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# **Application for Licence Amendment**

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

Licence Number	L8561/2011/1	
Licence Holder	GMA Garnet Pty Ltd	
ACN	009 344 227	
File Number	DER2015/001679	
Premises	Port Gregory Garnet Mine 1420 George Grey Drive YALLABATHARRA WA 6535	
	Legal description – Mining tenements M70/856, M70/204, M70/259, M70/926, M70/927, M70/968, G70/171, M70/1330 and M70/1331 (excluding Lot 58 on Plan 65334)	
Date of Report	7 January 2025	
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 L8561/2011/1 is held by GMA Garnet Pty Ltd (Licence Holder) for the Port Gregory Garnet Mine (the Premises), located at 1420 George Grey Drive, Yallabatharra, WA 6535. 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 L8561/2011/1 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 <a href="https://dwer.wa.gov.au/regulatory-documents">https://dwer.wa.gov.au/regulatory-documents</a>.

## 2.2 Amendment summary

On 29 April 2024, the Licence Holder submitted an application to the department to amend Licence L8561/2011/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The Licence Holder operates the Premises located approximately 11 km north of Geraldton in the Midwest region of Western Australia near the township of Gregory.

The project is an alluvial garnet mine and consists of two main mining areas: the Hose mining area to the north and the Lyton mining area to the south (Figure 1). Hose mine has been in operation since 1997 and processes mined sands through a wet separation plant. The Licence Holder conducts open-pit dry mining with the use of an excavator which loads sands into articulated dump trucks which is then hauled to the run-of-mine near the processing plant (Figure 2).

The purpose of this licence amendment is to increase the throughput capacity in order to accommodate the processing of a lower grade mineral sands ore to continue to meet the Licence Holder's production targets<sup>1</sup>. To achieve the production targets, the Licence Holder has proposed to increase throughput of mineral sands from 3,000,000 tonnes per year to 4,500,000 tonnes per year.

This amendment is limited only to changes to Category 8 activities from the Existing Licence Table 1 below outlines the proposed changes to the existing Licence.

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
8	3,000,000 tonnes per year	4,500,000 tonnes per year	Increased throughput of ore to accommodate the processing of lower grade ore to continue to meet output targets.

Table 1: Proposed throughput capacity changes

<sup>&</sup>lt;sup>1</sup> When the initial application was received the licence holder requested additional infrastructure to be constructed at the processing plant and the construction of an additional tailings transfer facilities (TTF). On 10 December 2024 it was communicated to the department that this was no longer required. This assessment has been revised to only include the increase in throughput capacity of the existing processing plant.

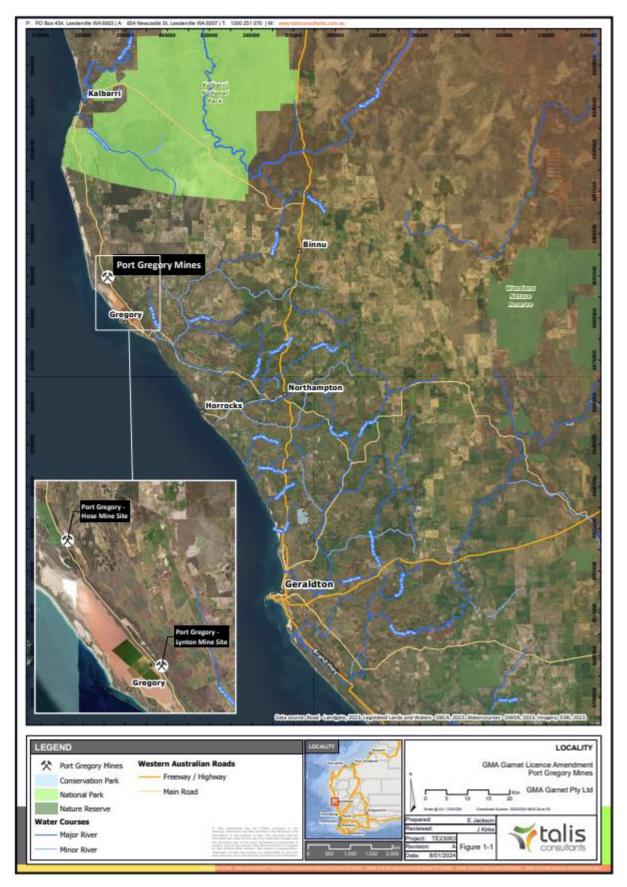


Figure 1: Premises spatial location and mining areas (Sourced from Talis 2024a)



