Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Works Approval Amendment

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

Works Approval Number	W6381/2020/1
Works Approval Holder	Cockburn Cement Limited
ACN	008 673 470
File Number	DER2020/000139
premises	Cockburn Cement Kwinana Plant Lot 45 Leath Road KWINANA BEACH WA 6167 Legal description – Lot 45 on Plan 916000, Part Lot 251 and Part Lot 252 on Deposited Plan 415974 As defined by the coordinates in Schedule 1 of the Revised works approval
Date of Report	19 November 2024
Decision	Revised works approval granted

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1. Decision summary

Works Approval W6381/2020/1 is held by Cockburn Cement Limited (works approval holder) for the Cockburn Cement Kwinana Plant (the premises), located at Lot 45 Leath Road, Kwinana Beach.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of the premises. As a result of this assessment, revised works approval W6381/2020/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the Department of Water and Environmental Regulation (DWER, department) has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at DWER Regulatory documents | Western Australian Government (www.wa.gov.au).

2.2 Application summary

On 21 December 2023, the works approval holder submitted an application to the department to amend works approval W6381/2020/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments to the works approval are being sought:

- Changes to some of the design and construction requirements detailed in Schedule 2 of the works approval, including changes to the grinding circuit, finished product silos and dispatch, truck wash down area and the stormwater infrastructure;
- Duration of commissioning be increased to 300 days to reflect the phased commissioning approach proposed for the premises infrastructure;
- An update to Figure 2 in Schedule 1 to reflect alterations to the plant design and layout;
- Separate reporting for noise verification monitoring; and
- Updated nomenclature of the grinding mills and associated stack emission points to reflect that the new mills will be additional to the two existing mills which already exist and operate on the premises.

The proposed changes are due to optimisation during the detailed design and construction phase of the project, and environmental commissioning now planned to occur in a staged manner. Further information provided by the works approval holder on the proposed changes is provided below:

2.2.1 Grinding circuit

The mill building design is smaller than initially proposed which has resulted in the mill stack height being reduced from 50 m to 42 m above ground level. Additionally the mill vent filter and process filter outputs will now be directed into a single stack, rather than individual stacks, reduced the number of stack emission points for the grinding circuit from four to two.

2.2.2 Finished product dispatch

The works approval specifies that the finished product dispatch system must comprise two adjustable loading spouts at each finished product silo bank however the final design has two

loading spouts for dispatch weighbridges 1 and 3; and three loading spouts for dispatch weighbridges 2 and 4. Design and operational capabilities of the system only allow for two loading spouts per weighbridge to operate simultaneously, which aligns with the initial design. The requested changes to the works approval reflect that while additional loading spouts will be constructed, operation will be limited to no more than two operating per weighbridge at any one time.

2.2.3 Finished product silos

Due to design optimization only six silos will be installed. The silos will be installed with safety relief valves at the top of the silo rather than being piped to the ground as conditioned in the works approval. Piping of safety relief valves to the ground is a requirement generally applicable to small batch concrete silos and is not common practice for bulk storage silos such as those being constructed at the premises as they are notably susceptible to pressure fluctuations.

The requested change is required to address the silo manufacturer's design standard that there is no impedance to the relief valves which could affect their ability to function in an emergency or impact the integrity of the silo. The change is not considered to alter the risk of discharges to air as the safety relief valves are not emission points and are only designed to operate in an emergency. The plant control system, interlocks, alarms, and silo level sensors operate in conjunction to minimise the likelihood of overfilling. Additionally, as the silos are subject to continuous filling via a low pressure air slide or pneumatic transporter rather than high pressure batch filling, there is less risk of overfilling than for smaller silos. The relief valves will also be directed onto the silo roof rather than into the air.

