Amendment Report

Application for Licence Amendment

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

Licence Number	L8454/2010/2
Licence Holder	Chichester Metals Pty Ltd
ACN	109 264 262
File Number	2010/003105
Premises	Christmas Creek Mine Site Tenements E46/610, E46/612, M46/320, M46/321, M46/322, M46/323, M46/324, M46/325, M46/326, M46/327, M46/328, M46/329, M46/330, M46/331, M46/332, M46/333, M46/334, M46/335, M46/336, M46/337, M46/338, M46/339, M46/340, M46/341, M46/342, M46/343, M46/344, M46/345, M46/346, M46/347, M46/348, M46/349, M46/350, M46/351, M46/352, M46/353, M46/354, M46/355, M46/403, M46/406, M46/412, M46/413, M46/414, M46/415, M46/416, M46/417, M46/418, M46/419, M46/420, M46/421, M46/422, M46/423, M46/424, G46/7, L46/49, L46/56, L46/58, L46/86, L46/87, L46/106, L46/111, E46/566 and L46/66 MULGA DOWNS WA 6751 As depicted in Schedule 1
Date of Report	05/04/2022
Decision	Revised licence granted

Alana Kidd

Digitally signed by Alana Kidd
Date: 2022.04.05 09:10:37 +08'00'

ALANA KIDD
MANAGER, RESOURCE INDUSTRIES

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

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1. Decision summary

Licence L8454/2010/2 is held by Chichester Metals Pty Ltd (Licence Holder) for the Christmas Creek Mine Site (the Premises), located at:

Tenements E46/610, E46/612, M46/320, M46/321, M46/322, M46/323, M46/324, M46/325, M46/326, M46/327, M46/328, M46/329, M46/330, M46/331, M46/332, M46/333, M46/334, M46/335, M46/336, M46/337, M46/338, M46/339, M46/340, M46/341, M46/342, M46/343, M46/344, M46/345, M46/346, M46/347, M46/348, M46/349, M46/350, M46/351, M46/352, M46/353, M46/354, M46/355, M46/403, M46/406, M46/412, M46/413, M46/414, M46/415, M46/416, M46/417, M46/418, M46/419, M46/420, M46/421, M46/422, M46/423, M46/424, G46/7, L46/49, L46/56, L46/58, L46/86, L46/87, L46/106, L46/111, E46/566 and L46/66

MULGA DOWNS WA 6751 As depicted in Schedule 1 of the Licence.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L8454/2010/2 has been granted.

2. Scope of assessment

2.1 Regulatory framework

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

2.2 Application summary

On 30 July 2021, the Licence Holder submitted an application to the department to amend Licence L8454/2010/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Construct a new Flinders In-Pit TSF2 Facility;
- OPF1 Lump Plant - extension to the existing OPF1;
- Change the location of the proposed Hydrogen Refuelling Station (HRS); and
- Install two back-up emergency generator sets at the power station.

This amendment is limited only to changes to Categories 5 and 31 activities from the Existing Licence. No changes to the aspects of the existing Licence relating to Categories 6, 52, 54, 57, 64 and 73 have been requested by the Licence Holder.

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

Table 1: Proposed design or throughput capacity changes

Category	Current design throughput capacity	Proposed design throughput capacity	Description of proposed amendment
5	77,000,000 tonnes per Annual Period	77,000,000 tonnes per Annual Period	N/A
6	43,000,000 tonnes per Annual Period (injected)	43,000,000 tonnes per Annual Period (injected)	N/A
31	N/A	**195 tonnes per annual period**	N/A
52	63.6 MWe	63.6 MWe	N/A
54	1,040 cubic metres per day	1,040 cubic metres per day	N/A
57	2,000 tyres	2,000 tyres	N/A
64	10,000 tonnes per Annual period	10,000 tonnes per Annual period	N/A
73	15,183.1 cubic metres in aggregate	15,183.1 cubic metres in aggregate	N/A

2.2.1 Flinders In-Pit TSF2 Facility

The Licence Holder currently produces tailings from OPF1 and OPF2 and transfers these to a TSF within a mined out pit void at Flinders In-Pit TSF1. The Licence Holder proposes to convert a larger exhausted pit void to Flinders In-Pit TSF2 directly adjacent to the existing Flinders In-Pit TSF1. Flinders In-Pit TSF1 is due to reach capacity in 2022, hence, the requirement for the new Flinders In-Pit TSF2. The Flinders In-Pit TSF2 will receive tailings from both OPF1 and OPF2 for an approximate three-year period, with an estimated capacity of 36.5 million tonnes.

The new Flinders In-Pit TSF2 will be an in-pit TSF with single point discharge via multiple spigots to ensure consistent beaching of tailings, and to maximise tailings storage capacity and water return to the OPF for reuse. The key infrastructure associated with the design of the Flinders In-Pit TSF2 includes:

- Tailings delivery pipelines and disposal spigot locations; and
- Decant return water pump and pipeline.

