

Amendment Report

Application for Licence Amendment

Part V Division 3 of the Environmental Protection Act 1986

Licence Number	L7340/1997/9
Licence Holder	Pilbara Iron Company (Services) Pty Ltd
ACN	107 210 248
File Number	DER2013/000903-2
Premises	Yandicoogina Iron Ore Mine Part of Mining Lease AM70/274; LGE L021123 NEWMAN WA 6753 As defined by the coordinates in Schedule 2 of the Revised Licence
Date of Report	15 November 2023
Decision	Revised licence granted

A/MANAGER, RESOURCE INDUSTRIES

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

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1. Decision summary

Licence L7340/1997/9 is held by Pilbara Iron Company (Services) Pty Ltd (Licence Holder) for the Yandicoogina Iron Ore Mine (the Premises), located at Part of Mining Lease AM70/274 and LGE L021123, in Shire of East Pilbara.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Revised Licence L7340/1997/9 has been granted.

The Revised Licence issued as a result of this amendment supersedes the existing Licence previously granted in relation to the Premises.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Application summary

On 10 May 2023, the Licence Holder submitted an application to the department to amend Licence L7340/1997/9 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Construction and operation of two additional discharge outlets (DO10 and DO11);
- Operation of the Waste Fines Cell 3A (WFC3A) Extension at the Premises; and
- Installation of JSE20, MB09YJSB009, MC004 and MB0YRN010 to replace dry, damaged or unsafe to sample monitoring bores MB09YJSB002, MB09YJSB004, MB10YMA006 and MB10YRN009D.

The following administrative amendments are also being sought:

- Removal of dry monitoring bore MCB2 (and retain monitoring at MCB1); and
- Amendment of chromium comparison criteria to achievable Limit of Reporting (LOR).

This amendment is limited only to changes to Category 5 and 6 activities from the Existing Licence. The previously assessed design capacities of Category 5 and 6 has not changed under this amendment.

No changes to the aspects of the existing Licence relating to Category 12, 54, 64 and 73 have been requested by the Licence Holder.

2.2.1 Compliance under Works Approval W6518/2021/1

On 05 August 2021, works approval W6518/2021/1 was granted to undertake construction works relating to extension of in-pit WFC3A. The WFC3A Extension is located in the Junction South East (JSE) pit, north of the existing WFC3.

On 19 November 2021 the department deemed the construction and commissioning of the WFC3A Extension as compliant (DWER 2021a and DWER 2021b). Further evidence of the waste fines pipelines bunding reporting to the sumps was provided on 30 November 2022 (RTIO 2022).

On 16 December 2022 the department deemed the construction of monitoring bores MCB1

and MCB2 as compliant (DWER 2022).

Time limited operations (TLO) from works approval W6518/2021/1 commenced on 05 April 2023 and will conclude upon the granting of this licence amendment.

The operational conditions for the WFC3A Extension and the relevant groundwater monitoring bores will be transferred from the works approval TLO W6518/2021/1 to the licence for consistency of operations.

To operate the WFC3A Extension under the licence, construction and commissioning compliance must have been met under works approval W6518/2021/1. Upon review of the compliance reports, conditions 1 to 7 have been met for the construction and commissioning of the WFC3A Extension and associated pipelines.

2.2.2 Other amendments

The existing Licence requires a comparison of water quality results against the 99% protection level in ANZECC 2000 (comparison criteria).

The 99% species level of protection for Chromium VI (0.01 μ g/L) is lower than the lowest possible LOR for Chromium IV (0.5 μ g/L). The Licence Holder has requested to change the Chromium IV comparison criteria to either the 95% species protection level (1 μ g/L) or to the LOR for Chromium VI.

The Licence Holder reported in the Annual Environmental Report for 2022, that they have not compared results of Chromium IV or total chromium to the comparison criteria (RTIO 2023).

The department has changed the comparison criteria to the LOR for Chromium VI (0.5 μ g/L).

2.3 Part IV of the EP Act

The Yandicoogina Iron Ore Project - Revised Proposal was assessed by the Environmental Protection Authority (EPA) and approved under Ministerial Statement (MS) 1038.

Condition 5 relates to hydrological processes, inland waters environmental quality and flora and vegetation – dewatering, discharge of surplus water and riparian vegetation. The Licence Holder has developed a Condition Environment Management Plan (CEMP) (RTIO 2021) to:

- address hydrological processes, inland water quality and flora and vegetation for dewatering, discharge of surplus water and riparian vegetation.
- specify environmental outcomes, trigger criteria, threshold criteria, and monitoring, and implement actions and contingency actions in the event thresholds are exceeded.
- address impacts on riparian vegetation including from, but not limited to changes to groundwater levels and groundwater quality; changes to surface water flows and surface water quality, and weeds.

