



<b>Licence Number</b>	L4762/1972/14
<b>Licensee</b>	Pilbara Iron (Services) Pty Ltd
<b>ACN</b>	35 107 210 248
<b>File Number:</b>	DER2013/001057
<b>Prescribed Premises:</b>	Category 5: Processing of beneficiation of metallic or non-metallic ore; Category 6: Mine dewatering; Category 12: Screening, etc. of material; Category 54: Sewage facility; Category 64: Class II putrescible landfill site; Category 73: Bulk storage of chemicals, etc.
<b>Premises</b>	Greater Tom Price Iron Ore Mine Mining tenement AML70/4 sections 1-7, 10, 13, 232 – 235, 258, L47/136, L47/209, L47/210, L47/342, L47/645, AG70/3, and G47/1258 within coordinates: E542850 N7491490; E548350 N7488660; E580100 N7475190; E584500 N7483800  MOUNT SHEILA WA 6751
<b>Date of Amendment</b>	<b>17 October 2017</b>

## Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the Environmental Protection Act 1986 as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act and follows.

Date signed: 17 October 2017

**Alana Kidd**

**MANAGER LICENSING**

**REGULATORY SERVICES (ENVIRONMENT)**

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

## Definitions and interpretation

### Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

**Table 1: Definitions**

Term	Definition
ACN	Australian Company Number
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 <a href="mailto:info-der@dwer.wa.gov.au">info-der@dwer.wa.gov.au</a>
DWER	Department of Water and Environment Regulation
Decision Report	refers to this document
Delegated Officer	an officer under section 20 of the EP Act
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
ha	Hectares
km	Kilometres
LWCWD	Landfill Waste Classification and Waste Definitions 1996
Licensee	Pilbara Iron Company (Services) Pty Ltd
Minister	Minister for Environment
m	Metres
m <sup>3</sup>	Cubic metres
MTP	Mount Tom Price (includes the South East Prongs Pit)
MS	Ministerial Statement
Noise Regulations	Environmental Protection (Noise) Regulations 1997 (WA)

Occupier	has the same meaning given to that term under the EP Act.
%ile	percentile
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.
Risk Event	as described in Guidance Statement: Risk Assessment
RIWI Act	Rights in Water Irrigation Act 1914
tpa	Tonnes per annum
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
WTS	Western Turner Syncline

## Department of Water and Environmental Regulation

As of 1 July 2017, the Department of Environmental Regulation (DER), the Office of the Environmental Protection Authority and the Department of Water amalgamated to form the Department of Water and Environmental Regulation (DWER), see <https://publicsector.wa.gov.au/public-administration/machinery-government/2017-machinery-government-changes> for further details.

### Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

This notice is limited only to an amendment for Categories 6, 64 and 73. No changes to the aspects of the original Licence relating to Categories 5, 12 or 54 have been requested by the Licensee. In addition, other administrative amendments have been requested.

The following guidance statements have informed the decision made on this amendment:

- *Guidance Statement: Risk Assessment (February 2017)*; and
- *Guidance Statement: Environmental Siting (November 2016)*.

### Amendment description

On 10 March 2017, Pilbara Iron Company (Services) Pty Ltd (Licensee) submitted an application for an amendment to the Greater Tom Price Mine Licence (L4762/1972/14). The licence amendment application relates to the following:

1. Increase in the Category 64 design capacity by 2000 tonnes per annum (tpa) due to the construction and operation of the Western Turner Syncline B1 putrescible landfill within the WTS B1 Waste Dump Landfill footprint.
2. Increase in the Category 6 design capacity by 7,300,000 tpa due to the proposed construction and operation of the Western Turner Syncline Section 10 discharge point.
3. Reduction in the Category 73 design capacity to 1546 cubic metres (m<sup>3</sup>) in aggregate due to the removal offsite of old storage tanks that are no longer required.
4. Amendment to the Prescribed Premises boundary to include tenure at Western Turner Syncline for future mining areas and the Western Turner Syncline Section 10 discharge point.
5. Inclusion of the Western Turner Syncline B1 waste dump landfill revised polygon in Attachment 9 to incorporate a slight expansion to the area.
6. Correction of the listing of tailings dam bore BH2 which has been incorrectly listed as BH5 in Table 2 of the Licence and Attachment 7.

During the assessment process, the Licensee also requested that the monitoring parameters for the WTS S2 discharge be reduced. This is due to the provision of an updated Water Quality Management Plan in accordance with IR1 of condition 27 of the licence.

Table 2 below outlines the proposed changes to the Licence.

**Table 2: Proposed design or throughput capacity changes**

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
6	14,000,000 tonnes per annual period (11,000,000 tonnes per annual period for Western Turner Syncline and 3,000,000 per annual period for South East Prongs Deposit)	21,300,000 tonnes per annual period (18,300,000 tonnes per annual period for Western Turner Syncline and 3,000,000 tonnes per annual period for South East Prongs Deposit)	Increase in the Category 6 design capacity by 7,300,000 tpa due to the installation of the Western Turner Syncline Section 10 discharge point
64	6 000 tonnes per annual period	8 000 tonnes per annual period	Increase in the Category 64 design capacity by 2000 tpa due to the addition of the Western Turner Syncline B1 putrescible landfill
73	4 532 cubic metres in aggregate	1546 cubic metres in aggregate	Reduction in the Category 73 design capacity to 1546 m <sup>3</sup> in aggregate due to removal offsite of old storage tanks that are no longer required

## Other approvals

The Licensee has provided the following information relating to other approvals as outlined in Table 3.

**Table 3: Relevant approvals**

Legislation	Number	Approval
Part IV of the Environmental Protection Act 1986	MS 1031 granted 23 June 2016 (amalgamates and supersedes MS 801 and 946)	Western Turner Syncline Iron Ore Project – Revised Proposal. The Western Turner Syncline Project involves the development of open-pit mining of iron ore deposits above and below the groundwater table, and the construction/operation of associated infrastructure
Iron Ore (Hamersley Range) Agreement Act 1963	ML4SA	The majority of the Premises is located on ML4SA granted in 1965
Mining Act 1978	AML 70/4, L47/136, L47/209, L47/210, L47/342, L47/645, AG70/3 and G47/1258	Some infrastructure associated with WTS is located on a number of Miscellaneous Licences and General Purpose Leases that were granted under the Mining Act 1978

## Amendment history

Table 4 provides the amendment history for L4762/1972/14.

**Table 4: Licence amendments**

Instrument	Issued	Amendment
L4762/1972/14	21/04/2016	<ul style="list-style-type: none"> <li>Increased design capacity for Category 5 to 40,000,000 tpa;</li> <li>Inclusion of Category 12 (design capacity 10,000,000 tpa) and Licence condition L1;</li> <li>Inclusion of WDL1 and WDL2 (now WTS B1 and WTS B2) and a capacity increase for existing Category 64 to 6,000 tpa (from 4,000 tpa);</li> <li>Amendment to condition L27 (previously L16) to include improvement requirements IR1 – IR3 relating to the Greater Tom Price Tailings Storage Facility (TSF), the Section 6 Pit and the MOC and Beneficiation Plant WWTPs;</li> <li>Removal of previous conditions 1, 2, 4, 7, 8, 9, 10, 16 – 20, 25, 37 and 38;</li> <li>Updated premises maps; and</li> <li>Administrative changes.</li> </ul>
L4762/1972/14	17/10/2017	<ul style="list-style-type: none"> <li>Increased design capacity for Category 6;</li> <li>Inclusion of the WTS S10 dewatering outfall discharge point;</li> <li>Increased design capacity for Category 64;</li> <li>Decreased design capacity for Category 73</li> <li>Reduction in the monitoring parameters of the WTS S2 discharge;</li> <li>Construction and operation of the WTS B1 putrescible landfill; and</li> <li>Other administrative changes.</li> </ul>

## Location and receptors

Table 5 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the construction and operation of the WTS S10 dewatering outfall and the WTS B1 putrescible landfill.

**Table 5: Receptors and distance from activity boundary**

Residential and sensitive premises	Distance from WTS S10 Dewatering Outfall	Distance from WTS B1 Landfill
P4 Priority Fauna (mammals)	More than 15 km downstream of discharge	350 m south-west
Protected Migratory Birds	More than 15 km downstream of discharge	-

Table 6 below lists the relevant groundwater and water sources within the vicinity of the Prescribed Premises which may be receptors relevant to the construction and operation of the WTS S10 dewatering outfall and the WTS B1 putrescible landfill.

**Table 6: Receptors and distance from activity boundary**

Groundwater and Water Source	Distance from WTS S10 Dewatering Outfall	Distance from WTS B1 Landfill
Pilbara Surface Water Area proclaimed under the Rights in Water and Irrigation Act 1914 (RIWI Act)	Site within the designated area	Site within the designated area
Pilbara Groundwater Area proclaimed under the RIWI Act	Site within the designated area	Site within the designated area
Minor non-perennial watercourses	Outfall located on tributary of the Hardey River. Confluence with Hardey River located approximately 5 km downstream of the discharge	-
Groundwater - TDS 500-600 mg/L (RTIO-HSE-0267297)	50-80 m below ground level within the WTS S10 deposit (RTIO-HSE-0304904)	More than 50 m below ground level (RTIO-HSE-0305682)

Table 7 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the construction and operation of the WTS S10 dewatering outfall and the WTS B1 putrescible landfill.

**Table 7: Environmental receptors and distance from activity boundary**

Environmental receptors	Distance from WTS S10 Dewatering Outfall	Distance from WTS B1 Landfill
Tom Price Town Site	17 km east	33 km east
Tom Price Tourist Park	16 km east	31 km east
Rocklea Pastoral Station Homestead (Pastoral Lease held by Licensee)	More than 20 km south	More than 20 km south

## Risk assessment

Tables 8 and 9 below describe the Risk Events associated with the construction and operation of the WTS S10 dewatering discharge point and the WTS B1 putrescible landfill consistent with the Guidance Statement: Risk Assessments (DER, 2017). Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

**Table 8: Risk assessment for proposed amendments during construction**

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
<b>Cat 64 Putrescible Landfill</b>	Construction of the WTS B1 Putrescible landfill and minor expansion of the WTS B1 waste dump landfill	<b>Dust:</b> Associated with construction of putrescible landfill	No residents or sensitive receptors in close proximity	<b>Air:</b> Particulate matter (dust)	Health and amenity impacts	Slight	Rare	Low	Clearing will be conducted on previously disturbed areas located on top of an existing waste dump. The closest sensitive receptor is located at the Rocklea Pastoral Station Homestead approximately 20 km from the WTS B1 putrescible landfill. The Delegated Officer notes the lack of sensitive receptors and has determined that there is a low risk of dust impacts.
		<b>Noise:</b> associated with construction of putrescible landfill	No residents or sensitive receptors in close proximity	<b>Air:</b> Noise generated through the operation of equipment and earthworks	Health and amenity impacts	Slight	Rare	Low	The closest sensitive receptor is located at the Rocklea Pastoral Station Homestead approximately 20 km from the WTS B1 putrescible landfill. The Delegated Officer notes the lack of sensitive receptors and has determined that there is a low risk of noise impacts.
		<b>Waste:</b> associated with leaks and spills of hydrocarbons	Soils and surface water systems	Direct discharge/runoff during rainfall events	Localised contamination of soils and/or contamination of surface water systems	Slight	Rare	Low	No hydrocarbons storage will be required for the construction of the WTS B1 landfill (RTIO-HSE-0305682). The only potential hydrocarbon leaks will be from machinery tanks. The Delegated Officer has determined that there is low risk of leaks and spills of hydrocarbons.
<b>Cat 6 Mine dewatering</b>	Construction of WTS S10 dewatering discharge outlet	<b>Dust:</b> Associated with construction of dewatering discharge outlet and pipeline	No residents or sensitive receptors in close proximity	<b>Air:</b> Particulate matter (dust)	Health and amenity impacts	Slight	Rare	Low	The closest sensitive receptor is located at Tom Price Tourist Park approximately 16 km from the WTS S10 outlet and pipeline. The Delegated Officer notes the lack of sensitive receptors and has determined that there is a low risk of dust impacts.



		<p><b>Noise:</b> Associated with construction of dewatering discharge outlet and pipeline</p>	No residents or sensitive receptors in close proximity	<p><b>Air:</b> Noise generated through the operation of equipment and earthworks</p>	Health and amenity impacts	Slight	Rare	Low	The closest sensitive receptor is located at Tom Price Tourist Park approximately 16 kilometres from the WTS S10 outlet and pipeline. The Delegated Officer notes the lack of sensitive receptors and has determined that there is a low risk of noise impacts.
		<p><b>Waste:</b> Associated with leaks and spills of hydrocarbons</p>	Soils and surface water systems	Direct discharge	Localised contamination of soils	Slight	Unlikely	Low	All small quantities of hydrocarbons will be “ <i>stored in purpose built dangerous good cabinets and/or on bunded pallets</i> ” (RTIO-HSE-0304904). Noting that only small quantities of hydrocarbons will be stored, the Delegated Officer considers the consequence to be <b>slight</b> and the likelihood to be <b>unlikely</b> . The Delegated Officer considers the risk of spills of hydrocarbons to be <b>low</b> .

**Table 9: Risk assessment for proposed amendments during operation**

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
Cat 64 Putrescible landfill	Operation of WTS B1 putrescible landfill trenches	<b>Dust:</b> Associated with stockpiled cover material, vehicle movement and covering activities	No residents or sensitive receptors in close proximity	<b>Air:</b> Particulate matter (dust)	Health and amenity impacts	Slight	Rare	Low	The closest sensitive receptor is located at the Rocklea Pastoral Station Homestead approximately 20 km from the WTS B1 putrescible landfill. The Delegated Officer notes the lack of sensitive receptors and has determined that there is a low risk of dust impacts.
		<b>Noise:</b> Associated with vehicular movement and covering activities	No residents or sensitive receptors in close proximity	<b>Air:</b> Noise generated through the operation of equipment	Health and amenity impacts	Slight	Rare	Low	The closest sensitive receptor is located at the Rocklea Pastoral Station Homestead approximately 20 km from the WTS B1 putrescible landfill. The Delegated Officer notes the lack of sensitive receptors and has determined that there is a low risk of noise impacts.
		<b>Waste:</b> Windblown waste	No residents or sensitive receptors in close proximity. No priority fauna within 1 km of the landfill	<b>Air:</b> Windblown waste and deposition outside of landfill cells	Aesthetic impacts	Slight	Rare	Low	The Licensee is to construct a 2.2 m high fence around the facility. The waste will be covered on a weekly basis (RTIO-HSE-0305682). The Delegated Officer notes the lack of sensitive receptors and that priority fauna are located more than 350 m from the landfill and has determined that there is a low risk of windblown waste impacts.
Cat 64 Putrescible landfill	Operation of WTS B1 Putrescible landfill trenches	<b>Waste:</b> Contaminated stormwater associated with contact with deposited waste	Surface water systems	<b>Land and waters:</b> Contaminated stormwater	Contamination of stormwater potentially impacting on surface water systems	Slight	Rare	Low	The Licensee has proposed to construct earthen bunds surrounding the perimeter of the facility (except the entry). These earthen bunds are to prevent the ingress of stormwater (RTIO-HSE-0305682). Additionally, a

								<p>“rollover bund will be constructed to prevent surface water entering the trench” (RTIO-HSE-0305682)</p> <p>Noting the Licensee’s controls, the Delegated Officer considers the consequence to be <b>slight</b> (minimal on-site impact) and the likelihood <b>rare</b> (may only occur in exceptional circumstances). The Delegated Officer therefore considers the overall risk of stormwater contamination to be <b>low</b>.</p>	
		<p><b>Waste:</b> Seepage of leachate due to putrescible waste /special waste type 2 decomposition and contact with precipitation</p>	Groundwater	<p><b>Waters:</b> underlying groundwater</p>	Impacts to groundwater quality	Slight	Unlikely	Low	<p>Noting the depth to groundwater &gt;50 m, the low volumes of waste to be disposed (2000 tonnes per annum) and the low potential for leachate generation due to the arid environment, the Delegated Officer considers the consequence to be <b>slight</b> (minimal on-site impacts) and the likelihood <b>unlikely</b> (will probably not occur in most circumstances). The Delegated Officer therefore considers the overall risk of seepage of leachate to be <b>low</b>.</p>
		<p><b>Waste:</b> Associated with seepage, leaks and spills of hydrocarbons during operation</p>	Surrounding soils	Direct discharge	Localised contamination of soils	N/A	N/A	N/A	<p>Hydrocarbons are not required for the landfill operation (RTIO-HSE-0305682).</p>

Cat 6 Mine dewatering	Dewatering discharge to Hardey River system (including receiving tributary)	<b>Waste:</b> Ruptured dewatering pipeline resulting in uncontrolled discharge to the environment	Riparian vegetation and surface water system alongside path of pipeline	Direct discharge	Erosion and impact to riparian vegetation	Slight	Unlikely	Low	Refer to detailed risk assessment below.
		<b>Waste:</b> Surplus dewatering discharge	Hardey River system (including receiving tributary)	Direct discharge	Erosion to the immediate areas of the dewater discharge point.  Impact upon riparian vegetation	Minor	Rare	Low	Refer to detailed risk assessment below.
			Macroinvertebrates, microinvertebrates and hyporheic invertebrates of the Hardey River system (including receiving tributary)	Direct discharge to surface water	Disruption of natural duration and magnitude of flow impacting invertebrate ecosystems	N/A	N/A	N/A	Changes in hydrological processes have been assessed under Part IV of the EP Act. This is regulated through MS 1031.
			Aquatic ecosystems and terrestrial fauna	Direct discharge	Loss of intolerant invertebrates due to discharge water quality. Elevated metals and nutrient-rich conditions leading to eutrophication	Major	Possible	High	Refer to detailed risk assessment below.

