



## Application for Licence Amendment

### Part V Division 3 of the *Environmental Protection Act 1986*

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<b>Licence Number</b>	L4762/1972/14
<b>Licence Holder</b>	Pilbara Iron Company (Servies) Pty Ltd
<b>ACN</b>	107 210 248
<b>File Number</b>	DER2013/001057-2
<b>Premises</b>	Greater Tom Price Iron Ore Mine  Legal description –  Mining tenements ML4SA, G47/1258, G47/1260, L47/161, L47/209, L47/210, L47/342, L47/552, L47/645, L47/668, L47/698, L47/721, G47/1271, L47/745, L47/824, L47/826, and L47/858.  MOUNT SHEILA WA 6751  As defined by the coordinates in Schedule 2.
<b>Date of Report</b>	28/11/2024 (FINAL)
<b>Decision</b>	Decision to grant licence amendment

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## 1. Decision summary

Licence L4762/1972/14 is held by Pilbara Iron Company (Services) Pty Ltd (licence holder) for the Greater Tom Price Iron Ore Mine (the Premises), located at mining lease ML4SA and tenements G47/1258, G47/1260, L47/161, L47/209, L47/210, L47/342, L47/552, L47/645, L47/668, L47/698, L47/721, G47/1271, L47/745, L47/824, L47/826 and L47/858, MOUNT SHEILA WA 6751.

This amendment report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, revised Licence L4762/1972/14 has been granted.

## 2. Scope of assessment

### 2.1 Regulatory framework

In completing the assessment documented in this amendment report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

### 2.2 Application summary

On 20 June 2024, the licence holder submitted an application to the department to amend Licence L4762/1972/14 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Inclusion of the operation of the Southeast Prongs (SEP) Waste Fines Storage Facility (WFSF) 'Part 2 – Decant Recovery Infrastructure' onto the licence that was approved and commissioned under W6409/2020/1 (Category 5);
- Proposed changes to the Site-Specific Trigger Values (SSTV) for the Beasley and Hardey River dewatering discharge water quality (Category 6);
- Relocate the Beasley River dewatering discharge point approximately 240 m north-west of its current location (Category 6);
- Increase the Category 64 design capacity from 8,000 tonnes per annual period to 8,500 tonnes, as a result of adding a new Class II inert landfill facility;
- Update Schedule 1: Figure 9 (Landfills) of the licence and update landfill facilities throughout the licence; and
- Administrative changes.

This amendment is limited only to changes to Categories 5, 6, and 64 activities from the existing Licence. No changes to the aspects of the existing Licence relating to Categories 12, 54 and 73 have been requested by the licence holder.

Table 1 below outlines the proposed changes to the existing Licence.

**Table 1: Proposed category changes**

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
Category 5: Processing or beneficiation of metallic or non-metallic ore	40,000,000 tonnes per annual period	No change	Amendment is related to inclusion of the 'Part 2 – Decant Recovery Infrastructure'.
Category 6: Mine dewatering	11,000,000 tonnes per annual period (Western Turner Syncline Stage 2-B1 and Section 17 Deposit) 7,300,000 tonnes per annual period (Western Turner Syncline Section 10 Deposit) 3,000,000 tonnes per annual period (South East Prongs Deposit)	No change	Amendment relates to changes to SSTVs for Hardey and Beasley Rivers and relocation of the Beasley River dewatering discharge point.
Category 12: Screening, etc. of material	10,000,000 tonnes per annual period	No change	No changes
Category 54: Sewage material	305 cubic metres per day	No change	No changes
Category 64: Class II putrescible landfill site	8,000 tonnes per annual period	Increase to 8,500 tonnes per annual period	Update to the figure of the location of the new landfill facilities within the Premises.
Category 73: Bulk storage of chemicals, etc.	2,250 cubic metres in aggregate	No change	No changes

### 2.2.1 Overview of proposed amendments

#### SEP WFSF 'Part 2 – Decant Recovery Infrastructure'

The SEP WFSF 'Part 2 – Decant Recovery Infrastructure' is currently in time limited operations (TLO) under works approval W6409/2020/1. The licence holder noted that Part 2 had already been added to the Licence erroneously during the last licence amendment granted on 02 March 2023. The department advised upon notification by the licence holder that this infrastructure would remain on the Licence and the licence holder would inform the department when Part 2 entered TLO and be reviewed as part of this licence amendment.

The department has reviewed the conditions relating to the 'Part 2 – Decant Recovery Infrastructure' and has determined no further information is required.

#### SSTVs proposed changes

Mine dewatering discharge to the Beasley River from Western Turner Syncline (WTS) B1 began in September 2014, with discharge to the Hardey River from WTS S10 following in November 2017. As per current conditions under the Licence L4762/1972/14, monthly water quality

monitoring has been undertaken from within and upstream of the river discharges. Results are then compared against SSTVs for a suite of parameters that are part of the monitoring program that commenced in 2015. The licence holder has indicated that in the last three years, exceedances of SSTVs (namely total dissolved solids, dissolved oxygen, and electrical conductivity) and has undertaken several investigations as part of Licence requirements.

Stantec Australia Pty Ltd (Stantec) undertook a review in May 2022 of the Hardey and Beasley River discharge water quality and the SSTVs, as well as a review of the environmental receptors and ecological values of both the rivers. Stantec (2022) identified a total of 20 listed species associated with inland water within a 50 km radius of the WTS Operation, of which 10 were migratory shorebirds that occasionally visited during seasonal migrations. The following threatened and priority species from the Beasley and Hardey Rivers were recorded:

- Fortescue grunter (*Leiopotherapon aheneus*) – Priority (P) 4 / Endangered
- Pilbara olive python (*Liasis olivaceus barroni*) – Vulnerable
- Pilbara pin damselfly (*Eurysticta collawanyah*) – Vulnerable
- Pilbara emerald damselfly (*Hemicordulia koomina*) – Vulnerable

Furthermore, two potential groundwater dependent vegetation (GDV) units and one semi-permanent/permanent pool, Donkey Pool have been recorded from the Beasley and Hardey Rivers nearby the WTS operations. Riparian vegetation units include tall open scrub comprising *Eucalyptus camaldulensis* subsp. *refulgens*, *E. victrix* woodland over *Acacia citrinoviridis* (EcEvAci) as well as tall shrubland with *E. victrix* scattered trees over *A. citrinoviridis* over *Triodia epactia* open hummock grassland and/or *\*Cenchrus ciliaris* open tussock grassland (EvAcITeCEc).

The Stantec 2022 review identified minor changes in discharge water quality from the WTS operation, with several parameters regularly exceeding the SSTVs, is unlikely to impact on the above environmental receptors at a regional scale. It is also considered unlikely to impact the environmental receptors at a local scale.

After Stantec reviewed and undertook statistical analysis of reference and regional site water quality datasets for both the Beasley and Hardey Rivers, the following key recommendations were provided to the licence holder:

1. It is recommended to increase the SSTVs for 10 parameters, including:
  - Electrical Conductivity, Total Suspended Solids, Total Nitrogen, Nitrite, Nitrate, Total Phosphorus, Cadmium, Cobalt, Copper and Chromium.
2. Conversely, it is proposed to maintain the existing SSTVs for 13 parameters, including:
  - pH, turbidity, Nitrate, Total Reactive Phosphorus, Arsenic, Boron, Barium, Molybdenum, Nickel, Lead, Silver, Uranium and Zinc.
3. It is also recommended that the SSTVs for 10 parameters are removed, including:
  - Dissolved Oxygen, temperature, Total Dissolved Solids, chlorophyll a, Nitrate, Aluminium, Iron, Mercury, Manganese, Selenium and Vanadium.

