



Licence Number	L7774/2000/6
Licence Holder	Robe River Mining Co Pty Ltd
ACN	008 694 246
File Number:	DER2014/000873
Premises	West Angelas Iron Ore Mine AML70/248 sections 71, 72 and 79, L47/50, L47/52, L47/53, L47/60, L47/409, E47/2963, G47/1236 and G47/1235
Date of Amendment	03/05/2019

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* (EP Act) 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.

Alana Kidd

Manager, Resource Industries

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
Amendment Notice	refers to this document
Applicant	Robe River Mining Co. Pty Ltd
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 Act Locked Bag 10, JOONDALUP DC WA 6919 info-der@dwer.wa.gov.au ;
cfu	Colony Forming Unit
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DG	Dangerous Goods
DWER	Department of Water and Environmental Regulation
EC	Electrical Conductivity
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
ha	hectare
HDPE	High Density Polyethylene

Licence Holder/ Licensee	Robe River Mining Co. Pty Ltd
GL	gigalitre
kg	kilogram
kL	kilolitre
L	litre
mbgl	metres below ground level
mm	millimetre
m ³	cubic metres
mg/L	milligram per litre
MS	Ministerial Statement
m ³ /day	cubic metres per day
Occupier	has the same meaning given to that term under the EP Act.
PEC	Priority Ecological Community
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 <i>Guidance Statement: Risk Assessment</i>
Robe River	Robe River Mining Co. Pty Ltd
Robe River State Agreement	<i>Iron Ore (Robe River) Agreement Act 1964 (WA)</i>
RO WTP	Reverse Osmosis Water Treatment Plant
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
µS/cm	<i>Microsiemens per centimetre</i>
WQPN 22	Water Quality Protection Note No. 22
WWTP	Waste Water Treatment Plant

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 54 and 73. No changes to the aspects of the Licence relating to Categories 5, 6, 12, 52 or 64 have been requested by the Licence Holder, or been made.

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

- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

Amendment description

Robe River Mining Co. Pty Ltd (Robe River) (Licence Holder) (Applicant) submitted an application on 5 December 2018 to amend the West Angelas Iron Ore Mine premises Licence L7774/2000/6. The application was for:

- A Waste Water Treatment Plant (WWTP) with capacity of 186 cubic metres per day (m³/day) and 6.79 hectare (ha) spray field.
- Additional diesel storage capacity comprising of two x 110 kilo litre (kL) tanks and reconciliation with the existing Dangerous Goods (DG) Licence number DGS016356 for capacity of 18,630 m³ in aggregate.

DWER sent a proposed amendment to Robe River on 26 March 2019 for comment. Robe River responded on 11 April 2019 with information that the proposal for the WWTP had been updated and some changes were requested. The updated proposal for the WWTP is for:

- A WWTP with capacity of 210 m³/day and a minimum size of 7.67 ha spray field; and
- 30 m³/day of reject water from the camp Reverse Osmosis (RO) plant will be plumbed into the WWTP irrigation tanks (post treatment cycle), where it will mix with the treated wastewater before discharge by irrigation to the spray field.

The discharge of RO water to the spray field is less than the threshold of 0.5 GL or more per year required for Category 85B Water Desalination plant (as defined by Schedule 1 of the *Environmental Protection Regulations 1987*).

The updated proposed WWTP has been assessed for this Amendment.

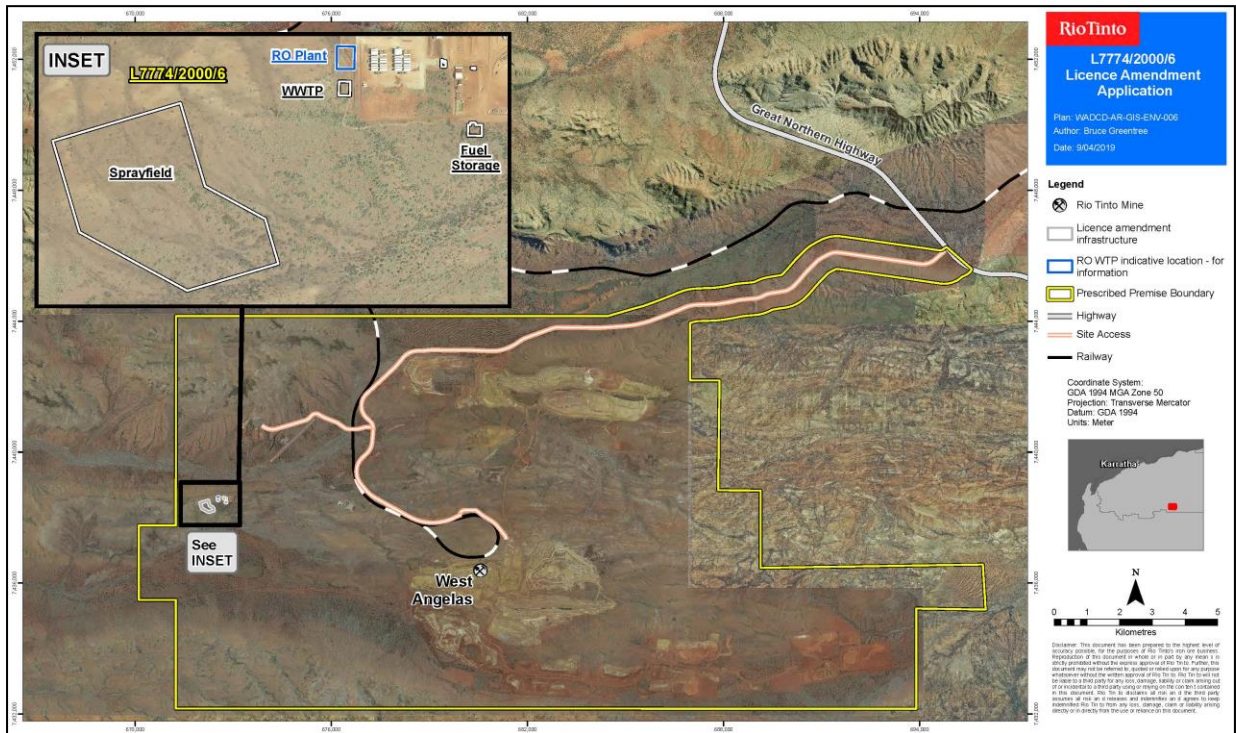
Table 2 summarises the existing licence and proposed changes.