#### Figure 2: Processing plant location

## 2.3 **Processing plant infrastructure**

The Licence Holder is proposing an increase of throughout for lower grade ore to meet production targets.

The proposed amendment does not involve physical alterations to the plant feed, such as size separation and concentration. No alternative techniques will be used to alter the chemical composition of the material being processed. The Licence Holder had advised that there will be no alteration to the nature of the plant emissions currently approved under Licence L8561/2011/1, other than the quantity of material processed potentially increasing dust and noise emissions (Talis 2024b).

Tailings generated as a slurry will be discharged at solar drying ponds constructed under Works Approval W6584/2021/1 presented in Figure 3.

Tailings generated from the processing plant will be deposited at tailings transfer facilities authorised under Works Approval W6789/2023/1. Tailings will be generated across the Western and Existing Re-profiled transfer facilities (Figure 4) which have a combined storage capacity of 274,000 tonnes. The emissions and discharges associated with the solar drying ponds and tailings transfer facilities were assessed in works approval W6789/2023/1 and will not be reassessed in this licence amendment.

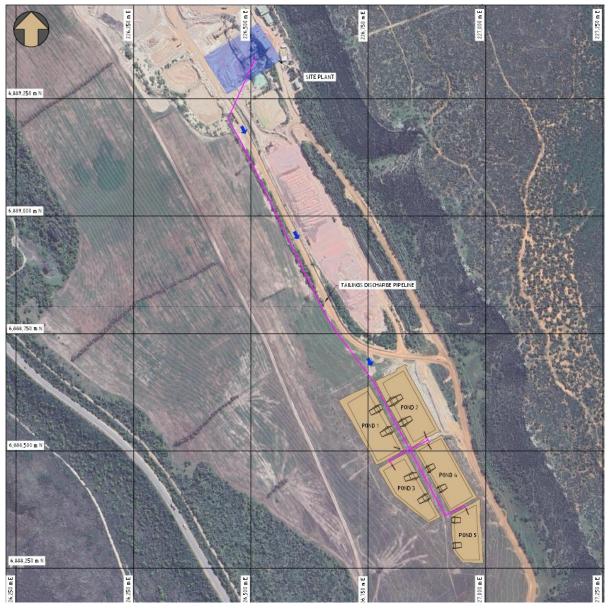


Figure 3: Solar Drying Ponds constructed under W6584/2021/1 (sourced from REC 2023)