The CEMP identifies the following high level environmental values of Weeli Wolli Creek:

- 1. Fortescue Marsh A Priority Ecological Community and listed on the Directory of Important Wetlands of Australia as a wetland of national significance.
- 2. Flora and Vegetation The vegetation communities and fauna habitats within the Yandicoogina Development Envelope including riparian vegetation and groundwater dependant ecosystems (GDEs).
- 3. Fauna all vertebrate and invertebrate fauna which utilise Weeli Wolli Creek including subterranean fauna (stygofauna).
- 4. Heritage including Aboriginal Heritage places.

The CEMP addresses environmental outcomes for surface dewater discharge and aims for no

long term impacts to environmental values of Weeli Wolli Creek, Aboriginal heritage values linked to the physical and biological surroundings of Weeli Wolli Creek, or on the health or cover of riparian vegetation outside the Management Zone as defined in MS 1038 (shown by Figure 1 below). The Management Zone delineates the protected area from the Development Area of the Project.

In accordance with MS 1038 Condition 5, the Yandicoogina Operations Groundwater Operating Strategy (the strategy) (RTIO 2014) manages all borefields and abstraction (production bores) that service the Yandicoogina Operations.

Rehabilitation and decommissioning are also regulated by Condition 6 of MS 1038.

Requirements of MS 1038 are limited to hydrological processes and the environmental values associated with Weeli Wolli Creek and are not re-assessed in this Amendment Report nor are they duplicated as conditions in the existing licence.



Figure 1: Management zones from the CEMP required under Part IV

2.4 *Contaminated Sites Act 2003* (CS Act) and Per-and polyfluoroalkyl substances (PFAS)

The Premises is located adjacent to a site which has been classified under the CS Act as "Possibly contaminated – investigation required' in part, based on the presence of PFAS in groundwater.

While the Premises is not classified under the CS Act, the department does not currently hold site-specific information in relation to PFAS at the Premises.

The Premises is intersected by Marillana Creek and Weeli Wolli Creek, which have been identified as potential receptors to PFAS contamination identified at the adjacent site. Marillana Creek flows into Weeli Wolli Creek and eventually discharges into the Fortescue Marsh, which are areas of environmental and cultural significance.

This licence amendment application was referred internally to the department's Contaminated Sites Branch (CSB). CSB stated:

"However, it is noted that the detection of PFAS at mine sites in Western Australia is becoming a common occurrence due to on-site sources of PFAS that have been used currently or historically on mine sites. This has occurred due to activities such as the use of aqueous film-forming foams for firefighting and activities associated with mining processing" (DWER 2023).

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

For each PFAS compound, by comparing to the 99% species protection values from the PFAS National Environmental Management Plan then bioaccumulation in aquatic organisms within the Yandicoogina and Weeli Wolli Creeks can be accounted for.

Given the potential for PFAS sources to have been present on this Premises, CSB recommended that the Licence Holder conduct a one-time spot sample for PFAS at the discharge locations to surface water to confirm the presence or absence of PFAS.

The department has included condition 13 on the licence under this amendment for a once off spot sample for PFAS at the dewatering outlets on the Premises.

3. Risk assessment

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

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Installation of discharge outlets (DO10 and DO11). Installation of replacement monitoring bores.	Air/windborne pathway	 Works isolated to a disturbance footprint of at least 200 m from priority flora with clearly identified protected flora avoidance zones. Works occurring within a disturbance footprint at least 1 km from priority fauna. Dust suppression will be implemented (including use of water trucks, control of vehicle movements / restricted speeds).
Noise	Installation of discharge outlets (DO10 and DO11). Installation of replacement monitoring bores.	Air/windborne pathway	 Works occurring within a disturbance footprint at least 1 km from priority fauna. Noise generated during construction is expected to be limited at night (when nocturnal native fauna are foraging), and as such, is expected to have a negligible impact on native fauna.
Operation			
Dewatering discharge Sedimentation due to erosion	Operation of discharge outlets (DO10 and DO11).	Overland / surface water / seepage to groundwater	 Pulsed discharge to reduce the risk of creating new permanent pools that will subsequently dry up post discharge. Pulsed discharge strategy implemented
			to help control and mitigate the risk of potential erosion and eutrophication.
			 Remote controlled actuated valves allow discharge water to be directed through either DO9a, DO10, DO11, or a combination of all three.
			 Additional discharge points assist in distributing dewatering discharge across multiple discharge points mirroring an ephemeral creek condition.
			 Regular inspection of the dewatering outlets and pipelines.
			 Flow meters installed at both DO10 and DO11 to record discharge volumes.
			 Pipelines anchored to concrete footings to avoid the displacement of pipe during flood conditions.
			 At both outlet areas, the pipeline is protected from rock damage and erosion through the installation of a

