage
Weir Rd
Alexanders Rd
Bon Accord Rd
Cowells Lane
Wallers Lane
Snobbs Rd
Kemptons Rd
Walkers Rd
Maidens Rd
Lindenow - Glenaladale Rd
Fernbank - Glenaladale Rd
Honeysuckle Rd
Stockdale - Fernbank Rd
Rashs Lane
Fernbank - Stockdale Rd
Fernbank - Lindenow South Rd
Pearce St
Man Deans Rd
Cheffles Rd
Perry River
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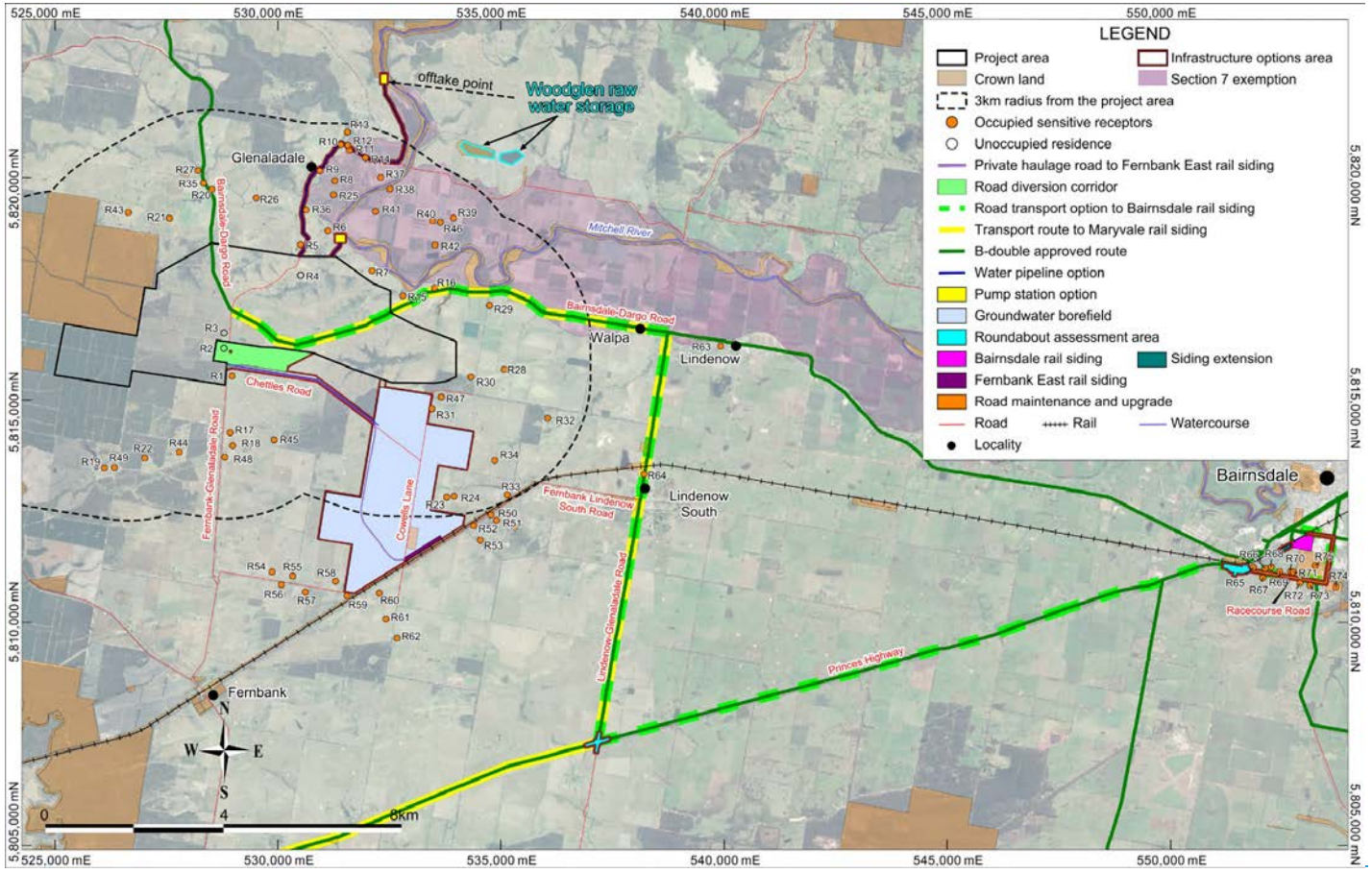

Figure 2-1: Sensitive receptors – water quality & hydrology

3. Inherent risk

In this risk treatment plan 'inherent risk' means the likelihood and consequence of a risk event, assuming that standard controls specified in Attachment 1 of the Fingerboards Risk Management Plan are implemented.

Table 3-1: Inherent risk ratings – water quality and hydrology

#	Details of risk event	Phase	Consequence	Likelihood	Inherent risk rating
1	Runoff from stockpiles or disturbed / rehabilitated areas: Sedimentation increases water turbidity and harms aquatic species	C, O, CL	Moderate	Unlikely	Medium
2	Runoff from stockpiles or disturbed / rehabilitated areas: Increase in metals or radionuclides or change in receiving water pH harms aquatic species or human health	C, O	Insignificant	Unlikely	Low
3	Runoff from stockpiles or disturbed / rehabilitated areas: Sedimentation increases water turbidity and harms aquatic species	C, O	Minor	Unlikely	Low
4	Discharge from contact water dams (via spillway): Sedimentation increases water turbidity and harms aquatic species	O, CL	Moderate	Rare	Medium
5	Discharge from contact water dam (via spillway): Increase in metals or radionuclides or change in receiving water pH harms aquatic species or human health	O, CL	Insignificant	Rare	Low
6	Release of stored water as a result of failure of contact water dam(s): Sedimentation increases water turbidity and harms aquatic species	O, CL	Moderate	Rare	Medium
7	Release of stored water as a result of failure of contact water dam(s): Increase in metals, radionuclides, nutrients or oxygen demand or change in receiving water pH harms aquatic species or human health	O, CL	Minor	Rare	Low
8	Discharge from contact water dams (via spillway): Increase in nutrients or oxygen demand harms aquatic species	O	Minor	Rare	Low
9	Discharge ~~from TSF or~~ from process water dam (via spillway): Sedimentation increases water turbidity and harms aquatic species	O	Moderate	Rare	Medium
~~10~~	~~Release of tailings as a result of failure of TSF or process water dam embankment: Sedimentation increases water turbidity and harms aquatic species~~	~~O~~	~~Major~~	~~Rare~~	~~Medium~~
11	Release of ~~tailings or~~ turbid water as a result of ~~TSF or~~ process water dam overtopping event: Sedimentation increases water turbidity and harms aquatic species	O	Moderate	Rare	Medium
12	Discharge from ~~TSF or~~ process water dam (via spillway): Increase in metals or radionuclides or change in receiving water pH harms aquatic species	O	Minor	Unlikely	Low