Testing from the Vasse and Windich TSFs and latest tailings confirm that the tailings from OPF1 and OPF2 exhibit similar specific gravity, average dry density and geochemical parameters, therefore, tailings from OPF1 and OPF2 are considered as a single, uniform material (SRK, July 2021).

Previous sampling conducted has shown that tailings have no likelihood of generating acid. The tailings geochemical characterisation assessment indicated there is a low likelihood of leaching of some metals including aluminium, barium, chromium, copper and zinc. Analysis of tailings supernatant water indicated a high likelihood of cadmium, chromium, mercury and zinc, with a low likelihood of boron, rubidium and uranium occurring in any seepage, at low concentrations.

The groundwater at the Flinders In-Pit TSF1 has increased in salinity and increases in some trace metal concentrations comparative to previous data suggests that saline seepage may be occurring. Results summary is shown in Table 2 (FMG, 2021).

The proposed alignment of the tailings delivery pipelines and return water pipelines to and from the Flinders In-Pit TSF2 are shown in Figure 1.

Groundwater and water balance modelling indicate that the Flinders In-Pit TSF2 will become a groundwater sink following the completion of mining and in-pit sump dewatering. Mine dewatering creates a cone of depression that reverses natural groundwater flow from the south towards the Fortescue Marsh back towards the mining areas. As the Flinders In-Pit TSF2 is located within the dewatering cone of depression with the altered groundwater gradients, this is expected to result in any seepage remaining within close proximity to the TSF within the Marra Mamba Aquifer.

Three new monitoring bores are to be installed in the vicinity of the proposed Flinders In-Pit TSF2 Complex to determine any seepage impacts on groundwater quality and level in the surrounding groundwater aquifers.