Table 2: Proposed production or design capacity changes

Category	Description	Current production or design capacity	Proposed production or design capacity	Description of proposed amendment
5	Processing or beneficiation of metallic or non-metallic ore	35,000,000 tonnes per annual period	No change	N/A
6	Mine dewatering	6,000,000 tonnes per annual period	No change	N/A
12	Screening, etc. of material	10,000,000 tonnes or more per annual period	No change	N/A
52	Electric power generation	90 Megawatts	No change	N/A
54	Sewage facility	610 cubic metres per day	820 cubic metres per day	Construction and operation of a 210 m ³ /day WWTP
64	Class II putrescible landfill site	11,500 tonnes per annual period	No Change	N/A
73	Bulk storage of chemicals, etc	18,300 cubic metres in aggregate	18,630 cubic metres in aggregate	Addition of two 110 kL diesel fuel storage tanks and reconciliation with the DG licence

The location of the proposed WWTP and fuel storage facility is shown in Figure 1.

Figure 1: Location of the proposed WWTP and fuel storage



Category 54

WWTP

Sewage will be pumped 100 m from the camp to the WWTP (named Village WWTP3) by pump station and pipe. No other wastes will be introduced into the treatment system.

Licence L7774/2000/6

The WWTP will be a *PlanetDisk* Rotating Biological Contractor (RBC) unit with a 210 m³/day maximum treatment capacity, and is designed to service up to 600 construction personnel assuming a daily water consumption rate of 350 litres (L) per person.

The treatment process consists of primary anaerobic sedimentation tanks, anoxic zones, RBC aeration zone, clarification, effluent sterilization and treated waste water storage. Treated waste water delivered to the irrigation tank is sterilized using liquid chlorine, applied through an automated dosing system. Effluent is discharged from two 50 m³ irrigation storage tanks to a spray field. The storage tanks act as a storage buffer in case of WWTP malfunction.

The treatment plant design includes high level audio/visual alarms for the balance and irrigation tanks, and pump trip.

Sewage sludge will be removed offsite and disposed via a licenced waste contractor.

The Manufacturer's specification of the expected treated wastewater quality is shown in Table 3 below.

Table 3: Expected WWTP effluent quality

Parameter	Effluent quality
Biochemical Oxygen Demand (BOD)	<20 mg/L
Total Suspended Solids (TSS)	<30 mg/L
pH	6-9 (pH value)
Total Nitrogen (TN)	20 – 50 mg/L
Total Phosphorus (TP)	6 – 12 mg/L
<i>E.Coli.</i> (cfu/100mL)	<1,000 (cfu/100 mL)

Reverse Osmosis

A reverse osmosis water treatment plant (RO WTP) is located approximately 30 m north of the WWTP to enable water purification on site, and is designed to meet the *National Water Quality Management Strategy (NWQMS) Australian Drinking Water Guidelines* (2011).

Reject water from the camp RO WTP plant will be plumbed into the WWTP irrigation tanks (post treatment cycle), where it will mix with the treated wastewater before discharge by irrigation to the spray field. The irrigation system has been designed to accommodate the maximum throughput of 210 m³/day from the WWTP and 30 m³/day of water treated via the RO plant.

The expected salinity of the water discharged from the irrigation tanks to the spray field is shown in Table 4 below.

Table 4: Expected WWTP and RO WTP effluent salinity for sprayfield disposal

Parameter	WWTP Effluent (210 m ³ /day capacity)	RO WTP Effluent (30 m ³ /day capacity)	WWTP and RO WTP blend going to sprayfield
Sodium (mg/L)	115	217	128
Chloride (mg/L)	175	327	194
EC (µS/cm)	690	3400	1000

WWTP Spray field

Treated waste water will be discharged to a minimum of a 7.67 ha irrigation spray area, as shown in Figure 2 below. The spray area is sized to be able to receive and contain the planned volume of effluent. Approximately 82 above ground sprinklers will be spaced to avoid pooling.

The Applicant's calculations to determine predicted nutrient application rates were based on the effluent quality of 40 mg/L Total Nitrogen and 12 mg/L Total Phosphorus:

- Total Nitrogen – $(40 \text{ mg/L} / 1,000) = 0.04 \text{ kg/m}^3 \times 210 \text{ m}^3/\text{day}$ (design output) = 8.4 kg/day x 365 days = 3066 kg/year / 7.67 ha = 399.7 kg/ha/year.
- Total phosphorus – $(12 \text{ mg/L} / 1,000) = 0.012 \text{ kg/m}^3 \times 210 \text{ m}^3/\text{day}$ (design output) = 2.52 kg/day x 365 days = 919.8 kg/year / 7.67 ha = 119.9 kg/ha/year.

The calculated application rates meet the maximum nutrient application criteria specified in the *Water Quality Protection Note 22, Irrigation with nutrient-rich wastewater* (Department of Water 2008) (WQPN 22) for Risk Category D, and common levels of concern for impacts to native vegetation and surface water (adapted from EPHC, 2006, ANZECC 2000 Guidelines and US EPA, 2006) and as shown in Table 4 below.

