Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

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

Licence Number	L8121/2003/2
Licence Holder	BGC (Australia) Pty Ltd
Application Number	APP-0026373
Premises	BGC Naval Base 24 Beard Street Naval Base WA 6165
Date of Report	5 August 2025
Status of Report	Final

1. Decision summary

Licence L8121/2003/2 is held by BGC (Australia) Pty Ltd (licence holder; BGC) for the BGC Naval Base Cement Mill (the premises), located at 24 Beard Street, Naval Base, WA.

This 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 L8121/2003/2 has been granted.

The revised licence issued as a result of this amendment supersedes the existing licence previously granted in relation to the premises. Previous Amendment Reports for the licence will remain on the department's website for future reference and will act as a record of the department's decision making.

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://www.wa.gov.au/service/building-utilities-and-essential-services/integrated-essential-services/dwer-regulatory-documents.

2.2 Application Summary

On 13 November 2024, the licence holder submitted an application to the department to amend Licence L8121/2003/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Replacement of the existing 60 tonne Triple Pass Rotary Drum Dryer with an 80 tonne Single Pass Rotary Drum Dryer and associated infrastructure.

The licence holder anticipates the proposed change to the premises will improve operational efficiency and reduce emissions from the premises through reduced dryer operational hours.

2.2.1 Background

BGC (Australia) Pty Ltd, trading as BGC Cement, operates a cement clinker grinding and storage facility at their Naval Base premises, at which cement clinker, clay, limestone or similar material is ground. The premises is licenced under category 43 (cement or lime manufacturing) and category 77 (concrete batching or cement products manufacturing). This amendment relates to the category 43 activity of the premises.

The premises uses Ground Granulated Blast Furnace Slag (GGBFS) as a substitute for Normal Portland Cement made from cement clinker. The GGBFS is delivered to the premises in a moist state and stored in storage sheds before transfer into a 60-tonne gas fired dryer where it is dried. The licence holder advised the use of GGBFS has ensured that the carbon footprint of the operation is reduced. The licence holder anticipates that replacement of the existing dryer with an 80-tonne gas fired dryer, will reduce operating times, owing to its capacity to dry higher quantities within a short period of time, with no change to the current production capacity.

2.2.2 Proposed works

The licence holder proposes to construct and operate an 80 tonne Single Pass Rotary Slag Drum Dryer, to replace the existing 60 tonne Triple Pass Rotary Drum Dryer, which will be decommissioned and demolished. No changes to the prescribed premises category or design capacity are required as a result of the change and the licence holder does not anticipate any

significant changes to the activities or emissions previously assessed for the premises relating to the replacement.

The licence holder advised that the existing dryer can dry approximately 60 tonnes of GGBFS per hour having a maximum drying capability of 450,000 tonnes per annum for 24 hour per day operation and accounting for maintenance and downtime. In the 2024 financial year the existing dryer ran approximately 2,400 hours, operating four days per week at approximately 55 tonnes per hour. The proposed replacement dryer can dry between 90 to 100 tonnes of slag per hour significantly reducing the operational time required to dry the same amount of product that is currently processed. The licence holder advised that the new dryer will only be required to be operate two to three days per fortnight and is expected to operate for 1,400 hours per year.

The proposed new dryer has a larger drum and silo, but the size of the exhaust stack will remain the same as the existing dryer. The new dryer will comprise of the following infrastructure components:

- a combustion chamber
- a Weishaupt ultra-low NOx gas burner
- an enclosed overhead conveyor
- a Single Pass Rotary Drum
- draught fan
- a 200-250 tonne buffer silo
- two dust collectors/cyclone units (one each on the silo and the overhead conveyor)
- one baghouse connected to the dryer drum and the exhaust stack
- a 15-meter exhaust stack.

BGC advised that the dryer will be installed with a round, acrylic + PTFE film type baghouse (JLPM 2x9C model) that has a 1,728 m^2 filtration area and 90,000 m^3/hr capacity.

The new dryer will be located on the southern side of the premises, east of the main entrance gate off Beard Street with the stack position set back 26 metres from the boundary wall. The licence holder advised that the dryer location had to be changed from the existing location in the Materials Storage Warehouse to accommodate the larger footprint of the new dryer.

