



Application for Licence Amendment

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

Licence Number	L8485/2010/2
Licence Holder	St Ives Gold Mining Company Pty Ltd
ACN	098 386 273
File Number	DER2018/000300-1
Premises	St Ives Gold Mine KAMBALDA WEST WA 6442 Legal description – Mining Tenements described in Schedule 2 of the Revised Licence L8485/2010/2 KAMBALDA WEST WA 6442 As defined by the Premises maps attached to the Revised licence
Date of Report	24 October 2024
Decision	Revised licence granted

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

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1. Decision summary

Licence L8485/2010/2 held by St Ives Gold Mining Company Pty Ltd (Licence Holder) for the St Ives Gold Mine (the Premises), located in Kambalda West, Western Australia. A full description of the premises location is provided in Schedule 2 of the revised Licence L8485/2010/2.

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 minor construction activities and ongoing operation of the Premises. As a result of this assessment, Revised Licence L8475/2010/2 has been granted.

The Revised Licence issued as a result of this amendment consolidates and 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 18 April 2024 the Licence Holder submitted an application to the department to amend Licence L8475/2010/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). Two key amendments are being sought and are summarised in Table 1:

Table 1: Risk Assessed Amendments

Proposed amendment	Justification
<p>1. An increase in the quantity limit of waste disposal by 7,000 tonnes/annum cumulative. This will result in an increase of the prescribed premises category 64 design capacity to 14,000 tonnes per annual period.</p> <p>Removal of the waste quantity limits column in Table 4.</p>	<p>Business improvements in record keeping and monitoring of waste disposal has indicated that the premises exceeded its category 64 design capacity limit in 2023, disposing of a volume of waste in excess of 7,000 tonnes during the reporting period.</p>
<p>2. Existing Invincible South Paste Plant will be upgraded and requires increased capacity.</p>	<p>The upgraded plant will have an output capacity of 190 m³/hour. The upgrades are required to supply the necessary quantities of paste to maintain an increasing production profile for Invincible South Underground.</p>

Waste Upgrade Summary

A review of waste management at the premises has led to improved tracking and recording of waste volumes on site. As a result, the Licence Holder understands that to remain compliant with its licence conditions, an increased production limit for category 64 is required. Changes in mining sequence and multiple mining fronts has led to an increase in the waste produced on site, specifically that of the contaminated solids produced at washdown facilities and then remediated for disposal at the site bioremediation facilities.

The Licence Holder is requesting that the waste quantity limits in Table 4 of the Licence be removed to provide flexibility on the volumes of different waste types that can be disposed of within each annual period. The total waste generated will not be more than the proposed capacity limit of 14,000 tonnes per annual period and all waste will be disposed of in the currently approved disposal locations (Table 2 of the Licence) and in accordance with the specifications detailed in Table 4 of the Licence. There is no proposed change to the current waste management practices and environmental impacts will continue to be managed through existing controls in the Licence and ongoing monitoring.

Upgrade of Invincible South Paste Plant

The invincible South Paste Plant is located in Mining Tenement M15/1687.

The current Invincible South Paste Plant is unable to meet the increasing demands.

An upgraded paste plant was constructed prior to this assessment process. The construction of the paste plant without authorisation under a works approval or licence may constitute an offence under the EP Act. This matter is being considered by DWER's Assurance team. The department is not able to grant retrospective approval for the paste plant construction, however this report documents the controls that the applicant has proposed for ongoing operations which are being assessed.

The upgraded plant has been designed with a maximum throughput of 800,000 tonnes per annum and includes the following components:

- Tailings stockpile area;
- Hopper and feeder system;
- Binder storage silo, transfer and metering system
- Paste mixing facility and hopper
- Control room, laboratory and ablution facilities
- Store and curing chamber; and
- Supporting infrastructure, electrical supply, potable and freshwater supply systems, access road and traffic areas

The existing Invincible Paste Plant will be decommissioned once the new paste plant has been included onto the licence.

Currently, the paste backfill contributes to approximately 800,000 tonnes of the overall approved throughput of the licence (9,000,000 tonnes Category 5 processing capacity for the site). The upgraded plant will have an output capacity of 190 m³/hour. The upgraded paste plant is located adjacent to the existing plant and there are no changes to the input and output material.

