Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Licence

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

Licence Number	L2981/2025/1
Applicant	Tianqi Lithium Kwinana Pty Ltd
ACN	612 085 364
File number	INS-0002981, APP-0028798
Premises	Tianqi Lithium Hydroxide Processing Plant 61 Donaldson Road KWINANA BEACH WA 6167 Legal description Lot 201 on Deposited Plan 407762 As defined by the premises maps attached to the issued licence.
Date of report	03 March 2026
Decision	Licence granted

Alana Kidd

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Alana Kidd
Manager, GREEN ENERGY

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

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1. Decision summary

The delegated officer has determined to grant licence L2981/2025/1 (L2981). This report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, licence L2981 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of premises

On 24 April 2025, Tianqi Lithium Kwinana Pty Ltd (the applicant, Tianqi) submitted an application for a licence to the department under section 57 of the *Environmental Protection Act 1986* (EP Act).

The application sought a licence relating to the operation of processing Train 1 lithium hydroxide monohydrate refinery (LMH refinery) and pollution control works at Tianqi Lithium Hydroxide Processing Plant, located at 61 Donaldson Road Kwinana Beach WA 6167 (the premises). The premises is approximately 5.6 km north, northeast of Rockingham and is located within the Kwinana Industrial Area.

The premises relates to the following categories and assessed production and design capacity (Table 1) under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in licence L2981.

Table 1: Prescribed premises categories in the application

Classification of premises	Description	Works approval W5977/2016/1 (for 2 trains) Assessed production capacity	Proposed premises assessed design capacity (1-train)	Proposed licence L2981/2025/1 assessed production capacity
Category 31	Chemical manufacturing: premises (other than premises within category 32) on which chemical products are manufactured by a chemical process	48,000 tpa (LHM) 88,500 tpa (sodium sulfate anhydrous) (SSA)	24,000 tpa (LHM) 43,000 (sodium sulfate anhydrous) (SSA)	24,000 tpa (LHM) 43,000 tpa (sodium sulfate anhydrous) (SSA)
Category 44	Metal smelting or refining: premises on which metal ore, metal ore concentrate, or metal waste is smelted, fused, roasted, refined or processed.	200,000 tpa (spodumene ore concentrate)	160,000 tpa (spodumene ore concentrate)	156,810 tpa (spodumene ore concentrate)
Category 73	Bulk storage of chemicals etc.: premises on which acids, alkalis or chemicals that – (a) contain at least one carbon to carbon bond; and (b) are liquid at STP (standard temperature and pressure, are stored.	-	523.7 m^3 (sulfuric acid) 775.5 m^3 (sodium hydroxide)	523.7 m^3 (sulfuric acid) 775.5 m^3 (sodium hydroxide)

The infrastructure and equipment relating to the premises categories and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in licence L2981.

2.3 Background

Spodumene ore concentrate (SOC) is supplied to the LHM refinery by the Talison Lithium Australia Pty Ltd (Talison) Greenbushes Lithium Operation. Tianqi has 51% ownership of Talison who own and operate the Greenbushes Operation. The SOC refining process also produces sodium sulfate anhydrous (SSA) as a by-product. SSA and LHM are packaged, loaded into containers and trucked to Fremantle Port for export.

Tianqi was issued with a works approval W5977/2016/1 (W5977) on 21 September 2016 for the construction, and time limited operations which included commissioning of a two-processing train LHM refinery. To date, only one train has been constructed and commissioned, operating under time limited operations. Train 2 is partially constructed, however under care and maintenance.

The premises is a brown fill site based within the Kwinana Industrial Area (KIA). In 1952, BHP Billiton (BHP) developed a steel rolling mill on the site. Activities since then have included operational steelwork from 1965 to 1982 (blast furnace, pig mill, sinter plant, power station, tippler, conveyor system and landfill), a bulk storage facility (1985), the HIsmelt Corporation Pilot Plant (1993-1999), and the HIsmelt Corporation commercial plant (2003-2011). The premises remained vacant since the decommissioning of the HIsmelt commercial plant in 2011. Works for the lithium refinery began in 2016. Historical activities at the premises have caused it to be classified as Contaminated – restricted use under the provisions of the *Contaminated Sites Act 2003*.