3. Air emissions

Operation of the new dryer is expected to increase in gas usage by 75%, with the premises air emissions, in particular nitrogen oxides (NOx), expected to change as a result. Air emissions were previously assessed as low risk for the existing dryer. The licence holder advised the manufacturer of the existing dryer provided data for an estimated maximum NOx emission rate of 11.8 g/min and a corresponding concentration of 49 mg/m^3 in exhaust gases based on maximum NOx emissions from the burners and expected operational time. This information corresponds with the original works approval application for the burner. The licence holder engaged stack engaged NATA accredited emission monitoring contractor Ektimo to conduct stack test of the existing 60-tonne dryer to quantify emissions for NOx, SO_2, CO, CO_2 and O_2.

The test results indicated SO_2 and CO in the stack gases emitted from the dryer were below the limit of detection, and therefore these emissions are not expected to pose a risk of air quality impact. Nitrogen oxides (as NO_2) emissions were measured at 16 mg/m^3 or 7.6 ppm.

The proposed new gas burner has estimated a NOx mass emission rate of 25.3 g/min and a corresponding concentration of approximately 17 mg/m^3 in the exhaust gases.

The applicant advised that owing to higher efficiency of the burner, it will be able to dry larger quantities of GGBFS within a shorter period of time and is expected to operate approximately two to three days (continuously for 24 to 48 hours) per fortnight reducing emissions from the dryer as a result of the reduced operational hours. BGC engaged Ektimo (a NATA accredited

consultant) to conduct stack tests of emissions from a 100-tonne (proxy for 80T), 60-tonne and a 30-tonne dryer, which showed emissions from the 100-tonne dryer to be lower than the 60-tonne and 30-tonne dryers that are already in operation.

4. 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.

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

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

Table 1: Licence holder controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Installation of the new 80-tonne dryer and associated infrastructure	Air/windborne pathway	• Regular monitoring of dust at site.
Noise			• None proposed as noise levels for construction not expected to be significantly higher than the premises operational noise.
Commissioning and operation			
Dust	Commissioning and operation of the new 80-tonne Single Pass Dryer	Air/windborne pathway	• Fabric filter dust collectors with an efficiency of 50 mg/m^3 installed. • Daily visual monitoring of dust emissions. • Monthly preventative maintenance of bag filters.
Noise			• Installation of a silencer on the draught fan. • Manufacturer specified average noise of 75 dB at 1m from the dryer compared with existing dryer which has been measured as 80 dB. • Dryer expected to be operated only 2 to 3 days a fortnight • Noise monitoring will be conducted, if required during commissioning.
Air emissions (NOx)			• An ultra-low NOx burner installed with an expected NOx mass emission rate of 25.3 g/min corresponding to 17 mg/m^3 concentration in the stack gases. • Dryer expected to be operated only 2 to 3 days a fortnight. • Exhaust gases directed through a 15 m exhaust stack before discharge to atmosphere. • Burner complies with Emission Class 3 of the European Standards (EN676:2020) of <80 mg/m^3. • Burners inspected every 3 – 6 months.

4.1.2 Receptors

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

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental siting* (DWER 2020)).

Table 2: Sensitive human and environmental receptors and distance

Human receptors	**Distance from prescribed activity**
Residents on Lussky Road, Hope Valley	~2.3km to the north-east
Residents on Abercrombie Road, Postans	~2.9km to the south-east
Workers at other industrial premises	Immediately adjacent
Environmental receptors	**Distance from prescribed activity**
Cockburn sound	~500m to the west
Long Swamp	~1.96km to the north-west
Banksia woodlands of the Swan Coastal Plain	Within 2km
Un-named wetland/dampland/basin (feature ID 6379)	0.7km to the east
Bush Forever site 346 (Brownman Swamp, Mt Brown Lake and Bushland)	1.7km to the north

4.2 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 4.1. 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 4.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the licence holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

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

The revised licence L8121/2003/2 that accompanies this report authorises emissions associated with the installation and operation of an 80 tonne Single Pass Slag Drum Dryer at the premises.