The upgrades are required to supply the necessary quantities of paste to maintain an increasing production profile for Invincible South Underground. Paste plant upgrades have been constructed on Run of Mine areas to reduce environmental impact. Telemetry and leak detection will be installed on pipes supplying saline water to the paste plants, with water storage tanks to be regularly maintained. Tank overflow will be directed into mine pits or plant sumps.

Figure 1 provides design details of the upgraded Invincible South Paste Plant.

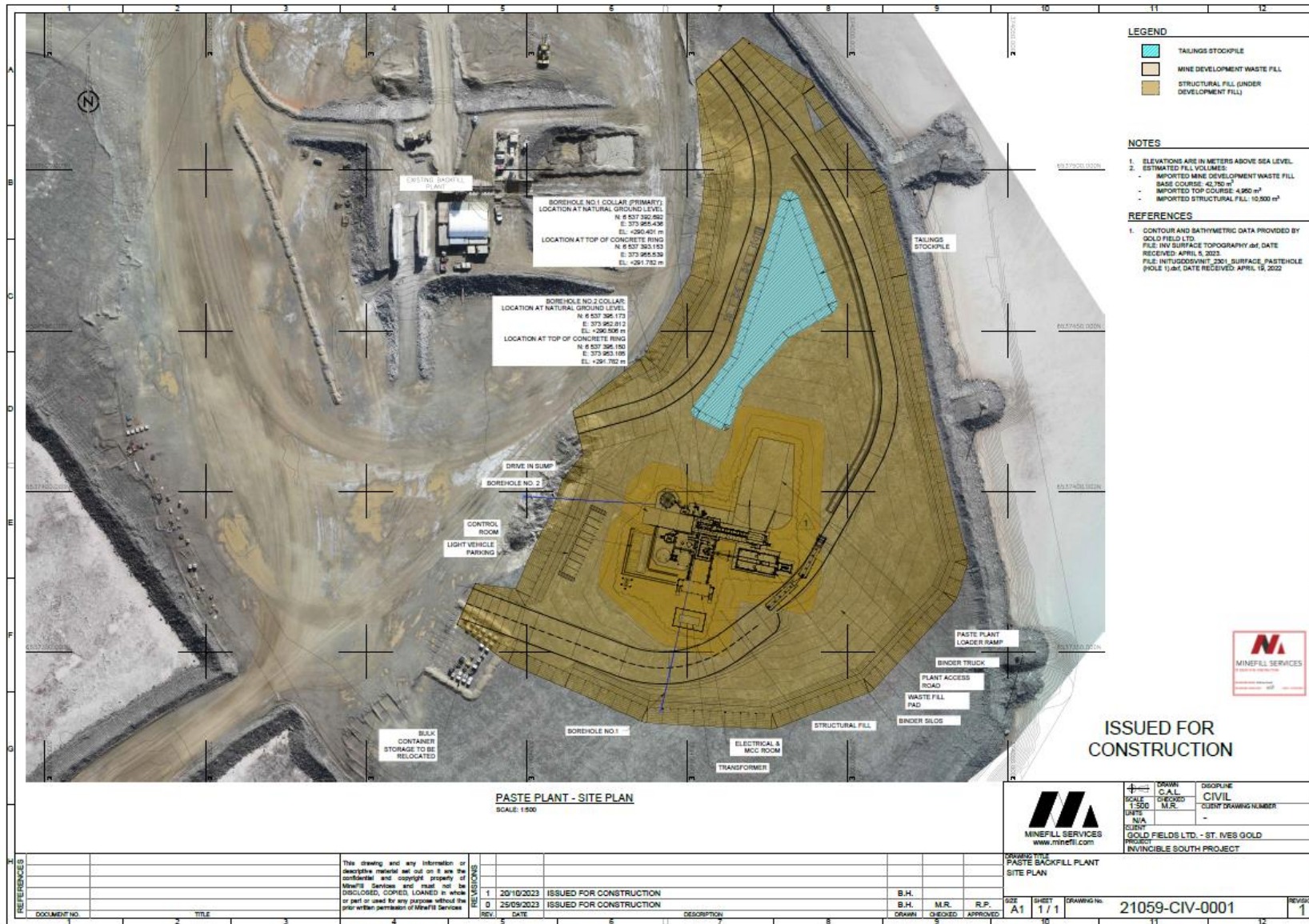


Figure 1 : Upgraded Invincible South Paste Plant Layout

Licence: L8485

IR-T15 Amendment report template v3.0 (May 2021)

In addition to the paste plant and landfill amendments discussed above, additional administrative amendments are requested as detailed in Table 2. These amendments are not risk assessed as they are administrative in nature and any potential change to the risk profile of the premises is negligible.