#	Details of risk event	Phase	Consequence	Likelihood	Inherent risk rating
~~13~~	~~Release of tailings as a result of failure of TSF embankment: Increase in metals or radionuclides or change in receiving water pH harms aquatic species~~	~~O~~	~~Major~~	~~Rare~~	~~Medium~~
14	Release of ~~tailings or~~ turbid water as a result of ~~TSF or~~ process water dam overtopping event: Increase in metals or radionuclides or change in receiving water pH harms aquatic species	O	Moderate	Rare	Medium
15	Altered site hydrology results in increased rate of erosion in natural drainage lines downstream of project: Sedimentation increases water turbidity and harms aquatic species	O, CL	Moderate	Unlikely	Medium
16	Runoff from septic effluent disposal fields: Increase in nutrients or oxygen demand harms aquatic species	C, O	Minor	Unlikely	Low
17	Seepage from in-pit coarse tailings: Contamination of groundwater by acidity, metals or radionuclides	O, CL	Insignificant	Possible	Low
18	Seepage from ~~fine tailings in TSF~~in pit tailings storage are: Contamination of groundwater by metals or radionuclides	O	Minor	Unlikely	Low
19	Seepage from process water dam: Contamination of groundwater by metals or radionuclides	O	Minor	Unlikely	Low
20	Infiltration of septic effluent: Contamination of groundwater by nutrients, pathogens or BOD	C, O	Minor	Unlikely	Low
21	Seepage from ~~RoM pad~~fines centrifuge cake or HMC product stockpiles: Contamination of groundwater by acidity, metals or radionuclides	O	Minor	Unlikely	Low
22	Capture of water in mine contact water dams: Reduced frequency / magnitude of flow down drainage lines results in modifications to riparian systems along drainage lines - Mitchell system	O, CL	Minor	Possible	Medium
23	Capture of water in mine contact water dams: Reduced frequency / magnitude of flow down drainage lines results in modifications to riparian systems along drainage lines - Perry system	O, CL	Minor	Possible	Medium
24	Capture of water in mine contact water dams: Reduced flow in Mitchell harms aquatic ecology	O, CL	Insignificant	Rare	Low
25	Capture of water in mine contact water dams: Reduced flow in Mitchell reduces water available to irrigators and other water users	O, CL	Insignificant	Rare	Low
26	Winter fill water extraction from Mitchell River: Reduced flow in Mitchell harms aquatic ecology	C, O	Minor	Unlikely	Low

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#	Details of risk event	Phase	Consequence	Likelihood	Inherent risk rating
27	Winter fill water extraction from Mitchell River: Reduced flow in Mitchell reduces water available to irrigators and other water users	C, O	Minor	Rare	Low
~~28~~	~~Seepage from TSF: Groundwater seepage compromises geotechnical stability of surrounding areas~~	~~O~~	~~Major~~	~~Rare~~	~~Medium~~
~~29~~	~~Seepage from TSF: Groundwater seepage increases risk of tunnel erosion in surrounding areas~~	~~O~~	~~Major~~	~~Rare~~	~~Medium~~
~~30~~	~~Seepage from TSF: Groundwater mounding affects vegetation health~~	~~O~~	~~Minor~~	~~Rare~~	~~Low~~
31	Seepage from process water dam or freshwater storage dam: Groundwater mounding affects vegetation health	O	Minor	Rare	Low
32	Seepage from tailings in mine void: Groundwater mounding affects vegetation health	O, CL	Minor	Unlikely	Low
33	Seepage from tailings in mine void: Groundwater seepage compromises geotechnical stability of surrounding areas	O, CL	Major	Unlikely	High
34	Seepage from tailings in mine void: Groundwater seepage increases risk of tunnel erosion in surrounding areas	O, CL	Major	Unlikely	High
35	Seepage from process water dam or freshwater storage dam: Groundwater seepage reduces geotechnical stability of surrounding areas	O	Rare	Moderate	Medium
36	Seepage from process water dam or freshwater storage dam: Groundwater seepage increases risk of tunnel erosion in surrounding areas	O	Rare	Moderate	Medium
37	Seepage from mine contact water dams: Groundwater seepage increases risk of tunnel erosion in surrounding areas	O, CL	Rare	Moderate	Medium
38	Seepage from mine contact water dams: Groundwater seepage reduces geotechnical stability of surrounding areas	O, CL	Rare	Moderate	Medium
39	Altered site hydrology: redirection of flow, modified storage: Increased flood risk in Mitchell / Perry catchments	C, O, CL	Minor	Unlikely	Low
40	Extraction of groundwater from the Latrobe Group aquifer: Groundwater drawdown to Latrobe Group aquifer and reduced availability for licensed users or ecosystem support.	O	Minor	Unlikely	Low

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#	Details of risk event	Phase	Consequence	Likelihood	Inherent risk rating
41	Extraction of groundwater from the Latrobe Group aquifer: Groundwater drawdown transmitting to overlying Seaspray Group Aquifer, Boisdale Aquifer and surficial alluvial aquifers and reduced availability for licenced groundwater users or ecosystem support.	O	Minor	Unlikely	Low
42	Extraction of groundwater from the Latrobe Group aquifer: Reduced groundwater flux in the Latrobe Group aquifer increasing saline groundwater intrusion near the coast.	O	Minor	Rare	Low
43	Tunnel erosion compromises stability of water storage structures: Sediment discharge to surface water	O, CL	Major	Rare	Medium
44	Water erosion in drainage channels: Vegetation / ecosystem damage	C, O, CL	Minor	Unlikely	Low
45	Water erosion near active pit void: Initiation of slope instability	O	Major	Unlikely	High
50	Use of inappropriate materials in constructed landforms: Slope instability: loss of containment from constructed landforms	O, CL, PC	Moderate	Unlikely	Medium
~~51~~	~~Tailings dam failure: Injury / loss of human life~~	~~O~~	~~Critical~~	~~Rare~~	~~High~~
~~52~~	~~Tailings dam failure: Soil contamination~~	~~O~~	~~Major~~	~~Rare~~	~~Medium~~
53	Runoff or seepage from HMC stockpiles or centrifuges cake storage areas~~Runoff or seepage from HMC stockpiles: Soil / surface water / groundwater~~	O	Minor	Unlikely	Low
~~54~~	~~Erosion: Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation~~	~~O, CL, PC~~	~~Moderate~~	~~Unlikely~~	~~Medium~~
55	Tailings are hardsetting: Loss of land capability; increased erosion hazard; restriction in water infiltration	O, CL	Moderate	Unlikely	Medium
56	Surface water runoff erodes bare surface: Gullying / tunnel erosion results in loss of land productivity	O, CL, PC	Moderate	Possible	Medium
57	Surface water runoff erodes bare surface: Erosion and sediment mobilisation: loss of soil fertility and decline in land productivity	O, CL, PC	Moderate	Possible	Medium

Note: 'C' = construction; 'O' = operations; 'CL' = decommissioning and closure 'PC' = postclosure

Note 2: # may not appear in the table as risks have been removed with the removal of the TSF

4. Objectives

The objectives of this risk treatment plan are to minimise and manage project-related changes to existing water quality and hydrological function in order to protect catchment environmental values[1] and beneficial uses of water resources over the short and long-term.