Table 5: Application criteria

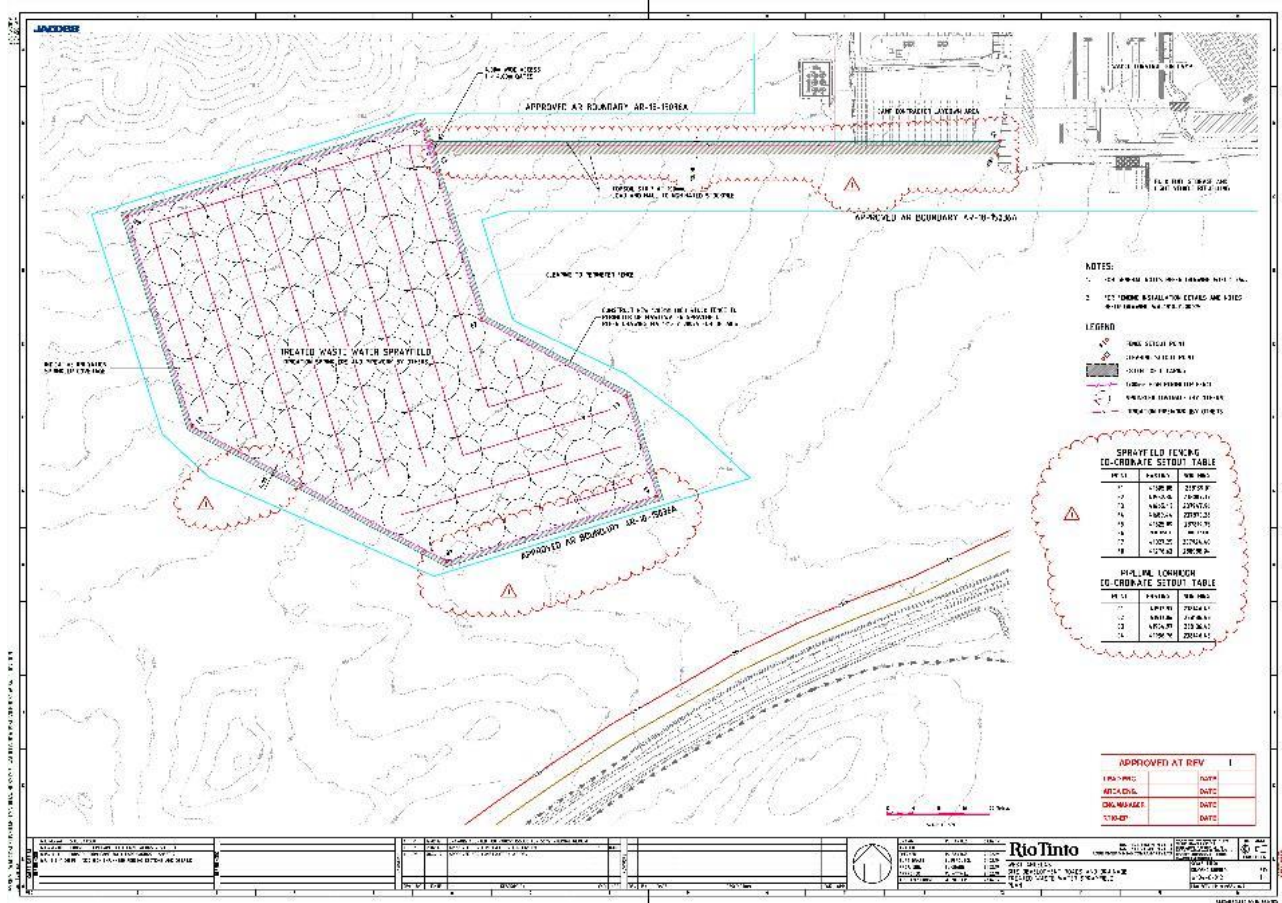
Parameter	WQPN 22 criteria - Risk Category D	Calculated application rate	Levels of concern adapted from EPHC, 2006, ANZECC 2000 and US EPA, 2006	Expected effluent quality
Total Nitrogen	480 kg/ha/year	399.7 kg/ha/year	125 mg/L	20 – 50 mg/L
Total Phosphorus	120 kg/ha/year	119.9 kg/ha/year	12 mg/L	6 – 12 mg/L

Expected combined salinity loadings to the sprayfield (RO WTP rejects and treated effluent) will have an electrical conductivity of 1,000 µS/cm. According to the NSW Department of Primary Industries, *Salinity tolerance in irrigated crops, December 2016, Primefact*, this level of salinity would see no reduction in yield of forage crops, pastures and clovers.

WWTP Commissioning

Robe River proposes to commission the Village WWTP3 for around three months, when electrical and mechanical installation of the WWTP will be tested, wastewater flows optimised and the plant inspected for leaks. Effluent water quality will be monitored monthly during the commissioning period. Once the plant has stabilised and deemed operational, water quality monitoring will be quarterly in accordance with the existing Licence.

Figure 2: Spray field design



Category 73 - Bulk storage of chemicals

Robe River propose to install two additional 110 kL diesel fuel tanks with refueling.

The two 110 kL fuel tanks will be double walled with leak detection systems and over fill protection.

The fuel storage and refueling facility will be constructed to the following specifications:

- Ground directly below the refueling apron compacted to 95% Maximum Dry Density.
- 0.75 mm HDPE liner installed 400 mm below the refueling apron.
- Rollover bund 100 mm high by 200 mm wide constructed on all sides of the refueling apron.
- Two 1000 mm high by 200 mm concrete filled bollards installed either side of the refueling apron to prevent vehicle collision.
- Windrows 500 mm high at 2.1 batter to surround the sides of the fuel storage facility.

Spill response pads and booms, and fire extinguishers will be made available.

Other approvals

The Licence Holder has provided the following information relating to other approvals as outlined in Table 6.

Table 6: Relevant approvals

Legislation	Approval
<i>Iron Ore (Robe River) Agreement Act 1964 (WA) (Robe River State Agreement).</i>	The West Angelas Project is located on Mineral Lease 248SA (ML248SA) which was granted in 1976 under the Robe River State Agreement. Construction of the proposed WWTP was approved under the State Agreement in November 2018.
<i>Mining Act 1978 (WA) (Mining Act)</i>	The location of the WWTP and associated infrastructure falls within General Purpose Lease 47/1236 (G47/1236), while the location of the additional fuel storage area falls within General Purpose Lease 47/1235 (G47/1235). Both General Purpose lease areas have been granted under the Mining Act in accordance with the Robe River State Agreement.
EP Act 1986	Ministerial Statements (MS) 970 and 1015. The Applicant has advised that two hectares of clearing required for the infrastructure is captured in the MSs.
<i>Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007.</i>	An amendment will be sought to the existing Dangerous Goods (DG) Site Licence (licence number DGS016356) for the provision and installation of the two diesel fuel storage tanks.
<i>Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974.</i>	Approval for the proposed WWTP will be sought from the Shire of East Pilbara.