## Detailed Risk Assessment WTS Stage 1 S10 (WTS S10) Dewatering Discharge – Ruptured Dewatering Pipeline

Uncontrolled dewatering discharge causing erosion to the banks of the tributary of the Hardey River.

### Identification and general characterisation of emission

Maximum of 7,300,000 tpa of dewatering discharge through the pipeline. Dewatering is required to develop the Western Turner Syncline Stage 1 Section 10 Hub which consists of the MME (eastern section) and S10 BRK pits, MME (western section) and S10 BRK pits, and the MMW pit.

### Description of potential adverse impact from the emission

Erosion of the river bank from the uncontrolled dewatering discharge causing an impact to riparian vegetation in the immediate vicinity of the rupture and possible increased sedimentation in the watercourse.

**Key finding:** The Delegated Officer has reviewed the information regarding dewatering discharges to surface waters and has found:

1. Total dewater discharge volumes approved under MS 1031 are 7,300,000 tonnes per annum.
2. The protection of riparian ecosystems along the Hardey River system is regulated under Part IV, via MS 1031.
3. Rupture of the dewatering pipeline is not regulated under Part IV of the EP Act.

### Criteria for assessment

The Licensee has developed Site Specific Trigger Values (SSTV's) documented in the Interim Operational Guidelines for Dewatering Discharges (WRM, 2015) which have been derived from baseline water quality data for the creek systems. ANZECC 2000 for assessing inland surface waters for water quality and turbidity levels associated with increased sedimentation.

### Licensee's proposed controls

The majority of the pipeline is located within the pit area and adjacent to the existing haul road which is highly disturbed. *“Water volumes and water pressure of the pipeline can be monitored in real time through the use of telemetry and will allow for early detection of a pipeline failure” (RTIO-HSE-0307189).*

### Consequence

The Delegated Officer notes that the immediate area around the majority of the pipeline is highly disturbed and does not contain any threatened or priority flora. Any on-site impacts to riparian vegetation are likely to be low level. As such, the Delegated Officer considers the consequence of erosion impacts due to the uncontrolled dewatering discharge through a rupture of the pipeline to be **slight**.

### Likelihood of consequence

Noting the Licensee's controls to detect leaks, the Delegated Officer has determined that erosion due to a rupture of the dewatering pipeline will not occur in most circumstances. As such, the Delegated Officer considers the likelihood of the risk event occurring to be **unlikely**.

## Overall rating of dewater discharges to surface water

The Delegated Officer has compared the consequence and likelihood ratings described above with the Risk Rating Matrix (DER, 2017) and determined that the overall rating for the risk of a rupture to the dewatering pipeline is **low**, based on the Licensee's controls.

## Detailed Risk Assessment WTS Stage 1 S10 (WTS S10) Dewatering Discharge – Erosion

Dewatering discharge from WTS S10 outfall causing erosion and increased sedimentation in the vicinity of the outfall.

### Identification and general characterisation of emission

Maximum of 7,300,000 tonnes per annum of dewatering discharge through discharge outfall WTS S10. Dewatering is required to develop the Western Turner Syncline Stage 1 Section 10 Hub consists of the MME (eastern section) and S10 BRK pits, MME (western section) and S10 BRK pits, and the MMW pit.

### Description of potential adverse impact from the emission

Erosion at the outlet could cause impacts to riparian vegetation in the immediate vicinity of the outfall, and increased sedimentation in the watercourse.

**Key finding:** The Delegated Officer has reviewed the information regarding dewatering discharges to surface waters and has found:

1. Total dewater discharge volumes approved under MS 1031 are 7,300,000 tonnes per annum.
2. The protection of riparian ecosystems along the Hardey River is regulated under Part IV, via MS 1031.
3. Erosion in the immediate vicinity of the dewater discharge outlets is not regulated under Part IV of the EP Act.

### Criteria for assessment

The Licensee has developed Site Specific Trigger Values (SSTV's) documented in the Interim Operational Guidelines for Dewatering Discharges (WRM, 2015) which have been derived from baseline water quality data for the creek systems. ANZECC 2000 for assessing inland surface waters for water quality and turbidity levels associated with increased sedimentation.

### Licensee's proposed controls

Erosion controls at the discharge outlet include:

- T-piece installation resulting in reduced velocity of discharge;
- Rip rap armouring around the outlet structure and along the path of the discharge flow into the Hardey River to minimise scouring and erosion (RTIO-HSE-034904); and
- Monthly turbidity monitoring at the discharge outlet (DP17S1001 WTS S10 dewatering discharge point) and at the primary discharge sample point on the Hardey River (SW17S1001).

### Consequence

The Delegated Officer notes that the immediate area does not contain any threatened or priority flora. Any on-site impacts to riparian vegetation are likely to be low level. As such, the

Delegated Officer considers the consequence of erosion impacts due to the dewatering discharge to be *minor*.

### Likelihood of consequence

Noting the Licensee's controls to reduce flow velocity and to minimise scouring and erosion, the Delegated Officer has determined that erosion is likely to only occur in exceptional circumstances. As such, the Delegated Officer considers the likelihood of the risk event occurring to be *rare*.

### Overall rating of dewater discharges to surface water

The Delegated Officer has compared the consequence and likelihood ratings described above with the Risk Rating Matrix (DER, 2017) and determined that the overall rating for the risk of erosion from dewatering discharges is *low*, based on the Licensee's controls.

## Detailed Risk Assessment WTS Stage 1 S10 (WTS S10) Dewatering Discharge – Discharge Water Quality

Dewatering discharge containing elevated nutrients and metals causing an impact on the water quality of the Hardey River (including receiving tributary). Nutrient-rich water and elevated metals can result in eutrophication and/or toxicity to aquatic fauna.

### Identification and general characterisation of emission

The application is to discharge a maximum of 7,300,000 tonnes per annum of through discharge outfall WTS S10.

Wetland Research and Management (WRM) undertook a baseline aquatic fauna (microinvertebrates, hyporheic invertebrates and macroinvertebrates) and water quality survey, commissioned by the Licensee, between 2011-2013 on the Beasley River and the Hardey River (WRM, 2014). The baseline median water quality data within the WRM 2014 report shows elevated boron, copper, zinc, electrical conductivity, and nutrients when compared to the default 95% trigger values in ANZECC 2000. This baseline data was collected from the Beasley and Hardey River systems. This data was collected during the wet and dry season.

Furthermore, data gathered by WRM for the Beasley and Hardey River systems as well as data gathered within Pilbara Regional Creeks and Regional and WTS Creeks have been used to develop Interim Operation Water Quality Guidelines for Dewatering Discharge at WTS S2 and WTS S10 (WRM, 2015). These guidelines produced site specific trigger values (SSTVs) for the dewatering discharges. It is noted that there is limited data for some parameters within the Hardey River.

Both WRM reports were submitted as part of the supporting documentation for the Western Turner Syncline Revised Proposal approved under MS 1031.

Some groundwater quality results assessed in WRM 2015 report from WTS S10 production bores show elevated levels of electrical conductivity, boron, copper and nitrate as nitrogen when compared against the 95% protection levels in the ANZECC guidelines. Additionally, results for nitrate as nitrogen and copper are elevated when compared to the SSTVs (WRM, 2015).

Nitrate (NO<sub>3</sub>) results provided in the WRM 2015 report are also elevated when compared to the current 95% protection level in ANZECC 2000.

Some WTS S10 water quality results provided (email 22 May 2017) for groundwater bores indicate elevated boron, copper, zinc, total nitrogen and total phosphorus when compared to ANZECC 95% protection levels, trigger values for physical and chemical stressors and SSTVs

(RTIO 22 May 2017).

## Description of potential adverse impact from the emission

The Interim Operation Water Quality Guidelines for Dewatering Discharge at WTS S2 and S10 (WRM, 2015) outlines the risk to aquatic fauna from the dewatering discharge from WTS S10 orebody:

**“Moderate-high risk of habitat loss from eutrophication due to elevated nitrate and phosphorus in the WTS2 B1 orebody aquifer and elevated nitrate in the S10 orebody aquifer, relative to concentrations in surface waters of the Beasley and Hardey rivers”** (WRM, 2015).

Additionally, the WRM report on baseline aquatic fauna in the Hardey River determined that **“three species listed for conservation significance were recorded”**. **“Listed species include one fish species (the Fortescue grunter *Leiopotherapon aheneus*) and two invertebrate species (the Pilbara emerald dragonfly, *Hemicordulia koomina* and the Pilbara pin damselfly, *Eurysticta coolawanyah*)”** (WRM, 2014). The Fortescue grunter and the Pilbara emerald dragonfly were recorded in the Hardey River downstream of the proposed dewatering discharge point. The report also notes that these species occur in surface water systems outside the WTS development area.

These reports were submitted to the EPA as part of the revised proposal. The EPA determined that the proposal is unlikely to result in a significant impact on inland water environmental quality due to similarities in water quality.

**Key finding:** The Delegated Officer has reviewed the information regarding dewatering discharges to the Hardey River system and has found:

1. Total dewater discharge volumes to the Hardey River approved under MS 1031 are 7,300,000 tonnes per annum.
2. The protection of riparian ecosystems along the Hardey River is regulated under Part IV, via MS 1031.
3. The EPA has had regard to DWER regulating the water quality of the dewatering discharge in their decision (EPA Report 1565). The EPA determined that the proposal is unlikely to result in a significant impact on inland water environmental quality due to similarities in water quality.
4. The groundwater quality from the WTS S10 orebody has elevated levels of electrical conductivity, boron, copper, N-nitrate and phosphorus when compared to the 95% trigger values in ANZECC 2000 and/or SSTVs.
5. Three conservation significant species have been recorded in the Hardey River system downstream of the discharge outfall and that these species also occur outside of the WTS development area.

## Criteria for assessment

Interim Operational Water Quality Guidelines (WRM, 2015) have been proposed for the WTS S10 discharge. These guidelines have been derived by comparing site specific trigger values from baseline data and the 95% trigger values in ANZECC 2000.

The site specific trigger values were derived from the 80%ile of the baseline data (and 20%ile for pH and dissolved oxygen) (WRM, 2015). The baseline data was gathered from the Beasley and Hardey river systems as well as WTS creeks and Pilbara regional creeks.

The site specific trigger values were compared against the 95% trigger values in the ANZECC guidelines; where the site specific trigger value is greater than the 95% trigger value in ANZECC, the site specific trigger value is proposed as the Interim Operational Guidelines



(WRM, 2015). Where the 95% trigger value in ANZECC is greater than the site specific trigger value, the ANZECC value is proposed as the Interim Operation Guideline value (WRM, 2015). It is to be noted that those substances that bioaccumulate in the environment were compared against the 99% ANZECC trigger value (WRM, 2015). Table 10 below contains the Interim Operational Guidelines for the WTS S10 discharge and Hardey River system.

**Table 10 Interim operational water quality guidelines for WTS S10 dewatering discharge together with ANZECC 2000 default 95% trigger values<sup>1</sup>.**

■ Greater than or equal to the ANZECC/ARMCANZ (2000) default TV for protection of 95% of freshwater species (TV for metals modified by water hardness).

Analyte		ANZECC/ ARMCANZ (2000)	Hardey River	Beasley River	Pilbara Regional Creeks	Regional & WTS Creeks	Interim Operational Guideline
		95% TV	80%ile	80%ile	80%ile	80%ile	
Ag		0.00005	nr	nr	nr	nr	0.00005
Al (pH>8.5)	T	0.055	0.020	0.012	0.016	0.015	0.055
Alkalinity (as CaCO <sub>3</sub> )		np	213	447	346	354	np
As (III)	T	0.024	ID	nr	nr	ID	np
As (V)	T	0.013	nr	nr	nr	nr	np
As-total	T	np	<0.001	<0.001	<0.001	<0.001	0.013
B	T	0.37	0.20	0.43	0.38	0.40	0.40
Ba	T	np	0.07	0.10	0.10	0.10	0.10
Ca	E	np	71	79	65	68	np
Cd	T,H	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002
Cl (chloride)	E	np	194	516	297	311	np
Chlorine	T	0.003	ID	nr	nr	nr	np
Co	T	np	<0.0001	0.001	0.002	0.001	0.001
CO <sub>3</sub>	E	np	3	18	12	13	np
Cr (III)	T	np	nr	nr	nr	nr	np
Cr (VI)	T	0.001	<0.0005	<0.0005	nr	<0.0005	np
Cr-total	T	np	nr	nr	<0.0005	<0.0005	0.001
Cu	T	0.0014	0.0014	0.0016	0.0019	0.0018	0.0018
DO-field (% sat)		85-120	90-153	60-118	70-107	70-108	70-120
EC (µS/cm)	E	900	1280	2730	1680	1760	1760
F	T	**2	ID	nr	nr	nr	np
Fe	T,F	^0.3	0.1	0.1	0.1	0.1	0.3
Hardness (as CaCO <sub>3</sub> )		np	328	692	550	560	np
HCO <sub>3</sub>	E	np	251	484	399	407	np
Hg-inorganic	T,B	*0.00006	nr	nr	<0.0001	nr	*0.0001
Hg-total	T,B	--	nr	nr	nr	nr	np
K	E	np	9	11	11	11	np
Mg	E	np	54	112	91	91	np
Mn	T	1.9	0.05	0.29	0.05	0.05	1.9
Mo	T,M	np	0.005	0.002	<0.001	<0.001	0.001
Na	E	np	92	291	171	185	np
Ni	T,H	0.011	<0.001	<0.001	<0.001	<0.001	0.011
NH <sub>3</sub>		np	ID	nr	nr	ID	np
N-NH <sub>3</sub>	T	0.9	<0.01	0.01	0.01	0.01	0.9
N-NH <sub>4</sub> (eutrophication)		0.01	nr	nr	nr	nr	0.01
N-NO <sub>x</sub> (eutrophication)		0.03	0.01	0.01	0.04	0.04	0.04
NO <sub>2</sub>		np	ID	nr	nr	ID	np
NO <sub>3</sub>	T,N	0.7	3.3	nr	0.2	0.6	11
N-total (eutrophication)		0.3	0.5	1.2	0.5	0.6	0.6
P-SR (eutrophication)		0.005	nr	nr	<0.01	<0.01	0.01
P-total (eutrophication)		0.01	<0.01	0.02	0.02	0.02	0.02