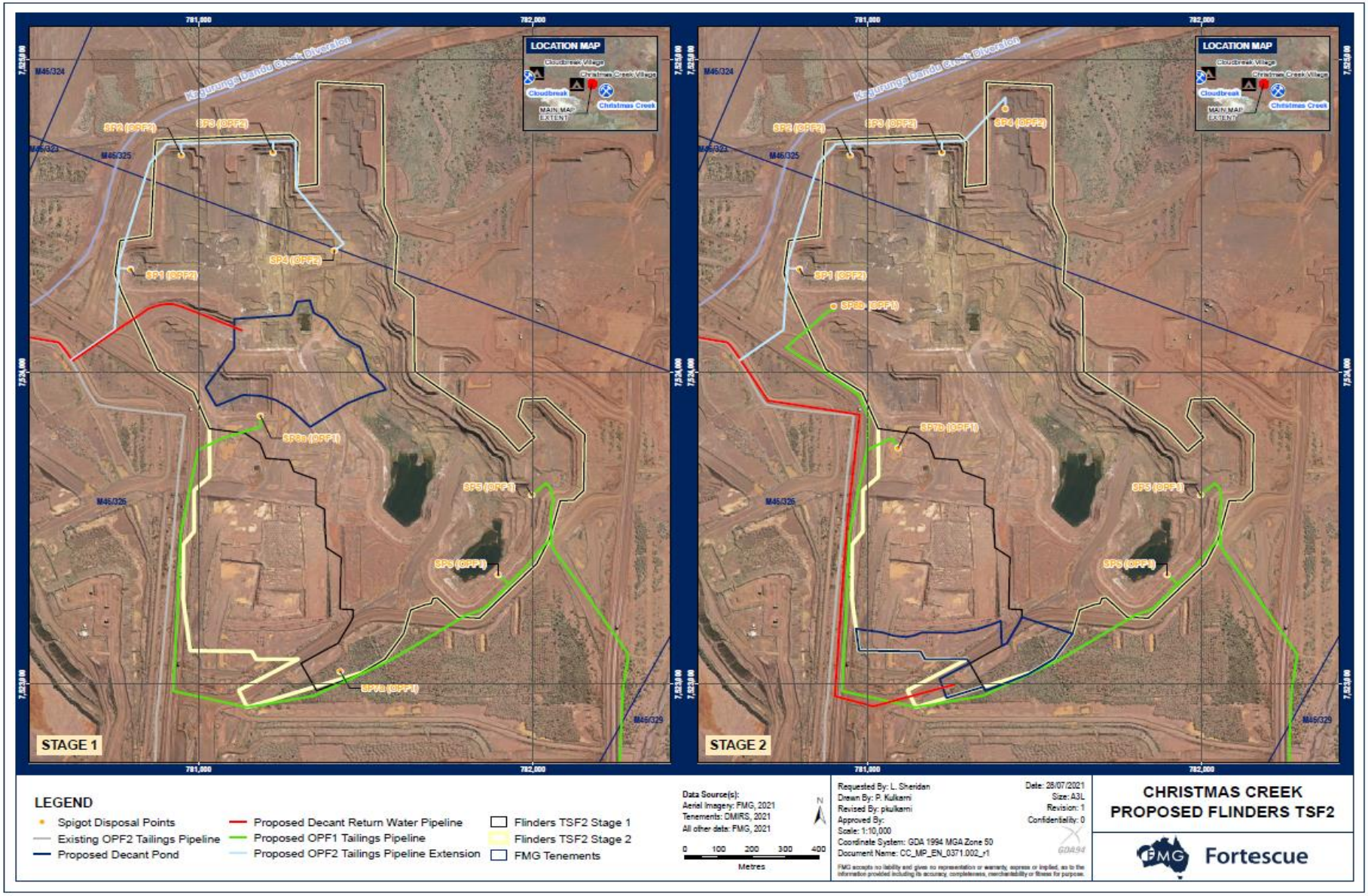

Figure 1: Christmas Creek Proposed Flinders TSF2

Table 2: Groundwater results summary for Flinders In-Pit TSF1

Location	Bores	ANZECC 95% of SLP exceedances (SLP higher than ITV for Al, Hg, Mo, Sb)	GW ITV exceedances	Parameters not of concern		Temporal trend comment
				Detected	Below detection (<LOR)	
Flinders In-Pit TSF1	FLM06_D	B, Cd, Cr, Cu, Ni, Ag, Tl, U, Zn	Sb, EC, Tl (<LOR)	As, Co, Fe, Mn, Hg, Mo, Se, Tl	Al, Be, Pb	pH increased in 2020, had previously decreased between 2017 and 2019 Increasing trend in TDS, Cl, Ca, Cl, Mg, K, Na Increasing Hg in 2019-2020
	FLM08_D	B, Cd, Cr, Cu, Hg, Ni, Tl (<LOR), Zn	pH, Hg, Tl (<LOR), NO_3	Sb, As, Co, Fe, Mn, Se, U	Al, Be, Pb, Ag	pH increased in 2020, had previously decreased between 2017 and 2019 Salinity (EC, TDS), major ions (Ca, Cl, Mg, Na, SO4, NO_3) and several trace elements (Cd, Cr, Cu, Hg, Mn, Ni, Sb, Se, Zn) increased in 2017-2018 but have been steady or decreased slightly in 2019-2020
	FLM17	B, Cd, Cr, Co, Cu, Fe, Mn, Ni, Ag, Tl, U, Zn	Sb, Co, EC, Fe, Mn, Tl	As, Pb	Al, Be, Hg, Se	pH increased in 2020, had previously decreased between 2017 and 2019 Increasing salinity (EC, TDS), major ions (Ca, Cl, K, Mg, Na, SO_4) Cd, Co, Fe, Mn and Tl increased in 2019 and remained higher in 2020 Decreasing Sb NO_3 increased in 2019 and decreased in 2020
	CCE04MB_S	Cd, Cr, Cu, Ni, Ag, Tl (<LOR), U, Zn	Sb, Tl (<LOR),	As, B, Co,	Al, Be, Hg	pH decreased in 2019, remained

			NO_3	Fe, Pb, Mn, Se, Tl		lower in 2020 Increased salinity (EC, TDS), major ions (Ca, Cl, K, Mg, Na, SO_4), Sb, Cd in 2019-2020 Increasing Mn, Cu, Zn Decreasing alkalinity NO_3 increased in 2019 and decreased in 2020

2.2.2 OPF1 Lump Plant extension to the existing OPF1

The Licence Holder currently produces fines product of nominally 8mm size. Ore within the OPF1 that is greater than 8mm is crushed by the secondary and tertiary crushing circuits until less than 8mm and classified as fines product.

Market requirements have driven the Licence Holder to produce a new lump product in addition to the existing fines product. A new plant is proposed to be located directly adjacent to the existing OPF1.

The new OPF1 Lump Plant will remove a partly processed ore stream to a new crushing and screening facility to screen out and generate a lump product and crush the oversize to return to the existing OPF1. There will be no changes to the overall feed, capacity or tailings increases as a result of the installation of this OPF1 Lump Plant.

The key infrastructure and process requirements for the OPF1 Lump Plant includes:

- Tie-in and modify the existing tertiary rolls crusher feed chute and belt feeder for reversible operation. When the belt feeder is running in reverse, the lump feed will transfer to a new conveyor;
- A new double deck vibrating screen;
- A new mineral sizer for crushing the vibrating screen oversize material;
- A new conveyor to transfer the mineral sizer product, re-entering the dry screening plant via the extended tail end of CV04;
- A new conveyor for sized lump product (vibrating screen undersize);
- A radial telescopic stacker and a lump product stockpile;
- A sample station at the transfer onto the radial telescopic stacker;
- Front end loaders and trucks for product reclaiming;
- All electrical, instrumentation and control systems for the lump circuit; and
- Provision of services to meet the lump circuit demand, including process water, instrument air and plant air.

The layout and location of the OPF1 Lump Plant is shown in Figure 2 and Figure 3.