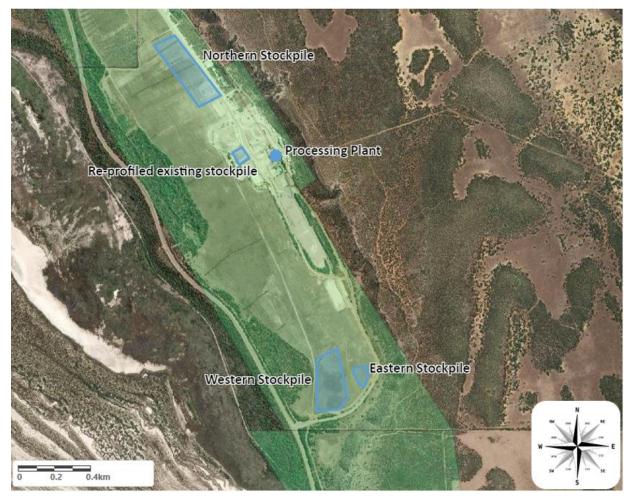


Figure 4: Stockpile (tailings transfer facility) locations

# 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 operation which have been considered in this Amendment Report are detailed in Table 2 below. Table 2 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Emission	Sources	Potential pathways	Proposed controls
Dust	Processing plant infrastructure	Air/windborne pathway	<ul> <li>Wet processing at the processing plant infrastructure;</li> <li>Pre-existing dust monitoring licence conditions;</li> <li>Water cart dust suppression; and</li> <li>Vehicle traffic confined to designated roads and tracks.</li> </ul>
Noise [Screened Out]	Processing plant infrastructure	Air/windborne pathway	<ul> <li>Maintain equipment and vehicles in accordance with manufactures recommendations;</li> <li>All equipment used on site will comply with Australian Standards for noise; and</li> <li>Conducted Noise Assessment in December 2023 for proposed infrastructure.</li> <li>Due to the distance of noise receptors from the proposed operations, noise is discounted as an emission for the purpose of this licence amendment.</li> </ul>
Leachate	Tailings ponds and tailings storage facilities	Seepage to soils and groundwater	<ul> <li>Materials are chemically inert.</li> <li>Earthen bunding around the ponds of the facility; and</li> <li>Existing groundwater monitoring bores measure standing water level (SWL) and pollutants.</li> </ul>

## 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 3 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)).

There are no human receptors within 6 km of the processing plant, therefore human receptors have not been considered in this risk assessment.

Environmental receptors	Distance from prescribed activity
Hutt Lagoon System (Directory of	Appropriately 780 m southwest of the processing plant.
Important Wetlands in Australia)	Expansive coastal brine lake that lies a few metres below sea level. Water is naturally highly saline (150,000 mg/L TDS) and is subject to inundation.
Priority Fauna within Hutt Lagoon	Vulnerable: Calidris ferruginea
System	Priority 4: Synemon gratiosa
	Have been identified within the Hutt Lagoon system
	The Hutt Lagoon system is also a wetland of national importance due to habitat values for migratory birds.
Priority Flora within Hutt Lagoon System	Priority 3 Lasiopetalum oldfieldii subsp. Oldfieldii has been identified within the Hutt Lagoon System.
Hutt River	Few small water lines classed as Hutt River are located approximately 180 m and 340 m to the southeast and north respectively of the proposed activity area.
Native Vegetation	Approximately 40 m north-east of the processing plant.
Groundwater [Screened out]	Groundwater occurs at 0.43 m along the edge of Hutt Lagoon and up to 40 m in bores adjacent to the scarp to the east and within the Hose Mine area.
	In July 2024 groundwater was measured to between 25.84 to 32.16 m below top of casing approximately 1 km south of the processing facility.
	Groundwater flows south-westwards and discharges into Hutt Lagoon, the adjoining wetlands or the ocean.
	Fresh/brackish groundwater in the superficial aquifer discharges over a saltwater wedge of hypersaline groundwater extending under the eastern edge of Hutt Lagoon.
	Receptor screened out as risks from TTFs are not being considered in this risk assessment.
Utcha Well Nature Reserve	Located approximately 1.14 km north-west of the processing plant.
Heritage receptors	Distance from prescribed activity
Hutt Lagoon System	The lagoon is of cultural significance to the local Aboriginal people and of historical significance as an early center of European settlement in WA.
	(Appropriately 780 m south-west of the processing plant

## Table 3: Sensitive environmental receptors and distance from prescribed activity



Figure 5: Surrounding wetlands and sites

## 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 in-complete 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 4.

The Revised Licence L8561/2011/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Increase in operation capacity of the processing plant.