Analyte		ANZECC/ ARMCANZ (2000)	Hardey River	Beasley River	Pilbara Regional Creeks	Regional & WTS Creeks	Interim Operational Guideline
		95% TV	80%ile	80%ile	80%ile	80%ile	
Pb	T,H	0.0034	0.0025	<0.0001	0.0001	0.0001	0.0034
pH-field (H <sup>+</sup> )		6.0-8.0	7.8-8.0	7.7-8.5	7.5-8.0	7.5-8.5	7.5-8.5
Sb	T	^ 0.009	nr	nr	nr	nr	0.009
Se-total	T,B	0.005	<0.001	<0.001	<0.001	<0.001	0.005
Si		np	nr	nr	12	12	np
SiO <sub>2</sub>		np	nr	nr	27	27	np
S		np	35	91	57	61	np
S-SO <sub>4</sub>	E	np	228	272	149	163	np
Sr	T	np	nr	nr	nr	nr	np
TDS-calc		np	870	1500	1020	1100	1100
Temperature-field (°C)		np	32	28	29	29	29
TSS		np	13	nr	5	5	5
Turbidity-field (NTU)		15	nr	nr	3	3	15
U	T	np	0.001	0.004	0.002	0.002	0.002
V	T	np	0.004	0.007	0.004	0.005	0.005
Zn	T,H	0.008	0.036	0.008	0.020	0.019	0.019
<b><i>Pesticides</i></b>							
2,4D	T	0.28	nr	nr	nr	nr	np
Chlorpyrifos	T	†0.0002	nr	nr	nr	nr	np
Glyphosate	T	0.37	nr	nr	nr	nr	np
MBAS	T	††0.28	<0.44	nr	nr	nr	np
Tricoplyr	T	0.1	nr	nr	nr	nr	np
Trifluralin	T	0.001	nr	nr	nr	nr	np
<b><i>Petroleum hydrocarbons</i></b>							
TPH	T	np	<0.44	nr	nr	nr	np
TPH C10-C14	T	np	<0.05	nr	nr	nr	np
TPH C15-C28	T	np	<0.2	nr	nr	nr	np
TPH C29-C36	T	np	<0.2	nr	nr	nr	np
TRH	T	np	<0.5	nr	nr	nr	np
TRH C10-C14	T	np	<0.05	nr	nr	nr	np
TRH C15-C28	T	np	<0.2	nr	nr	nr	np
TRH C29-C36	T	np	<0.2	nr	nr	nr	np
TRH C6-C9	T	np	<0.04	nr	nr	nr	np

**Notes:**

- ^ = ANZECC/ARMCANZ (2000) low reliability TV, as data deficient.
- \* = SSTV for Hg-inorganic is based on ANZECC/ARMCANZ (2000) default TV. For routine screening however, a laboratory LOR equivalent to this SSTV can only be achieved using persulphate digestion, and the resultant value will include a portion of organic mercury. LOR for routine screening of only the inorganic portion is currently 0.0001 mg/L, i.e. greater than the ANZECC/ARMCANZ (2000) default TV.
- \*\* = SSTV taken from Canadian (CCME 2014) guideline using algorithms based on median hardness.
- † = Laboratory analysis of chlorpyrifos requires 1L of sample to achieve ideal LOR = 0.00005 mg/L; otherwise LOR = 0.0002 mg/L.
- †† = No ANZECC/ARMCANZ (2000) default TV for methyl blue activated substances (MBAS) as a whole, therefore the minimum default TV for sulphate and sulphonate surfactants has been used.
- B = ANZECC/ARMCANZ (2000) 99% species protection level TV recommended due to the ability of these metals to bioaccumulate. However, laboratory analysis of mercury for routine screening is only achievable to 0.0001 mg/L Hg-inorganic or 0.00005 mg/L Hg-total; the latter by persulphate digestion on low salinity samples.

Note 1: The Interim Operational Guidelines SSTV for nitrate is not considered to be appropriate; the ANZECC 95% and 90% guideline trigger values for nitrate (NO<sub>3</sub>) are 0.7 mg/L and 3.4 mg/L respectively.

## Licensee's proposed controls

The Licensee has proposed monthly monitoring at the dewatering discharge point and the primary discharge sample point as detailed in table 11 below.

**Table 11: WTS S10 discharge monitoring sites**

Monitoring site	Parameter	Sampling frequency
DP17S1001 (WTS S10 Dewatering discharge point).  SW17S1001 [Primary discharge compliance sample point (Hardey River)]	Flow	Monthly
	Electrical conductivity ( $\mu\text{S}/\text{cm}$ )	
	pH (pH units)	
	Total Dissolved Solids (mg/L)	
	Dissolved Oxygen (% sat)	
	Turbidity (NTU)	
	Total Suspended Solids (mg/L)	
	Hardness ( $\text{CaCO}_3$ mg/L)	
Ions and Metals (mg/L) – Aluminium, Arsenic, Boron, Barium, Cadmium, Carbon trioxide, Calcium, Cobalt, Copper, Chromium, Iron, Bicarbonate, Mercury, Potassium, Magnesium, Manganese, Molybdenum, Ammoniacal Nitrogen, Nitrate, Nitrogen Oxide, Ammonium, Nitrate as nitrogen, Total Nitrogen, Sodium, Nickel, Total Phosphorus, Lead, Sulphur, Silicon, Sulphate-S, Selenium, Uranium, Vanadium, Zinc		

The Interim Operational Water Quality Guidelines (WTS, 2015) also propose two approaches to the review and assessment of monitoring data. It is recommended that:

1. *“Monitoring incrementally by a decision control chart process, as the water quality data are collected, and comparing against the operational guideline; and*
2. *An annual assessment at the end of the year, whereby the entire years’ monitoring data set is compared against the operational guideline” (WRM, 2015).*

Figure 1 shows the decision-making flow chart.

Figure 1: Decision support flow chart for assessing and responding to exceedance of Interim Operational Guidelines (referred to as SSTVs)

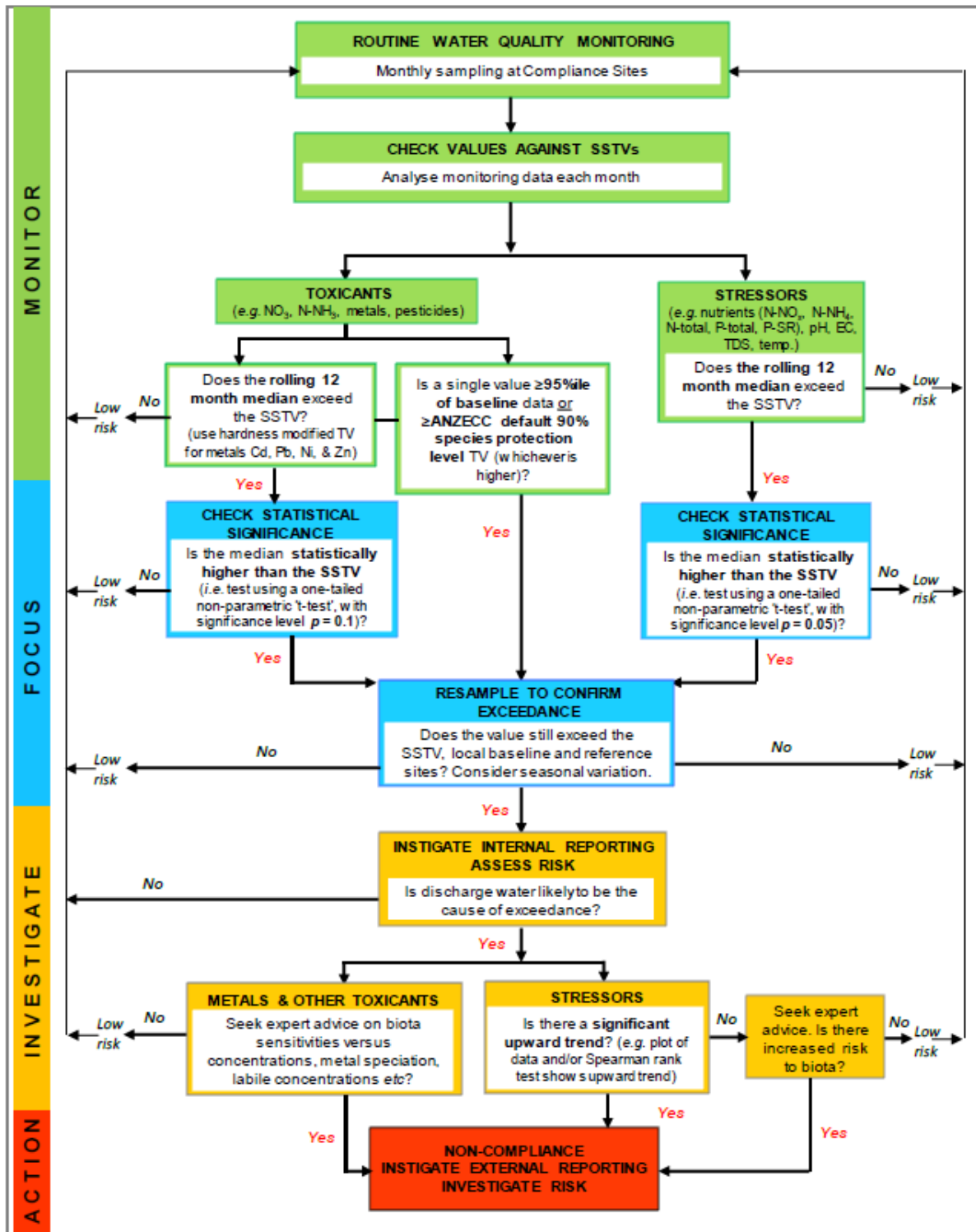
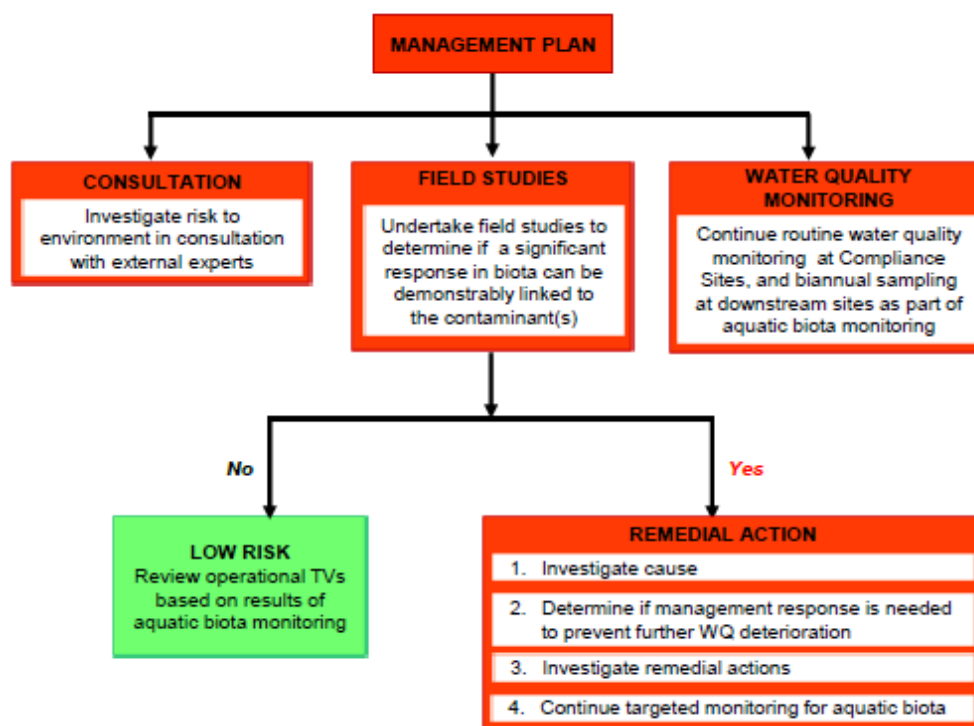


Figure 2 shows the management response to action triggers for the WTS S10 project.

**Figure 1: Management response to action triggers for the WTS S10 dewatering discharge.**



## Consequence

The Delegated Officer notes the elevated levels of nutrients (and some metals) above ANZECC 95 % protection levels and SSTVs and that there is also the potential for “*habitat loss due to eutrophication*” (WRM 2015). The Delegated Officer notes that three species listed for conservation significance were recorded and that these species are found outside of the WTS development area (WRM 2014). The discharge footprint is 15 km as approved under MS 1031. This discharge footprint extends beyond the Premises boundary. The Delegated Officer considers that there could be mid-level off-site impacts on a local scale and as such the consequence is **major**.

## Likelihood of consequence

Noting the Licensee’s controls, the Delegated Officer considers that the risk event could occur at some time. As such the likelihood of the consequence is **possible**.

## Overall rating of dewater discharges to surface water

The Delegated Officer has compared the consequence and likelihood ratings described above with the Risk Rating Matrix (DER, 2017), and determined that the overall rating for the risk of the WTS S10 dewatering discharges to surface water quality and surface water ecosystems is **high**, based on the Licensee’s controls.

## Decision

### WTS B1 putrescible landfill

The Delegated Officer has determined the key emissions associated with construction and operation of the putrescible landfill. Based on the application supporting documentation, the Delegated Officer has determined that the construction and operation of the landfill presents a low risk of impact to the environment.

The approved design/production capacity for Category 64 has been increased to 8000 tonnes per annum. This is a 2000 tonnes per annum increase to include the new WTS B1 putrescible landfill throughput.

The request to include the disposal of Special Waste Type 2 has been authorised by an amendment of condition 18 of the Licence. Specimens with residual urine are not classed as Special Waste Type 2 unless they are collected from a person with an infectious disease or if they have visible blood. The addition of Special Waste Type 2 is to be included on the Licence with specific controls as there may be an occasion in which the specimen sample falls within the Special Waste Type 2 category.

The Licensee has committed to controls during construction of the WTS B1 putrescible landfill and these controls have been included in Licence condition 33. Conditions 34-36 relate to compliance requirements for the construction of the WTS B1 landfill.

The Licensee is required to operate the landfill in accordance with the conditions of the licence upon submission of compliance documentation. Additionally, controls on the disposal of Special Waste Type 2 and covering requirements have been included in Licence condition 32.

### WTS S10 dewatering discharge

The Delegated Officer has determined the key emissions associated with the construction and operation of the WTS S10 dewatering discharge. Based on the application supporting documentation, and documentation submitted as part of the Part IV revised proposal (WTS, 2014 and WTS, 2015), the Delegated Officer has determined that the operation of the WTS S10 dewatering discharge presents a high risk of impact to the environment, but may be acceptable subject to the further regulatory controls as outlined below.

The approved design/production capacity for Category 6 has been increased to include the 7,300,000 tonnes per annum for the discharge from the WTS S10 deposit.

Specified infrastructure requirements for the construction of the WTS S10 dewatering discharge outlet and pipeline have been included in the Licence under condition 37. The infrastructure requirements include requirements on the location and construction of the dewatering pipeline and WTS S10 outfall as committed to in the application supporting documentation (RTIO-HSE-0304904). Condition 38, 39 and 40 relate to compliance requirements for the dewatering infrastructure. Attachment 11 has been included in the licence which shows the location of the proposed pipeline and the discharge point and primary sample point.

Condition 7 has been amended to include the requirement to monitor the cumulative volumes of the WTS S10 dewatering discharge.

Condition 8 and Table 2 have been amended to include surface water monitoring for the WTS S10 dewatering discharge. The Licensee is required to undertake fortnightly monitoring of the WTS S10 discharge for the first three months of operation. The Licensee has provided the location of an upstream sample point which has been included in the amendment of condition 8 and Table 2. The monitoring parameters consist of those identified in the Western Turner Syncline Stage 2 and S10 Interim Operational Water Quality Guidelines for Dewatering

Discharges (WRM, 2015). Definitions for total nitrogen and total phosphorus have been included in the amended Licence. Attachment 12 has been inserted into the Licence and depicts the monitoring points for the WTS S10 dewatering discharge specified in condition 8 and Table 2.

Flow rate at each monitoring point has been included in the parameters to enable an understanding of the physical conditions present at the time of the sample. The Licensee is required to provide the methodology.

Chlorophyll a has been included in the monitoring suite due to the risk of eutrophication. An amendment to condition 28 specifies that the sampling is undertaken in accordance with AWWA 2017.

The Delegated Officer has determined that the use of Interim Operational Guidelines to be appropriate and all trigger values proposed in the Western Syncline Stage 2 and S10 Interim Operational Water Quality Guidelines for Dewatering Discharges (WRM, 2015) will be included within the conditions of the Licence. This is with the exception of the proposed 11 mg/L SSTV for nitrate (NO<sub>3</sub>) which has been changed to 3.4 mg/L in accordance with the current 90% trigger value in ANZECC 2000, and following confirmation from internal DWER advice. This value has been set as the SSTV for nitrate due to the 80%ile of baseline data within the Hardey River being 3.3 mg/L. The Interim Operational Guideline SSTVs have been included in the Licence through an amendment of condition 9 of the Licence.