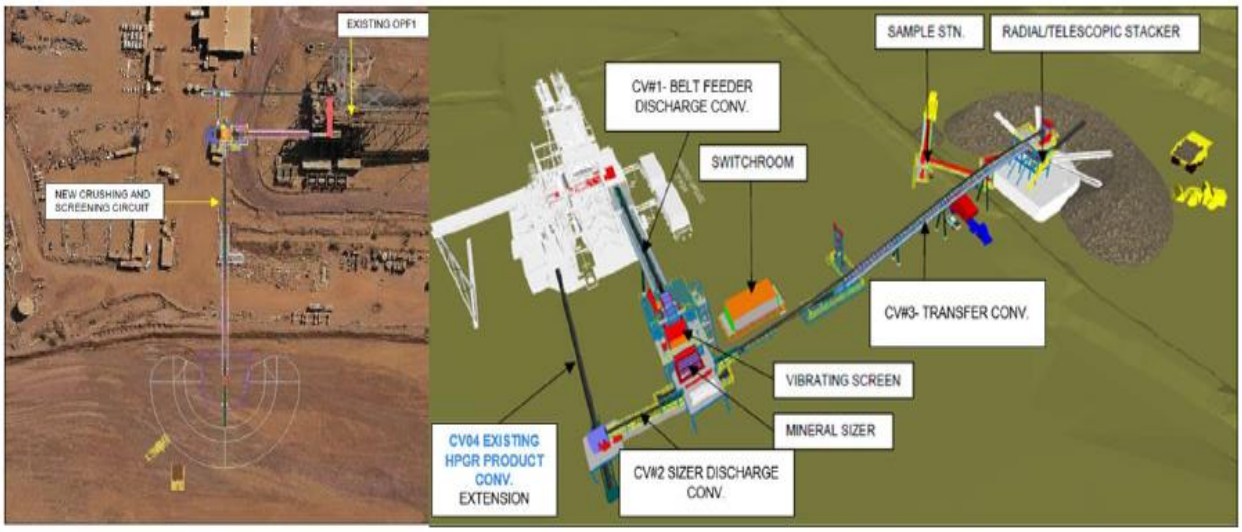

Figure 2: Proposed OPF1 Lump Plant Layout

Figure 3: OPF1 Lump Plant Location

2.2.3 Change the location of the proposed HRS

The design of the HRS has been finalised and a new location has been selected near the Central Contractors Yard (CCY1). This location is a larger area so is more accessible for the refueling of hydrogen powered buses and vehicles at the mine site. The water output will be piped to the LV wash pad and then onto the Elvis Turkey's nest where it will be used for dust suppression.

2.2.4 Install two back-up emergency generator sets at the power station

The existing diesel generators are regularly out of service for maintenance or sent offsite to be repaired and during these periods, emergency backup generator sets are required to maintain power generation for the mine. Therefore, two diesel emergency backup gensets of 1.6 MW capacity are to be installed adjacent to the existing Power Station. The Category 52 licensed capacity is not required to be changed from 63.6 MW as these will be used as back up when an operational genset is out for maintenance or offsite to be repaired.

2.3 Part IV of the EP Act

The Christmas Creek Iron Ore Mine Expansion was approved on 08 August 2016 by Ministerial Statement 1033, EPA Report No: 1567, to allow the expansion of the existing mining footprint, permanent waste landforms, tailings disposal, conveyors, roads, drainage and other associated mine infrastructure.

The EPA identified the following factors as the key environmental factors during the course of its assessment of the proposal and set the following conditions:

1. Hydrological Processes / Inland Waters Environmental Quality – potential impacts from drawdown and mounding of groundwater, potential changes in surface flow regimes and potential changes in water quality:
    - Groundwater abstraction and injection is limited to 110 GL/a as defined in Table 2 of Schedule 1 of the recommended environmental conditions;
    - Condition 7 is imposed to maintain the health of Mulga, Samphire and

Coolibah/River Red Gum vegetation (including a plan that addresses impacts from changes to groundwater levels and quality, and changes to surface flows); and

- Condition 10 is imposed which includes a monitoring framework for groundwater levels and groundwater quality post-mining once dewatering and injection ceases;