The water quality environmental values that this risk treatment plan seeks to protect are derived from the beneficial uses of water defined by the SEPP (Waters) which apply to the mining licence area and downstream catchments potentially affected by activities within the mining licence area. Beneficial uses are listed in Table 6-1.

5. Compliance standards

The compliance standards for this risk treatment plan are derived from applicable requirements of the:

- *Water Act (1989),*
- *Catchment and Land Protection Act (1994),*
- *Planning and Environment Act (1979),*
- *State Environment Protection Policy (Waters)* (SEPP Waters), and
- EPA Guideline 1287 *Risk Assessment of Wastewater Discharge to Waterways*.

6. Acceptance criteria

Acceptance criteria are the measures which, if attained, are the basis for concluding that the control measures described in this plan have been effective in achieving the plan objectives. The acceptance criterion for this risk treatment plan is that the diversion and return of diverted water to the environment does not detract from beneficial uses of surface water or groundwater. Beneficial uses dictated by water quality will be considered to have been met if project activities (including any water discharges from the mining licence area) do not cause receiving waters to exceed the criteria summarised in Table 6-2.

[1] An environmental value is:
A quality or physical characteristic of the environment that is important to ecological health; public benefit (or amenity), safety or health; or
A quality of the environment identified and declared to be an environmental value under and environmental protection policy or regulation.

Table 6-1: Water quality acceptance criteria – protection of beneficial uses of surface water

Beneficial Use	Acceptance Criteria	Source of Criteria
Water dependent ecosystem and species	Surface waters will not be affected to the extent that the level of any environmental quality indicator is greater than the level of that indicator for the specific water body or section of water body specified in the SEPP (Waters) (unless concentrations in the receiving water already exceed the value specified in the SEPP).	ANZECC 2000 (updated 2018) – *Australian Water Quality Guidelines for Aquatic Protection* – T95% SEPP (Waters)
Human consumption after appropriate treatment	Receiving water will not be affected to the extent that the level of any water quality indicator is greater than the level of that indicator specified for raw water for drinking water supply in the guidelines, or will not exceed average pre-mining water quality concentrations in the receiving water for a given parameter (whichever is the greater). The constituents of the receiving water will not be affected in a manner or to an extent that leads to tainting.	*Australian Drinking Water Guidelines 6, (2011), updated 2018, NHMRC, (National Health and Medical Research Council).*
Agriculture and irrigation	Surface receiving waters will not be affected to the extent that the level of any environmental quality indicator is greater than the level of that indicator specified for irrigation in the ANZECC Guidelines (unless concentrations in the receiving water already exceed the value specified in the ANZECC Guidelines).	*ANZECC 2000 - Australian Water Quality Guidelines for Irrigation Water Quality.*
	Surface receiving waters will not be affected to the extent that the level of any environment quality indicator is greater than the level of that indicator specified for livestock in the ANZECC Guidelines (unless concentrations in the receiving water already exceed the value specified in the ANZECC Guidelines).	*ANZECC 2000 - Australian Water Quality Guidelines for Fresh and Marine Waters – Guidelines for Livestock Watering.*
Human consumption of aquatic foods	If an environmental quality objective is not specified then an objective specific for water dependent ecosystems and species becomes the objective.	ANZECC 2000 – *Aquaculture and human consumption of aquatic foods & Australia New Zealand Food Standards Code.* ANZECC 2000 – *Aquaculture and human consumption of aquatic foods.*
Aquaculture	If an environmental quality objective involves the alternatives of a numerical limit provided for the protection of aquaculture, or a numerical limit for the protection of other beneficial uses, whichever limit is the most protective applies.	
Industrial and commercial	Surface receiving waters will not be affected to the extent that the level of any water quality indicator is greater than the level of that indicator specified for industrial water quality in the guidelines.	Consideration must be given to *Section 2.2.4* of the *SEPP (Waters)* for guidance on deriving guidelines where no guidelines currently exist.
Water-based recreation (primary & secondary contact)	Surface receiving waters will not be affected to the extent that the level of any water quality indicator is greater than the level of that indicator specified for primary contact recreation specified in the SEPP (Waters)	*NHMRC 2008 – Guidelines for Managing Risks in Recreational Water*
Water-based recreation (aesthetic enjoyment)	Surface receiving waters will not be affected to the extent that the water is rendered unsuitable for aesthetic enjoyment in line with the criteria outlined in the SEPP (Waters)	No water quality guidelines are provided
Traditional owner cultural values	Water quality that protects the cultural values of Traditional Owners in line with criteria outlined in the SEPP (Waters)	• No water quality guidelines are provided

Beneficial Use	Acceptance Criteria	Source of Criteria
Cultural and spiritual values	Water quality that is suitable for cultural and spiritual needs and will ensure cultural, spiritual and ceremonial practices can continue (e.g. baptisms, water-based festivals and cultural celebrations) in line with criteria outlined in the SEPP (Waters)	• No water quality guidelines are provided

Table 6-2: Environmental quality objectives (SEPP Waters, 2018)

Segment	Total P (µg/L)	Total N (µg/L)	Dissolved oxygen (% sat)		Turbidity (NTU)	Total Suspended Solids (mg/L)	Electrical conductivity (µS/cm)	Salinity (PSU)		pH (units)		Toxicants (water)
	75th percentile	75th percentile	25th percentile	Maximum	75th percentile	75th percentile	75th percentile	25th percentile	75th percentile	25th percentile	75th percentile	% protection (2)
Central Foothills and Coastal Plains	≤55	≤1100	≥75	130	≤25	-	≤250	-	-	≥6.7	≤7.7	95
Wetland												
Estuaries	90	1000	30	130	10	-	-	-	-	7.0	8.0	95
Gippsland Lakes												
Lake Wellington	120	1000	95	130	-	30	-	NA	15	7.5	8.5	95
Lake Victoria (1)	90	600	95	130	-	10	-	15	25	7.5	8.5	95
Lake King (1)	50	500	95	130	-	5	-	20	30	7.5	8.5	95
Lake Reeve (3)	R75	R75	R25	R75	-	R75	-	R25	R75	R25	R75	95
Exchange (1)	50	500	95	130	-	5	-	20	30	7.5	8.5	95

(1) – Water quality indicators and objectives for 'surface' water listed. Refer to SEPP (Waters) for additional criteria for deeper 'bottom' water.

(2) – '% protection' refers to the species protection levels in Table 3.4.1 of the ANZECC 2000 Guidelines.

(3) – Refer to SEPP (Waters) for further explanation of criteria.

(4) – In this Table 'R' means 'riffle'.