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

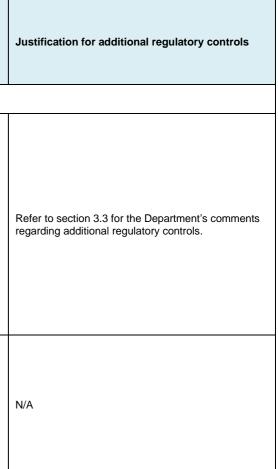
#### Table 4. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating <sup>1</sup>	Licence	
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood	Holder's controls sufficient?	Conditions <sup>2</sup> of licence
Operation							
Operation of the increased throughput of the processing plant.	Dust	Pathway Air/windborne pathway transporting emissions offsite. Impact Potentially causing impacts to health and sites amenity.	<ul> <li>Hutt Lagoon System (780 m)</li> <li>Priority Flora within Hutt Lagoon system (780 m)</li> <li>Priority Fauna (including migratory birds) within Hutt Lagoon system (780 m)</li> <li>Native Vegetation (40 m)</li> <li>Utcha Well Nature Reserve (1.14 km)</li> </ul>	Refer to Section 3.1.1	C = Moderate L = Possible Medium Risk C = Moderate L = Unlikely Medium Risk	N	Condition 13: Use of water carts when visible dust is generated. <u>Condition 29:</u> <u>Improvement program –</u> <u>Vegetarian monitoring.</u>
	Process water and Tailings slurry	Pathway Direct discharge via overflow or failure of infrastructure. Impact Potentially causing impacts to soil quality, causing flow on impacts to health of vegetation and fauna habitats.	<ul> <li>Native Vegetation (40 m)</li> <li>Priority Flora within Hutt Lagoon system (780 m)</li> <li>Priority Fauna (including migratory birds) within Hutt Lagoon system (780 m)</li> </ul>	Refer to Section 3.1.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	Condition 3: Process water and tailings management

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.

e documented and justified in Table 4. on capacity of the processing plant.



# 3.3 Dust emissions

## 3.3.1 Submitted Air Quality Report

The Licence Holder submitted an Air Quality Report presenting the expected dust emissions that would occur from the proposed upgraded plant presented in section 2.3. The report presents data for the 'worse case' operational year of 2026 (GHD 2024).

Two scenarios were presented within the report:

- Scenario A presents the expected dust emissions for the <u>existing</u> fixed plant infrastructure; and
- Scenario B presents the expected dust emissions for <u>inclusion of the upgraded</u> fixed infrastructure that is proposed within this licence amendment.

As discussed in section 2.2 of this licence amendment decision report the licence holder initially was going to install additional infrastructure to the processing plant. On 10 December 2024 the licence holder communicated to the department that the additional infrastructure upgrades to the processing plant and the additional TTF is no longer required. The licence holder confirmed that the operational production capacity from 3,000,000 to 4,500,000 tonnes per year will still be required.

The department notes that Scenario A expected emissions is the appropriate scenario as opposed to Scenario B (upgraded plant not proceeding) and therefore the department will only assess emissions for Scenario A.

The report identified that the emissions of dust (including total suspended particles (TSP),  $PM_{10}$  and  $PM_{2.5}$ ) were below the assessment criteria at all identified sensitive receptors. Table 5 presents the modeled 24-hour TSP concentrations at the identified sensitive receptors. Figure 6 also appears to indicate that TSP concentrations of 90 µg/m<sup>3</sup> are expected to be emitted within the Utcha Well Nature Reserve and the Hutt Lagoon System over a 24-hour averaging period for Scenario A.