2. Flora and Vegetation – direct impacts from the clearing of flora and vegetation and indirect impacts on vegetation from groundwater drawdown and mounding, and changes to surface water flows:
    - the extent of clearing of vegetation is limited to the authorised extent as defined within Table 2 of Schedule 1 of the recommended environmental conditions;
    - the extent of clearing (direct and indirect impacts) of Mulga, Samphire and Coolibah / River Red Gum vegetation is limited to the authorised extent as defined within Table 2 of Schedule 1 of the recommended environmental conditions;
    - condition 7 is imposed to avoid impacts on Priority 1 flora species and to maintain the health of Mulga, Samphire and Coolibah/River Red Gum vegetation;
    - condition 10 is imposed which includes completion criteria for the rehabilitation (including revegetation) of Mulga and Coolibah / River Red Gum vegetation; and
    - condition 11 is imposed to counterbalance the significant residual impact of a loss of up to 7,468 ha of 'Good to Excellent' condition native vegetation including vegetation located in the Fortescue Marsh management zones and the proposed Fortescue Marsh Conservation Reserve, and the cumulative loss of Mulga and Coolibah / River Red Gum vegetation;
3. Subterranean Fauna – potential impacts from loss of habitat due to dewatering and excavation of mine pits:
    - condition 9 is imposed which requires further surveys, and a management plan, if required;
4. Terrestrial Fauna – potential impacts from the loss of habitat for conservation significant species from the clearing of vegetation:
    - condition 8 is imposed which requires a revised management plan to minimise impacts to significant terrestrial fauna;
    - condition 10 is imposed which includes completion criteria for the rehabilitation (including revegetation) of Mulga and Coolibah / River Red Gum vegetation communities; and
    - condition 11 is imposed to counterbalance the significant residual impact of the loss of habitat for conservation significant fauna;
5. Rehabilitation and Decommissioning (Integrating Factor) – potential long-term impacts to vegetation and fauna habitat if rehabilitation is unsuccessful, and potential long-term impacts to aquifer water quality once dewatering and injection ceases:
    - condition 10 requires a Mine Closure Plan be developed consistent with the Guidelines for Preparing Mine Closure Plans;
6. Offsets (Integrating Factor) – to counterbalance the significant residual impacts to native vegetation in 'Good to Excellent' condition, including habitat for conservation significant fauna species; and vegetation in the proposed Fortescue Marsh Conservation Reserve and Fortescue Marsh management zone 1a:

- condition 11 is imposed to counterbalance the significant residual impacts of the additional clearing of up to 7,468 ha of 'Good to Excellent' condition native vegetation (including impacts to vegetation located in the Fortescue Marsh management zones and the proposed Fortescue Marsh Conservation Reserve, and impacts to and potential MNES habitat); and
- the condition incorporates outstanding proponent commitments relating to offsets in Ministerial Statement 707.

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 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Construction of infrastructure and associated equipment including vehicle movements	Air/windborne pathway	Inform personnel of dust management responsibilities Minimise clearing and vegetation disturbance and conduct vegetation clearing in accordance with permits Implement dust suppression measures including the use of water carts, vehicle speed restrictions etc. Dust mitigation measures are to be implemented while earthworks are conducted
Noise	Construction of infrastructure and associated equipment including vehicle movements	Air/windborne pathway	Low noise plant and equipment will be used where practicable Noise emissions monitoring conducted on mobile plant where potential exceedance is identified Noise emissions reduction will be addressed through the maintenance process. As necessary noise emissions monitoring

Emission	Sources	Potential pathways	Proposed controls
			conducted on fixed plant and noise and emissions reduction addressed through maintenance processes SCREENED OUT DUE TO DISTANCE TO SENSITIVE RECEPTORS SO NOT INCLUDED IN RISK ASSESSMENT
Hydrocarbons/chemicals	Construction of infrastructure and associated equipment including vehicle movements	Direct discharge	Australian Standard 1940-2004 The storage and handling of flammable and combustible liquids Remediation of any spills and leaks as soon as practicable
Commissioning and Operations			
Flinders In-Pit TSF2			
Dust	Dust lift off from the surface of the TSF	Air/windborne pathway	• The tailings is wet so dust should not be an issue.
Tailings liquid containing cadmium, chromium, mercury and zinc	Overtopping and pipeline spills / leaks	Direct discharge	• Minimum freeboard of the Flinders In-Pit TSF2 will be maintained equivalent to that required to contain a 1 in 100 storm event over 72 hours from the operational pond surface to the lowest elevation of perimeter embankment; • Pipelines or sections of pipelines containing tailings and high-risk saline pipelines are either: ➢ Equipped with telemetry; or ➢ Equipped with automatic cut-outs in the event of a pipe failure; or ➢ Provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.
Tailings leachate	Seepage through the base and walls of the TSF	Infiltration	• Water balance simulations, long-term groundwater modelling and operational data were used to support the groundwater impact assessment and the licence holder has stated that there are unlikely to be any significant impacts on the local groundwater system; • The decant water will be reclaimed to reduce seepage from the tailings pond; and

Emission	Sources	Potential pathways	Proposed controls
			• Additional ambient groundwater monitoring bores to be installed in the vicinity of the Flinders In-Pit TSF2.
OPF1 Lump Plant extension			
Dust	Processing of the lump ore	Air/windborne pathway	• The dust levels from the proposed OPF1 Lump plant are unlikely to be significant, as the ore processed through the plant is wet screened • Dust suppression equipment and measures will be included in the plant design and will include dust covers, skirts, and water sprayers.
Sediment laden stormwater	Rainfall in the vicinity of the processing area	Direct discharge	• Minor impact to the existing surface water drainage that includes modification to the surface water drainage route between the crushing and screening plant and the lump stockpile, but there is no change to the discharge pond or water reclamation system • Containment bunds will be designed and constructed around the proposed OPF1 Lump Plant to manage any surface water run-off.
Two emergency back-up diesel generator sets			
Air emissions	Diesel gensets	Air/windborne pathway	• Emission point height; and • Low sulphur diesel fuel.
Diesel leaks/spills	Diesel gensets	Direct discharge	• Potentially hydrocarbon contaminated treated wastewater from the Power Station treated water pond reports to a pond with adequate freeboard.
Relocation of HRS			
Oxygen gas vented to air as part of standard operations	HRS	Air/windborne pathway	N/A, none required.
Hydrogen gas vented to air (only during pressure relief)	HRS	Air/windborne pathway	N/A, none required.
HRS output water of high quality	HRS	Direct discharge	Wastewater produced from the HRS will be of a high quality and transferred to the LV washpad and then onto the Elvis Turkey's Nest where it will be used for dust suppression.