The contingency actions that were included in the Interim Operational Guideline Values (WTS, 2015) have been adapted and included in condition 41 to provide adequate time for investigation and reporting, to determine the level of impact to the Hardey River systems. Condition 42 and 43 specify the requirements for the investigation and reporting of the environmental impact of the dewatering discharge. A definition of 'Suitably Qualified Third Party' has also been included in the Licence for clarification.

Ongoing monitoring will be used to inform an update to SSTVs as more site-specific data is collected, in conjunction with the water quality monitoring already undertaken. If the Licensee seeks to revise SSTVs in the future, they will be required to provide evidence to demonstrate the risk to aquatic fauna and vegetation, based on monitoring data and any site-specific studies conducted for the impacted creeks.

## WTS S2 Dewatering Discharge

The Licensee has requested that the WTS S2 dewatering discharge to the Beasley River monitoring parameters required by condition 8 and Table 2 be revised upon submission of the Western Turner Syncline Stage 2 Water Quality Management Plan (RTIO-HSE-0207401).

The management plan has proposed a reduced suite of monitoring parameters and reduced frequency of monitoring. An assessment of the results provided in the 2014-2015 Annual Environment Report (AER) and the 2015-2016 AER have been undertaken for the Beasley River discharge.

The following parameters have been removed from Table 2 of condition 8 due to results being consistently below the SSTV and/or ANZECC 95% trigger values:

Turbidity, aluminium, arsenic, boron, barium, mercury, manganese, molybdenum, nickel, Sulphur, silicon, selenium, uranium and vanadium.

The request to remove tin has also been reviewed and approved. Ammonium, ammoniacal nitrogen and filterable reactive phosphorus (FRP) are to remain within the monitoring parameters in Table 2 of condition 8. Major ions are to remain on the licence as an increase in these substances can be a prelude for future increased metal concentrations.

An assessment of the Interim Operational Water Quality Guidelines for Dewatering Discharges (WRM, 2015) also identified that temperature has not been monitored or reported



against. This has now been included in the parameters for monitoring the WTS S2 dewatering discharge.

The Western Turner Syncline Stage 2 Water Quality Management Plan (RTIO-HSE-0207401) also requests the SSTV be revised for pH. Current SSTV is pH 7.5 – 8.5 and the Licensee requests that this is revised to 6.5-8.5. The SSTV for pH in the Licence is to remain as pH 7.5-8.5. Only 3 samples in the data submitted within two annual periods have been slightly below pH 7.5.

The SSTVs for the Beasley River discharge are now included in the Licence through an amendment of condition 9 of the Licence. The 11 mg/L trigger value proposed for nitrate (NO<sub>3</sub>) has been changed to 3.4 mg/L in accordance with current 90% trigger value in ANZECC 2000. This value has been set as the SSTV for nitrate due to the 80%ile of baseline data for the Hardey River being 3.3 mg/L. No baseline data for the Beasley River has been provided. Contingency actions and requirements for investigation and reporting that apply to the WTS S10 discharge also apply to the WTS S2 discharge through conditions 9, 41 42 and 43.

The Licensee has provided the location of an upstream sample point which has been included in the amendment of condition 8 and Table 2. Attachment 6 of the Licence has been amended to include the location of the upstream reference site.

### Other amendments

The Licensee has requested a reduction in the Category 73 design capacity from 4532 cubic metres to 1546 cubic metres in aggregate. The reason for the reduction is removal off-site of old storage tanks that are no longer required.

The Premises boundary (Attachment 1) has been amended to include the Western Turner Syncline tenure for future mining areas and the WTS S10 discharge point.

As requested an administrative error has also been corrected in relation to bore reference BH5 in Table 2 of condition 8. Tailings Dam bore BH5 reference has been corrected to BH2. Attachment 7 of the Licence has been amended to include the correct reference to monitoring bore BH2.

Attachment 9 is amended to include the expanded footprint of WTS B1 waste dump landfill polygon. The WTS B1 putrescible landfill trenches are located within the WTS B1 waste dump landfill footprint.

Improvement condition 27 has been removed from the Licence. The Licensee has submitted the reports required by IR1, IR2 and IR3.

Condition 30 has been amended to include more prescriptive requirements for reporting within the Annual Environmental Report.

DWER is currently undertaking a detailed risk based review of the Licence to align the Licence with DWER's risk based Regulatory Framework. The full risk based review will incorporate these amendments into the Revised Licence.

### Licensee's comments

The Licensee was provided with the draft Amendment Notice on 26 June 2017. Following a review of comments and changes made to the draft Amendment Notice, DWER provided a second draft to the Licensee on 3 August 2017.

Comments from the Licensee on 14 July and 17 August 2017 have been considered by the Delegated Officer as shown in Appendix 2.

## Amendment

- The Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

### PRESCRIBED PREMISES CATEGORY

Schedule 1 of the Environmental Protection Regulations 1987.

CATEGORY NUMBER	CATEGORY DESCRIPTION	CATEGORY	PREMISES PRODUCTION OR DESIGN CAPACITY
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes per year	40,000,000 tonnes per annual period
6	Mine dewatering	50,000 tonnes or more per year	11,000,000 tonnes per annual period (Western Turner Syncline Stage 2-B1 and Section 17 Deposits)  <b><u>7,300,000 tonnes per annual period (Western Turner Syncline Section 10 Deposit)</u></b>  3,000,000 tonnes per annual period (South East Prongs Deposit)
12	Screening, etc. of material	50,000 tonnes or more per year	10,000,000 tonnes per annual period
54	Sewage facility	100 cubic metres or more per day	320 cubic metres per day
64	Class II putrescible landfill site	20 tonnes or more per year	<del>6,000</del> <b><u>8000</u></b> tonnes per annual period
73	Bulk storage of chemicals, etc.	1,000 cubic metres in aggregate	<del>4,532</del> <b><u>1546</u></b> cubic metres in aggregate

- The Licence is amended by insertion of the definition below:

**'AWWA 2017'** means the Standard Methods for the Examination of Water and Wastewater, 23<sup>rd</sup> edition. American Water Works Association 2017

**'Suitably Qualified Third Party'** means a person, not employed by the Licensee, that has qualifications and expertise in hydrology and/or environmental and water sciences; or a person as determined to be appropriate by the CEO from time to time

**'Total Nitrogen'** means the sum of total kjeldahl nitrogen (ammonia as nitrogen plus organic nitrogen) and nitrate as nitrogen plus nitrite as nitrogen

**'Total Phosphorus'** means the sum of all forms of phosphorus (orthophosphate, condensed phosphate, and organic phosphate)

- Condition 7 of the Licence is amended by the insertion of the bold text shown in underline below:

7 The Licensee shall, on a **monthly** basis, measure and record in cubic metres, the cumulative volumes of waters discharged from the:

- Reclaim Dam discharge point (Attachment 2);
- TSF Seepage Main Embankment discharge point (Attachment 2);

- (c) Section 6 Pit discharge point (approved to discharge a maximum 3,000,000 tonnes per annum) (Attachment 2 and 5);
- (d) WTS S2 Mine dewatering discharge point (DP14B1001) (approved to discharge a maximum 11,000,000 tonnes per annum) (Attachment 6); and
- (e) **WTS S10 Mine dewatering discharge point (DP17S1001) (approved to discharge a maximum 7,3000,000 tonnes per annum (Attachment 12))**

and shall publish the results in the Annual Environmental Report.

4. Condition 8 of the Licence is amended by the deletion of the text shown in strikethrough and the insertion of the bold text shown in underline below:

- 8 *The Licensee shall take representative water samples from the monitoring sites listed in column 1 of Table 2, at the frequencies stated in column 2 of Table 2, and have analysed for the parameters listed in column 3 of Table 2 and present this information in the Annual Environmental Report.*

**Table 2: Water monitoring schedule**

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
<b>Monitoring site(s)</b>	<b>Sampling Frequency</b>	<b>Parameters to be measured <u>including units</u></b>
<b>Surface Water Monitoring Sites</b>		
<ul style="list-style-type: none"> <li>• Reclaim Dam Discharge Point (Attachment 2)</li> <li>• TSF Seepage Main Embankment Discharge Point (Attachment 2)</li> </ul>	Quarterly	pH (pH units) <sup>1</sup> Electrical Conductivity (µS/cm) <sup>1</sup> Total Dissolved Solids (mg/L) Total Suspended Solids (mg/L) Total Recoverable Hydrocarbons (mg/L) Chemical Oxygen Demand (mg/L) Biochemical Oxygen Demand (mg/L) E.coli (cfu/100mL) Surfactants (mg/L) Major ions (mg/L) – Sodium, Potassium, Calcium, Magnesium, Sulfate Metals (mg/L) – Lead, Copper, Iron, Manganese, Molybdenum, Zinc, Arsenic, Mercury, Cadmium, Chromium
Section 6 Pit Discharge Point (Attachment 2 and 5)	Quarterly	pH (pH units) <sup>1</sup> Electrical Conductivity (µS/cm) <sup>1</sup> Total Dissolved Solids (mg/L) Total Suspended Solids (mg/L) Major ions (mg/L) – Sodium, Potassium, Calcium, Magnesium, Sulfate Metals (mg/L) - Lead, Copper, Iron, Manganese, Molybdenum, Zinc, Arsenic, Mercury, Cadmium, Chromium
<b>Ground Water Monitoring Sites</b>		
<u>Section 6 Pit</u> MB13SSIX001, MB13SSX002, MB13SSIX003 (Attachment 2 and 5) <u>Tailings Dam</u>	Quarterly	pH (pH units) <sup>1</sup> Electrical Conductivity (µS/cm) <sup>1</sup> Total Dissolved Solids (mg/L) Total Recoverable Hydrocarbons (mg/L) Major ions (mg/L) – Potassium, Calcium Metals (mg/L) – Lead, Copper, Iron,

<p><del>BH5</del> <b>BH2</b>, MB04TD0001, MB04TD0002 (Attachment 7)</p> <p><u>Landfill Observation Bore TPL02, MB12TPL01</u> (Attachment 8)</p>		<p>Manganese, Molybdenum, Zinc, Arsenic, Mercury, Cadmium, Chromium, Magnesium</p>
<b>Dewatering Water Monitoring Sites – Beasley River</b>		
<ul style="list-style-type: none"> <li>• <b><u>SW11BESR007 (reference sample point)</u></b></li> <li>• DP14B1001. WTS S2 Mine dewatering discharge point</li> <li>• SW15B1001. Primary dewatering discharge compliance sample point (Beasley River)</li> <li>• SW15B1002. Secondary dewatering discharge compliance sampling point (Only sampled if no flow at primary sample point).</li> </ul> <p>As depicted in Attachment 6.</p>	<p>Monthly when flowing</p>	<p><b><u>Flow condition (photographic evidence)</u></b>  <u>Electrical Conductivity (µS/cm)<sup>1</sup></u>  <u>pH (pH units)<sup>1</sup></u>  <u>Temperature (°C)<sup>1</sup></u>  <u>Total Dissolved Solids (mg/L)</u>  <u>Dissolved Oxygen (% sat)<sup>1</sup></u>  <u>Turbidity (NTU)<sup>±</sup></u>  <u>Total Suspended Solids (mg/L)</u>  <u>Hardness (CaCO<sub>3</sub> mg/L)</u>  <u>Ions and Metals (mg/L) – Aluminium, Arsenic, Boron, Barium, Cadmium, Carbon <del>dioxide</del> trioxide, Calcium, Chlorine, Cobalt, Copper, <b>Total</b> Chromium, Iron, Bicarbonate, Mercury, Potassium Magnesium, Manganese, Molybdenum, Ammoniacal Nitrogen, Nitrate, Nitrogen <del>Oxide Nitrate + Nitrite (NO<sub>x</sub> as N)</del>, Ammonium, Nitrate as nitrogen, Total Nitrogen <b>(TN)</b>, Sodium, Nickel, Total Phosphorus <b>(TP)</b>, <b>Total Reactive Phosphorus (TRP)</b>, Lead, Sulphur, Silicon, Sulphate-S, Selenium, Uranium, Vanadium, Zinc</u></p>
<b>Dewatering Water Monitoring Sites – Hardey River</b>		
<ul style="list-style-type: none"> <li>• <b><u>SW17S1002 (reference sample point)</u></b></li> <li>• <b><u>DP17S1001 (WTS S10 dewatering discharge point)</u></b></li> <li>• <b><u>SW17S1001 (Primary dewatering discharge compliance point)</u></b></li> </ul> <p><u>As depicted in Attachment 12</u></p>	<p><b><u>Fortnightly for the first 12 weeks from commencement of the discharge followed by monthly thereafter when flowing</u></b></p>	<p><b><u>Flow condition (photographic evidence)</u></b>  <b><u>METHODOLOGY</u></b>  <u>Electrical conductivity (µS/cm)<sup>1</sup></u>  <u>pH (pH units)<sup>1</sup></u>  <u>Temperature (°C)<sup>1</sup></u>  <u>Total Dissolved Solids (mg/L)</u>  <u>Dissolved Oxygen (% sat)<sup>1</sup></u>  <u>Turbidity (NTU)<sup>1</sup></u>  <u>Total Suspended Solids (mg/L)</u>  <u>Hardness (CaCO<sub>3</sub> mg/L)</u>  <u>Ions and Metals (mg/L) – Aluminium, Total Arsenic, Boron, Barium, Cadmium, Carbon Dioxide, Calcium, Cobalt, Copper, Total Chromium, Iron, Bicarbonate, Total Mercury, Potassium, Magnesium, Manganese, Molybdenum, Nitrate, Nitrate + nitrite (NO<sub>x</sub> as N), Total Nitrogen(TN), Sodium, Nickel, Total Phosphorus (TP), Total Reactive Phosphorus (TRP), Lead, Silicon, Sulphate-S, Selenium, Uranium, Vanadium, Zinc, Silver, Chloride</u></p>

**Note 1: In-field non-NATA accredited analysis permitted**

5. Condition 9 of the Licence is amended by the insertion of the text shown in bold and underlined and the deletion of the text shown in strikethrough below:

- 9 The Licensee shall compare the results from the quality monitoring of discharge water required by condition 8 for the against the appropriate ANZECC 2000 water quality trigger values **or the values specified in column 2, 3 or 4 of Table 3 and 4 for each parameter in column 1 of Table 3 or 4** and present this information in the Annual Environmental Report **in accordance with Condition 30**, including a comparison of these results against previous years' monitoring data.