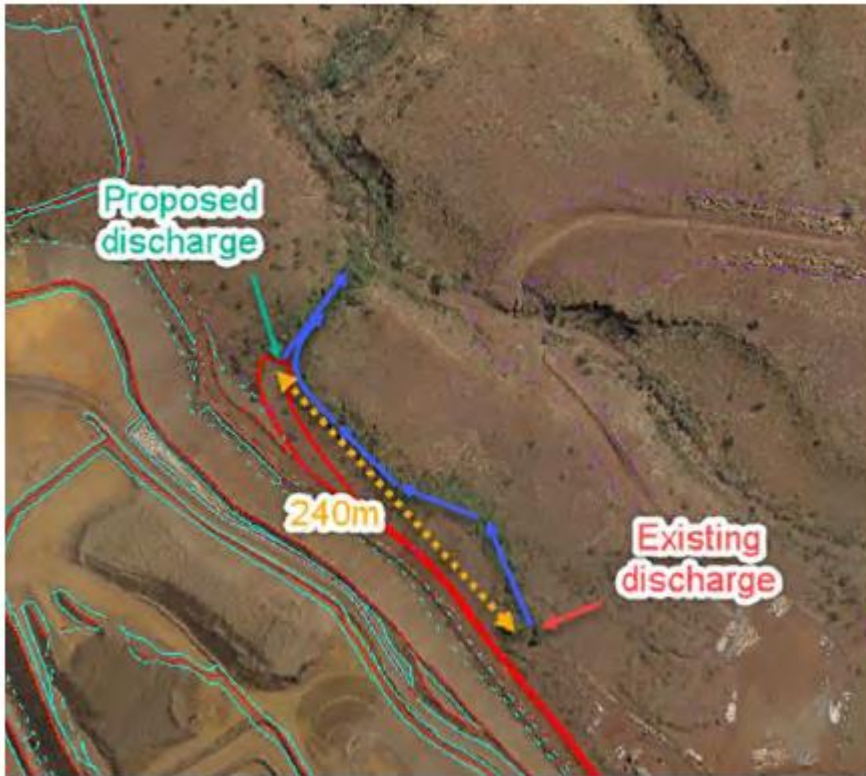
Further discussion on the proposed changes to the SSTVs are provided in section 3, as well as technical advice from the department's Contaminated Sites and River Sciences Branches.

### **Relocation of Beasley River discharge point (DP14B1001)**

The licence holder has indicated that as the WTS B1 pit continues to develop and the cutbacks progressed, the current location of the haul road needs to be moved to the east. The proposed location of the haul road will intercept the current Beasley River discharge point (DP14B1001). The licence holder is proposing to relocate this discharge point 240 m to the northwest, slightly upstream (Table 2 and Figure 1).

**Table 2: Relocation of Beasley River discharge point (DP14B1001)**

Discharge point	Easting	Northing
DP14B1001 (existing)	548,332.40	7,492,597.06
DP14B1001 (proposed relocation)	548,177.31	7,492,770.45

**Figure 1: Beasley River schematic relocation area**

The licence holder has indicated that the design and construction of the new discharge point will be as per the current conditions in the licence and other Rio Tinto internal standards. The licence holder does not anticipate a change to the wetting agent front due to the slight change in location and all discharge monitoring requirements will be as per the current licence conditions.

The department notes the proposed relocation of the Beasley River discharge point and has no objection to the relocation, where the risk assessment and operational controls imposed are still current for this proposed change. However, the department has included design and construction requirements under condition 5, Table 2 of the licence to ensure construction as per previous dewatering discharge points.

### **Increase Category 64 throughput capacity and construction of a new Class II inert landfill facility**

The licence holder has proposed an increase to the category 64 throughput capacity with the proposed construction of an additional Class II putrescible (inert) landfill within the S17 DP1 waste dump area. The additional landfill site will have an approximate throughput of 50 tonnes per annual period.

The landfill will be designed and constructed in accordance with the current licence conditions as well as the requirements under the *Environmental Protection (Rural Landfill) Regulations 2002*, which will be included as part of the licence amendment. The landfill will be totally encapsulated within the footprint of the WTS S17 DP1 waste dump area. The landfill design

involves a ‘trench and cell’ construction method and will have a depth of approximately 5 m and includes various cells to segregate waste types.

The landfill will only accept the following:

- Clean fill;
- Inert Type 1 waste (including conveyor belts, screen mats, concrete rubble and steel products);
- Inert Type 2 waste (including tyres and plastics);
- Putrescible waste (wooden packaging and pallets only);
- Special Waste Type 1; and
- Special Waste Type 2.

The landfill will operate as an inert landfill but has been classified as a ‘Class II putrescible landfill site’ to allow wooden packaging and pallets to be disposed, which are considered putrescible waste under the *Landfill Waste Classification and Waste Definition 1996 (as amended December 2019)*. Operational requirements will be in accordance with the licence conditions.

**Other administrative changes**

The licence holder has requested an administrative change to the requirements of monitoring data provided as part of the environmental reporting requirements under condition 23, Table 10. The licence holder has requested the proposed change and detailed in Table 3 (yellow highlighted text depicts the changes).

**Table 3: Requested administrative changes**

Table 10 licence condition reference	Proposed changes
Condition 15 Surface Water Monitoring Sites	The results to be provided to the CEO must include, but need not be limited to the following: <ul style="list-style-type: none"> <li>• the monitoring data presented graphically <b>only for those parameters resulting in exceedances</b></li> </ul>
Condition 15 Groundwater Monitoring Sites	
Condition 15 Dewatering Water Monitoring Sites – Beasley River	
Condition 15 Dewatering Water Monitoring Sites – Hardey River	

The department acknowledges the reasoning for the proposed change to Condition 23, Table 10 related to environmental reporting requirements and has no objection.

### 3. Department’s technical advice

**Contaminated Sites Branch**

Technical advice was sought from the department’s Principal Hydrogeologist on the proposed changes to SSTVs for a number of chemical constituents near the dewatering discharge areas in the Beasley River and Hardey River at the premises.

The Principal Hydrogeologist notes that the licence holder would like to increase the SSTVs for electrical conductivity, total suspended solids, ammonium-N, nitrate/nitrite-N, total phosphorus, cadmium, cobalt, copper and chromium. In addition, the licence holder has requested to remove SSTVs from the licence for dissolved oxygen, temperature, total dissolved solids, chlorophyll-a, aluminum, iron, mercury, manganese, selenium, and vanadium.

The Principal Hydrogeologist reviewed the methodology used by Stantec (2022) to calculate the SSTVs and determined that the methodology was generally consistent with that described in the Australian and New Zealand Guidelines (2018). Furthermore, Stantec has obtained a sufficient number of surface water samples to allow the 20<sup>th</sup> and 80<sup>th</sup> percentiles for the time-series dataset for the Hardey River and Beasley River to be determined with a 95% level of confidence.

However, it was noted that Stantec used a SSTV setting process that has an underlying assumption that the water quality data are approximately normally distributed. Though, this is not often the case for time-series surface water quality data that are collected from rivers that have highly variable flow rates, particularly when the sample size is less than about 50. These data sets tend to have a highly skewed distribution and are often better approximated by a log-normal distribution.

The Principal Hydrogeologist also assessed the water quality in the hyporheic zones in the Hardey River and Beasley River near the dewatering discharge areas. It is noted that the hyporheic zone is an area of saturated sediments beneath riverbeds that are an important habitat for macroinvertebrates that are rarely seen within the water column in rivers in the region. The Pilbara region is known to be a centre of biodiversity for hyporheic and other stygofauna (Eberhard *et al.* 2005).

Furthermore, the hyporheic zone plays a vital role in reducing concentrations of contaminants that are discharged to rivers from mine sites (Gandy *et al.* 2007) due to biochemical processes that can take place in sediments beneath the riverbeds. These processes can often alter the chemical composition of surface water in rivers downstream of mine sites and can adversely affect populations of hyporheic fauna.

Despite the potential importance of the interactions between surface and hyporheic water quality near mine sites, this issue has not been considered in the monitoring program near the dewatering discharge areas. Consequently, it is not currently known whether the long-term discharge of mine dewatering effluent has altered the hyporheic porewater and sediment quality downstream of the discharge areas, or whether these discharges have caused significant changes to the hyporheic fauna in the Beasley River and Hardey River.