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 4 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 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Construction camp and Operations camp	These camps are located within the prescribed premise boundary. Potential impacts of mine operations on these areas are governed by health and safety legislation and as such these are screened out as a sensitive premises.
Townsites and Homesteads	Nullagine is the nearest town, located over 60 km away from the prescribed premise boundary. Screened out as sufficient distance to avoid potential impacts. Roy Hill Station is located 30 km away. Marillana Homestead is located more than 40 km away. Screened out due to sufficient distance from emission premises.
Environmental receptors	**Distance from prescribed activity**
Surface water	The premises are situated approximately 1 km from the boundary of Fortescue Marsh. Fortescue Marsh is a nationally important and the largest ephemeral wetland in the Pilbara region, a Priority Ecological Community, and is listed on the Directory of Important Wetlands of Australia as a wetland of national significance.
Flora and Vegetation	There are no Threatened flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or Declared Rare Flora (DRF) listed under the *Biodiversity Conservation Act 2016* (BC Act) recorded within the premises boundary. Groundwater sensitive vegetation within or near the premises includes Mulga, Samphire and Coolibah / River Red Gum.
Livestock bores	Three livestock bores are located within the premises boundary, 22 Mile Bore, Rick's Bore and Gorge Bore. A fourth bore is over 3 km outside of the premises.
Groundwater	Groundwater in the project area is generally brackish (>1,000 mg/L TDS) and becomes increasingly saline towards the Fortescue Marsh and with depth (>100,000 mg/L TDS). The Premises sits over three main connected aquifers,

	the fresh-brackish Tertiary Detritals, brackish Marra Mamba formation and the hypersaline Oakover formation. The Oakover Formation is approximately 20 m thick and is confined to semi-confined by overlying clays and silts. Current injection at Christmas Creek has confirmed hydraulic disconnection between the Oakover Formation and overlying watertable. To the south of the premises, the MMF is overlain by Alluvial Clays and Tertiary Detritals consisting of layers of clays, silts and minor sandy gravels.
Fauna	Significant fauna identified as potentially occurring within the premises are the Northern Quoll, Night Parrot and Greater Bilby, Pilbara Leaf-nosed Bat and Pilbara Olive Python. Screened out as the proposed amendment is not expected to alter the risks to fauna species outside that addressed within MS 1033.

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 5.

The Revised Licence L8454/2010/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Categories 5 and 31 activities.