**Table 3: Guideline Values for the WTS S2 Dewatering discharge (SW15B1001 and/or SW15B1002)**

<b>Column 1</b> <b>Parameter</b>	<b>Column 2</b> <b>Beasley River Guideline values (units) - Site Specific Trigger Values (SSTV)</b>	<b>Column 3</b> <b>95%ile of baseline data (RTIO to provide)</b>	<b>Column 4</b> <b>ANZECC default 90% protection trigger value</b>
<b>Physical and chemical stressors</b>			
<b>Chlorophyll a</b>	<b>0.005 mg/L</b>	<b>N/A</b>	<b>N/A</b>
<b>Electrical conductivity (EC)</b>	<b>1760 (µS/cm)</b>	<b>N/A</b>	<b>N/A</b>
<b>pH</b>	<b>7.5-8.5 (pH units)</b>	<b>N/A</b>	<b>N/A</b>
<b>Total Dissolved Solids (TDS)</b>	<b>1100 (mg/L)</b>	<b>N/A</b>	<b>N/A</b>
<b>Dissolved oxygen (DO)</b>	<b>70-120 (% sat)</b>	<b>N/A</b>	<b>N/A</b>
<b>Temperature</b>	<b>29 (°C)</b>	<b>N/A</b>	<b>N/A</b>
<b>Total Suspended Solids (TSS)</b>	<b>5 (mg/L)</b>	<b>N/A</b>	<b>N/A</b>
<b>Total Phosphorus (TP)</b>	<b>0.02 (mg/L)</b>	<b>N/A</b>	<b>N/A</b>
<b>Filterable reactive phosphorus (FRP)</b>	<b>0.01 mg/L</b>	<b>N/A</b>	<b>N/A</b>
<b>Total Nitrogen (TN)</b>	<b>0.6 (mg/L)</b>	<b>N/A</b>	<b>N/A</b>
<b>Nitrate + nitrite nitrogen (NO<sub>x</sub> as N)</b>	<b>0.04 (mg/L)</b>	<b>N/A</b>	<b>N/A</b>
<b>Ammonium (NH<sub>4</sub> as N)</b>	<b>0.01 (mg/L)</b>	<b>N/A</b>	<b>N/A</b>
<b>Toxicants</b>			
<b>Ammoniacal Nitrogen (NH<sub>3</sub> as N)</b>	<b>0.9 mg/L</b>	<b>0.081 mg/L</b>	<b>1.43 mg/L</b>
<b>Cadmium (Cd)<sup>H</sup></b>	<b>0.0002 (mg/L)</b>	<b>0.0005 mg/L</b>	<b>0.0004 mg/L</b>
<b>Cobalt (Co)</b>	<b>0.001 (mg/L)</b>	<b>0.0025 mg/L</b>	<b>N/A</b>
<b>Copper (Cu)<sup>H</sup></b>	<b>0.0018 (mg/L)</b>	<b>0.0034 mg/L</b>	<b>0.0018 mg/L</b>
<b>Total Chromium (Cr)</b>	<b>0.001 (mg/L)</b>	<b>0.0005 mg/L</b>	<b>0.006 mg/L</b>
<b>Nitrate (NO<sub>3</sub>)</b>	<b>3.4 (mg/L)</b>	<b>3.15 mg/L</b>	<b>3.4 mg/L</b>
<b>Lead (Pb)<sup>H</sup></b>	<b>0.0034 (mg/L)</b>	<b>0.0005 mg/L</b>	<b>0.0056 mg/L</b>
<b>Zinc (Zn)</b>	<b>0.019 (mg/L)</b>	<b>0.05 mg/L</b>	<b>0.015 mg/L</b>

**H= the SSTV should be modified for water hardness (mg/L CaCO<sub>3</sub>) at the time of measurement, according to the algorithms provided in Table 3.4.3 of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ 2000)**

**Table 4: Interim Operational Guideline Values for WTS S10 Dewatering discharge**

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>	<b>Column 4</b>
<b><u>Parameter</u></b>	<b><u>Hardey River Interim Operational Guideline values (units) - Site Specific Trigger Values (SSTV)</u></b>	<b><u>95%ile of baseline data (RTIO to provide)</u></b>	<b><u>ANZECC default 90% protection trigger value</u></b>
<b><u>Physical and chemical stressors</u></b>			
<b><u>Chlorophyll a</u></b>	<b><u>0.005 mg/L</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Electrical conductivity (EC)</u></b>	<b><u>1760 (µS/cm)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>pH</u></b>	<b><u>7.5-8.5 (pH units)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Total Dissolved Solids (TDS)</u></b>	<b><u>1100 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Dissolved oxygen (DO)</u></b>	<b><u>70-120 (% sat)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Temperature</u></b>	<b><u>29 (°C)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Turbidity</u></b>	<b><u>15 (NTU)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Total Suspended Solids (TSS)</u></b>	<b><u>5 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Total Phosphorus (TP)</u></b>	<b><u>0.02 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Filterable reactive phosphorus (FRP)</u></b>	<b><u>0.01 mg/L</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Total Nitrogen (TN)</u></b>	<b><u>0.6 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Nitrate + nitrite nitrogen (NO<sub>x</sub> as N)</u></b>	<b><u>0.04 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Ammonium (NH<sub>4</sub> as N)</u></b>	<b><u>0.01 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>
<b><u>Toxicants</u></b>			
<b><u>Ammoniacal Nitrogen (NH<sub>3</sub> as N)</u></b>	<b><u>0.9 (mg/L)</u></b>	<b><u>0.081 mg/L</u></b>	<b><u>1.43 mg/L</u></b>
<b><u>Aluminium (Al)</u></b>	<b><u>0.055 (mg/L)</u></b>	<b><u>0.081 mg/L</u></b>	<b><u>0.008 mg/L</u></b>
<b><u>Total Arsenic</u></b>	<b><u>0.013 (mg/L)</u></b>	<b><u>0.002 mg/L</u></b>	<b><u>0.042 mg/L</u></b>
<b><u>Boron (B)</u></b>	<b><u>0.40 (mg/L)</u></b>	<b><u>0.996 mg/L</u></b>	<b><u>0.68 mg/L</u></b>
<b><u>Barium (Ba)</u></b>	<b><u>0.1 (mg/L)</u></b>	<b><u>0.16 mg/L</u></b>	<b><u>N/A</u></b>
<b><u>Cadmium (Cd)<sup>H</sup></u></b>	<b><u>0.0002 (mg/L)</u></b>	<b><u>0.0005 mg/L</u></b>	<b><u>0.0004 mg/L</u></b>
<b><u>Cobalt (Co)</u></b>	<b><u>0.001 (mg/L)</u></b>	<b><u>0.0025 mg/L</u></b>	<b><u>N/A</u></b>
<b><u>Copper (Cu)<sup>H</sup></u></b>	<b><u>0.0018 (mg/L)</u></b>	<b><u>0.0034 mg/L</u></b>	<b><u>0.0018 mg/L</u></b>
<b><u>Total Chromium (Cr)<sup>H</sup></u></b>	<b><u>0.001 (mg/L)</u></b>	<b><u>0.0005 mg/L</u></b>	<b><u>0.006 mg/L</u></b>
<b><u>Iron (Fe)</u></b>	<b><u>0.3 (mg/L)</u></b>	<b><u>0.29 mg/L</u></b>	<b><u>N/A</u></b>
<b><u>Total Mercury</u></b>	<b><u>0.0001 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>0.0019 mg/L</u></b>
<b><u>Manganese (Mn)</u></b>	<b><u>1.9 (mg/L)</u></b>	<b><u>0.3 mg/L</u></b>	<b><u>2.5 mg/L</u></b>
<b><u>Molybdenum (Mo)</u></b>	<b><u>0.001 (mg/L)</u></b>	<b><u>0.003 mg/L</u></b>	<b><u>N/A</u></b>
<b><u>Nickel (Ni)<sup>H</sup></u></b>	<b><u>0.011(mg/L)</u></b>	<b><u>0.002 mg/L</u></b>	<b><u>0.013 mg/L</u></b>
<b><u>Nitrate (NO<sub>3</sub>)</u></b>	<b><u>3.4 (mg/L)</u></b>	<b><u>3.15 mg/L</u></b>	<b><u>3.4 mg/L</u></b>
<b><u>Silver (Ag)</u></b>	<b><u>0.00005 (mg/L)</u></b>	<b><u>N/A</u></b>	<b><u>0.0001 mg/L</u></b>
<b><u>Lead (Pb)<sup>H</sup></u></b>	<b><u>0.0034 (mg/L)</u></b>	<b><u>0.0005 mg/L</u></b>	<b><u>0.0056 mg/L</u></b>

<u>Selenium (Se)</u>	<u>0.005 (mg/L)</u>	<u>0.0005 mg/L</u>	<u>0.018 mg/L</u>
<u>Uranium (U)</u>	<u>0.002 (mg/L)</u>	<u>0.0035 mg/L</u>	<u>N/A</u>
<u>Vanadium (V)</u>	<u>0.005 (mg/L)</u>	<u>0.009 mg/L</u>	<u>N/A</u>
<u>Zinc (Zn)<sup>H</sup></u>	<u>0.019 (mg/L)</u>	<u>0.05 mg/L</u>	<u>0.015 mg/L</u>

H= the SSTV should be modified for water hardness (mg/L CaCO<sub>3</sub>) at the time of measurement, according to the algorithms provided in Table 3.4.3 of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ 2000)

6. Condition 18 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

18 ~~The Licensee shall bury only the following types of waste within the putrescible landfills:~~  
~~(i) Inert Waste Type 1;~~  
~~(ii) Special Waste Type 1; and~~  
~~(iii) Putrescible waste; and~~  
**(iv) Special Waste Type 2.**  
as defined in the Landfill Definitions.

7. Condition 27 of the Licence has been deleted.

~~The Licensee shall complete the improvements listed in column 1 of Table 3 by the date of completion listed in column 2 of Table 3.~~

**Table 3: Improvement program**

<b>Column 1</b>	<b>Column 2</b>
<b>Improvement</b>	<b>Date of completion</b>
<del>IR1 - The Licensee shall update site specific target values (SSTVs) for the dewatering discharge parameters in the Western Turner Syncline Stage 2 Water Quality Management Plan. The SSTVs will be updated following ANZECC (2000) protocols for the protection of aquatic ecosystems. These SSTVs will apply to the primary dewatering discharge sample point SW15B1001, or if not flowing, secondary sample point SW15B1002.</del>  <del>An updated Western Turner Syncline Stage 2 Water Quality Management Plan will be provided to the CEO by the date of completion in Column 2 of this table, along with an evaluation of these SSTVs against background data, and identification of the likelihood and potential risks of target exceedances.</del>	Friday, 27 May 2016
<del>IR2 - The Licensee shall submit to the CEO a report on the Tom Price TSF Seepage. The report will evaluate the seepage extent, water quality parameters and potential environmental risks of identified concentrations and extent, including proposed corrective measures and timeframes. The report should reference the investigation compiled by Bruce Brown, RTIO, titled 'Tom Price TSF Seepage Investigation' (10 September 2015) and corrective actions undertaken in line with the recommendation(s) of that report.</del>	Friday, 27 May 2016
<del>IR3 - The Licensee shall submit to the CEO a report on the MOC and Beneficiation Plant WWTPs including information on, but not limited to, the following: — a review of treatment performance against manufacturers specifications</del>	Thursday, 30 June 2016

<p><del>and appropriate guidelines (e.g. ANZECC 1997 and ANZECC 2000);</del></p> <p><del>— a review of the nutrient loading rates discharged to the discharge points depicted in Attachment 4 and potential (or identified) environmental impacts;</del></p> <p><del>— a risk analysis of the discharge locations (e.g. soil type, vegetation type, depth to groundwater and neighbouring sensitive receptors); and</del></p> <p><del>— a statement of environmental risk of current operations and, if deemed unacceptable, proposed actions to mitigate environmental impacts identified.</del></p>	
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8. Condition 28 is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

28 ~~The Licensee shall collect all water samples required by conditions 4 and 8, in accordance with the relevant parts of Australian Standard 5667.~~ **The Licensee shall collect all samples of for the analysis of chlorophyll a in accordance with AWWA 2017.**

9. Condition 30 of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the bold text shown in underline below:

30 ~~The Licensee must submit to the CEO by 30 April each year, an Annual Environmental Report that contains, as a minimum, the following data for the Annual Period beginning 1 January and ending on 31 December in the previous year:~~

- (a) ~~throughput volumes for each prescribed activity conducted under this Licence;~~
- (b) ~~wastewater treatment plant monitoring data required by Table 1, Condition 4;~~
- (c) ~~monthly volumes of waters discharged under Condition 7;~~
- (d) ~~monitoring data required by Table 2, Condition 8 presented graphically and compared against previous years' monitoring data; and~~
- (e) ~~a summary of all exceedances identified through Condition 9 that includes:~~
  - i. ~~laboratory reports and graphical representation of exceedances at Dewatering Water Monitoring Sites described in Table 2, Condition 8 and depicted in Attachments 2, 5 and 6;~~
  - ii. ~~comparison of exceedance values with water quality at Dewatering Water Reference Sample Points (SW11BESR007 and SW17S1002);~~
  - iii. ~~any third party reports in accordance with Condition 42(b);~~
  - iv. ~~a list of all reports submitted as required under Condition 42 for the previous Annual Period; and~~
  - v. ~~outcomes for any contingency actions and corrective measures undertaken.~~

~~The Licensee shall provide to the CEO, by 30 April each year, a copy of an Annual Environmental Report that containing the monitoring results and data collected as a requirement of any condition of this licence during the period~~



~~beginning 1 January the previous year and ending on 31 December in that year.~~

10. The Licence is amended by the insertion of conditions 32 to 43 below:

32 The Licensee is to dispose of the waste types listed in column 1 of Table 5 in accordance with the requirements set out in column 2 of Table 5.

**Table 5: Special Waste Type 2 Disposal Requirements**

Column 1	Column 2
Waste Type	Disposal Requirements
Special Waste Type 2	<p>To be disposed of in sealed bags and within a dedicated trench.</p> <p>The location of disposed wastes to be recorded.</p> <p>Immediately cover the waste with a minimum depth of one metre of inert and incombustible material.</p>

33 The Licensee shall ensure that each item of infrastructure or equipment specified in column 1 of Table 6 is designed and constructed in accordance with the requirements specified in column 2 of Table 6.

**Table 6: WTS B1 Putrescible Landfill Infrastructure Requirements**

Column 1	Column 2																		
Infrastructure	Requirements (design and construction)																		
Landfill facility	<p>Constructed within the approximate boundaries below:</p> <table border="1"> <thead> <tr> <th colspan="3">MGA 50</th> </tr> <tr> <th>ID</th> <th>Easting</th> <th>Northing</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>547,104</td> <td>7,491,323</td> </tr> <tr> <td>2</td> <td>547,269</td> <td>7,491,297</td> </tr> <tr> <td>3</td> <td>546,732</td> <td>7,490,673</td> </tr> <tr> <td>4</td> <td>546,692</td> <td>7,490,947</td> </tr> </tbody> </table>	MGA 50			ID	Easting	Northing	1	547,104	7,491,323	2	547,269	7,491,297	3	546,732	7,490,673	4	546,692	7,490,947
MGA 50																			
ID	Easting	Northing																	
1	547,104	7,491,323																	
2	547,269	7,491,297																	
3	546,732	7,490,673																	
4	546,692	7,490,947																	
Earthen stormwater bund	Constructed to divert clean stormwater away from landfill trenches.																		
Rollover bund	Constructed at the entrance to each trench to prevent stormwater entering trenches.																		
Mesh fence with access gates	<p>To be constructed to a minimum height of 2.2 m.</p> <p>To be constructed around the perimeter of the WTS B1 putrescible landfill facility.</p>																		

34 The Licensee must not depart from the requirements specified in Table 6 except:  
 (a) Where such departures are minor in nature and do not materially change or

affect the infrastructure; or

(b) Where such departure improves the functionality of the infrastructure and does not increase the risks to public health, public amenity or the environment.

35 The Licensee shall submit a construction compliance document to the CEO, following construction of the WTS B1 putrescible landfill and prior to operation.

36 The Licensee must ensure the construction compliance document:

(a) is signed by a person authorised to represent the Licensee and contains the printed name and position of that person within the company; and

(b) certifies that each item of infrastructure specified in Table 6 has been constructed in accordance with the conditions of the Licence with no material defects beyond those listed under condition 33.

37 The Licensee shall ensure that each item of infrastructure or equipment specified in column 1 of Table 7 is designed and constructed in accordance with the requirements specified in column 2 of Table 7.

**Table 7: WTS S10 Dewatering Infrastructure Requirements**

<b>Column 1</b>	<b>Column 2</b>						
<b>Infrastructure</b>	<b>Requirements (design and construction)</b>						
Dewatering pipeline	<p>Located generally in accordance with Attachment 11 of the Licence.            Consist of PE100 PN8 high density polyethylene.            Constructed with a telemetry systems, to monitor the pipeline to allow for the detection of leaks and failure.</p>						
WTS S10 Dewatering discharge point (DP17S1001)	<p>Constructed at the approximate coordinates</p> <table border="1" data-bbox="884 1312 1257 1420"> <thead> <tr> <th colspan="2"><b>MGA 50</b></th> </tr> <tr> <th><b>Easting</b></th> <th><b>Northing</b></th> </tr> </thead> <tbody> <tr> <td>563, 062</td> <td>7,493,378</td> </tr> </tbody> </table> <p>Flow meter to be installed at the outlet to measure cumulative volumes of water discharged.            Constructed with a T-piece installation to reduce the velocity of discharge            Constructed with rip rap armouring around the outlet structure and along the path of the discharge flow into the tributary of the Hardey River to minimise scouring and erosion.</p>	<b>MGA 50</b>		<b>Easting</b>	<b>Northing</b>	563, 062	7,493,378
<b>MGA 50</b>							
<b>Easting</b>	<b>Northing</b>						
563, 062	7,493,378						

38 The Licensee must not depart from the requirements specified in Table 7 except:

(a) Where such departures are minor in nature and do not materially change or affect the infrastructure; or

(b) Where such departure improves the functionality of the infrastructure and does not increase the risks to public health, public amenity or the

environment.