2.2.4 Truck wash down area

The location of the truck wash down area has moved 50 m east to address road clearance restrictions and alleviate traffic congestion issues. The wastewater treatment infrastructure for the facility has been modified from what was originally proposed. Wastewater from the truck wash will pass through a primary sedimentation trap and into a secondary sediment trap which also acts as a recycled water tank. The recycled water is reused for the main truck rinse function. The primary and secondary traps have a combined volume of 48,000 litres. When the recycled water tank is full it will discharge to the tertiary cleaning system comprising an in-ground oily water separator of total capacity 3,400 litres and internal hydrocarbon capacity of 1,000 litres, followed by a universal pollution trap installed in series. Treated water from the universal pollution trap will discharge into a central junction pit prior to discharge to stormwater basin 1. Quarterly sampling from the central junction pit is proposed to confirm water quality criteria are met and weekly inspection of the infrastructure.

The works approval holder advised that the truck wash down area would only be used for removal of cementitious material from trucks prior to leaving the premises rather than wholescale vehicle washing therefore the primary contaminant is expected to be cementitious sediments.

2.2.5 Stormwater basins and site drainage

The location of stormwater disposal basins 6 and 7 has been altered slightly with an associated change in the size of each basin to reflect the altered catchment area and the works approval design requirement for the basins to accommodate a storm having an average recurrence interval of 20 years over 24 hours.

During design optimisation it was also identified that drainage from the finished product dispatch road needed to be split between stormwater disposal basin 1 and 8, rather than only being directed into basin 1. An additional first flush concrete sediment trap is therefore proposed for stormwater basin 8, as per the design requirements for basin 1, as basin 8 will

now receive runoff potentially containing concrete sediment from the dispatch area.

2.2.6 Environmental commissioning

Construction and environmental commissioning are now planned to be undertaken in a phased approach. There will be three overarching phases indicatively comprising Cement Mill 4 process stream (Phase 1), Cement Mill 3 process stream (Phase 2) and the remaining scope (Phase 3). Each phase will not necessarily be completed all at the same time. This will necessitate submission of staged Environmental Compliance Reports as components of each phase are completed and need to move into environmental commissioning.

An extended environmental commissioning period is being requested to provide sufficient time for all infrastructure to be completed and commissioned in the phased manner proposed. The works approval holder advised of the intension to submit a single Environmental Commissioning Report once all infrastructure has been commissioned and requisite air emission monitoring is completed.

Verification noise monitoring is specified as a requirement of the works approval which is to be undertaken during the environmental commissioning period. All infrastructure will need to have commenced environmental commissioning before noise verification monitoring can commence. It may not be achievable for the monitoring and reporting to be completed in time for inclusion with the Environmental Commissioning Report.

3. Air quality assessment

The works approval holder submitted a revised air quality assessment (AQA), undertaken by Environmental Technologies and Analytics (ETA 2023), to take into account relevant design changes, including reduced stack heights (from 50 to 42 metres) and number of emission points (from 4 to 2); revised stack exhaust parameters based on the detailed design; and a reduced number of emission points due to removal of some sources now located inside buildings.

Air quality modelling predicted ground level concentrations (GLC) of particulate matter (PM) at sensitive receptors for the revised design are presented in Table 1 and are compared with predicted GLC from the air quality impact assessment conducted by ETA in 2020 for the original premises design. Monitoring data from the department's South Lake monitoring station was utilised to represent relevant background concentrations for cumulative assessment.

Assessment criteria adopted for the AQA included in Table 1 and are taken from the *National Environment Protection (Ambient Air Quality) Measure* (Ambient Air Quality NEPM) for PM_{10} and $PM_{2.5}$, and the Kwinana Environmental Protection Policy (Kwinana EPP) total suspended particle (TSP) criteria.