Table 2: Administrative Amendments

Proposed amendment	Justification
Removal of Diana Landfill from the Licence	The Diana pit was never commissioned as a landfill on site and has since been backfilled.
Removal of South Delta Open Pit as a waste disposal location from the Licence	The South Delta Open Pit has been backfilled and is no longer a suitable disposal location for Special Waste.
Removal of sediment quality monitoring points W2, W7 and W11	<ul style="list-style-type: none"> • Sediment quality monitoring points W2 and W7 are associated with dewatering discharges to in-pit locations and not onto Lake Lefroy. Any samples collected from W2 and W7 are not of lake sediment but in-pit material. St Ives Gold Mine is of the opinion that W2 and W7 do not align with the intent of the monitoring of condition 40 - to monitor the potential impacts of dewatering discharge to the ambient sediment quality on Lake Lefroy. • There is also a significant safety risk to personnel who must access in-pit locations for sampling. • Dewatering discharge points W10 and W11 discharge to the same location on Lake Lefroy. Sediment quality monitoring points W10 and W11 are taken from the same location on Lake Lefroy and are essentially duplicates of one another. St Ives Gold Mine is requesting that W11 be removed as a sediment quality monitoring point as the sample collected for sample point W10 is representative of the sediment quality at W11 and this will remove unnecessary duplication.
Text to read: <i>“Wooden pallets must be covered by clean fill material no later than one week after disposal”</i>	<p>Condition 10 – Table 4 Management of Waste.</p> <p>Wooden pallets are the only form of putrescible waste disposed of at approved waste disposal locations on Site. An extension of the period between cover requirements is unlikely to pose any additional risks from an odour, fire or vermin perspective. Increasing the time between cover requirements will also align the burial of the wooden pallets with the cover requirements for other approved waste on site, simplifying site waste management operations.</p>
Text to read: <i>“Dried sewage sludge must be covered with minimum 1m layer of waste rock or clean fill material no later than 24 hours after disposal”</i>	The stipulated 2 m layer of cover is in excess of the minimum cover requirements for clinical waste and material containing asbestos, as per section 16(1) of the <i>Environmental Protection (Rural Landfill) Regulations 2002</i> .

Table 3 below outlines the proposed changes to the existing Licence.

Table 3: Proposed throughput capacity changes

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
Category 5: Processing or beneficiation of metallic or non-metallic ore	9 000 000 tonnes per annual period	Unchanged	No change to category 5 capacity but note expansion to paste plant throughput, requiring expansion of paste plant.
Category 6: Mine dewatering	30 000 000 tonnes per annual period	Unchanged	Unchanged
Category 7: Vat or situ leaching of metal	3 000 000 tonnes per annual period	Unchanged	Unchanged
Category 54: Sewage facility	220 cubic metres per day	Unchanged	Unchanged
Category 64: Class II or III putrescible landfill site	Category 64: 7,000 tonnes per annual period.	Category 64: 14,000 tonnes per annual period.	Increased throughput to meet Licence Holder needs

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 of the landfill and operation of the paste plants at increased capacity which have been considered in this Amendment Report are detailed in Table 4 below. While the Licence Holder has not proposed any controls in this application, Table 4 details similar control measures previously proposed in the licence amendment application granted 12 September 2023 which the Licence Holder has confirmed are still valid.