The Principal Hydrogeologist considers that sediments beneath the riverbed in these areas may be accumulating significant amounts of iron sulfide minerals, mainly in the form of iron monosulfides. These minerals are also likely to contain significant amounts of metals derived from the discharge water. Porewater in the hyporheic zone in these areas is also likely to be accumulating significant levels of ammonium ions.

This situation is likely to change when dewatering ceases and the sulfide minerals oxidise. Hence, it would be important that the full suite of chemical parameters that is currently monitored near the dewatering discharge areas are continued to be monitored after dewatering ceases, and that no parameters are dropped from the monitoring program.

The following recommendations were provided:

- the licence holder should subject the time-series data for the water quality parameters that were used to calculate SSTVs to a Shapiro-Wilk test or similar statistical test. This is to confirm that the data are normally distributed with a high level of confidence.
- If this statistical test indicates that each water quality parameter is normally distributed with a high-level of confidence, then SSTVs that were calculated by Stantec can be used by the licence holder. However, if the parameters fail the Shapiro-Wilk test, it is recommended that the data is log-transformed and the normality of the distribution is rechecked using a Shapiro-Wilk test. If the log-transformed data are found to be normally distributed, these values should be used to recalculate the SSTVs. Otherwise, a non-parametric statistical methodology should be used to calculate SSTVs.
- the licence holder should install a hyporheic monitoring bore in the river sediments at



the surface water monitoring stations immediately upstream and downstream of both the Hardey River and Beasley River discharge points. This is due to a lack of information about the characteristics of the hyporheic zone near the dewatering discharge sites. Guidance on the construction and sampling of specialized hyporheic monitoring bores can be found in Dearden and Palumbo-Roe (2010).

- the licence holder should during construction of these bores, collect sediment samples for the analysis of acid volatile sulfur (AVS) and chromium-reducible sulfur content at each hyporheic monitoring site. As well as that the bores are sampled on at least a six-monthly basis for the same suite of chemical parameters that are measured in surface water samples. In addition, determine at least once in each of the bores the characteristics of the hyporheic fauna.
- the licence holder should not remove the SSTVs for the water quality parameters – dissolved oxygen, temperature, total dissolved solids, chlorophyll-a, aluminum, iron, mercury, manganese, selenium, and vanadium.

### River Sciences Branch

Technical advice was sought from the department's Principal Aquatic Ecologist on the proposed changes to SSTVs for a number of chemical constituents near the dewatering discharge areas in the Beasley River and Hardey River at the premises.

The Principal Aquatic Ecologist also reviewed the methodology used by Stantec (2022) to calculate the SSTVs and determined that the methodology was generally consistent with that described in ANZG (2018). In addition, Stantec obtaining a sufficient number of surface water samples to allow the 20<sup>th</sup> and 80<sup>th</sup> percentiles for the time-series dataset for the Hardey River and Beasley River to be determined with a 95% level of confidence.

The Principal Aquatic Ecologist notes that the representativeness of reference sites could not be assessed through the desktop analysis. Reference sites will ideally reflect the same characteristics as the discharge locations in terms of depositional nature, background water quality and biological receptors. In addition, the timing of monitoring is important, particularly in relation to discharge and natural water regime (noting that monitoring is largely conducted through the wet season). It is assumed that the assessment and the development of the monitoring program has factored in the above.

It is assumed that the water quality has not shown an upward trend overtime based on the comments provided by the Stantec (2022) memorandum as data was not presented over the life of the project. In addition, it is assumed biological communities have not changed over time and are similar between reference and impact sites as the data was not provided. If these assumptions are valid, the revised SSTVs will provide reasonable confidence that conditions are maintained and the environmental receptors are being supported. The licence holder should note that the relatively high hardness in the receiving environment is expected to reduce toxicity of some contaminants. However, this does not address the possible risk from accumulation (in environment or species).

The following should be considered by the licence holder:

- Ensure that biological monitoring data have not changed over time and long-term water quality trends are not showing an uptrend.
- Verify that no risk is posed to Bellary Creek (south) and Turee Creek (east, within the national park).
- The Principal Aquatic Ecologist agrees with the Principal Hydrogeologist's recommendation for an assessment of the hyporheic environment within the discharge zone (fauna and water quality). It is required to understand loads to know the risk of future impacts whether due to accumulation or post-dewatering.

- Recommendations for future environmental reporting:
  - Map displaying all monitoring sites, discharge locations and the footprint of mining activities to understand diffuse risks.
  - All water quality data provided in graphs by analyte to show trends over the entire life of the project with SSTVs identified.
- Recommendations for the following parameters (new values in bold):
  - TSS - Hardey **6.6** and Beasley **16** – not 16 for both
  - NOx – Hardey **0.55** and Beasley 0.04 (current) – not 0.55 for both
  - Cd – Hardey 0.0002 (current) and Beasley **0.0004** – not 0.0004 for both
  - Co – Hardey 0.001 (current) and Beasley **0.005** – not 0.005 for both
  - Cu – Hardey **0.0024** and Beasley 0.0018 (current) – not 0.0024 for both
  - Cr – Hardey 0.001 (current) and Beasley **0.0025** – not 0.0025 for both

### 3.1 Part IV of the EP Act

The licence holder has stated the following:

*“Development of the Tom Price mine was approved under the Iron Ore (Hamersley Range) Agreement Act 1963 and operations commenced in 1966, prior to the establishment of the EP Act. As such, no environmental approvals under Part IV of the EP Act or specific environmental conditions (other than those under the Agreement Act) have been applied to the Tom Price mine since operations commenced (the SEP WFSF is located at Tom Price mine).”*

The Western Turner Syncline Iron Ore Project – Revised Proposal was assessed by the Environmental Protection Authority (EPA) and approved under Ministerial Statement (MS) 1031 (and EPA report 1565). The proposed landfill, and Beasley River dewatering discharge are within the MS 1031 development envelope.

Condition 5 relates to riparian vegetation (flora and vegetation) in particular, maintaining the health of riparian vegetation of the Beasley and Hardey River Systems.

Table 2 of MS 1031 authorises the physical and operation elements of the revised proposal, and requires, for surplus dewater management, that *“disposal through controlled dewater discharge to:*

- *Beasley River. The wetting front to extend no further than 20 km downstream of the designated discharge point under natural no-flow conditions.*
- *Hardey River. The wetting front to extend no further than 15 km downstream of the designated discharge point under natural no-flow conditions.”*

Rehabilitation and decommissioning are also regulated by Condition 6 of MS 1031.

Requirements of MS 1031 are not re-assessed in this amendment report and are not duplicated as conditions in the existing Licence.

### 3.2 Contaminated Sites Act 2003 (CS Act) and Per-and poly-fluoroalkyl substances (PFAS)

The southern portion of the premises has been classified under the CS Act as ‘*Possibly contaminated – investigation required*’ in 2017. In addition, the presence of PFAS in surface water and groundwater has been identified in 2019. The department’s Contaminated Sites Branch are yet to update accordingly the site classification details for this area within the premises.

The premises is intersected by the Hardey River in the northern portion and the Beasley River near the northern portion of the premises, which are deemed as environmental sensitive

receptors. The northern part of a Priority one public drinking water source area, the Paraburdoo Water Reserve is located in the southern portion of the premises.

The licence amendment application was referred internally to the department's Contaminated Sites Branch (CSB). As part of the advice provided for this amendment application, CSB also noted that previously in 2019, PFAS was identified in surface water and groundwater at elevated levels against the PFAS National Environmental Management Plan (NEMP) guidelines for drinking water and non-potable groundwater use guidelines (HEPA 2020).

To date, two large groups of PFAS compounds, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), are listed as persistent organic pollutants under the Stockholm Convention, while a third, perfluorohexane sulfonate PFHxS, has been nominated as it meets the screening criteria for persistence, bioaccumulation, potential for long range environmental transport, and evidence for adverse impacts (HEPA 2020).

Given the presence of PFAS identified within part of the premises, CSB recommends that the licence holder conducts periodic sampling for PFAS at the discharge monitoring locations to surface water to confirm the presence or absence of PFAS.