The key findings of the revised AQA are:

- Maximum predicted GLC, at all receptors, for all particulate sizes, are lower for the revised design when compared to the previous modelling assessment (ETA, 2020).
- Predicted GLC comply with the relevant air quality assessment criteria at all sensitive receptors for the premises in isolation.
- When including background concentrations (i.e. existing conditions) with those from the premises, based on the revised design:
    - GLC of TSP and PM_{10} comply with the relevant air quality assessment criteria at all sensitive receptors.
    - The annual average GLC of $PM_{2.5}$ are above the air quality assessment criteria at all receptors however this is due to the nominated annual background concentration (based on measured ambient data) being higher than the assessment criteria (7.6 µg/m^3).

- The maximum contribution from the premises, at any receptor, is <15% of the air quality assessment criteria.

The AQA indicates that a conservative approach has been used where all source emissions were modelled to operate continuously and simultaneously.

Technical Review

The modelling was reviewed by the department, and it was concluded that the modelling broadly follows the department's *Air Quality Modelling Guidance Notes (2006).* Previously identified issues with the modelling meteorology have been resolved. It was noted that the modelling did not include most of the pre-existing sources of emissions which were considered in the 2020 model. The works approval holder advised that as the intent of the modelling was to demonstrate the effect of the design changes, and background and existing sources have not changed, they do not have any significant influence on this comparison. The modelling also did not address potential emissions from stockpiles or truck movements (wheel generated dust). The works approval holder advised that minimal external storge will be used once the project is completed and will be limited to damp materials, slag gypsum and shell sand/limestone which form a surface crust with localised surface drying. Water will be applied to control any localised dust if stockpiles are disturbed to ensure the crust is reformed. Dust emissions from stockpiles are therefore expected to be minimal.

The AQA states that all PM sources are assumed to operate at a design capacity of 15 mg/Nm^3 where the design criteria of the dust collectors specified in the works approval is <10 mg/Nm^3 therefore the modelled emission rates are likely to be conservative. Other conservative assumptions also included continuous emissions from emission sources which are anticipated to intermittent in nature (i.e. the finished product silos, the 'off-spec' bins, the clinker shed, and the clinker reclaiming infrastructure).

Based on the model outcomes, the department agrees that GLC are expected to comply with the relevant air quality assessment criteria at all sensitive receptors for the premises in isolation and also when background concentration is taken into account with the exception of annual average GLC of $PM_{2.5}$ however this is due to the nominated annual background concentration being higher than the assessment criteria rather than the influence of the premises emissions. As per the department's assessment of the 2020 modelling, the contour plots from the revised modelling indicate potential for exceedance of the 24-hour PM_{10} and $PM_{2.5}$ Ambient Air Quality NEPM criteria at neighbouring industrial premises when PM emissions from the premises are considered in isolation. The NEPM guidelines are not howevevr considered to be an appropriate guideline for industrial localities. It was also noted that when comparing the 2020 and 2023 conotur plots there is an apparent reduction in the area of impact where this is predicted to occur. The $PM_{2.5}$ contour plots for the original (2020) and revised (2023) air quality modelling are shown in Figure 1 and Figure 2 to illustrate this. The red line represents the $PM_{2.5}$ Ambient Air Quality NEPM 24-hour criteria of 25 µg/m^3.

Table 1: Predicted GLC of particulate matter (24hr) at sensitive receptors

Parameter	Percentile	Criteria	Background	Proposed Facility (ETA, 2020)				Revised design (ETA 2023)			
				Medina 1	Medina 2	Abercrombie Road	Wattleup	Medina 1	Medina 2	Abercrombie Road	Wattleup
TSP ($\mu g/m^3$)	Max	24-hr TSP Kwinana EPP Area A Criteria - 150 $\mu g/m^3$	57 $\mu g/m^3$	3.7	3.8	7.2	4.8	3.5	3.2	5.9	4.2
	99th			2.4	2.1	4.4	3.3	2.3	1.9	4.9	2.7
	95th			1.1	0.9	2.3	1.3	0.8	0.6	1.7	1.3
PM_{10} ($\mu g/m^3$)	Max	NEPM 24-hr PM_{10} Criteria - 50 $\mu g/m^3$	28.5 $\mu g/m^3$	2.5	2.5	5.2	3.5	2.5	2.3	4.3	2.8
	99th			1.6	1.4	3.0	2.4	1.5	1.3	3.5	1.9
	95th			0.8	0.7	1.6	0.9	0.6	0.4	0.8	0.9
$PM_{2.5}$ ($\mu g/m^3$)	Max	NEPM 24-hr $PM_{2.5}$ Criteria - 25 $\mu g/m^3$	13.4 $\mu g/m^3$	2.1	2.1	4.4	2.9	2.1	1.9	3.7	2.4
	99th			1.4	1.2	2.5	2.0	1.3	1.1	3.0	1.6
	95th			0.7	0.6	1.3	0.8	0.5	0.3	0.7	0.8