Emission	Sources	Potential pathways	Proposed controls
			rock gabion structure to enable a reduction in water velocity as the discharged water flows into the targeted discharge areas.
			• The use of gabion rock baskets (or mattresses), a rip rap apron and openly placed rock protection provides a more natural and non-intrusive effect on the surrounding environment and eliminates the requirement for permanent concrete structures.
Tailings	Pipeline spill during delivery of tailings to during operation	Spill overland and via groundwater	 Engineering design of piping systems to use suitably sized pumps and pressure- rated pipelines and fittings.
	of the WFC3A Extension	towards Marillana Creek	 Containment bunding around pipelines that protect pipelines from impacts with vehicles and direct spills away from environmental receptors.
			Daily pipeline integrity inspections.
			Pressure monitoring of pipelines.
			 Main sump to contain waste fines spills from pipeline leaks (on south side of WFC3A) and additional sump to contain stormwater runoff on western side of haul road waste fines spills from pipeline leaks (on northern side).
	Seepage during operation of the during operation of	Groundwater towards Marillana	Additional controls and operational procedures integrated into operation of WFC3A Extension include:
	the WFC3A Extension	Creek	 Groundwater quality and level monitored in bores located around the JSE pit.
			• The water quality and level of the pond in WFC3A Extension monitored for comparison with nearby groundwater monitoring.
	Tailings overtopping during operation of the WFC3A Extension	Spill overland towards Marillana Creek	 The normal operating pond for WFC3A Extension maintained below RL 485 m approximately 14 m from top of the pit to pond level during operations.

3.1.2 Receptors

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

Table 2 and Figures 2 and 3 below provides a summary of potential human and environmental

receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 2: Sensitive	human and e	environmental	receptors a	and distance f	from prescribed
activity					

Human receptors	Distance from prescribed activity
Phil's Creek Accommodation village	5.5 km north west. Ruled out due to distance and location upstream of the Marillana Creek.
Recreational users of Marillana and Weeli Wolli Creeks	Less than 1 km.
Environmental receptors	Distance from prescribed activity
Aboriginal Heritage Sites	Discharge sites• Cork Tree Well is about 0.3 km south east of DO10;• YB04-01 is about 1.7 km north and downstream of DO11.Ruled out as managed under the CEMP.The WFC3A Extension intersects the following registered sites:• Yandicoogina creek place ID 10005• Yandicoogina 38 place ID 9918• Y03-12 place ID 20541• Y03-25 place ID 20554
Weeli Wolli and Marillana Creeks ²	Less than 1 km (both drain north to Fortescue Marsh). Ruled out as water quality of the creek are managed under MS 1038.
Environmental values of Weeli Wolli Creek	 The following values are as mentioned in section 2.3 and their descriptions are from the CEMP prepared by the Licence Holder. Value 1 - Fortescue Marsh "Approximately 38 km north-north-east of the discharge locations, the Fortescue Marsh is the largest ephemeral wetland in the Pilbara region. It is a Priority Ecological Community and listed on the Directory of Important Wetlands of Australia as a wetland of national significance" (RTIO, 2021). The Fortescue Marsh: Catchment includes major ephemeral creeks which intersect the Premises (RTIO 2021); Is episodically inundated, predominantly as a result of rainfall associated with tropical low-pressure cyclonic weather systems that generally occur between December and April (RTIO 2021); Has cultural and heritage significance to the region's traditional owners and supports a range of native plant and animal species, including a large and diverse number of migratory bird species (RTIO 2021); and Supports conservation significant plant and animal species and communities here and in the surrounding areas, including endemic flora, fauna and a diversity of aquatic and terrestrial invertebrates (RTIO 2021). Value 2 – Flora and Vegetation

	Development Envelope are relatively widespread and well-represented regionally. This includes local riparian vegetation communities and groundwater dependant ecosystems commonly associated with large ephemeral creek systems of the Pilbara region.
	The riparian vegetation communities of Marillana and Weeli Wolli Creeks within the Development Envelope are similar to other large ephemeral systems of the Pilbara. Low flow pathways are populated with large open eucalypt woodland, over eucalypt and acacia low woodland, largely flanked by tall, open acacia shrubland with * <i>Cenchrus ciliaris</i> tussock grasslands.
	One community, identified locally as the C1A riparian community, broadly comprises a eucalypt woodland containing a co-dominant Melaleuca argentea component and is considered to have local conservation significance due to its groundwater dependency, associated mesic habitat values, somewhat restricted distribution, and association with a major creekline in the area (predominantly Marillana Creek). This community is similar but of different structure and reduced significance in relation to the vegetation community of Weeli Wolli Spring (significant <i>Melaleuca argentea</i> woodlands)" (RTIO 2021).
	Value 3 – Fauna
	"Weeli Wolli Creek provides habitat for a wide range of fauna. The alluvial aquifer system supports subterranean fauna (stygofauna), whilst the ephemeral seasonal surface expression of water supports fish and aquatic invertebrates (although the project area does not contain permanent pools). Weeli Wolli Creek also provides foraging habitat for an assemblage of various bat species and is the most northerly distribution of the Chocolate Wattle Bat (<i>Chalinobolus morio</i>). The Pilbara Olive Python (<i>Liasis olivaceus barroni</i>) has been recorded within Weeli Wolli Creek and the Development Envelope may contain habitat for the Northern Quoll (<i>Dasyurus hallucatus</i>)" (RTIO 2021).
	Value 4 – Heritage (see above Aboriginal Heritage Sites)
	"Weeli Wolli Creek holds special cultural and spiritual significance for the Traditional Owner groups of the region (Nyiyarparli and Banjima people) as a place where the rainbow serpent (Yarduba) resides. Weeli Wolli Creek hosts significant ethnographic and archaeological heritage sites which are associated with the water course. It is noteworthy that discharge of excess groundwater dewatered from nearby mining operations has created a temporary perennial source of water within parts of Weeli Wolli Creek, which is predicted to return to ephemeral patterns upon the cessation of discharge" (RTIO 2021).
	All values are ruled out as they are managed under the CEMP.
Groundwater	2 m below ground level (mbgl) in the vicinity of the modern day creek beds to 34 mbgl further away.
	Groundwater principally occurs in two aquifer systems, namely the CID and flood-plain (alluvium) aquifers. Both aquifers are inter-connected and recharged from nearby and overlying creek systems.