Amendment history

Table 7 provides the amendment history for L7774/2000/6.

Table 7: Licence amendments

Date of amendment	Amendment details
15/08/2014	Inclusion into L7774/2000/6 of category 70 Prescribed Premises and nutrient loading rates for the waste water treatment plant
4/12/2014	Revocation of Licence L7624/2000/7 and incorporation of the waste water treatment plant from L7624/2002/7 into Licence L7774/2000/6
31/03/2016	Inclusion into L7774/2000/6 of a landfill constructed under Works Approval W5721/2014/1
31/10/2017	<ul style="list-style-type: none"> • Increase in design capacity for Category 6 from 6GL/year to 11.84 GL/year to allow for a dewatering discharge outlet at deposit B, which will discharge at 5.84 GL/year. • Approval for a waste dump landfill at Deposit B to replace existing landfills that are nearing capacity. The design capacity for Category 64 has not changed. • Removal of previous condition 1 (requiring operating the mobile crushing and screening plant in accordance with a specific management plan. • Removal of previous condition 3 (requiring discharge of effluent only to approved irrigation areas). • Removal of previous condition 12 (referring to hydrocarbon management). • Removal of previous condition 22 for tyre storage and disposal. • Removal of previous condition 25 relating to the monitoring of the extent of surface water

	<p>discharge and replacement with new condition 24.</p> <ul style="list-style-type: none"> • Removal of conditions 26 - 30 (Relating to construction of the West Angelas Power Station). • Updated definitions. • Inclusion of new conditions 19 to 21 for the construction and operation of the deposit B dewatering discharge point. • Administrative change to the reference of the element Boron. • Inclusion of new condition 30 for the submission of a compliance document following construction of the Deposit b dewatering discharge point. • Update to condition 32 for the Annual Audit Compliance Report. • Update of Attachments 4 (map of premises landfills). • Removal of Attachment 7 (form for submission of Annual Audit Compliance Reports).
20/11/2018	Amendment Notice 1 - Decrease in Category 6 Mine dewatering discharged from 11.84GL per annual period to 6 GL per annual period.
3/05/2019	Amendment Notice 2 - Construction and operation of a WWTP (Village WWTP3) and increase Category 54 from 610 m ³ /day to 820 m ³ / day. Category 73 increase from 18,300 m ³ to 18,630 m ³ to account for new infrastructure.

Location and receptors

A construction camp is located 300 metres (m) east of the WWTP. As the camp is located within the premises and operated by the License Holder, the camp is not considered by DWER to be a sensitive land use or receptor for the purposes of assessing the risks of emissions and discharges associated with the operation of the prescribed activities.

Tables 8 and 9 below list the closest sensitive land users and environmental receptors.

Table 8: Sensitive land users

Residential and sensitive premises	Distance from Prescribed Premises
BHP's Jocelyn Camp	24 km north
Closest residential zoned area: Newman	Approximately 130 km south-east

Table 9: Environmental receptors

Environmental receptors	Distance from Prescribed Premises
Karijini National Park	Located approximately 10 km west of the infrastructure
Priority 1 Ecological Community (PEC) - West Angelas Cracking Clay	Approximately 1 km south-east of the infrastructure
Pilbara Groundwater Area	Premises located on the Area
Groundwater	Application states that the infrastructure is located in an area where depth to groundwater is greater than 40 metres below ground level (mbgl).
Pilbara Surface Water Area	Premises located on the Area
Turee Creek East Branch	Approximately 1 km north of the Sprayfield.

Risk assessment

Tables 10 and 11 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls

Table 10: Risk assessment for proposed amendments during construction

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning and regulatory control	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
Cat 54: Sewage facility	Construction of Village WWTP3, pipeline and irrigation area.	Dust associated with earth movement and construction vehicles.	Closest receptor is Jocelyn Camp 24 km north	Air	Health and amenity impacts	N/A	N/A	N/A	Distance to closest sensitive receptor is sufficient to inform the risk of dust emissions as not foreseeable. The general provisions of the EP Act are applicable.
Cat 54: Sewage facility and Cat 73: Bulk storage of chemicals	Construction of Village WWTP3 and irrigation area, and installation of fuel tanks.	Noise from construction machinery and vehicles.	Closest receptor is Jocelyn Camp 24 km north	Air	Amenity impacts	N/A	N/A	N/A	Distance to closest sensitive receptor is sufficient to inform the risk of noise emissions as not foreseeable. The <i>Environmental Protection (Noise) Regulations 1997</i> are applicable.

Table 11: Risk assessment for proposed amendments during operation

Risk Event									
Source/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts	Consequence rating	Likelihood rating	Risk	Reasoning and regulatory controls
Cat 54: Sewage Facility	Village WWTP3 and irrigation spray field	Odour associated with effluent treatment and effluent disposal by irrigation.	Closest sensitive land use is Jocelyn Camp 24 km north.	Air	Amenity impacts	N/A	N/A	N/A	Distance to closest sensitive receptor and scale of operations is sufficient to inform the risk of odour emissions as not foreseeable. The general provisions of the EP Act are applicable.
	Operation of the Village WWTP3 and irrigation spray field	Sewage from spills, pipeline and tank failures, potentially containing metals and nutrients and saline water.	Soils Turee Creek East Branch is approximately 1 km north of the Spray field. West Angelas Cracking PEC is located approximately 1 km south east. Groundwater of beneficial use as stock watering is 40 mbgl.	Direct discharge to ground and along flow path.	Contamination of soils. Altered ecology of local surface water features and the PEC.	Minor Low level on site impacts	Unlikely The risk event will probably not occur.	Medium	<u>Applicant controls</u> The Village WWTP3 will be an above ground 'plug and play' PlanetDisk Rotating Biological Contractor (RBC) unit with 210 m ³ /day maximum treatment capacity. The treatment plant design includes high level audio/visual alarms for the balance and irrigation tanks, and pump trip. Treated sewage and 30 m ³ /day RO WTP reject water is discharged from two 50 m ³ irrigation storage tanks to a sprayfield via a 100m HDPE pipeline. The storage tanks act as a storage buffer in case of WWTP malfunction. The pipeline will run alongside a cleared access track and will be protected on both sides by a windrow. Impacted land will be