7. Controls to address hazard

The controls listed in Table 7-1 will be implemented in order to minimise adverse impacts on beneficial uses of surface water from activities conducted within the mining licence area. Controls and performance measures for hazards associated with changes in groundwater quality or groundwater hydrology are listed in Table 7-2.

Table 7-1: Controls and associated performance measures (surface water)

#	Details of controls	Performance measures
SW01	Surface water will be extracted from the Mitchell River in line with the conditions, timings, and limits detailed in any licence issued by Southern Rural Water.	Water pumping data, annual compliance reports.
SW02	The design and placement of infrastructure in the project area will consider potential for flow accumulation and increased flood risk. Where reasonably practicable, mining activities will be located outside of areas designated as a floodplain and/or Land Subject to Inundation.	Design reports, licence application documentation, as-built reports
SW03*	Mine contact water from outside of the mine void or tailings dam that is retained in water management dams will be offset by releasing the same volume of fresh water from the fresh water storage dam. Water will be released downstream of the project area (to the Perry River catchment) or directly to the Mitchell River via the pipeline from the freshwater dam.	Dam water level records, site water balance, site meteorological data, discharge data, annual compliance report.
SW04~~a~~	A Water Risk Treatment Plan will be developed and implemented to minimise discharge of stormwater from the construction areas.	Implementation of this plan.
SW04 a	Surface runoff will be directed around or away from areas of land disturbance, stockpiles, embankments or nearby sensitive areas, where practicable.	Mine plan, site drainage plan and designs, as-built reports.
SW04b	Runoff that comes into contact with construction areas will be captured by surface water management infrastructure and directed to sedimentation dams. If required, water treatment (i.e., alum, gypsum or hydrated lime) will be used to drop suspended sediment levels in the stormwater.	Mine plan, site drainage plan and designs, as-built reports.
~~SW04d~~SW04c	Erosion within gullies will be controlled using primary and secondary sediment traps constructed at appropriate sites.	Records of sediment accumulation in detention structures; observations of gully / rill erosion.
~~SW04e~~SW04d	Catchment water onsite will be retained to approximately 3.3% annual-exceedance-probability.	Meteorological records; dam water levels and discharge records.
~~SW04f~~SW04e	All site drains will be designed and profiled to reduce water flow velocity, to reduce erosion	Mine plan, site drainage plan and designs, as-built reports; routine erosion
SW05	Freeboards on the fresh water storage dam, process water dam and sedimentation ponds will be maintained to allow for storm events and high rainfall periods, in accordance with relevant licence, permit and approval requirements.~~Australian and Victorian regulatory requirements~~	Meteorological records; dam water levels and discharge records.

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#	Details of controls	Performance measures
SW06	Where infrastructure, such as dams and haul roads, are to be installed on or in close proximity to a watercourse, these areas ~~should~~ will be inspected for nearby stream bed instability prior to construction	Design reports, inspection records.
SW07	If required, bed instability should be addressed though appropriately designed grade controls, such as the use of rock chutes.	Inspection records, design reports, as-built reports, routine erosion observations.
SW08	All stream bed instability areas should be inspected prior to, and annually during construction to ascertain a rate of movement and potential risks posed to mine infrastructure.	Inspection records, design reports, as-built reports, routine erosion observations.
SW09	Surface water management infrastructure designed to capture run-off (and eroded sediments) will be maintained until such a time that vegetation is sufficiently established to control landscape erosion.	Records of sediment accumulation in detention structures; observations of gully / rill erosion.
SW10 & RH23	Stockpile slope angles will be constructed as low as practicable and seeding or mulch materials and contour ripping will be strategically used to stabilise stockpiles, prevent runoff and minimise erosion.	Standard operating procedures, records of sediment accumulation in detention structures
SW11	The freshwater storage, process water, contingency water and water management dams will have design storage allowance for a 1 in 100-year average-exceedance probability, 72-hour storm event.	Design and as-built reports
SW12	The design, construction and operation of the freshwater storage dam will follow the Australian National Committee on Large Dams (ANCOLD) Guidelines on the Consequence Categories for Dams (October 2012 – or subsequent revisions).	Design and as-built reports, operating records, annual inspection reports.
~~SW13,~~ GW04	Limited quantities of chemical will be stored on site. Any hazardous materials, such as laboratory chemicals, will be stored in designated areas in accordance with their safety data sheets.	Chemicals inventory records; materials safety data sheets.
~~SW14,~~ GW11	Spills of fuels or chemical will be managed in accordance with requirements set out in the Spill Response and Clean-up Procedure.	Standard operating procedures; materials safety data sheets; incident reports.
~~SW15,~~ GW05	Handling of concentrated flocculant and any hazardous materials will be done in accordance with safety data sheet recommendations.	Standard operating procedures; materials safety data sheets
~~SW16,~~ GW12	Hazardous materials will be transported in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, ~~2017~~2018).	Transport manifests
~~SW17,~~ GW06	Hazardous waste will be removed from site by a licensed contractor for treatment or disposal in an approved facility in accordance with the requirements.	Procurement documentation; waste cartage and disposal records.

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#	Details of controls	Performance measures
~~SW18,~~ GW08	Inductions and training will be provided to all relevant project personnel on the safe storage, handling and transport of dangerous goods and in emergency management.	Induction records; emergency response and dangerous goods handling training records
~~SW19,~~ TE26	Bunding for the fuel storage area (fuel farm) will be in accordance with Australian Standard 1940:2017 (Standards Australia, 2004). The capacity (i.e., bund height), storage, stormwater control and maintenance, and operation of bunded areas will comply with EPA ~~bunding~~ liquid storage and handling guidelines (EPA, ~~2015~~2018).	Design report; as-built report.
~~SW20,~~ TE41	Areas used for handling and/or storage of hazardous materials will be appropriately bunded and contain spill response equipment.	Design report; as-built report; compliance with spill response procedure
SW21	Rainfall runoff water from vehicle workshops, vehicle service areas and refuelling areas will be captured and directed to an interceptor trap to extract hydrocarbons, prior to it being discharged to the drain and sump network. The trap will be emptied of hydrocarbons routinely by a licensed contractor for disposal offsite at a license facility.	Drainage design and as-built report; waste cartage and disposal records
SW22	Water draining from in-pit tailings will be managed using sumps and underdrains to capture and reuse seepage.~~The temporary TSF will be constructed using engineered cells with lined walls. Water will be~~	Records of water recovery / transfer; groundwater monitoring records~~Design and as-built reports; operational~~
SW23	The project will recover and reuse water where practicable (such as run-off from ore stockpiles and ~~supernatant water from the TSF and tailings area within the mine void~~water recovered from the in pit tailings storage) and optimise operations to maximise water use	Water balance, dam water level records, meteorological records, plant production records
SW24	Where practical, undisturbed water will be diverted around disturbance areas to prevent clean surface water from entering the site and becoming contaminated.	Drainage design report; as-built reports.
SW25	Wastewater from ablutions and the office will be treated with a wastewater treatment system. There will be sufficient capacity to cater for the operations workforce and visitors.	Wastewater treatment plant design specification; effluent monitoring records.
SW26	All waste excluding septic waste will be removed from site and disposed of by licensed contractors.	Procurement documentation; waste cartage and disposal records.
SW27	Waste hydrocarbons will be stored in suitable containers for removal from the mine site for disposal at either an EPA-approved hydrocarbon waste site or a recycling depot.	Waste inventory; waste cartage and disposal records.
~~SW28~~	~~Surface water will be managed through an adaptive management strategy that includes trigger levels for surface water quantity and quality that determine when remedial action is required (in consultation with affected stakeholders).Implement an adaptive management strategy that includes triggers for surface water quantity and quality for remedial action in consultation with affected stakeholders.~~	~~Implementation of this plan; qQuarterly briefings of Community Reference Group; annual compliance reviews and reporting; updates of water risk treatment strategy (in consultation with stakeholders).~~
SW29*	Permanent and long-term drains and bund walls will be topsoiled and vegetated with suitable vegetation as soon as possible.	Rehabilitation reports.