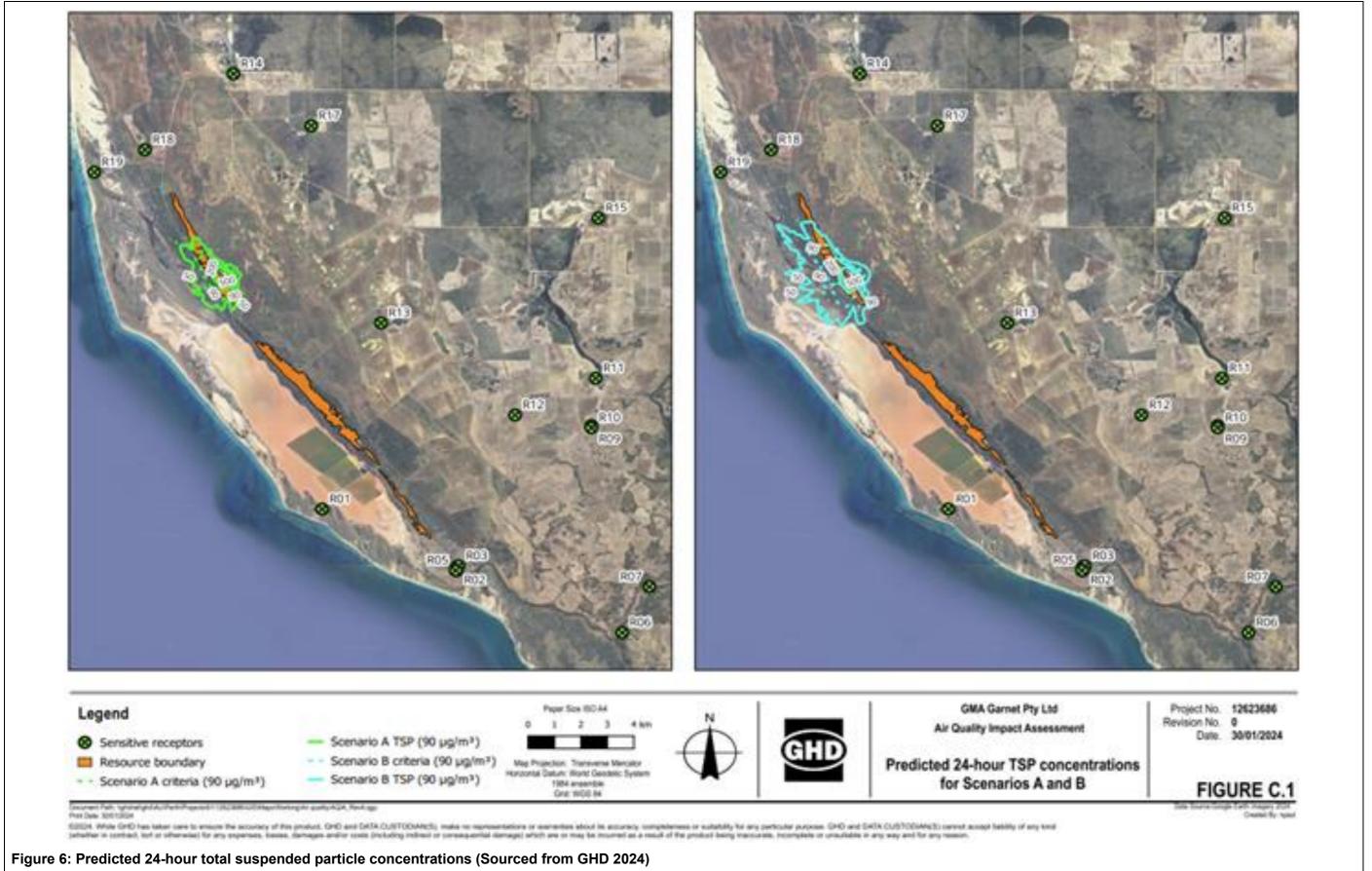
The Department notes that the inputs used to calculate the predicted dust emissions by GHD (2024) is limited to:

- Two loaders feeding ore into two separate screens; and
- The dumping of material into a haul truck.

It is understood that no other potential dust sources are included into the model such as mining, operation of the TTFs or other processing activities that can contribute to the total dust emissions.

Sensitive receptor	Scenario A concentration (µg/m <sup>3</sup> )
R01	1.8
R02	1.3
R03	1.5
R04	1.1
R05	1.0

Sensitive receptor	Scenario A concentration (µg/m <sup>3</sup> )
R06	0.7
R07	0.6
R08	0.4
R09	0.4
R10	0.5
R11	0.6
R12	0.7
R13	1.3
R14	2.0
R15	0.5
R16	0.2
R17	2.2
R18	7.6
R19	6.3



#### Licence: L8561/2011/1

## 3.3.2 DBCA consultation

To assist with the assessment of the proposed amendments, the Department of Biodiversity Conservation and Attractions (DBCA) was consulted to provide comment.