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

Table 3: Risk assessment of potential emissions and discharges from the Premises during construction, commissioning and operation

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Reasoning
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Installation of the new 80-tonne Single Pass Dryer and associated infrastructure	Dust	**Pathway:** Air/windborne pathway **Impact:** Health and amenity	• Residences 2.3km north-east; • Residences 2.9km south-east; Immediate neighboring industries	Refer section 3.1	C = Slight L = Possible **Low Risk**	NA	NA	Given the nature and scale of the construction works, with the works occurring within an existing industrial area and there being adequate separation in place to nearby residential receptors, the delegated officer does not reasonably foresee offsite receptors being impacted by noise and dust emissions associated with construction works relating to the dryer installation.
	Noise							
Commissioning and Operation								
Commissioning and operation of the new 80-tonne Single Pass Dryer	Noise	**Pathway:** Air/windborne pathway **Impact:** Health and amenity	• Residences 2.3km north-east; • Residences 2.9km south-east; Immediate neighboring industries	Refer section 3.1	C = Minor L = Possible **Medium Risk**	Y	Condition 1	The applicant advised that the main source of noise is from the dust collector, which is to be controlled via installation of a silencer on the draught fan. Noise emissions from the new dryer are expected to be lower than the existing dryer subject to the applicant's controls therefore the controls have been imposed as construction requirements and the risk of noise impacts is not expected to increase as a result of the amendment.
	Dust			Refer section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Conditions 1 and 2	Given the applicant proposes to install and maintain dust collectors on infrastructure, the infrastructure is enclosed, and will no longer operate the existing dryer, the delegated officer considers the risk of impacts from dust emissions is not expected to change and has applied the applicant's controls as construction

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Reasoning
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
								and operational requirements to ensure an acceptable level or risk is maintained.
	Air (combustion) emissions (NO_x, SO_2, CO)			Refer section 3.1	C = Minor L = Unlikely **Medium Risk**	N	Conditions 1, 2, **4, 5 and 6.**	Based on the information provided by the applicant, the new dryer is expected to have higher NOx emissions than the existing dryer. The applicant proposes to install a low NOx burner which complies with Class 3 of the European Standards (EN676:2020) to mitigate the risk of air quality impact. Other air emissions such as SO_2 and CO were determined to be insignificant during stack testing conducted by Ektimo. The delegated officer determined that the risk of air quality impact is adequately mitigated with the proposed controls in conjunction with an additional regulatory control requiring the licence holder to monitor air emissions (NOx) from the dryer stack to confirm dryer NOx emissions remain in accordance with expectations.

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.

Note 3: Conditions 10 and 11 are department imposed conditions required for compliance reporting.

5. Consultation

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

Table 4: Consultation

Consultation method	Comments received	Department response
City of Kwinana advised of the proposal on 28 January 2025. The letter was re-sent on 4 February 2025 as the earlier pdf file was corrupted.	The City of Kwinana replied on 14 March 2025 with the following comment: • The City had dust issues in 2023 which have since been resolved so we do not have issues with the current operations. Please find below the comments under Health for the proposed upgrade: Noise: ○ The development shall comply with the Environmental Protection (Noise) Regulations 1997. Dust: ○ The proponent shall implement dust control measures for the duration of site and construction works and for the ongoing operation of the site to the satisfaction of the City of Kwinana. ○ Operations to achieve a negative pressure within the premises at all times.	The Delegated Officer noted that City of Kwinana had no objection to the proposed amendment, and the comments related to dust and noise emission control requirements are captured within the licence conditions. July 202
Licence Holder was provided with draft amendment on 7 July 2025.	Licence holder responded on 29 July 2025 with their comments on the drafts (Refer Appendix 1)	Refer Appendix 1

6. Decision

The delegated officer has determined the proposal to install and operate an 80 tonne Single Pass Rotary Drum Dryer and associated infrastructure in place of the existing premises dryer, does not pose an unacceptable risk of impacts to public health or the environment. This determination is based on the following:

- The replacement dryer will incorporate appropriate noise, dust and NOx emission controls to mitigate the risk of impact to receptors and these have been applied as construction and operation regulatory controls in the licence; and
- Monitoring of NOx emissions has been specified in the licence to confirm expected emissions are being achieved.