The department has included periodic spot sampling requirements for PFAS at the dewatering outlets in condition 15 on the licence (annual frequency).

## 4. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020a).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

### 4.1 Source-pathways and receptors

#### 4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this amendment report are detailed in Table 4 below. Table 4 also details the proposed control measures the licence holder has proposed to assist in controlling these emissions, where necessary.

**Table 4: Licence holder controls**

Sources / Activities	Emission	Potential pathways	Proposed controls
<b>Construction</b>			
<b>Category 6 – Mine dewatering</b>			
Construction of WTS B1 dewatering discharge point (DP14B1001)	Dust	Air / windborne pathway	<ul style="list-style-type: none"> <li>the potential dust impact to nearby vegetation is low, thus no further risk assessment will be undertaken as the previous risk assessment is still valid.</li> </ul>
<b>Category 64 – Class II inert landfill</b>			

Sources / Activities	Emission	Potential pathways	Proposed controls
Construction of Class II inert landfill facility	Dust	Air / windborne pathway	<ul style="list-style-type: none"> <li>the potential dust impact to nearby vegetation is low being located within the S17 DP1 waste dump area;</li> <li>there are no other nearby sensitive receptors, thus no further risk assessment will be undertaken as the previous risk assessment is still valid;</li> <li>landfill construction requirements in accordance with the <i>Environmental Protection (Rural Landfill) Regulations 2002</i> will be added to the licence; and</li> <li>existing conditions under licence L4762/1972/14 applies.</li> </ul>
<b>Operation</b>			
<b>Category 5 – SEP WFSF: decant recovery structure</b>			
Runoff from exposed potential acid-forming (PAF) lithologies in the pit walls	Acid mine drainage (AMD)	Surface water runoff and leaching	<ul style="list-style-type: none"> <li>tailings must be filled to 670 mRL or higher to cover exposed PAF lithologies;</li> <li>operation of the acid water treatment plant (AWTP) to add alkalinity to decant water; and</li> <li>existing conditions under licence L4762/1972/14 applies.</li> </ul>
Tailings deposition within the WFSF	Tailings	Seepage from the WFSF	<ul style="list-style-type: none"> <li>decant water recovered from the WFSF at a rate of 60 L/s during deposition so that water level in the pit is below the groundwater rebound level for most of operations;</li> <li>operation of the AWTP to improve pond quality during deposition;</li> <li>tailings must be filled to 670 mRL or higher to cover exposed PAF lithologies; and</li> <li>undertake groundwater monitoring regime as per existing conditions under licence L4762/1972/14.</li> </ul>
Operation of tailings decant return pipelines	Spillage of tailings through leaks, pipeline ruptures or failure	Direct discharges to land and infiltration to soil	<ul style="list-style-type: none"> <li>maintain and operate pipeline from the SEP WFSF to the AWTP;</li> <li>maintain bunded pipeline corridor as required;</li> <li>maintain suitably sized sumps in</li> </ul>

Sources / Activities	Emission	Potential pathways	Proposed controls
			<p>low areas along the pipeline routes to contain spillages;</p> <ul style="list-style-type: none"> <li>• maintain and operate new flowmeter installed on the pipe between Decant Pump Units and Transfer Station;</li> <li>• maintain and operate existing flowmeters installed at the discharge of AWTP pumps and at the Buffer Tank;</li> <li>• undertake routine inspection of pipeline infrastructure to identify small or potential leaks; and</li> <li>• existing conditions under licence L4762/1972/14 applies.</li> </ul>
Overtopping	Pond water Tailings material	Direct discharges to land and infiltration to soil	<ul style="list-style-type: none"> <li>• maintain the freeboard adequately to store a 1:100 year, 72-hour rainfall event;</li> <li>• contain inflows from a 1:100-year Annual Exceedance Probability;</li> <li>• maintain and operate decant pumping at 60 L/s or more;</li> <li>• undertake routine inspections to monitor tailings and supernatant water levels; and</li> <li>• existing conditions under licence L4762/1972/14 applies.</li> </ul>
<b>Category 6 – Mine dewatering</b>			
Operation of WTS B1 dewatering discharge point (DP14B1001)	Mine dewatering water	Direct discharges to land and infiltration to soil	<ul style="list-style-type: none"> <li>• existing conditions under licence L4762/1972/14 applies and the previous risk assessment remains unchanged.</li> </ul>
<b>Category 64 – Class II inert landfill</b>			
Increased throughput of the burial of Class II inert type wastes	Contaminated stormwater	Surface water runoff	<ul style="list-style-type: none"> <li>• maintain and operate recycling and general waste collection areas and labelled with the relevant waste type to facilitate the management of waste;</li> <li>• total landfill waste must not exceed 8,500 tonnes per annual period;</li> <li>• only accept approved types of waste;</li> <li>• include and maintain a sign which</li> </ul>

Sources / Activities	Emission	Potential pathways	Proposed controls
			<p>clearly defines what waste is accepted;</p> <ul style="list-style-type: none"> <li>• surface water management structures (i.e. bunding) must divert surface water away from landfill facilities; and</li> <li>• existing conditions under licence L4762/1972/14 for waste dump landfills applies.</li> </ul>
	Leachate	Seepage from the facility	<p>Same operational controls as those listed above, and including the following:</p> <ul style="list-style-type: none"> <li>• located so that vertical distance between the waste and the highest seasonal and expected post mining ground water level is no less than 3 m;</li> <li>• maintain location as more than 100 m from any permanent or perennial watercourse; and</li> <li>• existing conditions under licence L4762/1972/14 for waste dump landfills applies.</li> </ul>
	Windblown waste	Air / windborne pathway	<p>Same operational controls as those listed above, including the following:</p> <ul style="list-style-type: none"> <li>• waste in the tipping area must be covered with a dense (at least 200 mm), inert and incombustible material at final landform design; and</li> <li>• existing conditions under licence L4762/1972/14 for waste dump landfills applies.</li> </ul>

#### 4.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020a), the Delegated Officer has excluded employees, visitors and contractors of the licence holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 5 below provides a summary of potential human and environmental receptors that may be impacted because of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020a)).

**Table 5: Sensitive human and environmental receptors and distance from prescribed activity**

Human receptors	Distance from prescribed activity
Tom Price town	Is approximately 700 m north of the Premises, however, is 7.2 km north-east of the SEP WFSF.
Environmental receptors	Distance from prescribed activity
Threatened and/or priority flora	<p>The nearest <i>Eucalyptus victrix</i> communities to the SEP WFSF decant recovery infrastructure have been recorded more than 3 km from the existing pit.</p> <p>The nearest Priority flora to the SEP WFSF, <i>Indigofera ixocarpa</i> (P2), <i>Sida</i> sp. Barlee Range (P3), <i>Eremophila magnifica</i> subsp. <i>Magnifica</i> (P4) and <i>Lepidium catapycnon</i> (P4) have been recorded more than 450 m from the existing pit.</p> <p>There is no threatened flora within a 5 km radius of the proposed inert landfill. The nearest Priority flora to the landfill are:</p> <ul style="list-style-type: none"> <li>• <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) P1 – 1.45km to the south;</li> <li>• <i>Indigofera rivularis</i> P3 – 1.45km to the north-west; and</li> <li>• <i>Goodenia</i> sp. East Pilbara (A.A. Mitchell PRP 727) P3 – 2.6km to the east.</li> </ul>
Threatened and/or priority fauna	<p>There are no records of threatened or priority fauna within the footprint of the proposed landfill. The closest records are as follows:</p> <ul style="list-style-type: none"> <li>• Western Pebble-mound mouse – 1 km to the southeast;</li> <li>• Northern Quoll – 2.4 km to the south;</li> <li>• Ghost Bat – 3.2 km to the southeast;</li> <li>• Pilbara Leaf-nosed Bat – 4.9 km to the northwest; and</li> <li>• Pilbara Olive Python – 4.9 km to the northwest.</li> </ul> <p>The landfill footprint is not located within any of the above species critical habitat.</p>
Public Drinking Water Source Area (PDWSA)	The SEP WFSF decant recovery infrastructure is located within the Priority 1, Paraburdoo Water Reserve. Drinking water borefields are located more than 10 km from the potential impact site. The proposed landfill is 29 km east of the PDWSA.
Groundwater and Surface Water Areas	<p>SEP WFSF decant recovery infrastructure and landfill are located within the Proclaimed Pilbara Groundwater and Surface Water Areas.</p> <p>Hardey River – 3.4 km to the south-east of the landfill.</p> <p>Beasley River – 12 km to the north-west of the landfill.</p>
Native vegetation	Within the premises boundary.