Current and previous consultation and engagement with DBCA has identified that there is a concern over potential environmental impact on the Utcha Well Nature Reserve which DBCA manages. DBCA have mentioned that they have experienced declines in vegetation health and conditions in the reserve. DBCA has also mentioned that they are experiencing and observing dust deposition which may be potentially impacting the vegetation. A summary of DBCA's comments received by the Department for this licence amendment is presented in Table 6.

### 3.3.3 Current dust controls

A dust monitoring requirement (condition 18) was added to the Licence during a licence amendment granted on 1 September 2020. The was included to provide data and an indication of potential dust impacts to Utcha Well Reserve from mining activities on M70/926. Monitoring is carried out using three directional dust deposition gauges (DDGs) which were established in October 2021 (GHD 2022).

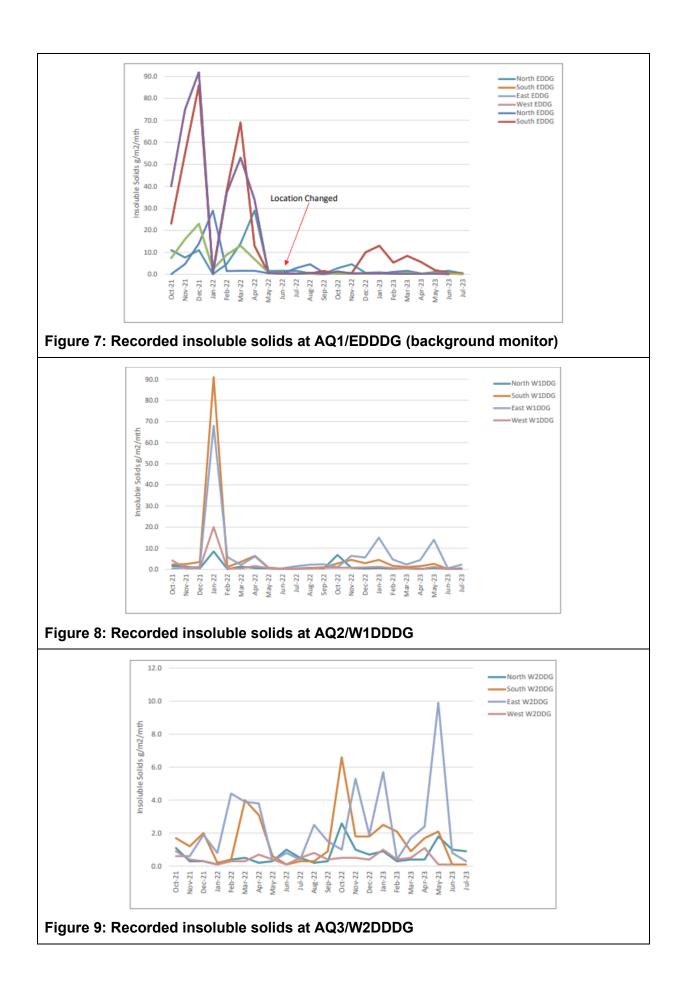
Monitoring of these DDGs is only required during October to May of every year and are only required when mining operations on M70/926 are occurring. Two DDGs are used along the current mining area to the west and are situated between the mining activity and the Hutt Lagoon System. The Department notes that the inclusion of this monitoring requirement is to monitor dust emissions caused by the active mining of mineral sands.

Condition 13 provides a list of controls to limit fugitive dust emissions from the site. Some of the controls include the use of water carts/sprays, dust suppression other than water and the easing of dust contributing activities during high and unfavorable winds.