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#	Details of controls	Performance measures
SW30	Appropriate outlet scour protection will be placed on all stormwater outlets, chutes, spillways and slope drains to dissipate flow energy and minimise risk of soil erosion.	Drainage design report and as-built reports; erosion monitoring records; records of sediment accumulation in detention ponds.
SW32	Mine contact water management dams within the Perry River catchment will be emptied as a priority over those located in the Mitchell River catchment to reduce potential water quality impacts to the Perry River catchment.	Site water balance; dam water level records.
SW33*	If during successive storm events water management dams are required to be drawn down at a rate greater than can be achieved by the process water demand, mine contact water will be treated at a rate of 24 ML/day prior to discharge to the freshwater dam. Mine contact water will be treated to a level that is acceptable for discharge to the Mitchell River.	Treated water quality test results
SW34*	Revegetate ephemeral drainage gullies in areas downstream of future mining activities prior to operations commencing to mitigate current instability and to increase stability of landscape during and post mining.	Rehabilitation records
SW35	An adaptive management strategy will be implemented, based on water quality and quantity monitoring results, to determine whether offset water that would typically be returned to the Mitchell River may be directed to ephemeral drainage gullies in a controlled manner.	Results of waterways health assessments and drainage line stability monitoring; periodic reviews of this risk treatment plan
SW36	Aquatic and riparian vegetation will be established in minor waterways between water management dams and major receiving waterways to reduce potential water quality impacts from the release of mine contact water.	Rehabilitation records; results of waterways health assessments
SW37	Natural surface water drainage courses will be re-routed to avoid post-mining landforms, where practicable.	Rehabilitation design and construction reports
SW38	Surface water ponding on post-mining landforms will be avoided, where practicable, through appropriate slope profile design and topsoil treatments.	Rehabilitation design and construction reports
SW39	The downhill side of containment structures, such as surface water drains and road batters, will undergo soil conditioning and be spread with topsoil and revegetated as soon as practicable to minimise erosion and sediment laden runoff.	Rehabilitation records, results of waterways health assessments and drainage line stability monitoring
SW40	Sediment traps and dams will be cleaned at regular intervals, and following storm events and high rainfall events, to maintain the efficiency of the infrastructure.	Maintenance schedule and maintenance reports; dam capacity surveys

Table 7-2: Controls and associated performance measures (groundwater)

#	Details of controls	Performance measures
GW01	~~All dams~~The freshwater dam and contingency water storage dams ~~for regular water storage~~ will be constructed with engineered liners to reduce infiltration to groundwater.	Dam design report; liner specification; as-built reports
GW02	Groundwater will be extracted from the Latrobe Group aquifer in line with the conditions, timings, and limits detailed in a licence issued by Southern Rural Water.	Water metering data; water meter calibration certificates; annual compliance reports
~~GW03,~~ TE26	Bunding for the fuel storage area (fuel farm) will be in accordance with Australian Standard 1940:2017). The capacity (i.e., bund height), storage, stormwater control and maintenance, and operation of bunded areas will comply with EPA liquid storage and handling~~bunding~~ guidelines (EPA, ~~2015~~2018).	Bunding design and as-built reports; annual environmental compliance reports.
GW04a	Limited quantities of chemical will be stored on site. Any hazardous materials, such as laboratory chemicals, will be stored in designated areas in accordance with their safety data sheets.	Chemicals inventory records; materials safety data sheets.
GW05~~b~~	Handling of concentrated flocculant and any hazardous materials will be done in accordance with safety data sheet recommendations.	Standard operating procedures; materials safety data sheets; incident reports.
GW06	Hazardous waste will be removed from site by a licensed contractor for treatment or disposal in an approved facility in accordance with the requirements.	Procurement documentation; waste cartage and disposal records.
~~GW07,~~ TE41	Areas used for handling and/or storage of concentrated flocculent and other hazardous materials will be appropriately bunded and contain spill response equipment.	Bunding design and as-built reports; spill response procedure; emergency response training records.
GW08	Inductions and training will be provided to all relevant project personnel on the safe storage, handling and transport of dangerous goods and in emergency management.	Hazardous materials procedure; spill response procedure; emergency response training records.
GW09	Waste aside from septic waste will be removed from site and disposed of by licensed contractors.	Procurement documentation; waste cartage and disposal records.
GW10	Waste hydrocarbons will be stored in suitable containers for removal from the mine site for disposal at either an EPA-approved hydrocarbon waste site or a recycling depot.	Waste inventory; waste cartage and disposal records.
GW11	Spills of fuels or chemical will be managed in accordance with requirements set out in the Spill Response and Clean-up Procedure.	Standard operating procedures; materials safety data sheets; incident reports.
GW12	Hazardous material will be transported in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, ~~2016~~2018).	Transport manifests.
~~GW13 &TE27~~	~~The design, construction, operation, monitoring and rehabilitation of the TSF will comply with the Department of Economic Development, Jobs, Transport and Resources: Technical Guideline Design and Management of Tailings Storage Facilities (DEDJTR, 2017).~~	~~Tailings design and as-built reports; annual tailings inspection reports; routine operational inspection and monitoring records.~~
~~GW14,~~ SW22	Water draining from in-pit tailings will be managed using sumps and underdrains to capture and reuse seepage.~~The temporary TSF will be constructed using engineered cells with lined walls. Water~~	Records of water recovery / transfer; groundwater monitoring records~~Design and as-built reports; operational monitoring~~

#	Details of controls	Performance measures
GW15	Management techniques, such as underdrains, sumps and water recovery pumps will be used to maximise the recovery of water in the mine void tailings containment cells.	Operational monitoring records; site water balance.
GW16	The open voids will be progressively backfilled with sand tailings and clay/silt tailings which will then be covered with overburden, subsoil and, in areas other than Grassy Woodland revegetation, topsoil. Revegetation with crop/pasture or native vegetation will be undertaken where required.	Rehabilitation records.