Figure 2: DO10 and DO11 discharge locations to sensitive human receptors



Figure 3: Waste Fines Cell 3A Extension location relative to sensitive receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

The Revised Licence L7340/1997/9 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

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

Risk Event					Risk rating ¹	Licence		luctification for
Source / Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Holder's controls sufficient?	Conditions ² of licence	additional regulatory controls
Construction								
Installation of discharge outlets (DO10 and DO11). Installation of replacement monitoring bores.	Dust	Air/windborne pathway	Recreational users of	Refer to Section 3.1	C = Slight L = Rare Low Risk	Y	No conditions imposed. The general provisions of the EP Act apply.	N/A
	Noise	turbidity, impacts to health and amenity	Marillana and Weeli Wolli Creeks	Refer to Section 3.1	C = Slight L = Rare Low Risk	Y	No conditions imposed. The Environmental Protection (Noise) Regulations 1997 apply.	N/A
Operation								
Operation of discharge outlets (DO10 and DO11) and their associated pipelines.	Leaks of dewatering discharge	Soak through the soil	Groundwater	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 1	Condition 1: Infrastructure listed in Table 14, including the dewatering pipelines, are to be maintained in good working order.
	Dewatering discharge	Erosion of the creek bed causing sedimentation and reduction of water quality	Recreational users of Marillana and Weeli Wolli Creeks	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 6, 8, 12	Condition 6: Construction requirements. Condition 8: Authorised discharge points for emissions. Condition 12: Flow rate monitoring.

Table 3. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating ¹	Licence		luctification for
Source / Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Holder's controls sufficient?	Conditions ² of licence	additional regulatory controls
		Elevated nutrient levels causing eutrophication decreasing water quality	Recreational users of Marillana and Weeli Wolli Creeks Groundwater	Refer to Section 3.1	C = Moderate L = Possible Medium Risk	Y	N/A	All monitoring is conducted under the Yandicoogina Operations Groundwater Operating Strategy (RTIO 2014).
Operation of WFC3A Extension	Tailings	Spills and leaks from delivery pipeline	Aboriginal Heritage Sites Groundwater	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 1	Condition 1: Infrastructure listed in Table 14, including waste fines pipelines, are to be maintained in good working order.
		Seepage of tailings within WFC3A	Groundwater	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Ν	Condition 8 Condition 15	Condition 8: Authorised discharge point with capacity limit. Condition 15: Ambient groundwater monitoring.
		Overtopping of tailings	Aboriginal Heritage Sites	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 2 Condition 4 Condition 8	 Condition 2: Operational requirement including freeboard. Condition 4: Inspection of infrastructure including embankment. Condition 8: Authorised discharge point with capacity limit.

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

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

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Shire of East Pilbara advised of proposal on 29 June 2023.	None received.	N/A.
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 29 June 2023.	None received.	N/A.
Department of Planning Lands and Heritage (DPLH) advised of proposal 29 June 2023.	On 13 July 2023, DPLH requested the shapefile of the licence area. On 14 July 2023, DPLH replied with "A review of the Aboriginal Cultural Heritage (ACH) Directory concludes that the subject area intersects the boundary of 123 ACH records. Any activities conducted from 1 July 2023 will need to be compliant with the Aboriginal Cultural Heritage Act 2021 (ACH Act). Please refer Rio Tinto to the DPLH website for more information on the ACH Act and ACH Guidelines."	On 14 July 2023 the department sent the shapefile of the Premises boundary to DPLH. On 19 July 2023 the Licence Holder was referred to DPLH website for more information on the ACH Act and ACH Guidelines via a request for further information. On 07 August 2023 the Licence Holder responded with the following: "The footprint of WFC3A Extension intersects with the boundaries of eight (8) heritage sites recorded on the DPLH register of sites. Of these, six (6) have been completely disturbed and two (2) remain intact but subject to previous disturbance (Table below). Approval to impact these heritage sites was permitted under s. 18 of the Aboriginal Heritage Act 1972 (Permit # 00018026; Permit # 0320236 and Permit # 0503849). The footprint of proposed Discharge Outlets D010 and D011 does not intersect with any heritage sites listed on the DPLH register of sites."
Banjima Native Title Holders advised of proposal 17 July 2023	None received.	N/A.
Karlka Native Title Holders advised of proposal 17 July 202	Karlka Native Title Holders replied on 24 July 2023 requesting that Table 4 – Consultation Summary is updated to accurately reflect the consultation that has been carried out with the Nyiyaparli Local Implementation Committee. I.e.,	The application and its contents are provided to the department by the applicant for use in assessing the licence amendment. This cannot be changed by the department. The department acknowledges the March consultation did not occur and