- 39 The Licensee shall submit a construction compliance document to the CEO, following construction of the WTS S10 dewatering infrastructure and prior to operation.
- 40 The Licensee must ensure the construction compliance document:
- (a) is signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company; and
  - (b) certifies that each item of infrastructure specified in Table 7 has been constructed in accordance with the conditions of the Licence with no material defects beyond those listed under condition 38.
- 41 The Licensee shall undertake the contingency actions specified in column 2 of Table 8 for each event in column 1 of Table 8 within the timeframe specified in column 3 of Table 8.

**Table 8: Contingency action in the event of an exceedance of the Interim Operational Guideline Value at the dewatering discharge compliance sampling points (SW15B1001, SW15B1002 and SW17S1001).**

Column 1	Column 2	Column 3
Event	Contingency action	Completion timeframe
1.1 The 3 month rolling median exceeds/outside the range of Site Specific Trigger Values (SSTV) specified column 2 of table 7 or 8 for stressors or toxicants	Assess data to determine if the exceedance is statistically significant (i.e. test using a one-tailed non-parametric 't-test' with significance level $p=0,1$ ) for toxicants and $p=0.05$ for stressors.  If statistically significant, the Licensee is required to conduct a repeat sample.	Within two weeks of becoming aware of the exceedance event.
1.2 Single value $\geq 95$ th percentile of baseline data or $\geq$ ANZECC default 90% species protection level trigger value (whichever is higher) listed in columns 3 or 4 of table 7 or 8 for toxicants at the dewatering discharge compliance sampling point(s) for toxicants	The Licensee is required to conduct a repeat sample	
2 Repeat sample still exceeds the SSTV or $\geq 95$ th percentile of baseline data or $\geq$ ANZECC default 90% species protection level trigger value (whichever is higher) specified in columns 2, 3 or 4 of table 7 or 8.	Investigate the likely cause of the exceedance.	Within one month of becoming aware of the exceedance event
3 Discharge water is likely to be the cause of the SSTV exceedance or	The Licensee shall notify the CEO that an investigation to determine	Within three months of becoming aware of

<p><i>≥95%ile of baseline data or ≥ ANZECC default 90% species protection level trigger value (whichever is higher) specified in columns 2, 3 or 4 of table 7 or 8</i></p>	<p><i>the environmental impact of the dewatering discharge has commenced and provide a completion date.</i></p> <p><i>The Licensee is required to complete an investigation into the environmental impact of discharge water in accordance with condition 42 of the Licence.</i></p>	<p><i>the exceedance event</i></p>
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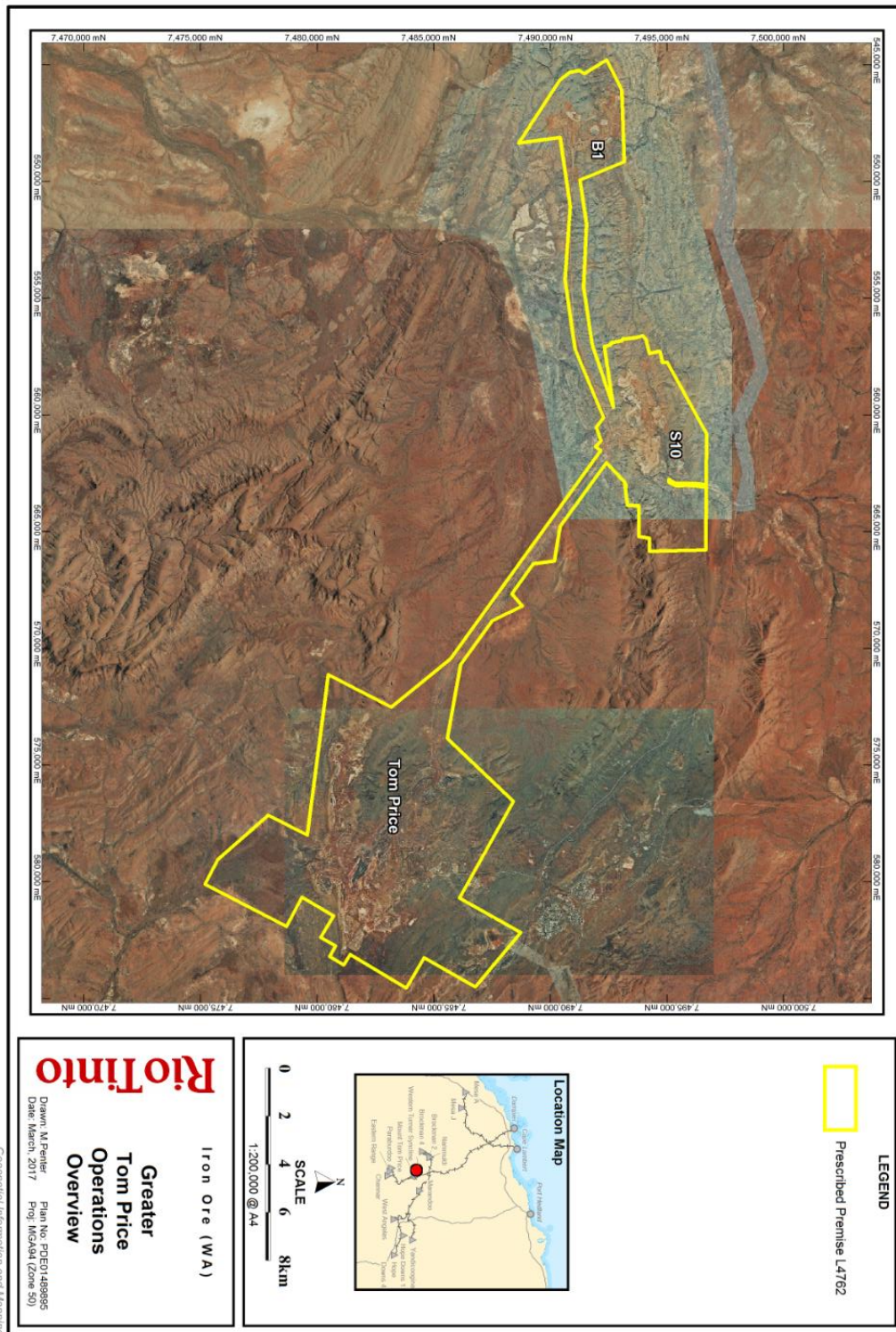
42. *The Licensee must submit to the CEO a report into the environmental impact of the dewatering discharge:*

- (a) an investigation into the level of risk to the environment as determined in consultation with a Suitably Qualified Third Party;*
- (b) a Direct Toxicity Assessment, unless where advised by a Suitably Qualified Third Party that impacts to aquatic ecosystems will not occur as a result of the exceedance; and*
- (c) timeframes for any contingency actions and corrective measures to be taken to mitigate the environmental impact of the discharge.*

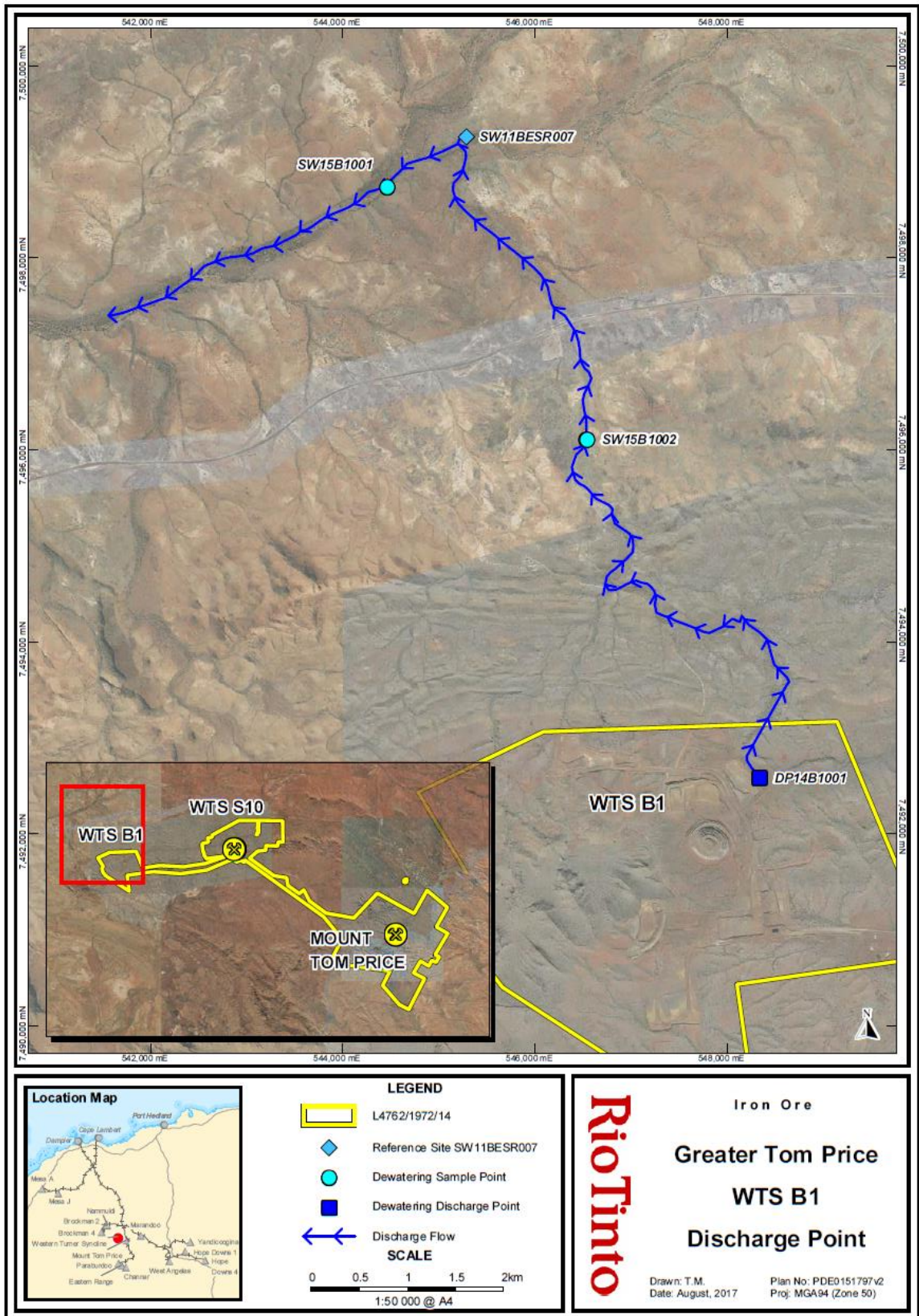
*The Licensee is required to submit the report to the CEO by the completion date nominated in accordance with condition 41 and Table 8 of the Licence.*

43. *Where required by condition 42(b), the Licensee must carry out the Direct Toxicity Assessment in accordance with the principles of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality ANZECC/ARMCANZ 2000.*

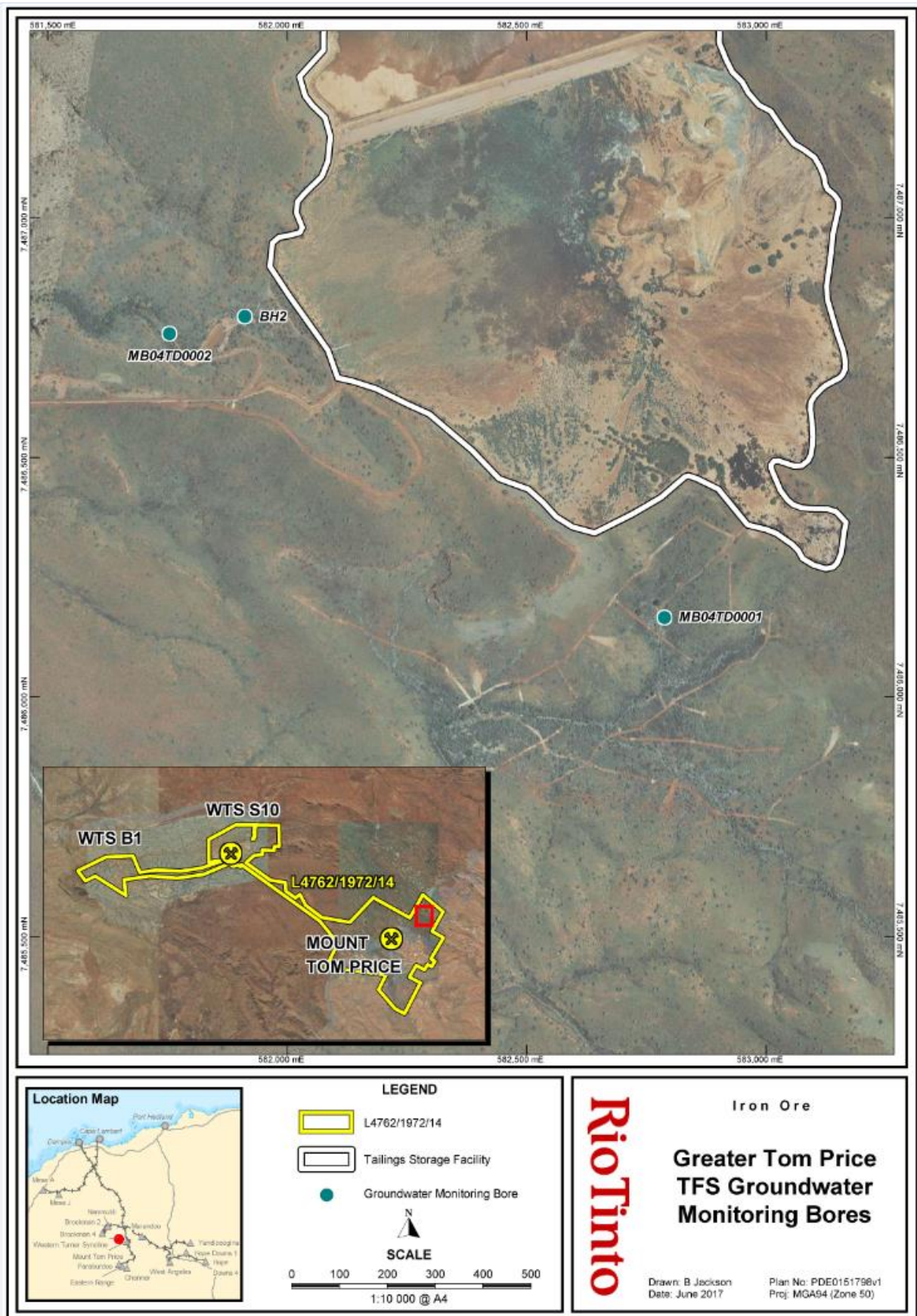
11. Attachment 1 of the Licence is amended by the insertion of the revised Premises map. The yellow line depicts the Premises boundary:



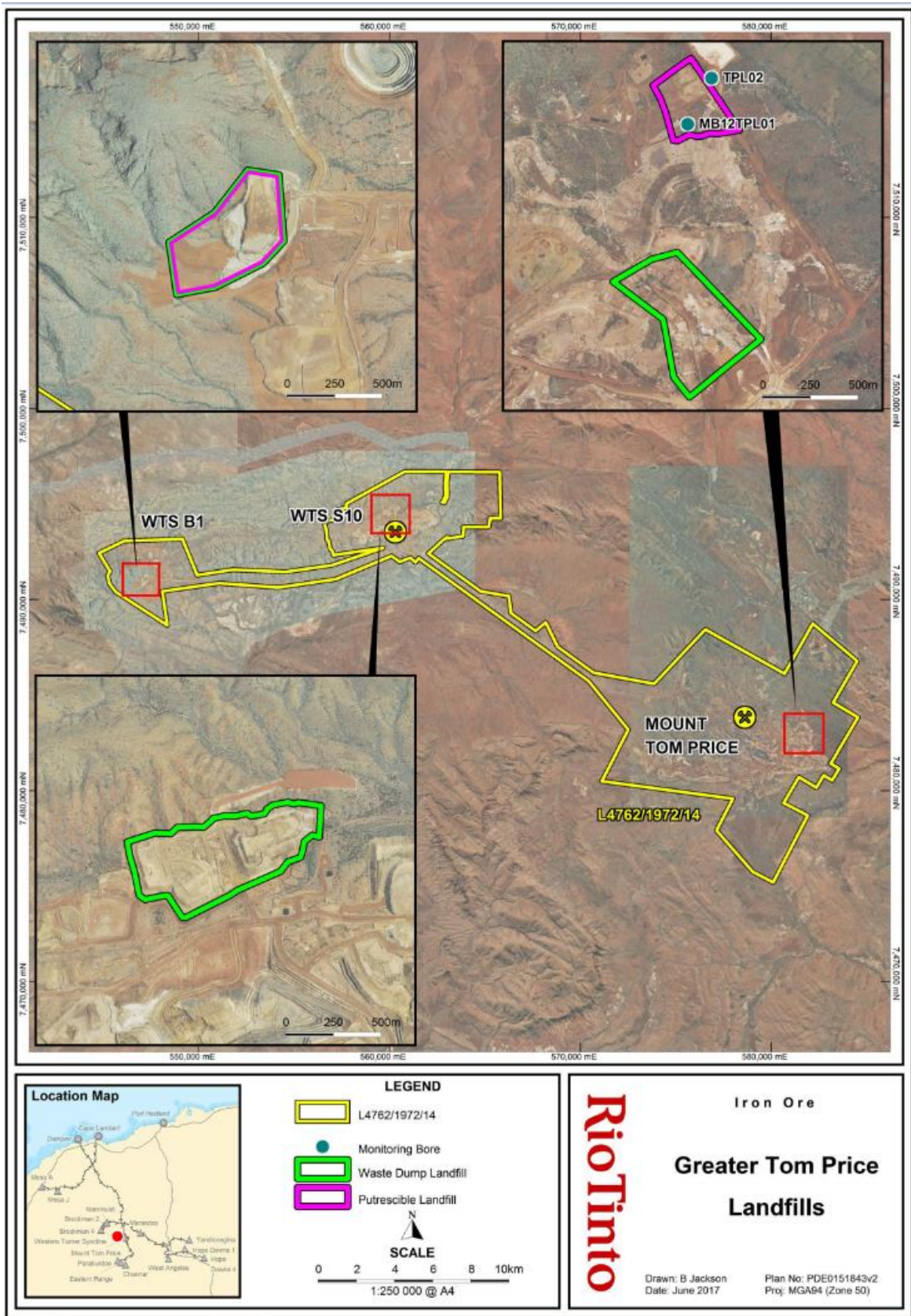
12. Attachment 6 is amended by inclusion of reference monitoring location SW11BESR007.