Table Table 7-3: Additional Controls identified in the EES process.

#	Details of controls	Performance measures
1	Development of a GDE management plan will be prepared prior to construction as part of the biodiversity risk treatment plan and environmental management plan.	
2	The framework for groundwater and tailings management will be addressed in the water quality and hydrology risk treatment plan and the surface water and groundwater management plan.	
3	Additional groundwater monitoring bores will be installed prior to construction in locations agreed by regulators including SRW.	
4	The water quality and hydrology risk treatment plan will be revised to include the SEPP (Waters) interim objectives for preliminary acceptance criteria and water quality for groundwater. This will then be further updated with groundwater quality objectives that are site specific.	
5	The water quality and hydrology risk treatment plan has been revised to include the SEPP (Waters) interim objectives for preliminary acceptance criteria and water quality for groundwater. It should be noted these are only interim pbjectives and will be further updated with groundwater quality objectives that are site specific	

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8. Residual risk assessment

Table 8-1: Residual risk ratings – water quality and hydrology

#	Details of risk event monitored	Phase	Consequence	Likelihood	Residual risk rating
1	Runoff from stockpiles or disturbed / rehabilitated areas: Sedimentation increases water turbidity and harms aquatic species	C, O, CL	Moderate	Unlikely	Medium
2	Discharge from contact water dams (via spillway): Sedimentation increases water turbidity and harms aquatic species	O, CL	Minor	Rare	Low
3	Discharge from contact water dam (via spillway): Increase in metals or radionuclides or change in receiving water pH harms aquatic species or human health	O, CL	Insignificant	Unlikely	Low
4	Release of stored water as a result of failure of contact water dam(s): Sedimentation increases water turbidity and harms aquatic species	O, CL	Moderate	Rare	Medium
5	Discharge from process water dam (via spillway): Sedimentation increases water turbidity and harms aquatic species~~Discharge from TSF or~~	O	Moderate	Rare	Medium
6	Release of turbid water as a result of process water dam overtopping event: Sedimentation increases water turbidity and harms aquatic species~~Release~~	O	Moderate	Rare	Medium
7	Discharge from process water dam (via spillway): Increase in metals or radionuclides or change in receiving water pH harms aquatic species~~Release of tailings or turbid water as a result of TSF or~~	O	Moderate	Rare	Medium
8	Altered site hydrology results in increased rate of erosion in natural drainage lines downstream of project: Sedimentation increases water turbidity and harms aquatic species	O, CL	Moderate	Rare	Medium
9	Capture of water in mine contact water dams: Reduced frequency / magnitude of flow down drainage lines results in modifications to riparian systems along drainage lines - Mitchell system	O, CL	Minor	Unlikey	Low
10	Capture of water in mine contact water dams: Reduced frequency / magnitude of flow down drainage lines results in modifications to riparian systems along drainage lines - Perry system	O, CL	Minor	Unlikey	Low
11	Seepage from tailings in mine void: Groundwater seepage compromises geotechnical stability of surrounding areas	O, CL	Major	Rare	Medium
12	Seepage from tailings in mine void: Groundwater seepage increases risk of tunnel erosion in surrounding areas	O, CL	Major	Rare	Medium

#	Details of risk event monitored	Phase	Consequence	Likelihood	Residual risk rating
13	Seepage from process water dam or freshwater storage dam: Groundwater seepage reduces geotechnical stability of surrounding areas	O	Moderate	Rare	Medium
14	Seepage from process water dam or freshwater storage dam: Groundwater seepage increases risk of tunnel erosion in surrounding areas	O	Moderate	Rare	Medium
15	Tunnel erosion compromises stability of water storage structures: Sediment discharge to surface water	O, CL	Major	Rare	Medium
16	Water erosion near active pit void: Initiation of slope instability	O	Major	Rare	Medium
17	Use of inappropriate materials in constructed landforms: Slope instability: loss of containment from constructed landforms	O, CL, PC	Moderate	Unlikely	Medium
18	Surface water runoff erodes bare surface: Gullyng / tunnel erosion results in loss of land productivity	O, CL, PC	Moderate	Unlikely	Medium
19	Surface water runoff erodes bare surface: Erosion and sediment mobilisation: loss of soil fertility and decline in land productivity	O, CL, PC	Moderate	Unlikely	Medium

Note: 'C' = construction; 'O' = operations; 'CL' = decommissioning and closure; 'PC' = post-closure

9. Monitoring

The purpose of environmental monitoring for the project is to verify impact predictions made in this report and to demonstrate regulatory and licensing compliance. Where necessary, corrective action will be taken should monitoring indicate that management measures are not effective. Monitoring will also inform day-to-day operation of the mine and will enable periodic updating of this risk treatment plan and the hydrological models upon which it is based.

Monitoring required to check the effectiveness of controls aimed at limiting impacts on surface water quality and surface water hydrology is summarised in Table 9-1. Monitoring required to check the effectiveness of controls aimed at limiting impacts on groundwater is summarised in Table 9-1.

Table 9-1: Proposed monitoring for surface water

#	Aspect to be monitored	Details of monitoring		
		Receptor	Monitoring points	Frequency
1	Flow rate - preconstruction	Mitchell River	DELWP gauging stations	Daily
2	Water quality - preconstruction	Mitchell River	MR01 to MR05	Quarterly
3	Water quality - preconstruction	Perry River	Two locations – to be agreed with regulators	Quarterly
4	Flow rate - preconstruction	On-site ephemeral catchments	Initially at Honeysuckle Creek Eastern Tributary, Moulin Creek Trubutary #3, and Perry Gully.	Continuous (via data loggers)
5	Water quality - preconstruction	On-site ephemeral catchments	Initially at Honeysuckle Creek Eastern Tributary, Moulin Creek Trubutary #3, and Perry Gully.	Twice per year (if water is present)
6	Drainage line stability – visual evidence of gullying or other instability	On-site ephemeral catchments	Initially at Honeysuckle Creek Eastern Tributary, Moulin Creek Tributary #3, and Perry Gully, thereafter. three points in gullies affected by or going to be affected by mining	Annually and prior to finalizing any infrastructure design where asset lies within 100 m of an existing drainage line.
7	Water quality during construction, operations and active rehabilitation phases	Mitchell River	MR01 to MR05	Every two months initially, moving to quarterly thereafter with agreement from regulator.
8	River flow rates during construction, operations and active rehabilitation phases	Mitchell River	DELWP gauging stations	Daily
9	Water extraction (winterfill) during construction, operations and active rehabilitation phases	Mitchell River	At water extraction point	Daily when pump is operating