Risk Event								
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts	Consequence rating	Likelihood rating	Risk	Reasoning and regulatory controls
								rehabilitated. The WWTP, sprayfield and associated infrastructure is subject to daily and weekly maintenance inspections. <u>Regulatory Controls</u> The Applicant's construction controls have decreased the 'consequence' and the 'likelihood' of risk, and will be conditioned as construction requirements.
	Treated effluent and RO reject water discharged to the spray field - potentially containing nutrients and salts.	Soils and vegetation. Turee Creek East Branch is approximately 1 km north of the Spray field. West Angelas Cracking PEC is located approximately 1 km south east. Groundwater of beneficial use as stock watering is 40 mbgl.	Direct discharge to ground.	Soil contamination inhibiting vegetation growth and survival at the spray field and close vicinity.	Minor Low level on site impacts	Unlikely The risk event will probably not occur.	Medium	<u>Applicant controls</u> Effluent water quality combined with the spray field size meets the maximum nutrient application criteria specified in the Water Quality Protection Note 22, for Risk Category D and common levels of concern from EPHC, 2006, ANZECC 2000 and US EPA, 2006 and NSW Department of Primary Industries, 2016. Effluent water quality will be monitored to confirm the plant is operating to the stated standards. <u>Regulatory Controls</u> The Applicant's construction controls including size and location of the spray field and sprinklers and spacing of sprinklers have decreased the 'consequence' and the 'likelihood' of risk, and will be conditioned as construction requirements.

Risk Event									
Source/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts	Consequence rating	Likelihood rating	Risk	Reasoning and regulatory controls
									<p>Commissioning will require monitoring to confirm expected discharge water quality.</p> <p>Conditions of the existing licence require monitoring and reporting of the effluent water quality and remain applicable to operation of Village WWTP3. Salinity will be included as an additional parameter due to the RO reject water being discharged to the spray field.</p> <p>Village WWTP3 sampling location and infrastructure location map will be added to the Licence.</p>
Cat 73: bulk storage of chemicals	Two 100 kL diesel fuel tanks and refueling facility	Potential spills and leaks of hydrocarbon	<p>Soil</p> <p>Turee Creek East Branch is approximately 500 m north.</p> <p>West Angelas Cracking PEC is approximately 1 km south east.</p> <p>Groundwater of beneficial use as stock watering is 40 mbgl.</p>	<p>Direct discharge to ground.</p> <p>Discharge to drainage lines.</p> <p>Infiltration through ground profile into groundwater depending on volume discharged.</p>	<p>Localised contamination of soil and surface water lines with hydrocarbons.</p> <p>Impact to vegetation health and fauna reliant on vegetation.</p> <p>Contamination of groundwater.</p>	Moderate	Unlikely	Medium	<p><u>Applicant controls</u></p> <p>2 x 110 L tanks will be double skinned to reduce the risk of tank rupture and discharge to the environment.</p> <p>A rollover bund will be constructed on the sides of the refueling apron and windrows surrounding the fuel storage facility will reduce the risk of spills discharging outside of the compound.</p> <p>Ground will be compressed and 0.75 mm HDPE liner installed, to restrict seepage of spills through ground.</p> <p>Spill response kits and booms will be available.</p>

Risk Event								
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts	Consequence rating	Likelihood rating	Risk	Reasoning and regulatory controls
								<p><u>Regulatory controls</u></p> <p>The Applicant's construction controls have lowered the risk and will be conditioned as construction requirements.</p> <p>Hydrocarbon storage and management is required to be in accordance with the <i>Dangerous Goods Safety Act 2004</i>, <i>Dangerous Goods Safety (General) Regulations 2007</i>, and the <i>Dangerous Goods Safety (Storage and Handling of Non-explosives Regulations 2007</i>, which are administered by DMIRS.</p> <p>Robe River Mining Co Pty Ltd holds the Dangerous Goods licence DGS016356.</p>

Decision

The Delegated Officer has determined to grant the amendment.

The Licence Holder's proposed controls for the construction of the WWTP, spray field, and fuel storage and refuelling facility have reduced risk, and are conditioned on the Licence in accordance with the *Guidance Statement: Risk Assessment*.

Amendment

Category 54 production or design capacity is increased to 820 cubic metres per day to include the Village WWTP3.

Category 73 design capacity is increased to 18,630 cubic metres in aggregate to account for the reconciliation with the existing DG licence and addition of two 110 kL diesel fuel storage tanks.

Definitions are updated.

Condition 1 is amended to include the RO reject water as a discharge and to include the location of the irrigation spray field by new location map Attachment 3A.

Condition 2 is amended to include the cumulative volume of RO reject water to be recorded and reported.

Condition 3, Table 1 of the Licence is amended by the inclusion of the new WWTP (named Village WWTP3) for monitoring of effluent and addition of monitoring of salinity of the Village WWTP3 discharge.

Condition 33 is added to the Licence for construction of Village WWTP3 and irrigation field, and additional fuel storage and refuel facility.

Condition 34 is included to allow for certain departures to condition 33.

Conditions 35 and 36 are added as compliance reporting conditions for construction of works listed by condition 33.

Conditions 37 to 40 are included to provide for commissioning of the Village WWTP3 and require submission of a commissioning report.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 26 March 2019. Comments received from the Licence Holder on 11 April 2019 included notice of a change of WWTP capacity and addition of RO reject water to the irrigation tank. Comments were considered by the Delegated Officer as shown in Appendix 2. The amendment was reassessed and conditions redrafted.

The Licence Holder was provided with a second draft Amendment Notice on 1 May 2019. Comments were received from the Licence Holder on 2 May 2019. Comments were considered by the Delegated Officer as shown in Appendix 2.