Figure 1: Predicted 24-hour average $PM_{2.5}$ GLC contours for 2020 modelling/premises design

Figure 2: Predicted 24-hour average $PM_{2.5}$ GLC contours for 2023 modelling/premises design

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 2 below. Table 2 also details the proposed control measures the works approval holder has proposed to assist in controlling these emissions, where necessary. Existing controls relating to the emissions and sources are detailed in the works approval therefore are not repeated in the table. Only new or altered controls proposed as part of the application are included.

Table 2: Works approval holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust	Receival, storage, movement and processing of raw materials to create finished products. The movement and storage of finished products prior to dispatch to customers. Changes relate to the following sources: – Cement milling – Bulk silo storage and dispatch of cement	Air/windborne pathway	• ;Each grinding mill ball circuit will have an independent dust collection system which is separate from the mill ventilation system; • The discharge from the grinding mill dust collectors (mill process filter) will be ducted to an independent induced draft fan for each ball mill circuit. This discharge, together with discharge from each circuit's mill ventilation filter will discharge into an independent exhaust stack for each ball mill circuit (reduced number of stacks from four to two); • The stacks will be built to a minimum height of 42 m above ground level (reduced from 50 m) • The mill building size has been reduced and the number of emission sources has also been reduced as some will now be emitted within buildings, • Final products will be stored within enclosed silos each fitted with a dust collector, the number of silos is expected to reduce from the planned eight to six; • A safety relief valve will be installed at the top of each final product silo, rather than piped to the ground, to ensure it is unimpeded. It will be directed down onto the filo roof. Filling via pneumatic delivery, silo level measurement linked to the plant control system and interlocks, ensure that the vent will only operate in an emergency therefore the valves are not defined emission points.
Noise		Air/windborne pathway	• A number of noise sources will be enclosed within buildings (that were not in the initial design) which is anticipated to result in a noise reduction.
Sediment		Overland	• Storm water basins 6 and 7 will only

Emission	Sources	Potential pathways	Proposed controls
Laden Stormwater		runoff potentially causing ecosystem disturbance or impacting surface water quality	receive non-contaminated surface water flows for infiltration; • Storm water basins 1 and 8 will primarily receive non-contaminated surface water flows and treated wastewater from the truck wash area (basin 1 only). Stormwater from the road between the silo loading area and the truck wash area may contain sediments therefore first-flush concrete sediment traps will be installed up-gradient of storm water disposal basins 1 and 8 and will be sized to collect the first 30 minutes of a 20-year annual recurrence interval rainfall event
Sediment and contaminant laden wastewater	Truck wash down area	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	• Revised design includes truck wash water draining to concrete primary sedimentation sump and then into a secondary sediment trap/ recycled water tank for reuse. • When full the recycled water tank will discharge to an inground oily water separator followed by a universal pollutant trap with the treated water being transferred to a central junction pit before discharge to stormwater basin 1. • Quarterly sampling from the central junction pit • Weekly visual inspection of the treatment infrastructure will be undertaken to confirm system condition and that sediment is below the water level.