Table 4: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Potentially contaminated surface water within paste plant operating area	Tailings stockpile runoff Tailings / paste spills	Overland runoff	<ul style="list-style-type: none"> Surface drainage from within the paste plant operating area is directed either to an open pit mine or to a sump at the main processing plant. Surface water runoff is directed away from the paste plant areas

Emission	Sources	Potential pathways	Proposed controls
Hydrocarbons spills from paste plant	Operation of paste plant – spills/ leaks	Direct discharge to land	<ul style="list-style-type: none"> Paste Plants are located on constructed ROM areas or compacted/hardstand area, reducing the chance of environmental impact.
Tailings dust from transport of dry tailings	Haul truck transport of tailings	Air/windborne dispersion	No controls proposed
Spills and leaks of tailings / paste fill from operation of paste plant	Spills from unloading of tailings. Tank overflows	Direct discharge to land	<ul style="list-style-type: none"> Paste Plants are located on constructed ROM areas or compacted/hardstand area, reducing the chance of environmental impact. Tailings spills outside of the paste plant footprint to be cleaned up immediately. Tank overflow directed into mine pits or plant sumps
Spills/leaks of saline water used in paste plants	Spills and Leaks from pipelines supplying water to paste plants	Direct discharge to land	<ul style="list-style-type: none"> Telemetry and leak detection on pipes supplying saline water to the Paste Plants. Paste Plants are located on constructed ROM areas or compacted/hardstand area, reducing the chance of environmental impact. Water storage tanks to be regularly maintained Tank overflow directed into mine pits or plant sumps
Noise	Noise from operation of paste plant	Air/windborne dispersion	<ul style="list-style-type: none"> Paste Plants are only operational on day shift unless business needs require night shift operation The closest noise sensitive receptor is 26km northwest

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 5 below provides a summary of potential 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)), noting no human receptors have been identified.

Table 5: Sensitive environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
Conservation Significant Fauna	<p>Fourteen conservation significant fauna species (two mammals and 12 birds) were recorded or expected to occur within the project area:</p> <ul style="list-style-type: none"> • Chuditch, Western Quoll (<i>Dasyurus geoffroii</i>) – Low • Red-tailed Phascogale (<i>Phascogale calura</i>) – Low • Curlew Sandpiper (<i>Calidris ferruginea</i>) – Low • Night Parrot (<i>Pezoporus occidentalis</i>) – Low • Carnaby’s Cockatoo (<i>Calyptorhynchus latirostris</i>) – Medium • Malleefowl (<i>Leipoa ocellata</i>) - High/Recorded • Grey Falcon (<i>Falco hypoleucos</i>) - Very Low • Fork-tailed Swift (<i>Apus pacificus</i>) - High/Recorded • Common Sandpiper (<i>Actitis hypoleucos</i>) – Low • Sharp-tailed Sandpiper (<i>Calidris acuminata</i>) – Medium • Pectoral Sandpiper (<i>Calidris melanotos</i>) – Medium • Grey Wagtail (<i>Motacilla cinerea</i>) – Low • Peregrine Falcon (<i>Falco peregrinus</i>) – Medium • Western Rosella (inland) (<i>Platycercus icterotis xanthogenys</i>) – Medium • Malleefowl (<i>Leipoa ocellata</i>) (known to occur within prescribed premises boundary, but approximately 5km from paste plant) <p>Two species are expected to have a ‘High’ likelihood of occurrence within the Study Area due to recent recordings; this includes Malleefowl (<i>Leipoa ocellata</i>, EPBC & BC Act Vulnerable) and Forktailed Swift (<i>Apus pacificus</i>, EPBC & BC Act Migratory).</p>
Native vegetation	Native vegetation located within 50 metres of existing landfill (all directions) and approximately 3 km west from Invincible South Paste Plant
Surface water: Lake Lefroy (ephemeral salt lake)	Paste plants are located on Lake Lefroy’s surface, and the lake is located approximately 1000 meters north of North Orchin landfill (predominant waste disposal location).
Groundwater	<ul style="list-style-type: none"> • Groundwater salinity concentrations represented by Total Dissolved Solids (TDS): <ul style="list-style-type: none"> ○ in the groundwater below the waste disposal locations generally range from 50,000 to 350,000 mg/L; and ○ within the immediate vicinity of Lake Lefroy’s drainage system, ranges between 274,000 and 423,000 mg/L TDS (Department’s Geocortex mapping software). • Premises is located within the Goldfields groundwater area. Groundwater Area proclaimed under <i>Rights in Water and Irrigation Act 1914</i>; • Groundwater flows eastward towards the Eucla Basin and Lefroy paleo drainage system; • Groundwater is primarily considered as a receptor in relation to landilling activities. Groundwater in the North Orchin area is expected to occur approximately 25 - 40 mbgl (L8485 - Annual Environmental Report, March 2024). <p><i>Note that groundwater data has been sourced from North Orchin TSF which is a disturbed area and may not be reflective of regional hydrology.</i></p>