Amendment

- The Prescribed Premises Category table on the front page of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the text shown in bold underline below:

CATEGORY NUMBER	CATEGORY DESCRIPTION	CATEGORY PRODUCTION OR DESIGN CAPACITY	PREMISES PRODUCTION OR DESIGN CAPACITY
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes or more per year	35,000,000 tonnes per annual period
6	Mine dewatering	50,000 tonnes or more per year	6,000,000 tonnes per annual period
12	Screening, etc. of material	50,000 tonnes or more per year	10,000,000 tonnes or more per annual period
52	Electric power generation	10 Megawatts or more in aggregate	90 Megawatts
54	Sewage facility	100 cubic metres or more per day	640 <u>820</u> cubic metres per day cubic metres per day
64	Class II putrescible landfill site	20 tonnes or more per year	11,500 tonnes per annual period
73	Bulk storage of chemicals, etc	1,000 cubic metres in aggregate	48,300 <u>18,630</u> cubic metres in aggregate

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

'CEO' for the purposes of notification means:

Director General
 Department Administering the Act
~~Locked Bag 33 Cloisters Square~~
 PERTH WA 6850
~~info-der@dwer.wa.gov.au;~~

Locked Bag 10
Joondalup DC WA 6919

info@dwer.wa.gov.au

'HDPE' means High Density Polyethylene;

'RO WTP' means Reverse Osmosis Water Treatment Plant

'µS/cm' means micro siemens per centemetre

'WWTPs' means the Village 1, Village 2 and Mine Wastewater Treatment Plants, **and Village WWTP3.**

- Condition 1 of the Licence is amended by the insertion of the text shown in bold underline below:

- The Licensee shall ensure that all effluent discharged consists only of treated sewage and is discharged to the irrigation sprayfields depicted in Attachment **3, and only treated sewage with up to 30 cubic metres per day of Reverse Osmosis**

Water Treatment Plant reject water is discharged to the irrigation sprayfield depicted in Attachment 3A.

4. Condition 2 of the Licence is amended by the insertion of the text shown in bold underline below:

2 The Licensee shall record the monthly cumulative volume of treated sewage **and Reverse Osmosis Water Treatment Plant reject water** discharged for the purpose of irrigation and this data shall be included in the Annual Environmental Report in tabular form.

5. Table 1 of condition 3 of the Licence is amended by the insertion of the text shown in bold underline below:

Table 1: West Angelas WWTPs effluent/discharge quality monitoring requirements

Column 1	Column 2	Column 3
Sampling location	Parameters	Monitoring Frequency
Village WWTP1, Village WWTP2 Mine WWTP and <u>Village WWTP 3</u> (Attachment 3 <u>and Attachment 3A</u>)	Biochemical Oxygen Demand (mg/L)	Quarterly
	Total Suspended Solids (mg/L)	
	pH (pH units)	
	Total Nitrogen (mg/L)	
	Total Phosphorus (mg/L)	
	<i>E.coli</i> (cfu/100mL)	
<u>Village WWTP 3</u>	<u>Electrical conductivity (µS/cm)</u>	
	<u>Total Dissolved Solids (mg/L)</u>	

6. The Licence is amended by the insertion of the following Construction and Commissioning conditions 33, 34, 35, 36, 37, 38 and 39:

33 The Licensee must construct and/or install the infrastructure listed in Table 5, in accordance with;
(a) the corresponding design and construction requirement / installation requirement; and
(b) at the corresponding infrastructure location; and
(c) within the corresponding timeframe,
as set out in Table 5.

Table 5: Design and construction requirements / installation requirements

<u>Infrastructure</u>	<u>Design and construction requirement / installation requirement</u>	<u>Infrastructure location</u>	<u>Timeframe</u>
<u>Village WWTP3</u>	<u>The WWTP system to be a 'PlanetDisc' Rotating Biological Contractor (RBC) unit with a 210 m³/day maximum treatment capacity.</u> <u>The treatment process to consist of primary anaerobic sedimentation tanks, anoxic zones, RBC aeration zone, clarification, effluent sterilization, treated effluent tank and irrigation spray field.</u>	<u>Located as shown in Attachment 3A and labelled "WWTP"</u>	<u>Within 3 years of issue of this amendment notice</u>

	<p><u>Designed to treat sewage to the following quality</u></p> <table border="1" data-bbox="491 271 986 864"> <thead> <tr> <th><u>Parameter</u></th> <th><u>Effluent quality (WWTP)</u></th> </tr> </thead> <tbody> <tr> <td><u>Biochemical Oxygen Demand (BOD)</u></td> <td><u><20 mg/L</u></td> </tr> <tr> <td><u>Total Suspended Solids (TSS)</u></td> <td><u><30 mg/L</u></td> </tr> <tr> <td><u>pH</u></td> <td><u>6-9 (pH value)</u></td> </tr> <tr> <td><u>Total Nitrogen (TN)</u></td> <td><u>20 – 50 mg/L</u></td> </tr> <tr> <td><u>Total Phosphorus (TP)</u></td> <td><u>6 – 12 mg/L</u></td> </tr> <tr> <td><u>E.Coli. (cfu/100mL)</u></td> <td><u><1,000 (cfu/100 mL)</u></td> </tr> </tbody> </table> <p><u>Treated waste water delivered to irrigation tanks is sterilized using liquid chlorine, applied through an automated dosing system.</u></p> <p><u>The treatment plant to include high level audio/visual alarms for the balance and irrigation tanks, and pump trip.</u></p> <p><u>Two 50 cubic metre irrigation storage tanks for storage of treated sewage and RO WTP reject water prior to discharge to the Irrigation Spray Field.</u></p> <p><u>Effluent discharge pipelines to be constructed of HDPE, located alongside a cleared access track and protected on both sides by a windrow.</u></p>	<u>Parameter</u>	<u>Effluent quality (WWTP)</u>	<u>Biochemical Oxygen Demand (BOD)</u>	<u><20 mg/L</u>	<u>Total Suspended Solids (TSS)</u>	<u><30 mg/L</u>	<u>pH</u>	<u>6-9 (pH value)</u>	<u>Total Nitrogen (TN)</u>	<u>20 – 50 mg/L</u>	<u>Total Phosphorus (TP)</u>	<u>6 – 12 mg/L</u>	<u>E.Coli. (cfu/100mL)</u>	<u><1,000 (cfu/100 mL)</u>		
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<p><u>Irrigation Spray Field</u></p>	<p><u>Accepts treated sewage waste water and combined reject RO WWTP water only.</u></p> <p><u>At least 7.67 ha in area.</u></p> <p><u>Fenced.</u></p> <p><u>Approximately 82 above ground sprinklers spaced to avoid pooling, and spray drift outside of the spray field.</u></p>	<p><u>Located as shown in Attachment 3A and labelled “Sprayfield”</u></p>	<p><u>Within 3 years of issue of this amendment notice</u></p>														
<p><u>Two 110 kL diesel fuel tanks with a refueling facility</u></p>	<p><u>Tanks double walled with leak detection systems and over fill protection.</u></p> <p><u>The fuel storage and refueling facility</u></p>	<p><u>As shown in Attachment 3A and labelled “Fuel Storage”</u></p>	<p><u>Within 3 years of issue of this amendment notice</u></p>														