4.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the delegated officer has excluded employees, visitors and contractors of the works approval 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 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 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Industrial Receptors	Approximately 30 metres east of the premises boundary.
Thomas oval	Approximately 2.9 kilometres southeast of the premises.
Kwinana golf course	Approximately 4 kilometres southeast of the premises.
Residential receptors	• Abercrombie Road, situated approximately 2.8 kilometres southeast of the premises; • Medina, situated approximately 2.9 kilometres southeast

	of the premises; and • Wattleup, situated approximately 3.7 kilometres northeast of the premises.
Environmental receptors	**Distance from prescribed activity**
Important wetlands – Western Australia	Spectacles swamp is situated 5.3 kilometres east southeast of the premises.
Parks and Wildlife Managed Lands and Waters	Beeliar Regional Park is situated approximately 1.5 kilometres north of the premises.
Cockburn Sound	550 metres west.

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 take 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 works approval holder has proposed mitigation measures/controls or alterations to the existing controls (as detailed in Section 4.1), these have been considered when determining the final risk rating. The risk assessment considers whether the proposed changes alter the previously assessed risk of impacts to sensitive receptors. Where the delegated officer considers the works approval holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the works approval 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 works approval W6381/2020/1 that accompanies this Amendment Report authorises construction and time-limited operations. The conditions in the Revised works approval have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence amendment is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises. A risk assessment for the operational phase has been included in this Amendment Report, however licence conditions will not be finalised until the department assesses the licence application.

Table 4. Risk assessment of potential emissions and discharges from the premises during construction, commissioning and operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Works approval holder's controls sufficient?	Conditions[2] of works approval	Reasoning
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Works approval holder's controls**				
Commissioning and Operation (including time-limited-operations operations)								
Receival, storage, movement and processing of raw materials to create finished products. The movement and storage of finished products prior to dispatch to customers.	Dust and particulate matter	Air/windborne pathway causing impacts to health and amenity	Industrial receptors in the local area.	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Revision to condition 1 (Table 11), 5 (Table 1), and 19 (Table 5) infrastructure/operational requirements 6, 7, 8, 20, 21 and 22 revision to stack location, height and nomenclature. Revised Figure 2 – premises layout and discharge points	The delegated officer reviewed the revised air quality modelling, based on the revised design, and determined that air quality at all sensitive receptors is not expected to be impacted by dust emissions from the premises and that there remains a risk of exceedances of NEPM air quality criteria at nearby industrial receptors as originally assessed. Comparison of modelling contour plots indicates the area this could potentially impact appears to be reduced. Ambient monitoring data indicates that the Kwinana EPP 24 hour TSP standard and NEPM PM_{10} 24 hour average criteria are already exceeded in Area's A and B of the Kwinana EPP, periodically and the NEPM criteria are not likely to be appropriate within industrial settings such as the Kwinana Industrial Area. Based on the review the delegated officer considers that the proposed changes will not alter the previously assessed of dust emissions impacting receptors.
			Sensitive receptors situated between 2.8 and 3.7 kilometres from the premises.		C = Minor L = Rare **Low Risk**			
	Noise	Air/windborne pathway causing impacts to health and amenity	Sensitive receptors situated between 2.8 and 3.7 kilometres from the premises.	Refer to Section 3.1	C = Moderate L = Possible **Medium Risk**	Y	Revision to condition 11 and 16 and addition of condition 13 to alter timing and submission date of noise verification report.	The delegated officer considers that the proposed amendments are not expected to materially impact the predicted noise impact at sensitive receptors therefore the assessed risk remains medium. The delegated officer considers it appropriate to allow for submission of a separate noise verification report to the Environmental Commissioning Report to ensure there is sufficient time to complete the monitoring and reporting after all infrastructure has commenced commissioning. Conditions were revised to reflect this change.
	Sediment and contaminant laden stormwater	Seepage through the underlying soil profile leading to the contamination of underlying groundwater resources. Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	The Cockburn Groundwater Area. Cockburn sound.	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Revision to condition 1 (Table 11) Revised Figure 2 – premises layout and discharge points	The delegated officer considered the proposed changes to stormwater management including the location of stormwater basins and addition of a sediment trap for stormwater basin 8 will not alter the previously assessed risk of sediment laden water impacting receptors. The works approval holder has proposed suitable controls aligned with those previously assessed. Changes were made to the infrastructure construction requirements to provide for first flush sumps at both basin 1 and basin 8.
	Sediment and contaminant laden wastewater from the truck wash down area	Seepage through the underlying soil profile leading to the contamination of underlying groundwater resources. Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	The Cockburn Groundwater Area. Cockburn sound.	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Revision to condition 1 (Table 11), 5 (Table 1), and 19 (Table 5) infrastructure/operational requirements	The delegated officer considered the proposed changes to the truck wash down wastewater treatment system and notes that the washdown area is for the purpose of removing cementitious material from trucks and not for an underbody rinse or vehicle maintenance. The works approval holder has proposed suitable controls however the delegated officer has required monthly testing of the treated water which is discharged to stormwater basin 1 to confirm the treatment system remains effective for an extended period of time.