#	Aspect to be monitored	Details of monitoring		
		Receptor	Monitoring points	Frequency
10	Water quality during construction, operations and active rehabilitation phases	Perry River	Two locations (one location upstream and one downstream of the confluence of Honeysuckle Creek and the Perry River) – to be agreed with regulators	Every two months initially, moving to quarterly thereafter with agreement from regulator.
11	Water quality during construction, operations and active rehabilitation phases	Onsite: disturbed catchments	Two locations within each impacted drainage line – to be agreed with regulators	Every two months (if water is present)
12	Water quality following significant rainfall events during construction, operations and active rehabilitation phases	Onsite: undisturbed catchments	SW01, SW02, SW03, SW04, SW05, SW06	When rainfall received at mine site exceeds 60 mm within a 24 hour period (corresponding approximately to a 1 year ARI event), assuming water is available to sample.
13	Water quality discharged from water storages	Varies, depending upon discharge point	Point of discharge, nearest accessible point to receiving water and (if applicable), upstream of water storage.	At least daily during discharge and for minimum of 5 days at upstream and downstream sampling locations following cessation of discharge.
14	Water quality in mine contact water dams	--	One designated sampling point for each dam.	Twice yearly and no less than 72 hrs before any discharge event.
15	Quantity of water intercepted by or stored in mine contact water dams	--	Water level indicator post at each dam.	Daily input to site water balance
16	Sediment detention ponds – sediment accumulation	--	Observations of quantity of sediment in detention ponds	Twice yearly, including one event prior at end October each year.
17	Sediment detention ponds – water quality	--	Field and laboratory testing of water quality in ponds	Twice yearly

#	Aspect to be monitored	Details of monitoring		
		Receptor	Monitoring points	Frequency
18	Structured observations to assess stability / health of waterways within / immediately adjacent to operational areas	Perry Gully; Simpsons Gully; Lucas Creek; Long Marsh Gully; Moilun Creek and an unnamed tributary of Honeysuckle Creek	At furthest accessible downstream point within mining licence area.	2-yearly and following any major rainfall events (72 hr rainfall exceeds 136 mm, corresponding approximately to a 1 in 5 year 72 hour event.
19	Quantity of water released from freshwater dam to offset surface water intercepted in mine contact water dams	Mitchell River	At licensed discharge point(s) specified in EPA works approval and licence.	Daily during periods of water discharge.
20	Quality of water released from freshwater dam to offset surface water intercepted in mine contact water dams	Mitchell River	At licensed discharge point(s) specified in EPA works approval and licence.	Daily during periods of water discharge.

Table 9-2: Proposed monitoring for groundwater

#	Aspect to be monitored	Details of monitoring		
		Receptor	Monitoring points	Frequency
1	Groundwater levels - preconstruction	Groundwater aquifers within the Coongulmerang, Balook, and Seaspray Formations and in the Latrobe Group.	Designated monitoring bores constructed in the Coongulmerang (7 bores); Balook (2), Seaspray (1) and Latrobe Group (2) aquifers	Monthly
2	Groundwater quality - preconstruction	Groundwater aquifers within the Coongulmerang, Balook, and Seaspray Formations and in the Latrobe Group.	pH, salinity, dissolved metals, radionuclides, major cations and anions, nutrients at designated monitoring bores constructed in the Coongulmerang (7 bores); Balook (2), Seaspray (1) and Latrobe Group (2) aquifers	Quarterly
3	Groundwater levels in Coongulmerang and Balook Formations	Coongulmerang Formation, Balook Formation and groundwater dependent ecosystems	Twelve locations – to be agreed with requlators	Monthly
4	Groundwater quality in Coongulmerang and Balook Formations	Coongulmerang Formation, groundwater dependent ecosystems	pH, salinity, dissolved metals, radionuclides, major cations and anions, nutrients at designated monitoring bores constructed in the Coongulmerang (7 bores); Balook (5)	Quarterly
5	Water extraction from production bores accessing water from the Latrobe Group	Latrobe Group aquifer, existing groundwater users	Water extraction records	Daily
6	Groundwater levels in water supply bores drawing on the Latrobe Group	Latrobe Group aquifer, existing groundwater users	Groundwater levels in monitoring network at production borefield – minimum of 5 monitoring bores.	Continuous water level monitoring via data loggers

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#	Aspect to be monitored	Details of monitoring		
		Receptor	Monitoring points	Frequency
7	Water quality in water supply bores drawing on the Latrobe Group	Kalbar operations	pH, salinity, dissolved metals, radionuclides, major cations and anions at active production bores	Monthly monitoring of water discharge from borefield into the contingency water dam
~~8~~	~~Water levels surrounding off-path TSF~~	~~Coongulmerang Formation, groundwater dependent ecosystems~~	~~3 shallow groundwater monitoring bores surrounding TSF~~	~~Continuous via data loggers~~
9	Water quality ~~beneath off-path TSF,~~ contractor's work area and processing plant	Coongulmerang Formation	Water levels, pH, salinity, dissolved metals, radionuclides, major cations and anions, nutrients and hydrocarbons at 6 designated shallow groundwater monitoring bores ~~(including 3 at TSF)~~.	Quarterly
10	Water quality in process water dam	Coongulmerang Formation, groundwater dependent ecosystems	One designated sampling point	Monthly for first year reverting to quarterly if consistency is demonstrated
11	Effluent quality discharged from WWTP	Coongulmerang Formation	BOD5, suspended solids, E coli, and other parameters in discharged effluent, as specified in EPA works approval / licence ((if waste quantity triggers requirement for licensing under EP Act). ~~if quantity of waste triggers~~	As specified in ~~EPA works~~ approval ~~/ licence~~
12	Quantity of treated sewage effluent	Coongulmerang Formation	Discharge records at disposal points(if waste quantity triggers requirement for licensing under EP Act). ~~(if quantity of waste triggers licensing threshold)~~	As specified in ~~EPA works~~ approval ~~/ licence~~