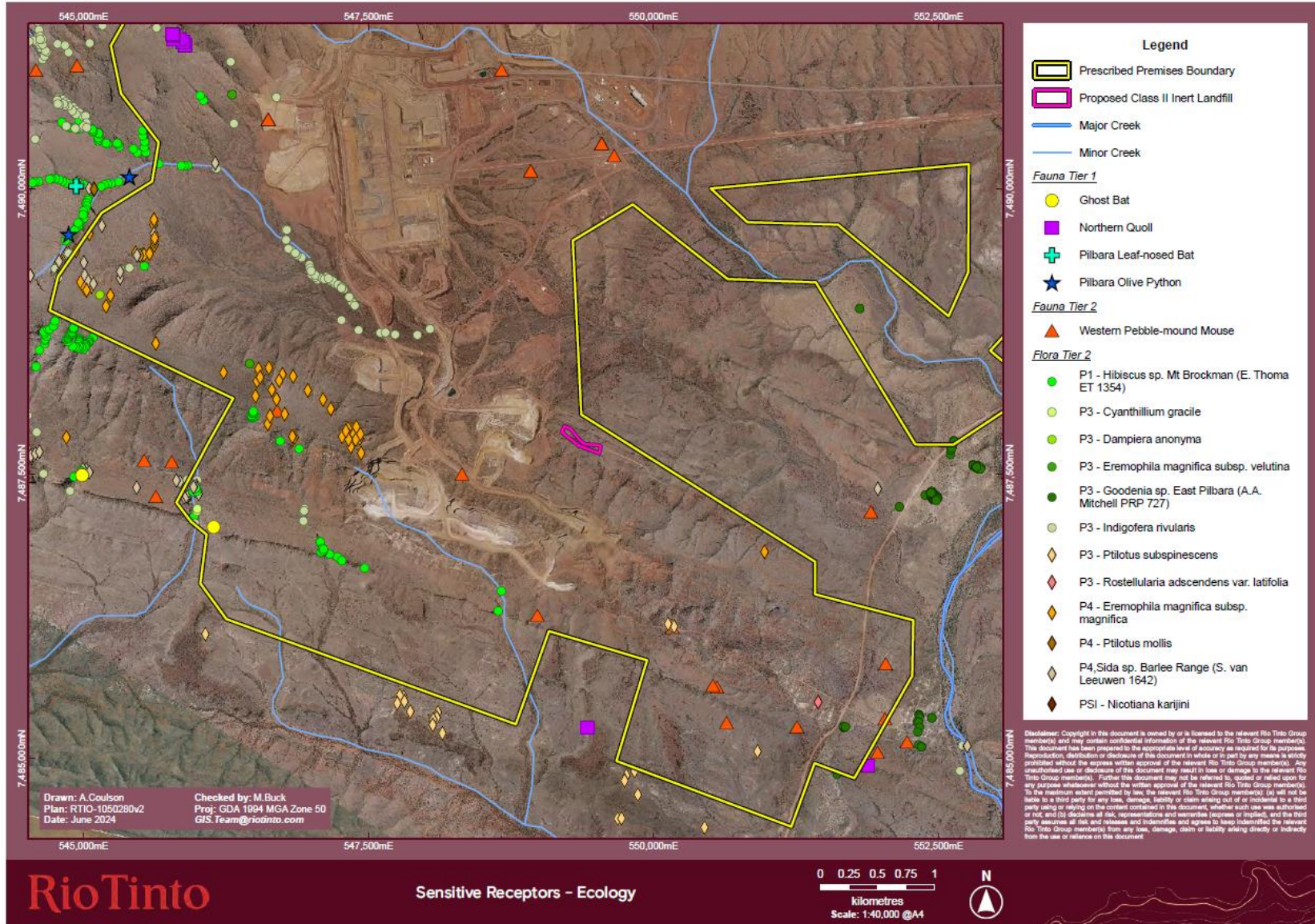


Figure 2: Distance to sensitive receptors

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## 4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 4.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the licence holder has proposed mitigation measures/controls (as detailed in Section 4.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the licence holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the Licence as regulatory controls.

Additional regulatory controls may be imposed where the licence holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 6.

The revised Licence L4762/1972/14 that accompanies this amendment report authorises emissions associated with the operation of the Premises.

The conditions in the revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

**Table 6. Risk assessment of potential emissions and discharges from the Premises during operation**

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
<b>Construction</b>								
<b>Category 6 – Relocation of dewatering discharge point</b>								
Construction of WTS B1 dewatering discharge point (DP14B1001)	Dust	Air / windborne causing impact to nearby health	Nearby vegetation	Refer to section 4.1	C = Slight L = Rare <b>Low Risk</b>	Yes	N/A	N/A
<b>Category 64 – Class II inert landfill</b>								
Construction of Class II inert landfill facility	Dust	Air / windborne causing impact to nearby health	Nearby vegetation	Refer to section 4.1	C = Slight L = Rare <b>Low Risk</b>	Yes	Conditions 5 and 6 – relates to the construction and design requirements to reduce dust generation.  Previous construction requirements have been included onto the licence.	N/A
<b>Operation</b>								
<b>Category 5 – SEP WFSF: decant recovery structure</b>								
Runoff from exposed potential PAF lithologies in the pit walls	AMD	Surface water runoff and leaching resulting in the potential contamination of groundwater by metals and other toxic inorganic constituents	Surface water Groundwater	Refer to section 4.1	C = Minor L = Likely <b>Medium Risk</b>	Yes	Conditions 9 and 10 – relates to infrastructure and equipment requirements to assist in managing potential AMD emissions.  Condition 11 – relates to authorised discharge points including surface water and tailings emissions.  Condition 15 – monitoring of emissions and discharges.  Conditions 22 and 23 – related to reporting requirements that includes	N/A

Licence: L4762/1972/14

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
							volume of tailings discharged and water recovered at the SEP WFSF.	
Tailings deposition within the WFSF	Tailings	Seepage from the WFSF potentially contaminating the soil and impacting on the quality of groundwater	Soil Groundwater	Refer to section 4.1	C = Moderate L = Possible <b>Medium Risk</b>	Yes	Conditions 9 and 10 – relates to infrastructure and equipment requirements to assist in reducing and managing tailings seepage. Condition 11 – relates to authorised discharge points including surface water and tailings emissions. Condition 15 – monitoring of emissions and discharges. Conditions 22 and 23 – related to reporting requirements that includes volume of tailings discharged and water recovered at the SEP WFSF.	N/A
Operation of tailings decant return pipelines	Spilling of tailings through leaks, pipeline ruptures or failure	Direct discharges to land and infiltration to soil resulting in potential contamination	Soil Nearby vegetation	Refer to section 4.1	C = Minor L = Unlikely <b>Medium Risk</b>	Yes	Conditions 9 and 10 – relates to infrastructure and equipment requirements to prevent and manage tailings discharge to land and infiltration to soil. Condition 11 – relates to authorised discharge points including surface water and tailings emissions. Condition 15 – monitoring of emissions and discharges. Conditions 22 and 23 – related to reporting requirements that includes volume of tailings discharged and water recovered at the SEP WFSF.	N/A