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

Note 2: Proposed works approval holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

5. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Local Government Authority advised of proposal 27 February 2024	The City of Kwinana replied on 18 March 2024 advising that they had no comment to add.	The delegated officer noted the response.
Works approval holder was provided with draft amendment on 28 August 2024 and a revised draft following comments on the first draft on 1 November 2024	The licence holder replied to the first draft on 20 September 2024 and 18 October 2024, and to the second draft on 13 November 2024. Comments are detailed in Appendix 1.	The delegated officer's response to the comments provided is detailed in Appendix 1.

6. Decision

The delegated officer has determined that the proposal to increase the environmental commissioning period to 300 days and amend limited design and construction, and operational requirements in works approval W6381/2020/1 does not pose an unacceptable risk of impacts to environmental or public receptors.

The proposed changes to the truck wash down area, grinding circuits and associated emission points, finished product silos and dispatch, and the premises stormwater infrastructure are not expected to result in any change to the previously assessed risk profile of emissions and discharges from the premises. The extended environmental commissioning period to allow for staged commissioning as construction of infrastructure is completed is similarly not expected to alter the risk profile of the premises, with operational controls and monitoring requirements already included in the works approval which are applicable throughout both the environmental commissioning and time limited operation stages.

Recognising that sufficient time needs to be provided for completion of the noise verification report once all infrastructure has been commissioned the delegated officer elected to alter reporting requirements to allow for the noise verification report to be submitted separate to the environmental commissioning report. The change ensures the timeframe for completion of monitoring and reporting is not limited by the commissioning period while still requiring the report to be prepared and submitted within a 90 calendar day timeframe.

In making these determinations the delegated officer considered:

- revised premises plans;
- revised air quality modelling based on the optimised premises design;
- the previous risk assessment and emission controls documented in the W6381/2020/1 2021 Decision Report;
- the works approval holder's risk assessment for changes to silo venting; and
- the works approval holder's expected timeframe for staged construction, commissioning, time limited operation and submission of a licence amendment application for ongoing operation.

7. Conclusion

Based on the assessment in this Amendment Report, the delegated officer has determined that a revised works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

7.1 Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the revised works approval as part of the amendment process.