Subsequently, authorisation is provided in the revised licence for the installation and operation of the 80 tonne Single Pass Rotary Drum Dryer and associated infrastructure. Upon completion of the installation of the new dryer and submission of an Environmental Compliance Report to DWER, the licence authorises the licence holder to operate the new infrastructure.

The Delegated Officer notes that the Environmental Protection (Concrete Batching and Cement Products Manufacturing) Regulations 1998 also apply to the premises.

Licence updates

As part of this amendment the delegated officer has updated the licence by removing infrastructure construction conditions 6-9 for completed infrastructure and imposing associated operational requirements for the 'as installed' infrastructure. The licence holder completed construction and submission of Environmental Compliance Reports for the infrastructure in 2022 confirming compliance with the design and construction requirements specified in the licence. Operational conditions are specified for the as installed emission controls to ensure an acceptable level of risk of impacts, in line with the department's previous assessment, is maintained.

7. 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.

7.1 Summary of amendments

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

Table 5: Summary of licence amendments

Condition no.	Proposed amendments
1	Inclusion of design and construction/installation requirements for the replacement 80 tonne rotary dryer.
2	Inclusion of condition 2 and Table 2 specifying operational requirements for premises infrastructure, including the blending plant, HE silo, bagging plant and white cement silos authorised for construction in the 2021 licence amendments. Inclusion of operational requirements for the new dryer.
3	Removal of a dust collector atop the existing dryer in Shed 2 and inclusion of three new authorised discharge points for the dryer dust collectors and dryer stack. The numbering sequence of the discharged points were also updated in Table 2.
4, 5, 6	Inclusion of annual stack monitoring requirements for emissions to air (NOx).
Previous conditions 6-9	Removal of construction/installation requirements for completed infrastructure.
7-9 and 12	Revised numbering of previous conditions 2, 4 and 5 to 7, 8 and 9 for complaints and record keeping. Revised AACR condition numbering from 3 to 12.
10 and 11	Inclusion of construction compliance reporting requirements.
13	Inclusion of a biennial environmental reporting requirement for reporting of monitoring results
Definitions	Definitions added for ACN, AS4323.1, averaging period, biennially, discharge, emission, EP Regulations, NATA, NOx, prescribed premises, USEPA (and Method 2 and 7E) and waste.

References

1. BGC (Australia) Pty Ltd (BGC) 2024, *Application Form: Licence Amendment* (including supporting documents as attachments), Perth, Western Australia.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. Ektimo 2025, *Emission Testing Report: R018704,* Perth, Western Australia *(*included within BGC's response to RFI received on 25 March 2025).

Appendix 1: Summary of comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
1(b) Licence holder was asked to note that the silo was included as having a dust collector in accordance with the Concrete Batching Regulations, which was not specified in the application.	Licence holder confirmed that the buffer silo will have a dust collector in accordance with the Concrete Batching Regulations requirement.	Noted and licence condition is retained
1(d) Licence holder was required to review and confirm the requirements included in condition 1(d) can be met, as the application did not include any specifications of the baghouse, other than the treatment efficiency for the dryer dust collector.	Licence holder accepted the condition and confirmed that the requirements included can be met. Licence holder also provided a brief description of the type and model of the baghouse that will be installed.	Licence condition is retained Updated the Amendment Report to note the type and model of the baghouse.
1(e) Licence holder was required to confirm if all dust collectors were designed to discharge dust collected bag into the infrastructure, noting the requirements apply to all dust collectors.	Licence holder confirmed that all dust collectors are designed to discharge back into the infrastructure.	Licence condition is retained
3 Licence holder was required to specify whether the Dry mix plant will still be operational, noting that the Layout Plan did not include a dust collector for the plant.	Licence holder responded that the Dry Mix Plant will not be operational as the assets have been removed.	The dust collector requirement at the Dry Mix Plant site is removed from condition 3 in the Amended Licence.
3	Licence holder noted that the waste discharge point W1 was not reflected in Schedule 1 - Figure 2.	Updated Figure 2 to reflect the wastewater discharge point W1.
Schedule 1: Maps Licence holder was required to provide a revised map of the prescribed premises boundary without the dryer location marked.	Licence holder provided a new premises map without the dryer location marked.	Updated Figure 1 with new premises map provided.