10. Reporting

Table 10-1: Water quality and hydrology performance and compliance reporting

#	Aspect being reported	To whom will the information be reported? At what frequency?	How will the information be used?
1	Mitchell River flow rate - preconstruction	Internal quarterly reporting – Fingerboards management team.	Input to site water supply strategy and water balance.
2	Mitchell River water quality - preconstruction	Internal quarterly reporting – Fingerboards management team.	Input to future revisions of water risk management plan.
3	Perry River water quality - preconstruction	Internal quarterly reporting – Fingerboards management team.	Input to future revisions of water risk management plan.
4	On-site ephemeral catchments flow rate - preconstruction	Internal reporting (6-monthly) – Fingerboards design team.	Input to site drainage design and rehabilitation plan
5	On-site ephemeral catchments water quality - preconstruction	Internal reporting (6-monthly) – Fingerboards design team and environmental compliance team.	Input to site drainage design and future revisions of water risk management plan
6	On-site ephemeral catchments drainage line stability – visual evidence of gullying or other instability	Internal reporting (6-monthly) – Fingerboards design team.	Input to site drainage design
7	Mitchell River - water quality during construction, operations and active rehabilitation phases	Internal quarterly reporting – Fingerboards management team and Community Reference Group; annual reporting to ERR, EPA, other agencies	To demonstrate compliance with regulatory requirements; as input to future revisions of water risk management plan.
8	Mitchell River flow rates during construction, operations and active rehabilitation phases	Internal quarterly reporting – Fingerboards management team	Input to site water supply strategy and water balance.
9	Water extraction (winterfill) during construction, operations and active rehabilitation phases	Internal quarterly reporting – Fingerboards management team and Community Reference Group; annual reporting to ERR, EPA, other agencies	To demonstrate compliance with regulatory requirements; as input to water supply strategy and water balance.
10	Perry River water quality during construction, operations and active rehabilitation phases	Internal quarterly reporting – Fingerboards management team and Community Reference Group; annual reporting to ERR, EPA, other agencies	To demonstrate compliance with regulatory requirements; as input to future revisions of water risk management plan.
11	Onsite undisturbed catchments: water quality during construction, operations and active rehabilitation phases	Internal quarterly reporting – Fingerboards management team and Community Reference Group; annual reporting to ERR, EPA, other agencies	To demonstrate compliance with regulatory requirements; as input to future revisions of water risk management plan.

#	Aspect being reported	To whom will the information be reported? At what frequency?	How will the information be used?
12	Onsite undisturbed catchments water quality following significant rainfall events during construction, operations and active rehabilitation phases	Internal quarterly reporting – Fingerboards management team and Community Reference Group; annual reporting to ERR, EPA, other agencies	To demonstrate compliance with regulatory requirements; as input to future revisions of water risk management plan.
13	Water quality discharged from water storages	Internal reporting to Fingerboards senior management, SRW, EGCMA, EPA and other regulators within 48 hours of discharge event; if appropriate (major uncontrolled release), immediate notification to emergency response organisations and downstream communities.	To guide incident responses; compliance reporting
14	Water quality in mine contact water dams (prior to discharge event)	Fingerboards senior management, EPA and EGCMA – at least 48 hrs prior to planned discharge.	To guide incident responses; compliance reporting
15	Quantity of water in mine contact water dams	Internal quarterly reporting – Fingerboards management team; annual reporting to SRW on quantities of water intercepted and offset	To demonstrate compliance with regulatory requirements; ~~T~~to inform operational water management and planning; use for calibration of site hydrological modelling
16	Quantity and quality of water released from freshwater dam to Mitchell River	Monthly internal reporting – Fingerboards management team; annual reporting to SRW and EPA on quantities and quality of water intercepted and offset	To demonstrate compliance with regulatory requirements; ~~T~~to inform operational water management and planning; use for calibration of site hydrological modelling
~~16~~ 17	Sediment detention ponds – sediment accumulation	Internal 6-monthly reporting – Fingerboards management team	To inform drainage design; use to check modelled erosion predictions; to guide maintenance scheduling.
~~17~~ 18	Sediment detention ponds – water quality	Internal 6-monthly reporting – Fingerboards management team	To inform drainage design; use to check modelled water quality predictions; to inform water treatment procedures; to guide future revisions of risk management plan
~~18~~ 19	Structured observations to assess stability / health of waterways within / immediately adjacent to operational areas	2-yearly reporting to Fingerboards management team, Community Reference Group, ERR, EGCMA	Check on effectiveness of water management controls, input to future revisions of water risk management plan and miner rehabilitation plan

#	Aspect being reported	To whom will the information be reported? At what frequency?	How will the information be used?
~~19~~ 20	Groundwater levels - preconstruction	Six-monthly reporting to environmental permitting and compliance team.	Augment baseline groundwater hydrological knowledge; input to future revisions of water risk treatment plan.
~~20~~ 21	Groundwater quality - preconstruction	Six-monthly reporting to environmental permitting and compliance team.	Augment baseline groundwater hydrological knowledge; input to future revisions of water risk treatment plan.
~~21~~ 22	Groundwater levels in Coongulmerang and Balook Formations	Quarterly reporting to Fingerboards management team and Community Reference Group.	Inform mine planning; use to update site groundwater model, including predicted impact of in-pit tailings placement
~~22~~ 23	Groundwater quality in Coongulmerang and Balook Formations	Quarterly reporting to Fingerboards management team and Community Reference Group.	Inform mine planning; use to update site groundwater model, including predicted impact of in-pit tailings placement
~~23~~ 24	Water extraction from production bores accessing water from the Latrobe Group	Monthly reporting to Fingerboards management team; quarterly reporting to Community Reference Group; annual environmental compliance reports to regulators, including SRW.	To demonstrate compliance with licence conditions; to guide water management strategy.
~~24~~ 25	Groundwater levels in water supply bores drawing on the Latrobe Group	Monthly reporting to Fingerboards management team; quarterly reporting to Community Reference Group; annual environmental compliance reports to regulators, including SRW.	To demonstrate compliance with licence conditions; and to i~~I~~nform mine water planning; use to update site groundwater model
~~25~~ 26	Water quality in water supply bores drawing on the Latrobe Group	Quarterly reporting to Fingerboards processing manager; annual environmental compliance reports to regulators, including SRW.	To demonstrate compliance with licence conditions; and to ~~C~~confirm suitability of process water supply
~~26~~ 27	~~Water levels surrounding off-path TSF~~	~~Monthly reporting to Fingerboards management team; quarterly reporting to Community Reference Group; annual environmental compliance reports to regulators~~	~~Confirm integrity of TSF containment system; inform dam safety management.~~
~~27~~ 28	Water quality beneath ~~off-the~~path ~~TSF,~~ contractor's work area and processing plant	Quarterly reporting to Fingerboards management team; quarterly reporting to Community Reference Group; annual environmental compliance reports to regulators	~~Confirm integrity of TSF containment system~~Demonstrate compliance

#	Aspect being reported	To whom will the information be reported? At what frequency?	How will the information be used?
~~28~~ 29	Water quality in process water dam	Quarterly reporting to Fingerboards processing manager	Confirm suitability of process water supply
~~29~~ 30	~~Water quality in TSF~~	~~Quarterly reporting to Fingerboards processing manager~~	~~Confirm suitability of process water supply~~
~~30~~ 31	Effluent quality discharged from WWTP	Monthly reporting to environmental superintendent, maintenance manager; annual reporting to EPA (if waste quantity triggers requirement for licensing under EP Act).	Check adequate functioning of WWTP; inform maintenance schedule; demonstrate statutory compliance.
~~31~~ 32	Quantity of treated sewage effluent	Monthly reporting to environmental superintendent; annual reporting to EPA (if waste quantity triggers requirement for licensing under EP Act). .	~~demonstrate~~ To demonstrate statutory compliance.

Note 2: # may not appear in the table as risks have been removed with the removal of the TSF

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12. Kalbar reference documents

[To be completed when EMS is fully developed]

Table 12-1: Kalbar reference documents

#	Document
1	
2	
3	