Table 6: Summary of works approval amendments

Condition no.	Proposed amendments
Condition 5	Correct a typographic error; condition becomes table.
Condition 5 Table 1	Duration of commissioning changed from 90 days to 300 days in aggregate. Numbering added to operational requirements for ease of compliance reporting (administrative change) Finished product dispatch operational requirement restricting operation to two spouts per weighbridge operating at any one time added to align with intent of original design. Amendment to truck wash down area requirements to reflect the revised design of the truck wash down area as described in this amendment report.
Condition 6-8 Table 2-Table 4	Update to nomenclature of discharge points and reduced number of discharge points to two with associated update to discharge point location and height. Stack height change from m to m agl, defined as above ground level, to clarify height requirements. Monitoring requirements amended from within the first 30 days of environmental commissioning to during the environmental commissioning period to enable the staged commissioning approach.
Condition 11 and 13	Timing for noise emission verification reporting altered to provide sufficient time for monitoring to occur once all infrastructure has been commissioning and a separate submission requirement not linked to the Environmental Commissioning Report.
Condition 19 Table 5	Numbering added to operational requirements for ease of compliance reporting (administrative change) Finished product dispatch operational requirement restricting operation to two spouts per weighbridge operating at any one time added to align with intent of original design. Amendment to truck wash down area requirements to reflect the revised design of the truck wash down area as described in this amendment report.
Condition 20-22 Table 6-Table 8	Update to nomenclature of discharge points and reduced number of discharge points to two. Update to discharge point location and height. Stack height change from m to m agl, defined as above ground level, to clarify height requirements.
Condition 25 Table 9	Monitoring location altered to reflect revised design and frequency amended to monthly.
Schedule 1	New Figure 2 showing revised nomenclature, emission points and infrastructure locations Figure 3 discharge points map removed as has been incorporated into Figure 2.
Schedule 2 Item 6 Grinding Mill	Amended to reflect reduction in the number of stacks and reduced stack height of 42 m above ground level.
Schedule 2 Item 5 Additive feed hopper and day bins	Amended day bin sizes. Amended number of silos to provide flexibility for less than eight to be established and removed requirement for safety release valves to be piped to ground.

Condition no.	Proposed amendments
Item 9 Finished product silos	
Schedule 2 Item 10 Finished Product Dispatch	Amendment to reflect the reconfiguration of loading spouts
Schedule 2 Item 12 Truck wash down area	Amendment to reflect the revised design of the truck wash down area as described in this amendment report.
Schedule 2 Item 13 and 14 Stormwater disposal basins and site drainage	Amendments to require additional first flush concrete sediment sump to be constructed for basin 8.
Schedule 2 Item 15	Update to nomenclature

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. DWER 2021, *W6381/2020/1 Decision Report Cockburn Cement Kwinana Plant,* Perth Western Australia
5. Cockburn Cement Limited (CCL) 2024, *W6381/2020/1 Kwinana Upgrade Project Works Approval Amendment Application and supporting documents*, Perth, Western Australia
6. Environmental Technologies & Analytics (ETA) 2020, *Cockburn Cement Kwinana Plant upgrade: air quality assessment, Final Report Version 2. Prepared for Cockburn Cement Limited, Project Number: 1153*, Perth, Western Australia.
7. ETA 2023, *Cockburn Cement Kwinana Plant Air Quality Assessment Project Number 1413*, Perth Western Australia.
8. Golder Associates Pty Ltd 2020, *Cockburn Cement Kwinana Plant Cement Milling Upgrade (and attachments), Reference No. 1792429-005-L-Rev0*, West Perth, Western Australia.

Appendix 1: Summary of works approval holder's comments on risk assessment and draft conditions