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
Overtopping	Pond water Tailings	Direct discharges to land and infiltration to soil resulting in contamination and vegetation decline	Soil Nearby vegetation	Refer to section 4.1	C = Moderate L = Rare <b>Medium Risk</b>	Yes	Conditions 9 and 10 – relates to infrastructure and equipment requirements to prevent and manage pond water and tailings discharge to land and infiltration to soil. Condition 11 – relates to authorised discharge points including surface water and tailings emissions. Condition 15 – monitoring of emissions and discharges. Conditions 22 and 23 – related to reporting requirements that includes volume of tailings discharged and water recovered at the SEP WFSF.	N/A
<b>Category 6 – Relocation of dewatering discharge point</b>								
Operation of WTS B1 dewatering discharge point (DP14B1001)	Mine dewatering water	Direct discharges to land and infiltration to soil resulting in contamination and vegetation decline	Soil Nearby vegetation	Refer to section 4.1	C = Minor L = Rare <b>Low Risk</b>	Yes	Conditions 9 and 10 – relates to infrastructure and equipment requirements including for dewatering discharges to flow through a gabion outlet. Condition 11 – relates to authorised discharge points including surface water and tailings emissions. Condition 15 – monitoring of emissions and discharges. Conditions 22 and 23 – related to reporting requirements that includes results from dewatering water monitoring sites.	N/A
<b>Category 64 – Class II inert landfill</b>								
Burial of Class II inert type wastes	Contaminated stormwater	Surface water runoff causing potential	Surface water	Refer to section 4.1	C = Minor	Yes	Condition 13 – relates to waste processing provisions, including	N/A

Licence: L4762/1972/14

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence holder's controls				
		impacts to surface water sources			L = Unlikely <b>Medium Risk</b>		stormwater management requirements.	
	Leachate	Seepage from the facility causing potential impacts to quality of groundwater and / or soil	Soil Groundwater	Refer to section 4.1	C = Minor L = Unlikely <b>Medium Risk</b>	Yes	Conditions 13 – relates to waste processing provisions and includes requirements to ensure no waste within 100 m of any surface water body at the site and 3 m of the highest level of the water table aquifer.	<b>Conditions 22 and 23</b> – related to reporting requirements that includes recording total volume of waste disposed of in all landfill facilities.
	Windblown waste	Air / windborne pathway causing impacts to surface water / groundwater and / or native vegetation	Surface water Groundwater Nearby vegetation	Refer to section 4.1	C = Slight L = Unlikely <b>Low Risk</b>	Yes	Conditions 13 – relates to waste processing provisions and includes requirements to manage waste and ensure no windblown waste occurs. Condition 14 – relates to landfill cover requirements to reduce the occurrence of windblown waste.	<b>Conditions 22 and 23</b> – related to reporting requirements that includes recording total volume of waste disposed of in all landfill facilities.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020a).

Note 2: Proposed licence holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

## 5. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

**Table 7: Consultation**

Consultation method	Comments received	Department response
Licence holder was provided with draft amendment on 16 September 2024	Refer to Appendix 1 for the licence holder's comments.	Refer to Appendix 1 for the department's response.

## 6. Conclusion

Based on the assessment in this amendment report, the Delegated Officer has determined that a revised licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

### 6.1 Summary of amendments

Table 8 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the revised licence as part of the amendment process.

**Table 8: Summary of licence amendments**

Condition no.	Proposed amendments
-	Updated figure numbers throughout the document.
Cover page	Inclusion of 'date of issue' and 'legal description' wording.
Licence history	Inclusion of this amendment application and the proposed changes.
Subheading	Removal of 'conditions' from 'General conditions'.
1, Table 1	Inclusion of categories 6, 54, and 64 to the table.
5 to 8, Table 2	Changed condition and Table numbers, previously 7 to 10 and Table 3. Changed heading to 'Infrastructure design and construction requirements'. Inclusion of additional design and construction requirements for 'Class II putrescible (inert) landfill facility' and 'WTS B1 dewatering discharge point (DP14B1001)'. In addition, inclusion of reporting requirements for the additional infrastructure to construct.
7	Inclusion of 'Class II putrescible (inert) landfill facility' to submit an environmental compliance report once construction has been completed. Updated terminology.
9 and 10, Table 3	Changed condition and Table numbers, previously 5 and 6 and Table 2. See Appendix 1 also.
10	Updated terminology.
13, Table 6	Inclusion of 'Class II putrescible (inert) landfill facility' waste processing requirements to the table.
14, Table 7	Updated terminology.

Condition no.	Proposed amendments
20 (previously 24)	Updated condition to standard condition wording to include 'the works conducted in accordance with conditions 5 and 6 of this licence'. Updated condition numbers.
21 (previously 25)	Updated condition numbers
22 (previously 20)	Updated condition to standard condition wording.
23 (previously 21), Table 10	<p>Updated condition to standard condition wording.</p> <p>Changed heading to 'Environmental reporting requirements'.</p> <p>Amended the following sentence 'the monitoring data present graphically' to include 'only for those parameters resulting in exceedances'.</p> <p>Updated condition numbers.</p> <p>Inclusion of condition 13 requirement "<i>record of the total volumes of waste disposed of in all landfill facilities.</i>"</p> <p>Updated reference to water quality guidelines with the current ANZG 2018 guidelines.</p>
24 and 25 (previously 22 and 23)	<p>Updated condition numbers.</p> <p>Updated reference to water quality guidelines with the current ANZG 2018 guidelines.</p>
Definitions, Table 11	Updated definitions in the table.
Figure 10	New figure added for the additional inert landfill at S17 DP1 waste dump area.
Schedule 3	Inclusion of the 'Class II putrescible (inert) landfill facility'.

## References

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3. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
5. DWER 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
6. Eberhard, S.M., Halse, S.A. and Humphreys, W.F., 2005. Stygofauna in the Pilbara region, north-west Western Australia: a review. *Journal of the Royal Society of Western Australia*, **88**, 167-176.
7. Gandy, C.J., Smith, J.W.N. and Jarvis, A.P., 2007. Attenuation of mining-derived pollutants in the hyporheic zone: A review. *Science of the Total Environment*, **373**, 435-446.
8. Heads of EPA Australia and New Zealand (HEPA) 2020, *PFAS National Environmental Management Plan Version 2.0 (NEMP)*, Australia and New Zealand.
9. Stantec Australia Pty Ltd (Stantec) 2022, *Hardey and Beasley River Discharge – Water Quality and Specific Guideline Values Review, Memorandum*, 21 September 2022. Unpublished report for Rio Tinto Iron Ore.



## Appendix 1: Summary of licence holder's comments on risk assessment and draft conditions

Condition	Summary of licence holder's comment	Department's response
<b>Licence – licence holder comments</b>		
Condition 10 – Table 3	<p>Site Infrastructure – 'SEP WFSF including tailings delivery pipeline, droppers, decant pump and decant return pipeline'.</p> <p>The licence holder requests the rate of recovery be amended to reflect the expected operational rate of recovery (45-60 L/s), as specified in the Works Approval Application.</p> <p><i>Decant water recovered at a <del>minimum rate of 60L/s</del> rate of 45-60 L/s during tailings deposition, with volumes recorded.</i></p>	The department has made the change to the decant water recovery rate.
Figure 1: Map of the boundary of the prescribed premises	<p><i>Figure 1: L4762/1972/14 – Prescribed Premise Boundary – Mount Tom Price and Western Turner Syncline</i></p> <p>The licence holder has provided an updated map of the Prescribed Premise boundary (Attachment 3) to remove the Tom Price Town WWTP which is not subject to L4762/1972/14.</p>	The department has updated Figure 1 with the new figure from the licence holder.
<b>Amendment Report – department requests / comments</b>		
<p>Section 2.2.1 Overview of proposed amendments</p> <p><b>The department requested to provide the full name of the vegetation units.</b></p>	<p>The licence holder has requested that the text <i>Riparian vegetation units EcEvAci and EvAciTeCEc</i> be changed to <i>Riparian vegetation units include tall open scrub comprising Eucalyptus camaldulensis subsp. refulgens, Eucalyptus victrix woodland over Acacia citrinoviridis (EcEvAci) as well as tall shrubland with E. victrix scattered trees over Acacia citrinoviridis over Triodia epactia open hummock grassland and / or *Cenchrus ciliaris open tussock grassland (EvAciTeCEc).</i></p>	The department has updated the wording for the vegetation units in this section of the report.