13. Attachment 7 of the Licence is amended to update groundwater monitoring bore to BH2 which is incorrectly listed as BH5.



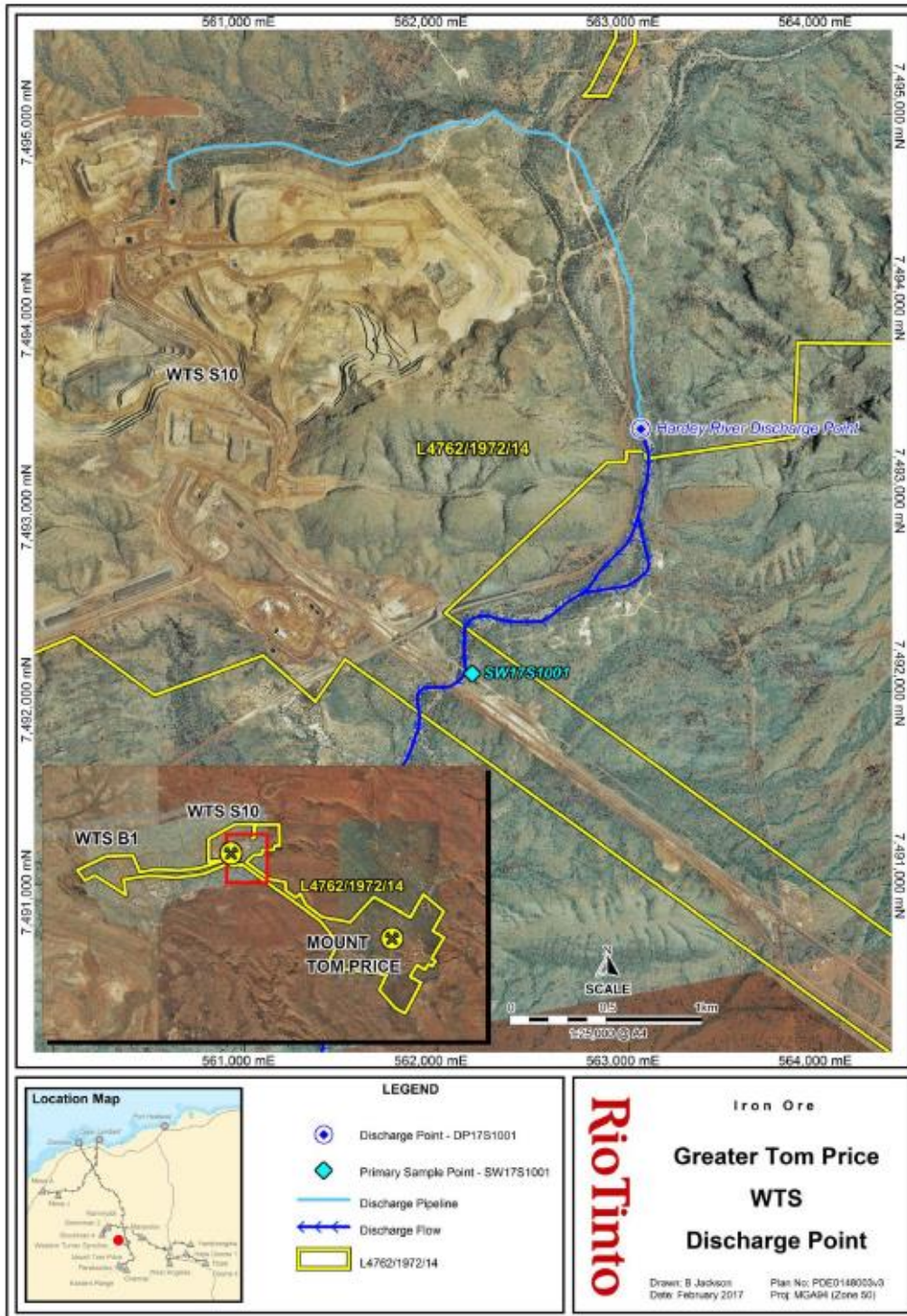
14. Attachment 9 of the Licence is amended to include the revised footprint of WDL- 1 (now WTS B1).





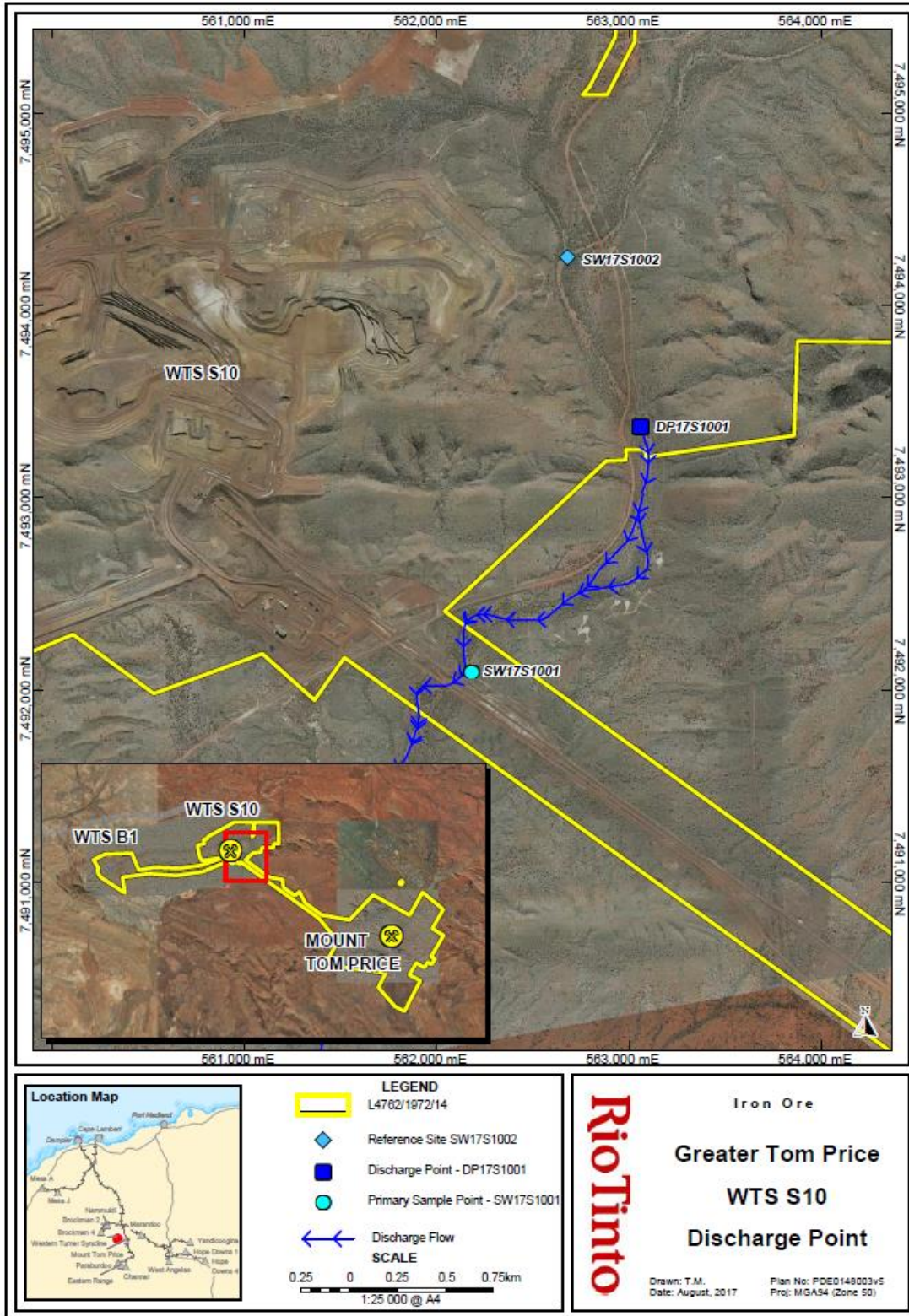
- The Licence is amended by the insertion of Attachment 11 depicting the location of the proposed dewatering pipeline and WTS S10 dewatering outlet as authorised by condition 37 of the Licence

**ATTACHMENT 11 - WTS S10 DEWATERING DISCHARGE POINT AND PROPOSED LOCATION OF THE DEWATERING PIPELINE**



16. The Licence is amended by the insertion of Attachment 12 depicting the location of the WTS S10 dewatering discharge point (DP17S1001), the downstream primary dewatering compliance sampling point (SW17S1001) and the reference sampling point (SW17S1002)

**ATTACHMENT 12 - WTS S10 DEWATERING DISCHARGE POINT AND PRIMARY SAMPLE POINT**



Geospatial Information and Mapping

## Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L4762/1972/14 – Greater Tom Price Iron Ore Mine	L4762/1972/14	accessed at <a href="http://www.der.wa.gov.au">www.der.wa.gov.au</a>
2	Rio Tinto, 10 March 2017. Licence Amendment Supporting Documentation Greater Tom Price Operation – Western Turner Syncline Section 10 Discharge Point (RTIO-HSE-0304904)	RTIO-HSE-0304904	DWER records
3	Rio Tinto, 10 March 2017. Licence Amendment Supporting Documentation Greater Tom Price Operation – Western Turner Syncline B1 Landfill (RTIO-HSE-0305682)	RTIO-HSE-0305682	DWER records
4	Rio Tinto, 27 March 2017. Additional information in relation to the Western Turner Syncline B1 Landfill and WTS S10 discharge point (RTIO-HSE-0307189)	RTIO-HSE-0307189	DWER records
5	Rio Tinto, 30 April 2015. 2015 Annual Environmental Report	RTIO-HSE-0267297	DWER records
6	Ministerial Statement 1031	MS 1031	accessed at <a href="http://www.epa.wa.gov.au/">www.epa.wa.gov.au/</a>
7	EPA, April 2016. Report and recommendations of the Environmental Protection Authority Western Turner Syncline Iron Ore Project – Revised Proposal Hamersley Iron Pty Limited Report 1565	EPA report 1565	accessed at <a href="http://www.epa.wa.gov.au/">www.epa.wa.gov.au/</a>
8	Wetland Research & Management, 10 November 2014. Western Turner Syncline State 2 Baseline Aquatic Fauna & Water Quality Surveys 2011-2013 prepared for Rio Tinto Pty Ltd	WRM, 2014	Accessed at <a href="http://www.epa.wa.gov.au/">www.epa.wa.gov.au/</a>
9	WRM, 6 January 2015. Western Turner Syncline Stage 2 and S10 Interim Operational Water Quality Guidelines for Dewatering Discharge prepared for Rio Tinto Pty Ltd	WRM, 2015	Accessed at <a href="http://www.epa.wa.gov.au/">www.epa.wa.gov.au/</a>
10	DER, February 2017. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	DER 2017	Accessed at <a href="http://www.der.wa.gov.au">www.der.wa.gov.au</a>

	DER, November 2016. <i>Guidance Statement: Environmental Siting</i> . Department of Environment Regulation, Perth	DER 2016	Accessed at <a href="http://www.der.wa.gov.au">www.der.wa.gov.au</a>
11	ANZECC and ARMCANZ (2000) <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i> .	ANZECC 2000	Accessed at <a href="http://www.environment.gov.au">www.environment.gov.au</a>
12	RTIO Western Turner Section 10 Water Quality Data received by email	RTIO 22 May 2017	DER record A1522043

## Appendix 2: Summary of Licensee's comments

The Licensee was provided with the draft Amendment Notice on 26 June 2017, followed by a revised draft Amendment Notice on 3 August 2017, for review and comment. The Licensee responded on 14 July 2017 and 17 August 2017 respectively. The following comments were received on the draft Amendment Notice.

Condition	Summary of Licensee comments	DWER response
<b>Licensee comments provided 14 July 2017</b>		
7	Request to amend condition 7 of the existing licence to include the WTS S10 mine dewatering discharge point.	DWER notes the request and has included an amendment to condition 7 in the amendment notice
Attachment 8 and 9	The Licensee has provided an updated map to replace attachment 8 and 9 of the Licence	DWER notes the request and has replaced attachment 8 and 9
Condition 33 and table 6	The Licensee has recommended changes to the map coordinates that depict the location of the WTS B1 putrescible landfill	DWER notes the request and has corrected the map coordinates that depict the location of the WTS B1 putrescible landfill
Attachment 11	The Licensee has requested the removal of attachment 11 which depicts the WTS B1 putrescible landfill location.	DWER notes the request and has removed attachment 11
Attachment 12	The Licensee has requested that attachment 12 is replaced with a new map that does not depict the path of the dewatering pipeline	DWER notes the request; however, attachment 12 is referenced in condition 37 which sets requirements on where the pipeline is to be constructed. Attachment 12 is to remain in the licence
8 and table 2	The Licensee has requested that the monitoring parameters be amended for the WTS S2 mine dewatering discharge points (DP14B1001, SW15B1001, SW15B1002) as per the updated hazard analysis provided in accordance with improvement condition 27(IR1).	DWER notes the request and has undertaken an assessment of the water quality data provided in the 2014-2015 and 2015-2016 annual environmental reports for the WTS S2 discharge points. DWER has concluded to remove the following parameters: Turbidity, aluminium, arsenic, boron, barium, chlorine, iron, mercury, manganese, molybdenum, sodium, silicon, uranium, vanadium. The results for these parameters are consistently below the site specific trigger values and the baseline data. Subsequently IR1 has also been removed from the licence. The following parameters are to remain: Potassium, magnesium and sulphur as increased concentration of major ions can be a prelude to increased metal concentrations.
9	The Licensee has requested the removal of proposed condition 41 and for condition current condition 9 to be amended to include the requirements to compare results from the monitoring required by condition 8 against ANZECC guidelines and site specific trigger values.	DWER notes the request and has removed proposed condition 41 and amended current condition 9.
Table 7	The Licensee has requested that table 7 be removed. The Licensee requests that site specific trigger values not be conditioned in the licence but the results from the monitoring undertaken in accordance with condition 8 be	DWER notes the request however, the request is declined.  The site specific trigger values for the WTS S10 discharge are to remain in the licence. In addition, the site specific trigger values provided in the Western