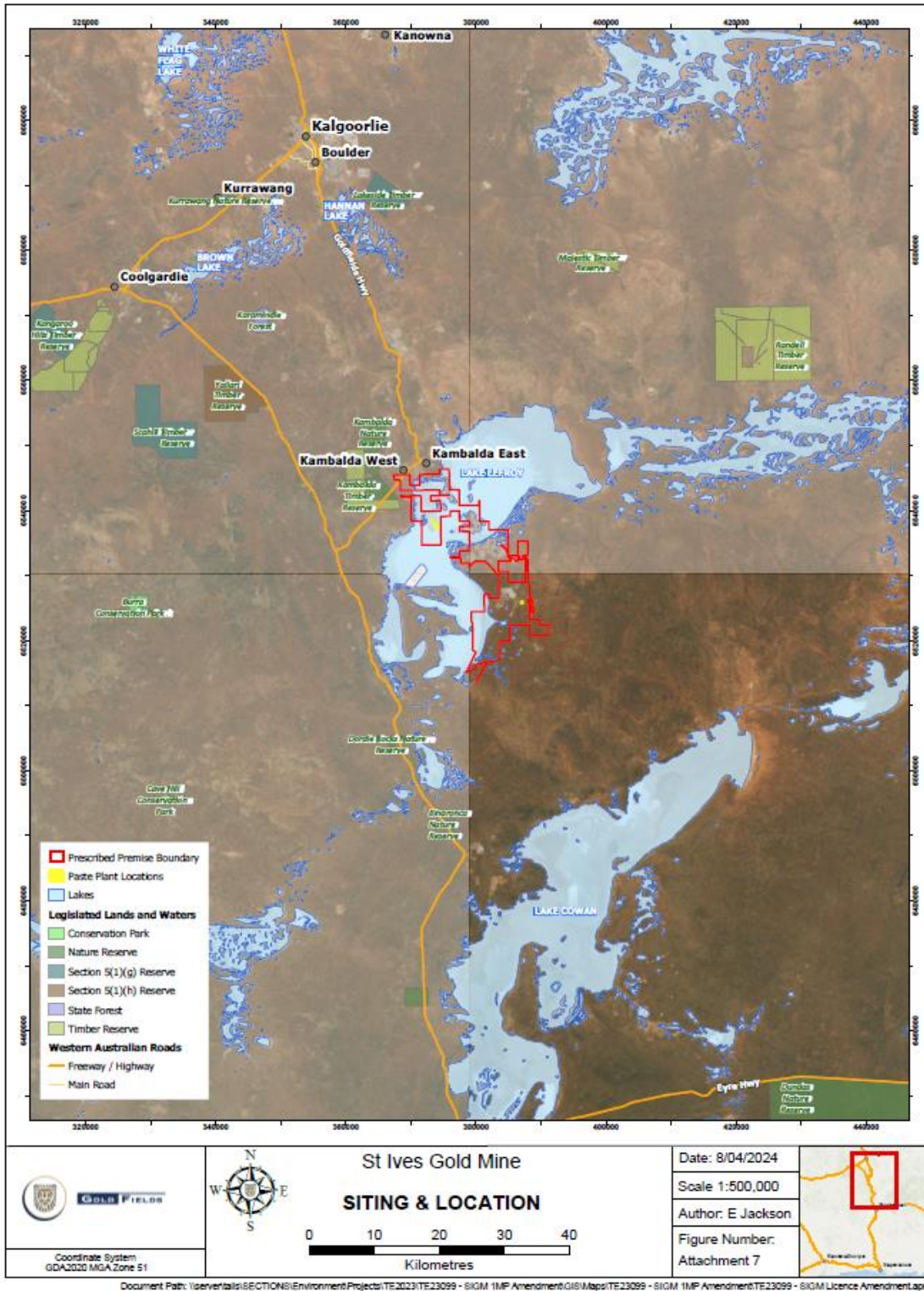


Figure 2: Distance to sensitive receptors

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 6.