Consultation method	Comments received	Department response
	Please only include the consultation listed in June 2023. There was no consultation on the project that occurred in March 2023, and they do not think it is appropriate to include a consultation that is yet to happen (October 2023).	October consultation has not yet occurred, and also acknowledges the Karlka Nyiyaparli Aboriginal corporation has no other comments in relation to the application's proposal.
Yinhawangka Native Title Holders advised of proposal 17 July 2023.	None received.	N/A.
Licence Holder was provided with draft amendment on 12 October 2023	Refer to Appendix 1.	Refer to Appendix 1.

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 5 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Condition no.	Proposed amendments
-	During this amendment condition and table numbering has been updated.
1	Shortened 'Schedule 3: Infrastructure and equipment' to 'Schedule 3'.
3, Table 1	Inclusion of 'WFC3A Extension' and operational requirements.
4, Table 2	Included an inspection regime derived from the TLO requirements of works approval W6518/2021/1.
6, Table 3	Inclusion of Dewater Discharge outlet construction requirements.
7	Inclusion of construction compliance reporting requirements.
8, Table 4	Updated reference to condition 8 now condition 11. Inclusion of WFC3A Extension capacity. Inclusion of DO10 and DO11.
12, Table 8	Inclusion of DO10 and DO11 as monitoring locations.
13, Table 9	Inclusion of a one-time spot sample for PFAS at the discharge monitoring locations. Refer to section 2.4.

 Table 5: Summary of licence amendments

Condition no.	Proposed amendments
14	Inclusion of conditions for submission of a report of the PFAS sampling results from Table 9.
15, Table 10	Inclusion of reference to 'WFC3A Extension'.
	Removal of MCB2.
	Specification of 'WFC5' for the first set of groundwater monitoring parameters.
	Inclusion of 'Averaging Period', 'Sampling' and 'Analysis' columns for consistency with the added groundwater monitoring table for WFC3A Extension. Averaging period and analysis columns updated for Groundwater monitoring for WFC5 and Surface water monitoring.
	New footnote for Chromium: 'Note 3: Comparison against the 0.5 μ g/L limit of reporting is required'.
	Note 3 updated to Note 4 for Thallium.
	Inclusion of the groundwater monitoring parameters for WFC3A Extension transferred from TLO monitoring of works approval W6518/2021/1.
	Note 2 reference to ANZECC 2000 updated to ANZG 2018.
17	Inclusion of requirement to undertake an annual water balance from WFC3A Extension.
21	Inclusion of dewatering outlets DO10 and DO11.
	Updated 'audit report' with 'Environmental Compliance Report' for consistency with latest terminology.
22	Inclusion of requirements of the Environmental Compliance Report.
Definitions, Table 12	Updated definitions and included new terminology.
Figure 2	Updated figure to include showing WFC3A Extension. Inclusion of descriptive text.
Figures 3 & 4	Inclusion of descriptive text.
Figure 5	Updated figure to include DO10 and DO11.
Figure 6	Inclusion of descriptive text.
Figure 7	Updated figure without MCB2.
Figure 8	New figure to show the monitoring bore arrangement and emission point to WFC3A extension.

References

- 1. Department of Biodiversity, Conservation and Attractions 2018, Fortescue Marsh Management Strategy 2018-24.
- 2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
- 3. Department of Water and Environmental Regulation (DWER) 2018, Amendment Decision Report, Perth, Western Australia.
- 4. DWER 2020, Guideline: Environmental Siting, Perth, Western Australia.
- 5. DWER 2020, Guideline: Risk Assessments, Perth, Western Australia.
- DWER 2021a, Yandicoogina Waste Fine Cell 3A Extension Works Approval W6518/2021/1 - Conditions Compliance Document, Joondalup, Western Australia, 19 November 2021.
- DWER 2021b, Yandicoogina Waste Fine Cell 3A Extension Works Approval W6518/2021/1 - Conditions Compliance Document, Joondalup, Western Australia, 19 November 2021.
- 8. DWER 2022, *W6518/2021/1* Yandicoogina WFC3A Extension Well Construction Report Compliance Demonstrated, Joondalup, Western Australia, 16 December 2022.
- 9. DWER 2023, Memorandum Advice for potential PFAS contamination at Yandicoogina Iron Ore Mine, Joondalup, Western Australia, 27 July 2023.
- 10. Heads of EPA Australia and New Zealand 2020, *PFAS National Environmental Management Plan Version 2.0 (NEMP)*, Australia and New Zealand.
- 11. Rio Tinto (RTIO) 2012, Yandicoogina Operations Groundwater Strategy, Tom Price, Western Australia.
- 12. RTIO 2021, Yandicoogina Iron Ore Project Environmental Management Plan -Ministerial Statement 1038 (RTIO-HSE-0307300), Perth, Western Australia.
- 13. RTIO 2022, Technical Memorandum, Installation of Groundwater Monitoring Wells at Yandicoogina Mine Site, Waste Fines Cells 3A, Western Australia,
- 14. RTIO 2023, 2022 Annual Environment Report for L7340 Yandicoogina Iron Ore Mine, Perth, Western Australia. Page 3.

Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
3, Table 1 The WFC was designed with an expected maximum deposition rate of 3.7 Mt per year. deposition rate is a design estimate based on the 2021 LoM mine plan. The rate of pla between 2022 and 2034 indicates a rate of between 2.1 to 3.7 Mt per year.		Removed the depositional rate from operational requirements.
	Quarterly survey and density reconciliation reporting is carried out, which considers any potential change in the deposition rate, on remaining capacity, density and freeboard.	
	Limit of the overall tonnes for processing or beneficiation of ore 60,000,000 tonnes per annual period is already applied in the assessed design capacity and the overall capacity volume and freeboard is already applied to licence.	
	As the deposition rate does not represent a design, safety or environmental risk. The licence holder requests removing the operational requirement limit of 3,700,000 (dry tailings) per year.	
	The WFC was designed with an expected average deposition solids concentration of 45% w/w and is an operational performance requirement. The solids concentration is a design estimate based on a planned and actual (from previous years) thickener performance.	Removed tailings specifications from operational requirements due to variability in concentrations and monitoring of
	Any potential environmental risks posed by lower solids concentrations are limited to groundwater impacts, which are monitored in surrounding monitoring bores and tailings water quality.	ambient groundwater quality.
	The concentration does affect tailings in-situ density, amount of free water and the remaining storage capacity. The % w/w is governed by multiple factors e.g., feed rate, feed type, breakdowns, shutdowns which are all unpredictable to achieving a consistent w/w.	
	Project in place to decant water from the WFC to limit ponding in the facility to RL 485 m which is in the license conditions to limit environmental impacts.	
	As the concentration does not represent a design, safety or environmental risk, the licence holder requests the removal of the requirement for average w/w.	

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	The beach profile range was assumed for the design of the WFC and is reconciled quarterly as part of the quarterly survey and density reconciliation. The profile is a design assumption, not a design requirement. The beach profile also varies based on feed type, flow rates, velocity and is impractical to manage ongoing basis.	Removed as requested.	
The beach profile does not represent a safety or environmental risk and is therefore not necessary as a licenced requirement. The licence holder requests the removal of the requirement for the beach angle profile to be maintained at 0.5% to 0.9%.			
4, Table 2	The licence holder requests some flexibility with this condition to allow for operational or weather constraints.	Added wording for to clarify inspections to be undertaken during tailings deposition, to	
	The licence holder suggests the following wording.	target a 90% daily inspection rate and to report missed inspections in the Annual	
	'The licence holder must: (a) undertake daily inspections during periods of deposition as detailed in Table 2 to ensure that the facility is functioning as per the design intent.	Environmental Report (AER).	
	Visual inspections for all components of the WFC including:		
	Pipelines and services corridor (Processing Plant to WFC3A Extension)		
	Pumps, valves		
	General integrity of embankment		
	Fauna entrapment		
	At least 90% of inspections in a month shall be completed, to allow for operational or weather constraints. Reasons for missed inspections shall be documented in the Annual Environmental Report.'		
5	WFC3 Embankment is currently at 492 RL (and in line with condition 4 of L7340). WFC3 Embankment has not yet reached its final approved RL of 500 RL (which is why a compliance document has not yet been provided as per Condition 15 of L7340).	A licence condition cannot refer to another document. The department has updated Figure 6 to the latest backfill design.	
	As outlined in correspondence between Rio Tinto and DWER, a land bridge will be required to be constructed adjacent the WFC3 embankment to cut haulage times.		
	It is proposed to backfill the area between the proposed land bridge and WFC3 embankment as part of the future mine closure plan. The licence holder does not consider the backfilling of this area as presenting an environmental risk as it will provide additional buttressing/support to		