Condition	Summary of licence holder's comment	Department's response
<p>Section 3 Department's technical advice</p> <p><b>The department requested the licence holder to review the Principal Hydrogeologist's recommendations to ensure whether further statistical analysis of the SSTVs confirms the values provided can be used on the licence or recalculated SSTVs are to be used.</b></p> <p><b>The department requested the licence holder to also note/consider the Principal Aquatic Ecologist's considerations and recommendations.</b></p>	<p><b>Department's Contaminated Site Branch advice:</b></p> <p><i>The licence holder should subject the time-series data for the water quality parameters that were used to calculate SSTVs to a Shapiro-Wilk test or similar statistical test. This is to confirm that the data are normally distributed with a high level of confidence.</i></p> <p><i>If this statistical test indicates that each water quality parameter is normally distributed with a high-level of confidence, then SSTVs that were calculated by Stantec can be used by the licence holder. However, if the parameters fail the Shapiro-Wilk test, it is recommended that the data is log-transformed and the normality of the distribution is rechecked using a Shapiro-Wilk test. If the log-transformed data are found to be normally distributed, these values should be used to recalculate the SSTVs. Otherwise, a non-parametric statistical methodology should be used to calculate SSTVs.</i></p> <p><b>Licence holder response:</b></p> <p>The licence holder acknowledges the Principal Hydrogeologist's recommendations and provides the following responses:</p> <p>To confirm that the data are normally distributed, the licence holder removed water quality outliers (&lt; or &gt; than 4 standard deviations from the mean for each parameter) from each of the datasets as per ANZG 2018 Guidance. Additional statistical testing was not considered to be required.</p> <p>The licence holder has a high degree of confidence that each of the water quality parameters that were used to calculate SSTVs is normally distributed and the calculated SSTVs can be used.</p>	<p>The department notes the licence holder's response and has amended the SSTVs based on the proposed SSTVs provided as part of this amendment application and the suggested changes the department's River Sciences Branch has recommended to several parameters.</p>
	<p><b>Department's Contaminated Site Branch advice:</b></p> <p><i>The licence holder should install a hyporheic monitoring bore in the river sediments at the surface water monitoring stations immediately upstream and downstream of both the Hardey River and Beasley River discharge points. This is due to a lack of information about the characteristics of the hyporheic zone near the dewatering discharge sites. Guidance on the construction and sampling of specialized hyporheic monitoring bores can be found in Dearden and Palumbo-Roe (2010).</i></p> <p><i>The licence holder should during construction of these bores, collect sediment samples for the analysis of acid volatile sulfur (AVS) and chromium-reducible sulfur content at each hyporheic monitoring site. As well as that the bores are sampled on at least a six-monthly basis for the same suite of chemical parameters that are measured in surface water samples. In addition, determine at least once in each of the bores the characteristics of the hyporheic fauna.</i></p> <p><b>Licence holder response:</b></p> <p>A detailed assessment of aquatic fauna, including hyporheic fauna within the Hardey River and Beasley River was undertaken as part of the Western Turner Syncline Iron Ore Project Environmental Review (2015). The assessment included water quality analysis and baseline sampling of aquatic fauna (fish, micro-, macro- and hyporheic invertebrates) to determine potential</p>	<p>The department has reviewed the licence holder's explanation to not install a hyporheic monitoring bore, collect sediment samples and undertaking monitoring.</p> <p>The department deems the response as acceptable to not undertake the Contaminated Site Branch's recommendations.</p>

Condition	Summary of licence holder's comment	Department's response
	<p>impacts from dewatering (to access ore deposits below the water table) and discharging excess water to the ecology of the receiving creeklines. The results are contained within the <i>Western Turner Syncline Baseline Aquatic Fauna &amp; Water Quality Surveys 2011-2013</i> (Wetland Research &amp; Management (WRM) 2014), attached to the Western Turner Syncline Iron Ore Project Environmental Review document, which was assessed and approved via the Report and Recommendations of the Environmental Protection Authority (Report 1565), April 2016 and Ministerial statement 1031, June 2016.</p> <p>In summary; a combined total of 451 macro- micro- and hyporheic invertebrate species, and 7 fish species were recorded during the baseline surveys (April 2011 to August 2013). The majority were common species with widespread distributions throughout Australia, including the Pilbara.</p> <p>A combined total of 115 taxa were hyporheic species, recorded from hyporheic zones (appropriate substrate types likely to support hyporheic fauna). None are listed for conservation significant. There were, however a number of species of interest.</p> <p>The majority (73%) of taxa collected were classified as stygoxene, <i>i.e.</i> do not have specialised adaptations for groundwater habitats however one obligate stygobite (groundwater species) was recorded during the baseline surveys; the ostracod <i>Candonopsis tenuis</i>. <i>C. tenuis</i> has been recorded widely across Australia, including the Pilbara.</p> <p>Three copepod species considered to be occasional hyporheic stygophiles (9%) were collected; <i>Diacyclops scanloni</i>, <i>Microcyclops varicans</i> and <i>Mesocyclops brooksi</i>. <i>D. scanloni</i> (recorded from the western channel of the Beasley River) is a possible Pilbara endemic and appears to be a stygophile only from more arid parts of Western Australia. <i>M. varicans</i> (commonly recorded across both upstream and downstream sites in the Beasley River, and in the downstream reach of the Hardey River) has been collected widely from hyporheic zones in the Pilbara, as well as surface and groundwater environments. <i>M. brooksi</i> (infrequently recorded in Beasley River) is an Australian endemic, collected widely from surface waters in the south west of Western Australia and appears to be a stygophile only from more arid parts of Western Australia.</p> <p>The larvae of many species of marsh beetles (Scirtidae) are also known to be hyporheic. Scirtid larvae occurred widely in the Beasley and Hardey Rivers, in both upstream and downstream reaches.</p> <p>The assessment concluded that aquatic faunal communities within the Hardey and Beasley Rivers are well represented by communities in other similar regional reference creeks and as such, the distribution and conservation status of aquatic fauna species is unlikely to be influenced by dewatering or discharge. Given the detailed assessment of aquatic fauna, including hyporheic fauna, within the upstream and downstream reaches of the Hardey and Beasley Rivers already undertaken, and the negligible risk to hyporheic fauna determined, the License holder considers that additional hyporheic monitoring is not required.</p>	

Condition	Summary of licence holder's comment	Department's response
	<p><b>Department's Contaminated Site Branch advice:</b></p> <p><i>The licence holder should not remove the SSTVs for the water quality parameters – dissolved oxygen, temperature, total dissolved solids, chlorophyll-a, aluminium, iron, mercury, manganese, selenium, and vanadium.</i></p> <p><b>Licence holder response:</b></p> <p>The licence holder has no objection to the inclusion of SSTV's for the water quality parameters – dissolved oxygen, temperature, total dissolved solids, chlorophyll-a, aluminium, iron, mercury, manganese, selenium, and vanadium.</p>	<p>The department will retain the water quality parameters that were originally requested by the licence holder to remove.</p>
	<p><b>Department's Contaminated Site Branch advice:</b></p> <p><i>Given the presence of PFAS identified within part of the premises, CSB recommends that the licence holder conducts periodic sampling for PFAS at the discharge monitoring locations to surface water to confirm the presence or absence of PFAS.</i></p> <p><b>Licence holder response:</b></p> <p>PFAS (and other high-risk compound) sampling is determined by assessment against a risk assessment. The licence holder tests regularly for PFAS at locations that are determined high risk, including our licensed drinking water supply sites, results are compared against the Australian Drinking Water Guidelines (ADWG), and any exceedances reported as per the requirements of our MOU with the Department of Health (DoH). We also provide quarterly reports and an annual report to the DoH detailing PFAS sampling across all licensed drinking water supply sites. However, the risk of PFAS at Western Turner Syncline is considered low given the age of the operation (compared to the nearby Tom Price Mine; operations commenced at Tom Price in the 1960s and the associated risk of PFAS is considered to be elevated). As such, the licence holder considers that additional sampling for PFAS at the discharge monitoring locations is not required.</p>	<p>The department has reviewed the licence holder's response to not include PFAS groundwater monitoring and has accepted that PFAS is not to be included as part of the groundwater monitoring requirements.</p>
	<p><b>Department's River Sciences Branch advice:</b></p> <p><i>Ensure that biological monitoring data have not changed over time and long-term water quality trends are not showing an uptrend.</i></p> <p><b>Licence holder response:</b></p> <p>The licence holder acknowledges the Principal Aquatic Ecologist's recommendations and provides the following responses:</p> <p>Under Ministerial Statement 1031, Rio Tinto is required to undertake monitoring in accordance with the approved Western Turner Syncline Riparian Vegetation Environmental Management Plan, to detect potential impacts to the health of riparian vegetation. As per the most recent Annual Compliance Assessment Report for <i>Ministerial Statement 1031: Western Turner Syncline Iron Ore</i></p>	<p>The department acknowledges that under Ministerial Statement (MS)1031 monitoring is undertaken to detect potential impacts to the health of riparian vegetation. The licence holder noted that in the recent Annual Compliance Assessment Report no impacts to vegetation from dewatering discharge was evident.</p> <p>Furthermore, Stantec (2022a &amp; b) reviewed monitoring data and</p>