The Revised Licence L8485/2010/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

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

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

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				
Operation								
Operation of paste plants at increased capacity of 800,000 tonnes per annum	Dust from tailings storage, handling and transport via haul trucks	Air/windborne pathway causing impacts to environmental receptors	Native vegetation and fauna	Refer to Section 5.1	C = Minor L = Possible Medium Risk	Y	Existing condition 1	N/A
	Potentially contaminated surface water within paste plant operating area	Surface water runoff	Lake Lefroy	Refer to Section 5.1	C = Minor L = Unlikely Medium Risk	Y	Existing condition 1	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				
Operation of paste plants at increased capacity of 800,000 tonnes per annum	Hydrocarbons spills from paste plan	Spills/ leaks to surface leading to run off impacting nearby environmental receptors	Lake Lefroy	Refer to Section 5.1	C = Minor L = Unlikely Medium Risk	Y	Existing condition 1	N/A
	Spills/leaks of saline water used in paste plant	Direct discharge to land as a result of pipeline leaks or overflowing/leaks of water tanks	Lake Lefroy	Refer to Section 5.1	C = Minor L = Unlikely Medium Risk	Y	Existing condition 1	N/A
Operation of landfill at increased capacity	Landfill leachate	Seepage impacting groundwater quality	Groundwater Lake Lefroy	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Existing condition 4 Table 2; existing condition 10 Table 4	N/A
	Windblow waste	Air/windborne pathway causing impacts to environmental receptors.	Groundwater Lake Lefroy	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Existing condition 4 Table 2; existing condition 10 Table 4	N/A
	Contaminated Stormwater runoff	Overland flow generated through stormwater runoff coming into contact with waste potentially impacting native vegetation and fauna habitat	Native vegetation and fauna	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Existing condition 4 Table 2 and existing condition 10 Table 4	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 7 provides a summary of the consultation undertaken by the department.

Table 7: Consultation

Consultation method	Comments received	Department response
Local Government Authority advised of proposal on 11 July 2024	None received.	N/A
Licence Holder was provided with draft amendment on 16 September 2024	<p>Condition 1, Table 1: Surface drainage from within the paste plant operating area is to be directed either to an open pit mine or sump at main processing plant;</p> <p>Condition 24, Table 7: Surface drainage from within the paste plant operating area is to be directed either to an open pit mine or sump at plant.</p>	<p>Updated as requested however as the Licence Holder has confirmed that the new paste plant has been constructed, the construction specification requirements have been removed from Table 7 and added into Table 6: Infrastructure design requirements.</p> <p>An image of the upgraded paste plant has been included as Fure 19 in Schedule 1 of the Licence.</p>

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

Table 8: Summary of Licence amendments

Condition no.	Proposed amendments
<ul style="list-style-type: none"> Prescribed Premise Category Description - production Capacity (page 1) Condition 10 – Table 4 	An increase in the quantity limit of waste disposal by 7,000 tonnes/annum cumulative to 14,000 tonnes/annum.
<ul style="list-style-type: none"> Condition 4 – Table 2 (C24) Condition 5(a) Condition 7 – Table 3 Condition 24 – Table 7 Figure 4 and Figure 18 Condition 31 – Table 11 	<p>Removal of Diana Landfill from the Licence.</p> <p>The Diana pit was never commissioned as a landfill on site. The Pit has since been backfilled with rehabilitation works underway and as such is no longer a feasible location for waste disposal.</p>
<ul style="list-style-type: none"> Condition 10 – Table 4 Condition 11 – Table 5 Figure 4 	Removal of South Delta Open Pit as a waste disposal location from the Licence

Condition no.	Proposed amendments
Condition 40 – Table 18	Removal of sediment quality monitoring points W2, W7 and W11
Condition 10 – Table 4 Management of Waste	Text to read: <i>“Wooden pallets must be covered by clean fill material no later than one week after disposal”</i>
Condition 10 – Table 4 Management of Waste	Text to read: <i>“Dried sewage sludge must be covered with minimum 1m layer of waste rock or clean fill material no later than 24 hours after disposal”</i>

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. Gold Fields, 2024, Annual Environmental Report L8485/2010/2, Western Australia