Condition	Summary of Licence Holder's comment	Department's response
	the WFC3 embankment.	
	The final RL for the backfilled area (which will encapsulate the embankment) will be 498 RL (in line with closure commitments and under the final approved 500 RL). The licence holder requests the removal of Schedule 1, Figure 6 and suggests the following wording.	
	'The licence holder must construct the embankments associated with Stage 2 of WFC3 in accordance with the diagram in Schedule 1, Figure 6. closure requirements.'	
10, Table 6	A maximum flow rate for a selection of discharge outlets was added to the licence in Jan 2018. D09 and D09A were not required to have a maximum flow rate conditioned. The pipeline is protected from rock damage and erosion through the installation of a rock gabion structure to enable a reduction in water velocity as the discharged water flows into the targeted discharge areas. The use of gabion rock baskets (or mattresses), a rip rap apron and openly placed rock protection provides a more natural and non-intrusive effect on the surrounding environment and eliminates the requirement for permanent concrete structures.	The department has made the requested change.
	DWER (Amendment Decision Report Jan 8 2018): Limits are not required for the DO9A outfall, as the Delegated Officer has determined that additional effective controls to rip-rap alone are in place to reduce erosion. The DO9A outfall has been constructed with a gabion structure and rip-rap.	
	As DO10 and DO11 have the same increased erosion control (gabion structure and rip rap) as DO9A, the licence holder requests that DO10 and DO11 are removed from Table 6.	
	It must also be noted that only DO10 and DO11 are designed to be a pulsed discharge. The remaining discharge locations are continuous flow when discharging. The licence holder requests that the 'Flow Type' column of Table 6 be removed.	Pulsed discharge not applicable to all Dewatering Outlets and the 'Flow Type' column has been removed.
13, Table 9	DO10 and D011 are not proposed to be constructed until Q1, 2024. Therefore, the licence holder will be unable to sample DO10 and DO11 by this date.	Condition wording updated.
	The licence holder requests that minimum frequency is changed	
	from 'Once off spot sample – all samples to be collected by 30 November 2023' to 'Once off spot sample – all samples to be collected as per condition 14'.	
14	DO10 and D011 are not proposed to be constructed until Q1, 2024. Therefore the licence holder will be unable to sample DO10 and DO11 by this date.	The department has updated the condition as requested. The report required by

Condition	Summary of Licence Holder's comment	Department's response	
	The licence holder proposes Condition 14 states 'The licence holder must provide to the CEO no later than 30 days after commissioning DO10 and DO11, a report which includes the following, but not limited to:	condition 14 can be provided as part of condition 21.	
	(a) laboratory results from parameters tested as specified in condition 13; and		
	(b) an analysis and interpretation of the results against the 99% species protection values from the PFAS National Environmental Management Plan.		
	It is also proposed that these results are provided as part of the Environmental Compliance Report as required by Condition 21 (b) to consolidate the number of reports required to be submitted to the CEO.		
15	WFC3A Extension Monitoring bores	MB10YRN009S and MC004 removed	
	• MB10YRN009S – to be removed as reporting as 'dry'. Bore MB10YRN008 is currently being	replaced by MB10YMA001.	
	monitored and is 70m away, as is MB10YRN008 (80m away). These two bores (already on the list) are sufficient.	The four bores from the works approval have not been assessed by the	
	MC004 - to be replaced by MB10YMA001	application.	
	The following bores were required to be drilled as part of Works Approval W6518/2021/1 Condition 3, Table 2;	Updated administrative errors.	
	• BH01 - MB22YJSE0001		
	• BH02 - MB22YJSE0002		
	• BH05 - MB22YJSE0005		
	• BH06 - MB22YJSE0006		
	The licence holder requests the following amendments;		
	MB10YRN009S – to be removed from Condition 15, Table 10 MC004 - to be removed from Condition 15, Table 10 and		
	replaced by MB10YMA001		
	The licence holder seeks clarification around whether BH01 - MB22YJSE0001, BH02 - MB22YJSE0002, BH05 - MB22YJSE0005 and BH06 - MB22YJSE0006 need to be included in the monitoring schedule as defined by Condition 15 The licence holder has provided an updated Figure 7 and Figure 8 (as Attachment 2).		

Condition	Summary of Licence Holder's comment	Department's response	
	Administrative errors to be amended in Condition 15, Table 10		
	Nitrate and N		
	Nitrite as N		
	Ammonia?		
23, Table	Groundwater monitoring	Reporting was a carryover of the	
11 for condition 2	This monthly requirement does not align with the frequency stipulated in Condition 15, Table 10 (six-monthly, quarterly, Monthly).	operational requirements listed in condition 10, table 4 Works Approval W6518/2021/1, which ensure acceptable operations of the	
	Additionally, this does not indicate if it is only physical parameters or a combination of chemical analysis as well. Please clarify.	TSF prior to inclusion on the licence.	
	Tailings level	monitoring results from condition 15, Table	
	The tailings level or reduced levels vary over the beach profile from deposition point to the edge of the pond. It is unclear as to what the intention, or where this elevation is to be reported.	10 duplication of groundwater monitoring and piezometer reading have been removed	
	The tailings surface is recorded quarterly by aerial imagery. Monthly recording is not considered practical or necessary as the monthly in-pit tailings level are predictable with tailings tonnage delivery.	Tailings solid content has been removed given depth to water and standing water level is required to be reported as part of	
	Quarterly surveys are carried out to record:	condition 15.	
	remaining capacity	Tailings level has been removed as	
	density reconciliations	overtopping are to be notified as incidents.	
	remaining freeboard	volume of tailings discharged'.	
	The rate of rise and consolidation of densities are completed quarterly, are well understood and predictable. Quarterly surveys are therefore considered to address the tailings level monitoring requirement.		
	The licence holder requests the removal of the 'Monthly' as it does not align with the timeframes set out in Condition 15, Table 10. The licence holder suggests the following.		
	Monthly Records of the following:		
	(a) groundwater monitoring (frequency as per condition 15)		
	(b) monthly piezometers readings		

Condition	Summary of Licence Holder's comment	Department's response
	(c) average tailings solid content	
	(d) quarterly tailings level (mRL)	
	(e) volume of tailings discharged	
23, Table 11 for condition	As the flowmeters are monitored continuously, the requirement to provide this continuous data as separate raw data points (e.g. Minute by minute) seems excessive.	Updated as requested.
12	The licence holder requests the removal of 'or more frequent' from Table 12, condition 12(b).	