### 3.3.4 Recent dust monitoring results

As per condition 27 the Licence Holder is required to submit a biennial environmental report which includes results of dust monitoring. The graphical recorded data submitted during the last biennial environmental report (GMA 2023) are presented in Figure 7, Figure 8 and Figure 9. The DDG locations for the monitoring period are presented in Figure 10. The Department notes that recorded concentrations of total insoluble matter have been recorded over  $90 \ \mu g/m^2$  over a monthly period potentially impacting native vegetation to the east.

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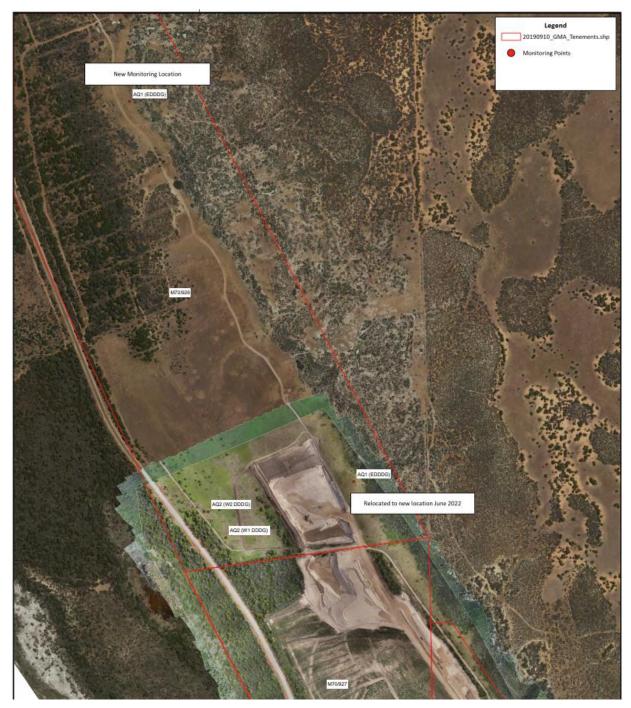


Figure 10: Dust monitoring locations form October 2021 to July 2023

### 3.3.5 Regulatory condition: Vegetation monitoring

To investigate if the Licence Holder is impacting on vegetation health decline experienced in the Utcha Well Nature Reserve and potentially the Hutt Lagoon System, an improvement program under condition 29 has been added to the Licence. The department notes that although the expected dust emissions from the processing plant will be less than the originally proposed processing plant upgrade (Scenario B) the department has included the condition due to the increase of throughput resulting in the potential of additional dust emissions.

Condition 29 requires the Licence Holder to provide the Department with a proposed vegetation monitoring regime in the Utcha Well Nature Reserve and Hutt Lagoon Wetland System within three months of the granting of this licence amendment.

The vegetation monitoring program will include the proposed methodology, frequency of inspections, inspection locations and a plan for commencing the ongoing monitoring. The inclusion of this vegetation monitoring program will allow the Licence Holder to assess potential impacts to vegetation to assist them in the management of fugitive dust from the Premises.

# 4. Consultation

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

### Table 6: Consultation

Consultation method	Comments received	Department response
Local Government Authority advised of proposal on 14 June 2024.	None received.	N/A
Department of Biodiversity Conservation and Attractions (DBCA) was engaged for comment and advice on 29 July 2024.	<ul> <li>The response was received on 14 August 2024 the comments received are summarised below:</li> <li>DBCA has mentioned that dust emitted from the mine site may potentially be impacting the vegetation condition within the Utcha Well Nature Reserve.</li> <li>The condition of vegetation has been observed to be declining within the reserve along with observations of dust deposition.</li> <li>DBCA expects that there will be additional dust-associated impacts on vegetation in both the Utcha Well Nature Reserve and the proposed Hutt Lagoon Conservation Park.</li> <li>DBCA recommended that a review of the proponent's dust management procedures and monitoring may be necessary to ensure the risk of impacts from mining activities on sensitive receptors are adequately managed.</li> </ul>	The Department has reviewed the information and statements that DBCA has provided and has added an additional regulatory control to identify potential impacts that the Premises may have on the nearby Utcha Well Nature Reserve and the proposed Hutt Lagoon Conservation Park. An improvement program under condition 29 requires the Licence Holder to develop a vegetation monitoring plan at both the Utcha Well Nature Reserve and The Hutt Lagoon System. Combined with background monitoring the Department believes that potential impacts identified through the vegetation monitoring program will assist the Licence Holder with implementing appropriate dust control measures. The Department notes that DBCA recommends a review into the Licence Holders dust management procedures. The Department has not conditioned this as a requirement as a part of this Licence Holder to review the plan and make appropriate changes.
Licence holder was provided with draft amendment on 20 September 2024.	The licence holder provided comments to the department on 10 December 2024 advising that the new tailings transfer facility and processing plant upgrades are no longer required.	Noted. The department has amended conditions to not include the previously proposed tailings transfer facility and the processing plant upgrades.