Condition	Summary of works approval holder's comment	Department's response
Decision Report section 2.2.6	Cement Mill 4 will be commissioned first, followed by Cement Mill 3 and finally balance of plant equipment.	The delegated officer has altered the text to reflect this order of commissioning.
Decision Report section 3 Technical Review	Response to comment on air modelling omitting existing sources: The objective of the ETA 2023 analysis submitted with the Works Amendment Application, was to demonstrate solely the effect of the design changes between the preliminary design as presented in the original Works Approval Application, and the Final Design presented in this Amendment request. As the background and existing sources have not changed, they will not have any significant influence on the comparison between preliminary and final design, with the initial results well below any relevant applicable standards. The results of this direct comparison shows either the same or lower particulate levels at the sensitive receptor locations (with the exception of TSP at Abercrombie Road). As such, it is definitive that the design changes will not cause any increase to the overall levels (inclusive of background and existing site emissions) and, will in fact, result in lower overall levels at the receiver locations than determined and presented in the 2020 analysis in the original Works Approval Application.	The delegated officer notes this advice.
Decision Report section 3 Technical Review	Response to comment on stockpiles and truck movements: Post transition to the new operating infrastructure, operational intent is to minimise all external stockpiles and there will be a significant reduction in external material storage. eg slag will be stored in the existing clinker shed, once the new clinker shed is available. Only when necessary, will external storge be used and this will be for damp materials only, slag gypsum and shell sand/limestone. These materials form a surface crust with localised surface drying. When disturbed, water will be applied to control any localised dust and ensure the crust is reformed once material movements cease.	The delegated officer notes this advice and considers that existing controls are sufficient for minimising dust from these sources and can be applied if required when the licence is amended to include the as constructed infrastructure.

Condition	Summary of works approval holder's comment	Department's response
	Considering the material properties (moisture content), site environmental management procedures (included in our original Works Approval Application) and confined/sheltered locations of the proposed external storage areas; fugitive dust emissions from external stockpiles will be minimal and have no impact on the results of the Air Quality Modelling.	
Decision Report section 2.2.4 and 4.1.1	Requested wording changes to clarify that the secondary sediment trap and recycled water tank are the same vessel.	Noted and wording adjusted.
Works approval Table 6	There is no Cement Mill 5, the new cement mills are numbered 3 and 4.	Typographical error corrected.
Works approval Table 9	Requested to conduct water samples quarterly, as per air emissions during TLO as it is not practical to sample at each discharge as this will happen automatically upon reaching full limits. Excess water will discharge from the oily water separator prior to discharge to Basin 1.	The delegated officer does not consider that quarterly testing will provide adequate protection for the risk of oily water discharge and has amended table 9 to require monthly monitoring during time limited operations. A monthly frequency during TLO has been specified to confirm the water treatment system is working effectively. If results confirm water quality is able to be maintained a longer frequency can be considered at the time of licensing the new infrastructure.
Works approval Table 11	The clinker bins have been combined into a single bin (750m^3) with dual outlets.	Noted and wording adjusted.
	The two slag bins have been combined into a single bin (540m^3) with dual outlets.	Noted and wording adjusted.
	Please note there are two weighbridges under each silo bank (group of three silos). One weighbridge is serviced by three socks and the other by two socks	Noted and wording adjusted.
	Details of the revised design of the truck wash down area wastewater system were provided.	The delegated officer reviewed the information and updated section 2.2.4 and Table 2 and 4 of the amendment report as well as the commission, time limited operational and construction requirements of Tables 1, 5 and 11 of the works approval to align to the revised design.
Works Approval Condition 29	During TLO and normal operations, when the system is full, treated water will automatically discharge to basin 1. It is therefore not feasible for us to record the date of each discharge. Weekly inspections and monthly water samples will be taken as required by the Works Approval. Suggest records include evidence of weekly inspection and results of monthly water sample quality.	The delegated officer has amended condition 29 to remove the requirement for a date of discharge which reflected the previous infrastructure design and instead included records of weekly inspections of the sedimentation sumps (monitoring records are already required by the condition).
Works approval	Amend the ball mill capacity to 100 tonnes per hour as this is a design capacity	Noted and wording adjusted.

Condition	Summary of works approval holder's comment	Department's response
Schedule 2 part 6 (2)	not a maximum capacity.	
Works approval Schedule 2 part 6 (5)	Wording could infer that there are two stacks per milling circuit when there is only one. Suggest *A common stack linked to both the grinding mill process filter and mill vent filter for each ball mill circuit.*	Noted and wording adjusted.
Works approval Schedule 2 part 12 (8)	Clarified that the volume of the recycled water tank (which is a common vessel with the secondary sedimentation tank) is 8,000 litres.	Noted and wording adjusted.