	<p><u>constructed to the following specifications:</u></p> <ul style="list-style-type: none"> • <u>Ground directly below the refueling apron compacted to 95% Maximum Dry Density;</u> • <u>0.75 mm HDPE liner installed 400 mm below the refueling apron;</u> • <u>Rollover bund 100 mm high by 200 mm wide constructed on all sides of the refueling apron;</u> • <u>Two 1000 mm high by 200 mm concrete filled bollards installed either side of the refueling apron to prevent vehicle collision; and</u> • <u>Windrows 500 mm high at 2.1 batter to surround the sides of the fuel storage facility.</u> 		
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- 34 The Licensee must not depart from the requirements specified in Table 5 except:**
- (a) **where such departures is minor in nature and does 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;**
and all other conditions in this Licence are still satisfied.

- 35 The Licensee must within 30 days of each item of infrastructure required by condition 33 being constructed, and prior to commencement of commissioning the Village WWTP3:**
- (a) **undertake an audit of their compliance with the requirements of condition 33; and**
 - (b) **prepare and submit to the CEO an audit report on that compliance.**

- 36. The report required by condition 35, must:**
- (a) **be certified by a suitably qualified professional engineer that each item of infrastructure listed in Table 5 meets the corresponding specifications and at the locations set out in Table 5 and has been constructed with no material defects; and**
 - (c) **be signed by a person authorised to represent the licence holder and contains the printed name and position of that person within the company.**

COMMISSIONING CONDITIONS

- 37. The Licensee shall commission the Village WWTP3 for a period not exceeding 4 months.**
- 38. The Licensee shall undertake the monitoring specified in Table 6 during the commissioning period.**

Table 6: Village WWTP3 Commissioning Monitoring

<u>Monitoring point reference</u>	<u>Parameter</u>	<u>Units</u>	<u>Averaging period</u>	<u>Frequency¹</u>
<u>Village WWTP3 – final effluent outfall</u>	<u>pH</u>	<u>pH units</u>	<u>Spot sample</u>	<u>Monthly</u>
	<u>E.coli</u>	<u>cfu/100ml</u>		
	<u>Biochemical Oxygen Demand (BOD)</u>	<u>mg/L</u>		
	<u>Total Suspended Solids</u>	<u>mg/L</u>		
	<u>Residual Free Chlorine</u>	<u>mg/L</u>		
	<u>Total Nitrogen</u>	<u>mg/L</u>		
	<u>Total Phosphorus</u>	<u>mg/L</u>		
	<u>Total Dissolved Solids</u>	<u>mg/L</u>		
	<u>Electrical Conductivity (EC)</u>	<u>µS/cm</u>		
	<u>Effluent flow rate</u>	<u>kL/day</u>	<u>24 hours</u>	<u>Continuous</u>

Note 1: Monthly monitoring shall be undertaken at least 15 days apart.

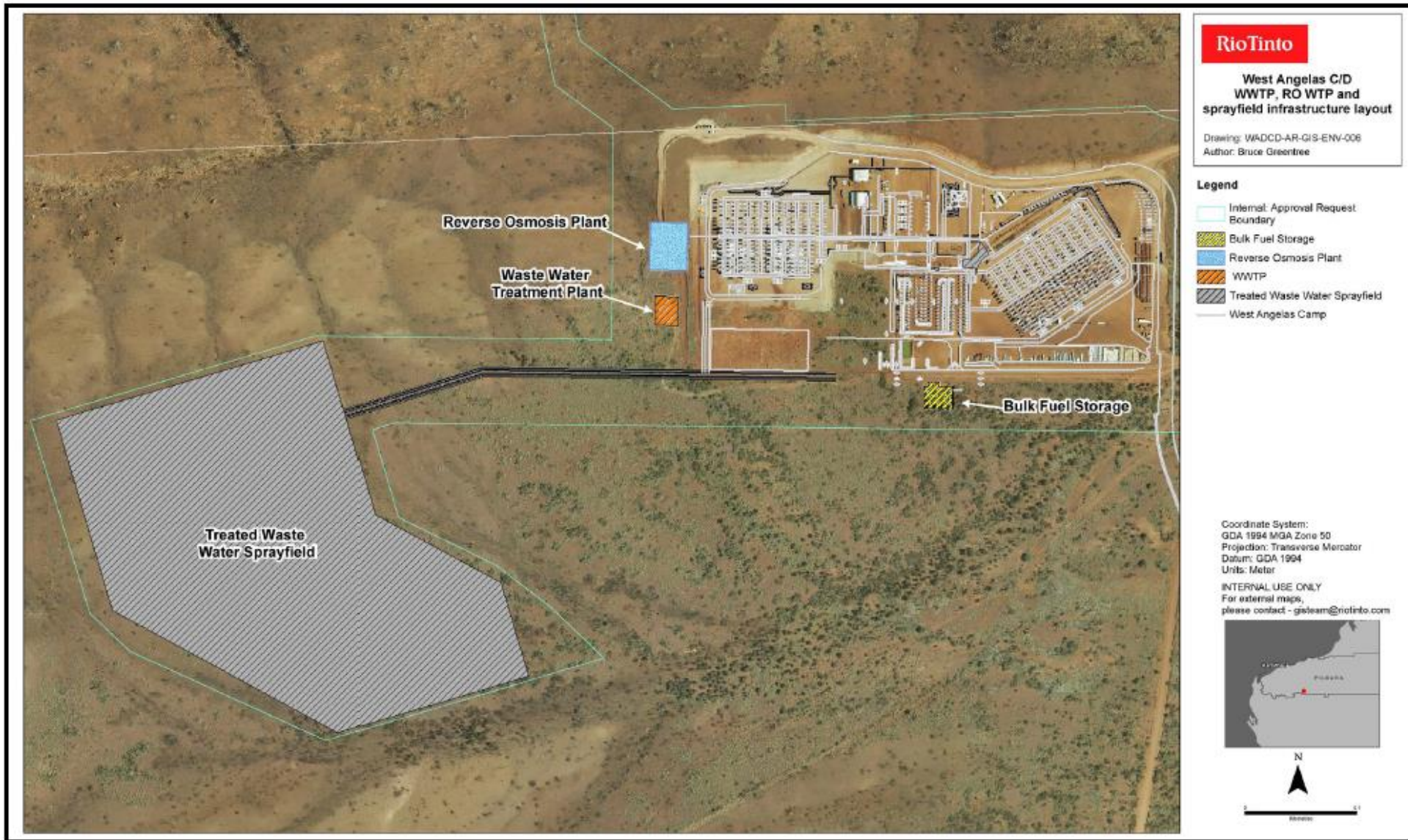
39 The Licensee shall submit a commissioning report for the Village WWTP3, to the CEO within 2 months of the completion of commissioning.