Condition	Summary of Licensee comments	DWER response
	<p>compared to values in the following reports for the WTS S2 and WTS S10 respectively:</p> <ul style="list-style-type: none"> <li>Western Turner Syncline Stage 2 Water Quality Management Plan (RIO-HSE-0207401)</li> <li>Western Turner Syncline Stage 2 and S10 Interim Operational Water Quality Guidelines for Dewatering Discharge (RTIO-HSE-0246924)</li> </ul>	<p>Turner Syncline Stage 2 Water Quality Management Plan (RIO-HSE-0207401) have been included in the licence.</p> <p>The Licensee has also requested the site specific trigger value for nitrate (NO<sub>3</sub>) as 11 mg/L on the basis that the upcoming revision of the ANZECC guidelines will include this value for 95% protection of species.</p> <p>DWER is not aware of a revision to the trigger value for Nitrate and has kept the proposed site specific trigger value at 3.4 mg/L for both the WTS S2 and WTS S10. The background nitrate concentration in the Hardey River is 3.3 mg/L</p>
Table 8	<p>The Licensee has made amendments to the events and contingency actions when SSTVs are exceeded. These include:</p> <ul style="list-style-type: none"> <li>12 month rolling median instead of rolling median in the first event</li> <li>Delineation between toxicants and stressors and the statistical significance tests</li> <li>Request to not undertake a repeat sample is “other causal factors other than the discharge” can be attributed to the exceedance</li> <li>Removal of timeframes for actions</li> <li>The removal of the requirement to consult with external experts when the dewatering discharge is the likely cause of exceedances of SSTV or the more than the 95%ile of baseline data of ANZECC default 90% trigger value.</li> </ul>	<p>DWER notes the request and provides the following response:</p> <ul style="list-style-type: none"> <li>DWER does not consider the 12 month rolling median to be appropriate before action is taken. DWER has amended this to be the 3 month rolling median.</li> <li>DWER has included the delineation between toxicants and stressors and the statistical significance tests.</li> <li>DWER has revised the timeframes for each contingency action in discussion with the Licensee.</li> <li>The requirement to consult with external experts is to remain in the contingency actions.</li> </ul>
<b>Licensee comments provided 17 August 2017</b>		
Table 10 of risk assessment section and references to the nitrate value in the decision section	<p>The licensee has previously requested the value for NO<sub>3</sub> be modified to 11 mg/L. This Licensee has stated that this value has been accepted by the OEPA (in consultation with the DWER – Water, previously Department of Water) for Nammuldi, Yandicoogina, Hope Downs 4 and Marandoo Operations. The Licensee has provided correspondence from the OEPA for Nammuldi.</p> <p>It is requested that consistency be applied to the Nitrate trigger level for all dewatering discharge managed either under Ministerial Statements or Part V Licenses in the Pilbara equivalent to the revised ANZECC default TV for nitrate published in SCEW (2013) Guidelines for the protection of aquatic ecosystems, toxicant guideline</p>	<p>A revised ANZECC guideline value for nitrate (NO<sub>3</sub>) has not been released. The trigger value of 3.4 mg/L for nitrate (NO<sub>3</sub>), consistent with the current ANZECC 90% protection level is to remain on the Licence.</p>

Condition	Summary of Licensee comments	DWER response
	<p>values: Nitrate – freshwater (Interim update). Australian and New Zealand guidelines for fresh and marine water quality. Council of Australian Governments Standing Council on Environment and Water, Canberra, ACT.</p> <p>The Licensee has proposed revised wording to Note 1 of Table 10 with deletions shown in strikethrough and additions shown in bold underline below:</p> <p><i>Note 1: The Interim Operational Guidelines for nitrate is not considered to be appropriate; the ANZECC 95% guideline trigger value for nitrate (NO<sub>3</sub>) is 0.7 mg/L. <del>Additionally, N-NH<sub>4</sub>, dissolved oxygen and pH have been incorrectly compared against the ANZECC 2000 default trigger value for lowland rivers,</del> <b><u>despite the Hardey River being at an elevation of 500m. This is because the ANZECC defaults for stressors for Tropical Australia were derived from data from Queensland and the Northern Territory and do not include Western Australian data. The values for lowland streams were considered more representative of Pilbara creeks that the values for upland streams.</u></b> <del>“Upland streams are defined as those at &gt;150m altitude” (ANZECC, 2000). The Hardey River is at an elevation of over 500m.</del></i></p>	<p>DWER notes this request. Note 1 has been removed.</p>
<p>Table 2. Water monitoring schedule</p>	<p>The licensee has provided upstream sampling points and proposes that they only require sampling during the contingency action phase and when flowing, given the ephemeral nature of the systems in question. The Licensee has also provided maps showing the location of discharge/sample points.</p> <p>The licensee requests that Ammoniacal Nitrogen (NH<sub>3</sub> as N), Ammonium (NH<sub>4</sub> as N) and Filterable Reactive Phosphorus (FRP) be removed. As per previous comment provided, a hazard analysis performed 18 months after discharge commenced identified NH<sub>3</sub> as low risk as it has not been elevated in discharge water or production bores. Furthermore, this will be captured by measuring total N.</p> <p>Total P has not been elevated in discharge water to date. Furthermore, FRP is captured by measuring total P; If</p>	<p>DWER notes this request and has included the reference sample points for the Beasley River discharge and the Hardey River discharge in Table 2. DWER considers that the sampling of the reference sample points should be undertaken at the same frequency to the discharge and downstream compliance points to enable an evaluation of the discharge water. The map depicting the discharge and sampling points for the Beasley River has replaced attachment 6 of the Licence. The map depicting the Hardey River discharge and sampling point has been added to the Licence at Attachment 12.</p> <p>DWER notes this request but considers the analysis of the components of nitrogen and phosphorus to be necessary to inform potential direct and indirect risks to aquatic fauna.</p>

Condition	Summary of Licensee comments	DWER response
	total P is elevated the investigation would include measurement of FRP.	
	The licensee requests that Arsenic V is replaced with Total Arsenic. Arsenic V is not a routine laboratory analysis. Total arsenic is routinely measured and includes Arsenic V.	DWER notes this request and considers the request to be acceptable. Arsenic V has been replaced by total arsenic in the list of parameters in Table 2.
	The licensee requests that Mercury Inorganic is replaced with Total Mercury. Total Mercury can be measured with a lower limit of reporting by laboratories and includes the inorganic portion.	DWER notes this request and considers the request to be acceptable. Inorganic mercury has been replaced by total mercury in the list of parameters in Table 2.
	The licensee requests that Tin be deleted from this table. Tin is not considered a risk in discharge water and has not previously been included for measurement in discharge water at other Pilbara operations. This was not included in the interim operational water quality guidelines, and there is no ANZECC default guideline due to insufficient data.	DWER notes this request and considers the removal of tin from the sampling and analytical suite to be acceptable.
	In reference to the sampling frequency required at reference sample monitoring points: The licensee notes that excess water is discharged from the outlet into ephemeral systems which are dry for the majority of the year. The licensee requests the wording is modified to note that sampling is only required when there is a flow event and when required by a contingency action.	DWER notes this request however the requirement to sample only “when flowing” is already a requirement of table 2. The sampling is required at the same frequency as all other related sample points to enable an evaluation of the discharge water.
Tables 3 and 4 Guideline Values for Dewater Discharges	The licensee requests that only the downstream compliance point be included in this comparison table, as this represents the receiving environment from which the SSTVs were derived.	DWER notes this request and considers the comparison of downstream compliance points (SW15B1002, SW15B1001 and SW17S1001) with SSTVs to be acceptable, therefore Table 8 of condition 41 has been amended to include to the following:  <i>Table 8: Contingency action in the event of an exceedance of the Interim Operational Guideline Value at the dewatering discharge compliance sampling points (SW15B1001, SW15B1002 and SW17S1001).</i>
	The licensee has merged column 3 and 4; comparison is made to whichever is greater of the 95%ile of baseline data and the ANZECC default 90% protection level TV, as shown in the decision support flowchart (Figure 1).  This comparison is made for toxicants only and is not applicable to stressors.	DWER has considered this request does not consider the merging of column 3 and 4 of tables 3 and 4 to be appropriate. This is due to the ANZECC 2000 guidelines values currently being revised which may result in the values for the 90 % protection levels being updated. Therefore column 3 and 4 detailing the 90%ile of baseline data and the ANZECC 90% protection level are to remain in tables 3 and 4.  It is requested that RTIO provide the missing data to populate column 3 of tables 3 and 4.



Condition	Summary of Licensee comments	DWER response
	<p>In line with comments provided for <i>Table 2. Water monitoring schedule</i>, the licensee requests the removal of ammoniacal nitrogen (NH<sub>3</sub> as N), ammonium (NH<sub>4</sub> as N) and filterable reactive phosphorus (FRP).</p>	<p>DWER notes this request but considers the analysis of the components of nitrogen and phosphorus to be necessary to inform potential risks to aquatic fauna.</p>
	<p>With regard to SSTV for Iron: The ANZECC guidelines state that there is insufficient data to derive a reliable TV for iron, and the current Canadian guideline of 0.3 mg/L should be used as an interim level at the 95% species protection level. Guidelines have not been provided for the 90% protection level (see ANZECC guidelines Chapter 8).</p>	<p>The Licensee has not provided the 95%ile of baseline data as requested. The 95%ile of data is required.</p>
	<p>The Licensee requests that tin be deleted from this table. Tin is not considered a risk in discharge water and has not previously been included for measurement in discharge water at other Pilbara operations. This was not included in the interim operational water quality guidelines, and there is no ANZECC default guideline due to insufficient data.</p>	<p>DWER notes this request and considers the removal of tin from the sampling and analytical suite to be acceptable.</p>
	<p>Inserted footnote: H= the SSTV should be modified for water hardness (mg/L CaCO<sub>3</sub>) at the time of measurement according to the algorithms provided in Table 3.4.3 of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ 2000)</p>	<p>DWER notes this request and has included the footnote beneath tables 3 and 4 which provides for the modification for water hardness for the following parameters: cadmium, copper, nickel, lead and zinc.</p>
<p>Table 8 Contingency action</p>	<p>The licensee requests that the 3 month rolling median is listed as 12 months as proposed in Figure 1. The Licensee states that 12 months of data is required to calculate a meaningful and statistically valid median. Comparison to the 12 month rolling median allows detection of a systematic increase in concentration of an analyte, while comparison to the 95%ile of baseline or ANZECC default 90% protection TV (event 1.2) will identify a single extremely high concentration.</p>	<p>As previously advised DWER does not consider the 12 month rolling median to be appropriate before action is taken. DWER has retained the requirement for the 3 month rolling median.</p>
	<p>The licensee notes the timeframes listed in column 3 (one week) are unable to be achieved and do not consider a range of factors such as accessibility, water availability, time taken for laboratory testing, external consultation with experts etc.</p> <p>The Licensee requests the timeframe be amended to 1 month for contingency action 1.1 and 1.2.</p>	<p>DWER has considered this request and has amended the timeframe to two weeks. DWER does not consider the timeframe of one month to be appropriate.</p>
	<p>The Licensee notes that the timeframe for contingency</p>	<p>DWER has considered this request and has amended the timeframe to one</p>

Condition	Summary of Licensee comments	DWER response
	action 2 is unable to be achieved and requests that the timeframe be changed from three weeks to one month.	month.
Table 8 Contingency action	The Licensee requests that a reference to the downstream compliance points be included in Table 8. The Licensee has requested a change of working in Table 8.	DWER has considered this request and has included the reference to downstream compliance points in table 8. The wording in table 8 is to remain as columns 3 and 4 are to remain as separate values.
Condition 42 and 43	<p>Condition 42 requires the Licensee to undertake a direct toxicity assessment (DTA) in accordance with the Australian and New Zealand Guidelines for Fresh and Marine Water Quality ANZECC/ARMCANZ 2000 on the basis that not every investigation will require a direct toxicity assessment.</p> <p>The Licensee states that the first step could be to instigate field studies and then appropriate investigation requirements identified depending on the specific exceedance.</p> <p>It is the licensee's preference to delete Condition 42 altogether. There should not be a predefined method of investigation in the licence, the licensee will undertake an adaptive response depending on the nature of the exceedance. The licensee requires flexibility when undertaking investigations of this nature to enable appropriate adaptive management to occur.</p>	DWER notes this request and has altered condition 42 which now requires the Licensee to undertake a Direct Toxicity Assessment unless where advised by a Suitably Qualified Third Party that impacts to aquatic ecosystems will not occur as a result of the discharge. A definition of Suitably Qualified Third Party has been included in the Licence. Condition 43 required the DTA to be undertaken in accordance with the principles of the ANZECC guidelines.
Attachment 11	The Licensee has provided an updated map that doesn't show the discharge pipeline (which the Licensee state's isn't required). The licensee requests that the updated map is used.	DWER notes this request however Attachment 11 is referenced in condition 37. The location of a pipeline is considered in the risk assessment therefore Attachment 11 is to remain in the licence. A new map depicting the dewatering discharge points and sample points for the WTS S10 discharge has been included in the Licence separately at Attachment 12.
<b><i>Licensee comments provided 10 October 2017</i></b>		
Detailed risk assessment - erosion	The Licensee does not consider the outflow from dewatering activities to be 'effluent'. The Licensee considers the descriptor of 'effluent' to relate to industrial wastes.	DWER notes this request and has amended the term to dewatering discharge.
Detailed risk assessment - discharge water quality	The Licensee requests that the decision report documents the Environmental Protection Authorities evaluation of the discharge water to the Hardey River. The Licensee requests that it be noted that the EPA considers it unlikely that the proposal would have significant impact given the similar quality of the discharge water compared to the	<p>DWER notes this request and has documented the EPA's evaluation in the assessment of discharge water quality.</p> <p>DWER has also noted that the data provided on the Hardey River is limited for some parameters. DWER has also further clarified the parameters that exceed SSTVs and/or ANZECC 2000 95% protection levels within the risk</p>

Condition	Summary of Licensee comments	DWER response
	water quality of the Hardey River.	assessment on water quality.
Detailed risk assessment - discharge water quality	The Licensee considers the value of 11 mg/L for nitrate as a toxicant to supersede the ANZECC 2000 guidelines until the formal revision of the ANZECC 2000 guidelines is published.	DWER notes this request and is not aware of a revision of the nitrate value to 11 mg/L. The use of 3.4 mg/L (current ANZECC 2000 90% protection level) to be appropriate given the baseline data provided for the Hardey River.
9 and Tables 3 and 4.	The Licensee has provided the 95%ile of baseline data from the Beasley and Hardey Rivers as requested.	The 95%ile of baseline data has been included in Tables 3 and 4.
8 and Table 2 -Water monitoring schedule	The Licensee requests that the requirement to measure flow rate is replaced with photographic evidence. This is due to the ephemeral nature of the watercourse and safe access.	DWER notes this request and has replaced the requirement to measure flow rate to the requirement to take photographic evidence.
Decision WTS S10	The Licensee believes that a significant amount of information has been provided and that the risk to the receiving environment is low to moderate.	DWER notes this comment but considers the amount of data provided on the Hardey River to be limited for some parameters. Furthermore, the WRM 2015 report concludes that there is a moderate-high risk of habitat loss due to elevated nitrate in the S10 orebody aquifer when compared to concentrations in surface waters of the Hardey river.  DWER considers there to be a potential mid-level impact. Due to the discharge extent (15 km) extending beyond the Premises boundary, this results in a consequence rating of <i>major</i> .
Decision WTS S2	The Licensee would like it noted that a hazard analysis has been provided to evaluate the SSTVs for the WTS S2 discharge to the Beasley River. This hazard analysis recommended that the SSTV for nitrate to remain at 11 mg/L.	DWER notes this information and undertook an assessment of the revised parameters for the WTS S2 discharge based on data provided in Annual Environmental Reports. Some parameters were removed from the monitoring program due to consistent results below the background levels. DWER understands that the hazard analysis consisted of a comparison of monitoring data against the SSTVs only.
30	The Licensee requests that the wording 'location of water discharged' is removed. From condition 30 (c).	DWER has considered this request and has removed the working 'location of water discharged' from condition 30 (c).
41 and table 8	The Licenses would like to note that the contingency action originally proposed were developed by a third party that specialises in this field and that these actions have previously been assessed and approved by DWER EPA and Regulatory Services (Environment).	Noted.