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

Table 5. Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and operations

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
Construction								
Construction of Flinders In-Pit TSF2 and OPF1 Lump Plant extension and associated equipment including vehicle movements	Dust from vehicle/machinery construction movements	Air/windborne pathway causing impacts to photosynthesis	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
	Hydrocarbons/chemicals	Direct discharge from leaks/spills and transfers	Groundwater No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
Commissioning and Operations								
Flinders In-Pit TSF2	Dust lift off from the surface of the TSF	Air/windborne pathway causing impacts to photosynthesis	No Threatened flora species, however, Mulga, Samphire and Coolibah / River	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	N/A	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
			Red Gum within or near the premises.					
	Tailings liquid containing aluminium, barium, chromium, copper, zinc. Cadmium, mercury, boron, rubidium and uranium	Overtopping and pipeline spills / leaks	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Condition 2 requires that all pipelines have telemetry, automatic cut-outs or secondary containment. Condition 10, Table 6 Infrastructure requirements Requires minimum freeboard.	N/A
	Tailings leachate containing aluminium, barium, chromium, copper, zinc. Cadmium, mercury, boron, rubidium and uranium	Seepage through the base and walls of the TSF	Groundwater Groundwater dependent flora Mulga, Samphire and Coolibah / River Red Gum within or near the premises	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Condition 24, Table 16 Requires groundwater monitoring in the vicinity of the new Flinders In-Pit TSF2 Complex.	N/A
OPF1 Lump Plant extension	Dust	Air/windborne pathway causing impacts to photosynthesis	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Conditions 9 and 10, Table 6 Infrastructure requirements includes design and construction requirements for dust. Condition 11 includes the operation of the OPF1 Lump Plant extension. Ministerial Statement 1033 also requires a plan to address impacts on conservation significant flora and vegetation health from	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
							dust.	
	Sediment laden stormwater	Deposition of sediment to vegetation causing impacts to photosynthesis	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Conditions 9 and 10, Table 6 Infrastructure requirements includes design and construction requirements for surface water run-off. Condition 11 includes the operation of the OPF1 Lump Plant extension.	N/A
Two emergency back-up diesel generator sets	Air emissions	Deterioration in air quality, however, these are only used as back-up	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	Conditions 9 and 10, Table 6 Infrastructure requirements includes design and construction requirements. Condition 12, Table 7 Emission points to air updated to include the two new diesel gensets with low sulphur diesel fuel. Condition 11 includes the operation of the back up generators HRS.	N/A
	Diesel leaks/spills	Contamination of soils resulting in impacts to vegetation	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 3, Table 2 Containment infrastructure requires that potentially hydrocarbon contaminated treated wastewater from the Power Station treated water pond reports to a pond with adequate	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
							freeboard. Condition 11 includes the operation of the back up generators HRS.	
Relocation of HRS	Oxygen gas vented to air as part of standard operations No greenhouse gases emitted from the HRS	Air/windborne pathway	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	Condition 1, Table 1 Production or design capacity limits includes Category 31 Chemical manufacturing. Condition 6, Table 4 Management of waste updated for the HRS output water to be directed to the Elvis Turkey's Nest. Conditions 9 and 10, Table 6 Infrastructure requirements include the infrastructure to be constructed as per the details provided in the supporting documentation. Condition 11 includes the operation of the HRS.	N/A
	Hydrogen gas vented to air (only during pressure relief)	Air/windborne pathway	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	Condition 1, Table 1 Production or design capacity limits includes Category 31 Chemical manufacturing. Condition 6, Table 4 Management of waste updated for the HRS output water to be directed to the Elvis	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
							Turkey's Nest. Conditions 9 and 10, Table 6 Infrastructure requirements include the infrastructure to be constructed as per the details provided in the supporting documentation. Condition 11 includes the operation of the HRS.	
	HRS output water of high quality	Dust suppression could cause contamination	No Threatened flora species, however, Mulga, Samphire and Coolibah / River Red Gum within or near the premises.	Refer to Section 3.1	C = Slight L = Rare **Low Risk**	Y	Condition 1, Table 1 Production or design capacity limits includes Category 31 Chemical manufacturing. Condition 6, Table 4 Management of waste updated for the HRS output water to be directed to the Elvis Turkey's Nest. Conditions 9 and 10, Table 6 Infrastructure requirements include the infrastructure to be constructed as per the details provided in the supporting documentation. Condition 11 includes the operation of the HRS.	N/A

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 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on (01/03/2022)	Licence Holder replied on 24/03/2022 Refer to Appendix 1	Licence Holder replied on 24/03/2022 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 7 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 7: Summary of licence amendments

Condition no.	Proposed amendments
3, Table 2	Modified to also include Flinders In-Pit TSF2.
6, Table 4	Modified HRS output water management strategy.
9	Modified to refer to the table as opposed to infrastructure.
10, Table 6	Updated to include the Flinders In-Pit TSF2 Complex, OPF1 Lump Plant extension and Back Up Diesel Gensets.
11	Modified to refer to table as opposed to infrastructure.
12, Table 7	Addition of emission points A34 – A35.
15, Table 10	Modification to remove HRS output water from L4 RO brine and include new emission point L5 for HRS output water.
24, Table 16	Addition of Flinders In-Pit TSF2 Complex ambient groundwater monitoring bores.
29, Table 17	Addition of Flinders In-Pit TSF2 Complex to AER reporting.
31, Table 18	Addition of Flinders In-Pit TSF2 Complex to compliance document.
Schedule 1: Maps	Update maps. Updated for modifications to infrastructure and monitoring locations.
Schedule 2: Reporting & notification forms	Updated to new format.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Fortescue Metals Group Ltd, Submission of licence amendment for Christmas Creek (L8454/2010/2) 30 July 2021, East Perth, Western Australia.
5. SRK Consulting, Flinders IPTSF2 Detailed Design 27 July 2021, Perth, Western Australia.
6. Fortescue Metals Group Ltd, Christmas Creek Part V Licence Groundwater Monitoring 2020 Results Summary Memorandum 20 April 2021, East Perth, Western Australia.
7. Fortescue Metals Group Ltd, FW: NOTICE OF PROPOSED AMENDMENT TO CHRISTMAS CREEK LICENCE L8454/2010/2 - FMG response with requested changes 24/03/2022, East Perth, Western Australia.

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 2	**Amend Flinders In-Pit TSF1 Complex – Requirements, third bullet point (administrative error on RL value, currently 437.9m) to:** • Flinders In-Pit TSF1 Complex maximum tailings elevation level of Relative Level 437.0 m.	Updated as requested.
10, Table 6	**Delete In-pit tailings storage facility – items;** Filled in two stages: • Stage 1 providing tailings storage of approximately 7.3 Mm3 to the maximum tailings level of 420.2 mRL; • Stage 2 will provide additional tailings storage of approximately 17 Mm3 to the maximum tailings level of 437.0 mRL; Minimum freeboard of Flinders In-Pit TSF2 will be maintained equivalent to that required to contain a 1 in 100 year storm event over 72 hours from the operational pond surface to the lowest elevation of perimeter embankment. These items are operational requirements and does not apply to this Table relating to design and construction only.	Flinders In-Pit TSF2 Complex requirements not updated as requested as this provides information on the design/construction of the Flinders In-Pit TSF2 Complex.
	Delete entire item for Ambient groundwater monitoring bores as these have been constructed and in operation through existing approval granted under DWER's *Rights in Water and Irrigation Act 1914*.	Updated as requested.
	Amend 'OPF1 Lump Plant extension' terminologies within "Infrastructure" column; • From "Double deck vibrating screen" to "Screen" • From "Mineral sizer" to "Oversize crusher" • From "Conveyor to existing dry screening plant" to "Conveyor to lump	Updated as requested.