40 The Licensee shall ensure the report includes:

- (a) a summary of the monitoring results recorded under condition 38;**
- (b) a list of any original monitoring reports submitted to the Licensee from third parties for the commissioning period;**
- (c) a summary of the environmental performance of the Village WWTP3 as installed, against the design specification set out in the works approval application; and**
- (d) where they have not been met, measures proposed to meet the design specification and/or works approval conditions, together with timescales for implementing the proposed measures.**

7. The Licence is amended by the insertion of Attachment 3A as shown below, as a map locating the Village WWTP3, irrigation spray field and the fuel facility.

ATTACHMENT 3A – Location of Village WWTP3, Spray field, and Bulk fuel storage



Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L7774/2000/6 – West Angelas Iron Ore Mine	Licence or L7774/2000/6	accessed at www.dwer.wa.gov.au
2	Application form and <i>Licence Amendment Supporting Documentation West Angelas Iron Ore Mine – L7774/2000/6</i> , updated April 2019.	Application	DWER records (A1745644)
3	Email with attachments from Rebecca Evans, Rio Tinto, 6/02/2019 212:55 PM. Subject: <i>L7774/2000/6 West Angelas Iron Ore Mine amendment queries</i>		DWER Records (A176299)
4	Email with attachments from Rebecca Evans, Rio Tinto, 11/04/2019 4:09PM <i>West Angelas updated Licence Amendment L7774</i>		DWER Records (A1781042)
5	ANZECC & ARMCANZ (2000) Water Quality Guidelines	ANZECC 2000	Accessed at http://www.waterquality.gov.au/anz-guidelines/resources/previous-guidelines/anzecc-armcanz-2000
6	EPHC, 2006. <i>Australian guidelines for managing water recycling: managing health and environmental risks (Phase 1). National Water Quality Management Strategy Report 21.</i>	EPHC, 2006	Report available at URL http://www.ephc.gov.au/sites/default/files/WQ_AGWR_GL_Managing_Health_Environmental_Risks_Phase1_Final_200611.pdf
7	DWER, October 2015. <i>Guidance Statement: Setting conditions.</i> Department of Water and Environmental Regulation, Perth.	-	accessed at www.dwer.wa.gov.au
8	DWER, November 2016. <i>Guidance Statement: Environmental Siting.</i> Department of Water and Environmental Regulation, Perth.		
9	DWER, February 2017. <i>Guidance Statement: Risk Assessments.</i> Department of Water and Environmental Regulation, Perth.		
10	DWER, February 2017. <i>Guidance Statement: Decision Making.</i> Department of Water and Environmental Regulation, Perth.		
11	Department of Water, 2008. <i>Water Quality Protection Note 22, Irrigation with nutrient-rich wastewater.</i>	WQPN 22	accessed at www.dwer.wa.gov.au
	US EPA, 2006. <i>Process design manual, land treatment of municipal wastewater effluents.</i> Report EPA/625/R-06/016.	US EPA, 2006	Report available at URL http://www.epa.gov/nrmrl/pubs/625r06016/625r06016whole.pdf .

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 26 March 2019 for review and comment. The Licence Holder responded on 11 April 2019. The following comments were received on the first draft Amendment Notice.

Summary of Licence Holder comment	DWER response
<p>Some changes have been made since the Application was submitted:</p> <ul style="list-style-type: none"> The capacity of the WWTP is now proposed to be 210 m³/day (not 186 m³/day as per original application); Reject water from the camp's Reverse Osmosis plant (30 m³/day or 0.1095 GL per year) will be plumbed into the WWTP irrigation tanks (post treatment cycle), where it will mix with the treated wastewater before discharge by irrigation to the spray field; and Spray field size has been changed to 7.67 ha (not 6.79 ha as per original application) to accommodate the increased volume of discharge. <p>RHIO provided updated tables and maps where applicable.</p>	<p>Background information has been updated in the Amendment Notice. Where applicable, risk has been reassessed within the Risk Assessment Table. The Delegated Officer has considered that risk remains medium.</p> <p>Conditions are updated to capture the changes made to the capacity of the proposed WWTP, the discharge of RO reject water via the irrigation tanks to the spray field and the increase in irrigation spray field design. Commissioning and monitoring conditions for waste water discharge to land are amended to include salinity as a parameter.</p>
<p>The Licence Holder provided information requested regarding effluent discharge pipeline construction and spill response measures.</p>	<p>The information was provided and has been included in Table 11 as applicant controls which have lowered risk, and are included in the amendment as construction requirements.</p>

The Licence Holder was provided with a second draft Amendment Notice on 1 May 2019 for review and comment. The Licence Holder responded on 2 May 2019. The following comments were received on the second draft Amendment Notice with a request for the 21 day comment period to be waived.

Summary of Licence Holder comment	DWER response
<p>Minor typos</p>	<p>Corrected.</p>