Condition	Summary of licence holder's comment	Department's response
	<p><i>Project – Revised Proposal</i>, riparian vegetation monitoring along the Hardey and Beasley rivers found no evidence of discharge affecting vegetation condition. Stantec (2022a), utilising previous monitoring data, demonstrated that the existing discharge water quality is not adversely impacting aquatic biota. The diversity within the Hardey and Beasley Rivers has generally been comparable to the reference sites upstream, as well as sites downstream of the discharge extents. There has also been higher diversity recorded from within the discharge extents in some instances (WRM 2019a; b). In addition, a review of Specific Guideline Values for discharge water quality in the Beasley and Hardey rivers there were no cumulative trends in the discharge water over time for EC, TSS, TN, N-NH4, N-NOx, TP, Cd, Co, Cu and Cr (Stantec 2022b).</p>	<p>identified that the discharge water quality is not negatively affecting the aquatic biota, and the SSTVs reviewed indicated there were no cumulative trends in the discharged water over time.</p> <p>The department therefore accepts that the licence holder is undertaking the relevant monitoring to the long-term data is indicating the water quality is not showing an upward trend or adverse impacts to aquatic biota and riparian vegetation.</p> <p>The department will continue to review the Annual Audit Compliance Report and Environmental Report to ensure the monitoring data shows no adverse impacts to vegetation and aquatic biota and upward trends of water quality.</p>
	<p><b>Department's River Sciences Branch advice:</b></p> <p><i>Verify that no risk is posed to Bellary Creek (south) and Turee Creek (east, within the National Park).</i></p> <p><b>License holder response:</b></p> <p>A detailed assessment of discharge within the Hardey River (and Beasley River) was undertaken as part of the Western Turner Syncline Iron Ore Project Environmental Review (2015). The licence holder modelled the surface water extents from the maximum discharge scenarios. Based on model results, the maximum wetting front within the Hardey River for discharge of 7.3 GL/a would not extend further than 15 km downstream (under natural no-flow conditions) and would not reach Bellary Creek.</p> <p>Similarly, discharge to a tributary of the Beasley River would not extend further than 20 km downstream under natural no-flow conditions and would not reach Turee Creek. Astron (2024) reported that the discharge extent within the Hardey River is contained to the upper section of the river and does not extend further than 12 km downstream, the discharge extent within the Beasley River is confined within the Beasley discharge creek and does not extend further than 9 km downstream. As such, the License holders considers that risks to Bellary Creek and Turee Creek are</p>	<p>The department notes that previous modelling on surface water extents from maximum discharge scenarios indicates the discharge water wouldn't reach Bellary Creek nor Turee Creek. It was also confirmed in 2024 that the discharge extent is no further than 12 km downstream within the Hardey River and no further than 9 km downstream within the Beasley River.</p> <p>The department also notes that under MS 1031, dewatering discharge to the Beasley River can extend no further than 20 km downstream and for the Hardey</p>

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	<p>low.</p>	<p>River to extend no further than 15 km downstream.</p> <p>The department considers the licence holder's justification as acceptable and that a low risk is posed to Bellary Creek and Turee Creek from dewatering discharge activities.</p>
	<p><b>Department's River Sciences Branch advice:</b></p> <p><i>The Principal Aquatic Ecologist agrees with the Principal Hydrogeologist's recommendation for an assessment of the hyporheic environment within the discharge zone (fauna and water quality). It is required to understand loads to know the risk of future impacts whether due to accumulation or post-dewatering.</i></p> <p><b>License holder response:</b></p> <p>This is addressed in the above comment provided in response to the Principal Hydrogeologist's recommendations.</p>	<p>Refer to the above department response.</p>
	<p><b>Department's River Sciences Branch advice:</b></p> <p><i>Recommendations for future environmental reporting:</i></p> <ul style="list-style-type: none"> <li>• <i>Map displaying all monitoring sites, discharge locations and the footprint of mining activities to understand diffuse risks.</i></li> <li>• <i>All water quality data provided in graphs by analyte to show trends over the entire life of the project with SSTVs identified.</i></li> </ul> <p><b>License holder response:</b></p> <p>The requested map/s showing all monitoring sites, discharge locations and the footprint of mining activities are provided in Licence L4762.</p> <p>The licence holder has no objection to the provision of water quality data in graphs by analyte to show trends over the life of the Project, however, we note that the intensive volume of data collected generates a large number of graphs that do not effectively communicate significant trends. The licence holder instead requests to provide water quality data in graphs by analyte <i>for those parameters where SSTVs were exceeded during the reporting period.</i></p>	<p>The department notes several figures are already provided in the licence, Schedule 1 maps for all monitoring sites, discharge locations and the footprint of mining activities.</p> <p>The department acknowledges that only graphs for parameters where SSTVs are exceeded should be presented in the annual Environmental Report. The department has amended the following dot point under Table 10 related to condition 15 dewatering water monitoring site;</p> <p><i>"the monitoring data presented graphically only for those parameters resulting in exceedances of SSTVs"</i></p>

Condition	Summary of licence holder's comment	Department's response
	<p><b>Department's River Sciences Branch advice:</b></p> <p>Recommendations for the following parameters (new values in bold):</p> <ul style="list-style-type: none"> <li>• TSS - Hardey <b>6.6</b> and Beasley <b>16</b> – not 16 for both</li> <li>• NOx – Hardey <b>0.55</b> and Beasley 0.04 (current) – not 0.55 for both</li> <li>• Cd – Hardey 0.0002 (current) and Beasley <b>0.0004</b> – not 0.0004 for both</li> <li>• Co – Hardey 0.001 (current) and Beasley <b>0.005</b> – not 0.005 for both</li> <li>• Cu – Hardey <b>0.0024</b> and Beasley 0.0018 (current) – not 0.0024 for both</li> <li>• Cr – Hardey 0.001 (current) and Beasley <b>0.0025</b> – not 0.0025 for both</li> </ul> <p><b>License holder response:</b></p> <p>The licence holder has no objection to the values proposed for TSS, NOx, Cd, Co and Cr. However, the licence holder requests the following values for Cu: Hardey 0.0018 mg/L (current) and Beasley 0.0024 mg/L. The licence holder suspects this may have been an error but provides the following rationale nonetheless: the 80<sup>th</sup>-tile values for the Hardey and Beasley Rivers are 0.0013 mg/L and 0.0024 mg/L respectively. As such, 0.0018 mg/L is an appropriate SSTV for Cu within the Hardey River (whose waters are from the same catchment as the Beasley River).</p>	<p>(blue highlighted text depicts the changes)</p> <p>The department has amended the parameters that the department's River Sciences Branch's recommendations for several parameters.</p>