Consultation method	Comments received	Department response
	The licence holder also requested to extend the requirement for the submission due date of a vegetation monitoring plan from 31 January 2025 to 31 March 2025.	The department has granted to the request and has extended to the due date requirement to 31 March 2025.

# 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.

Condition no.	Proposed amendments
Previous condition 2	Removed condition relating to the recovery etc of environmentally hazardous materials as it is appropriately conditioned by condition 4.
3 (Table 1)	Included reference to infrastructure locations.
Previous condition 5	Removed condition referencing the management of the evaporation ponds and moved the requirement to condition 7, Table 2.
Previous condition 8	Removed condition referring to the management of water in the process plant and added it to condition 7 Table 2.
7 (Table 2)	Removed inspection requirements for bioremediation facility and moved to condition 16 Table 7.
	Included processing plant and its operational requirements.
14	Removed reference to groundwater sampling within condition (no groundwater monitoring requirements in the Licence).
Previous condition 18	Removed old definition of quarterly monitoring.
15	Included new condition defining monthly and quarterly monitoring and the time in between samples must be taken.
16 (Table 7)	Included new condition and table for inspection requirements at the bioremediation pad.
18 (Table 9)	Amended Note 1 below Table to specify the name of the dust monitoring devices and background dust monitoring device to avoid confusion.
Heading: Reporting	Removed heading as it was not necessary and assumed to be a typographical error.
27	Amended condition to no longer require the annual environmental report but instead require a biennial environmental report.

Table 7: Summary of licence amendments

Condition no.	Proposed amendments	
	Added a requirement for the biennial environmental report to include a tabulated and graphical results for conditions 17 and 18.	
	Added a requirement to provide data or information demonstrating compliance with conditions 8 and 10.	
29 and 30	Added an improvement program to require the Licence Holder to submit a vegetation monitoring plan.	
Definitions	Removed reference to AS/NZS 5667.11 (Guidance on sampling groundwaters).	
	Included definition for HDPE.	
Figures	Updated Figure 1 and Figure 2.	
	Added Figure 3 presenting location of the TTF.	

# 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. GHD Pty Ltd 2022, GMA Lynton Mine Air Quality Impact Assessment, GMA Garnet Pty Ltd, Project No: 12552813.
- GHD 2024, Technical Report GMA Port Gregory Mine Air Quality, GMA Garnet Noise and Air Assessment, Project No: 12623686.
- 6. GMA Mining Australia 2023, Biennial Environmental Report, EPA Licence L8561/2011/1, Reporting Period 1 August 2021 31 July 2023.
- 7. Resource Engineering Consultants Pty Ltd (REC) 2023, Solar Drying Ponds Critical Containment Infrastructure Report, REV0.
- 8. Talis Consultants 2024a, Licence Amendment Port Gregory Garnet. Prepared for GMA Garnet Pty Ltd, Project Number: TE23063, Attachment 8 Supporting documentation.
- Talis Consultants 2024b, Licence Amendment Port Gregory Garnet. Prepared for GMA Garnet Pty Ltd, Project Number: TE23063, Attachment 11 – Commercially sensitive or confidential information.