Condition	Summary of Licence Holder's comment	Department's response
	product" • From "Conveyor to existing dry screening plant" to "Conveying system into existing plant" • From "Radial telescopic stacker" to "Stacker"	
	Delete reference to CAT 3516B within 2 x 1600 kW **CAT 3516B** emergency back up diesel gensets	Updated as requested.
12, Table 7	**Delete references to CAT 3516B,** within Emission Point column "6 x 1600 kW **CAT 3516B** Diesel Generator" And "2 x 1600 kW **CAT 3516B** emergency back up diesel gensets"	Updated as requested.
22, Table 14	**Insert missing footnote for pH relating to Emission Point Reference L4.**	Updated as requested.
Schedule 1: Maps Figure 18	**Update with NEW layout of proposed OPF1 Lump Plant, as depicted below.** **Amend title and include the term 'indicative',** "Figure 18: **Indicative** layout of OPF1 Lump Plant"	Updated as requested.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Works approval	☐				
Licence	☐	Relevant works approval number:		None	☐
		Has the works approval been complied with?		Yes ☐ No ☐	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes ☐ No ☐ N/A ☐	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes ☐ No ☐	
		Date Report received:			
Renewal	☐	Current licence number:			
Amendment to works approval	☐	Current works approval number:			
Amendment to licence	☒	Current licence number:	L8454/2010/2		
		Relevant works approval number:		N/A	☐
Registration	☐	Current works approval number:		None	☐
Date application received		30 July 2021			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Chichester Metals Pty Ltd			
Premises name		Christmas Creek Iron Ore Mine			
Premises location		Tenements E46/610, E46/612, M46/320, M46/321, M46/322, M46/323, M46/324, M46/325, M46/326, M46/327, M46/328, M46/329, M46/330, M46/331, M46/332, M46/333, M46/334, M46/335, M46/336, M46/337, M46/338, M46/339, M46/340, M46/341, M46/342, M46/343, M46/344, M46/345, M46/346, M46/347, M46/348, M46/349, M46/350, M46/351, M46/352, M46/353, M46/354, M46/355, M46/403, M46/406, M46/412, M46/413, M46/414, M46/415, M46/416, M46/417, M46/418, M46/419, M46/420, M46/421, M46/422, M46/423, M46/424, G46/7, L46/49, L46/56, L46/58, L46/86, L46/87, L46/106, L46/111, E46/566 and L46/66 MULGA DOWNS WA 6751			
Local Government Authority		SHIRE OF EAST PILBARA			
Application documents					
HPCM file reference number:		DWERDT484788			
Key application documents (additional to application form):		Letter Application Form Supporting Document			

	Company Extract and Mineral Titles
Scope of application/assessment	
Summary of proposed activities or changes to existing operations.	Licence amendment: • Construct a new Flinders In-Pit TSF2 Facility; • OPF1 Lump Plant extension to the existing OPF1; • Change the location of the proposed Hydrogen Refuelling Station (HRS); and • Install two back-up emergency generator sets at the power station.

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	77,000,000 tonnes per Annual Period	N/A
Category 6: Mine dewatering	43,000,000 tonnes per Annual Period (injected)	N/A
Category 31: Chemical manufacturing	195 tonnes per Annual Period	N/A
Category 52: Electric power generation	63.6 MWe per Annual Period	N/A
Category 54: Sewage facility	1,040 cubic metres per day	N/A
Category 57: Used tyre storage	2,000 tyres	N/A
Category 64: Class II putrescible landfill	10,000 tonnes per Annual Period	N/A
Category 73: Bulk storage of chemicals	15,183.1 cubic metres in aggregate	N/A

Legislative context and other approvals

Has the applicant referred, or do they intend 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: 1033 EPA Report No: 1567
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☒ No ☐	Reference No: EPBC 2013/7055

Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☐ Expiry: Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☒ No ☐ N/A ☐	Approval: Expiry date: 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: Christmas Creek Groundwater Operating Strategy (CC-PH-HY-0002, Revision 6, April 2016).
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: N/A Type: N/A Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☒ Regional office: N/A
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 ☐ No ☐ N/A ☒
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 (FMG Chichester Pty Ltd) Agreement Act*

Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	N/A
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	N/A
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Classification: Information Request Incomplete Report Awaiting Classification Date of classification: N/A