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
Application type					
Works approval					
		Relevant works approval number:		None	
		Has the works approving with?	oval been complied	Yes 🗆	No 🗆
Licence		Has time limited operations under the works approval demonstrated acceptable operations?		Yes 🗆	No 🗆 N/A 🗆
		Environmental Com Critical Containmen Report submitted?	pliance Report / t Infrastructure	Yes 🗆	No 🗆
		Date Report receive	ed:		
Renewal		Current licence number:			
Amendment to works approval		Current works approval number:			
		Current licence number:	L7340/1997/9	L7340/1997/9	
Amenament to licence		Relevant works approval number:	W6518/2021/1	N/A	
Registration		Current works approval number:		None	
Date application received		10 May 2023			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Rio Tinto Iron Ore - Pilbara Iron Company (Services) Pty Ltd			
Premises name		Yandicoogina Iron Ore Mine			
Premises location		Part of Mining Lease AM70/274; LGE L021123 NEWMAN WA 6753			
Local Government Authority		Shire of East Pilbara			
Application documents					
HPCM file reference number:		DER2013/000903-2			
Key application documents (additional to application form):		Attachment 1C: Authorisation to act as representative of the Occupier. Attachment 10: Information and data used to calculate proposed fees.			
Scope of application/assessment		<u> </u>			

	Licence amendment				
	Construction and operation of:				
	 additional discharge outlets (DO10 and DO11) under Category 6 within the existing prescribed premise boundary (Supporting Documentation attached). These discharge outlets are an increase of discharge options, but not an increase in discharge. 				
	Operation of:				
	 the Waste Fines Cell 3A (WFC3A) Extension under Category 5 within the existing prescribed premise boundary, post completion of time limited operations. 				
Summary of proposed activities or	Removal and replacement of:				
changes to existing operations.	 monitoring bores MB09YJSB002 and MB09YJSB004 which were dry or damaged, and replaced with JSE20 and MB09YJSB009 respectively; monitoring bores MB10YMA006 and MB10YRN009D which were unsafe to sample and replaced with MC004 and MB0YRN010 respectively; and monitoring bore MCB2 which has been dry since 2019. A replacement bore is planned to be drilled in Q4 2023 (location TBA) near MCB2 that will target basement formation and not to rely only on MCB1. 				
	Amendment of:				
	Chromium comparison criteria to align with achievable limit of reporting limits.				

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity		Proposed changes to the production or design capacity (amendments only)		
Category 5: Processing or beneficiation of metallic or non-metallic ore	60,000,000 tonnes or more per year		No change.		
Category 6: Mine dewatering	78 gigalitres p	er annum	No change.		
Legislative context and other approvals					
Has the applicant referred, or do they			Referral decision No:		

Has the applicant referred, or do they ntend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes 🗆	No 🛛	Referral decision No: Managed under Part V □ Assessed under Part IV ⊠	
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes 🛛	No 🗆	Ministerial statement No: MS 1038 – regulates surplus water discharge to Weeli Wolli Creek. EPA Report No:	

Has the proposal been referred and/or assessed under the EPBC Act?	Yes 🗆 No 🛛	Reference No: N/A Exemption applies: Exempt under Schedule 6 of the EP Act. Clearing to be carried out under MS1038
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes 🛛 No 🗆	Certificate of title General lease Mining lease / tenement Expiry: 18 September 2039 (Minedex) Other evidence Expiry:
Has the applicant obtained all relevant planning approvals?	Yes 🛛 No 🗆 N/A 🗆	Approval: W6464/2021/1 Expiry date: 5/08/2024 If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes 🗆 No 🛛	CPS No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes 🗆 No 🛛	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes 🗆 No 🛛	Application reference No: Licence/permit No: 166205
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes 🛛 No 🗆	Name: Pilbara Type: Surface Water Area Has Regulatory Services (Water) been consulted? Yes I No I N/A I Regional office: North West
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes □ No ⊠	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes I No I N/A I
Is the Premises subject to any other Acts or subsidiary regulations (e.g. Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx)	Yes 🛛 No 🗆	Iron Ore (Yandicoogina) Agreement Act 1996

Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes 🗆 No 🛛	
Is the Premises subject to any EPP requirements?	Yes 🗆 No 🛛	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes □ No ⊠	Contaminated site in adjacent mining tenement M 270SA. CSS_ID 81684 CSS_SITE_ID 12402 Classification: possibly contaminated – investigation required (PC–IR) Date of classification: 6 April 2023