2.3.1 Incident and complaints management for W5977/2016/1

The Department has 41 entries logged in its Incident and Complaints Management System (ICMS) (see Table 2) in relation to W5977. Some reports could not be attributed to a single source, noting that Covalent Lithium Pty Ltd (Covalent) is located diagonally adjacent to Tianqi.

Of the 41 entries, 32 were complaints relating to odour (including odour and fumes, or odour and dust). These complaints included reports of amenity impacts and a range of health symptoms such as headaches, dizziness, sinus symptoms, coughing and eye irritation. These reports reflect the complainants' experiences and do not, on their own, establish the source or cause of the reported symptoms.

Six entries were self-reported condition non-compliances, including three relating to chemical spills.

Table 2: Tianqi related incident and complaints logged with DWER.

Category	Complaint dates	Summary
Dust	11/12/2025 12/12/2025 26/09/2025	• Tianqi undertook a site investigation and determined the dust was from the transition area tower from 1100-CV-002 to 1100-CV-003 from southwestern winds blowing between the chutes. Tianqi fixed temporary tarp covers to reduce the wind generated dust. Tianqi will install a permanent structure around the transition area towers to enclose them. • Tianqi undertook work on 16/10/2025 to adjust and raise the side skirts on CV003 and close the chute gaps in CV003. • Dust complaints are currently managed under one master ICMS, with ongoing investigation and continued management actions underway. The licence will incorporate strengthened management measures and operational controls to ensure these issues are effectively regulated.
Odour (including fumes and smoke)	7/07/2025 16/06/2025 19/05/2025 15/05/2025 12/05/2025 14/04/2025	• Odour, smoke, and fume complaints are currently managed under one master ICMS, with ongoing investigation and continued management actions underway. The licence will incorporate strengthened management measures and operational controls to ensure these issues are effectively regulated.

	1/04/2025 21/03/2025 20/03/2025 19/03/2025 18/03/2025 6/03/2025 13/02/2025 12/02/2025 13/01/2025 10/01/2025 12/12/2024 5/12/2024 4/12/2024 12/11/2024 30/08/2024 29/08/2024 29/01/2024 10/02/2023 18/01/2023	
Health concerns	26/09/2025	• Negative impacts on health of workers have been linked to ongoing dust and odour issues. The complaint is managed under one open master ICMS.
W5977/2016/1 Condition 21 non-compliance notification	24/07/2025 23/06/2025 11/12/2024 2/07/2024 17/06/2024 17/01/2023	• W5977/2016/1 Condition 21 non-compliance notification. Exceedance of particulate matter at the calciner refeed discharge end stack from a recent review of stack testing results, this is still under investigation. • ICB with 60% sulfuric acid was spilled within the premises, the acid made its way into swale B1, this is still under investigation at the date of licence issue. • Tianqi advises the following non-compliance has been reported exceeding the emission limits specified in Table 7 as prescribed in Condition 21. The associated point source sampling events were undertaken in accordance with Condition 15 and a summary of the non-compliance occurred on 11th December 2024 stack testing on the Calciner Refeed Feed End Stack averaged Total Suspended Particulates as 330mg/m^3 at STP dry exceeding the 50mg/m^3 at STP dry limit as specified in the Works Approval. Preliminary investigations into the cause of the non-compliance indicated a baghouse had a leak due to incorrect installation (relatively lower clamp height) which might have caused some bypass. The Calciner was taken offline, the bags replaced with sufficient clamp height to prevent re-occurrence. There is no evidence to indicate an environmental impact occurred because of the non-compliance event. • Tianqi reported a non-compliance with the emission limits specified in Table 7, Condition 21 of the Works Approval. Point-source sampling was undertaken in accordance with Condition 15. Stack testing conducted on 2 July 2024 showed the following exceedances of Total Suspended Particulates (TSP): ➢ Calciner Refeed Feed End Stack: 600 mg/m³ (limit: 50 mg/m³, STP dry) ➢ Calciner Refeed Discharge End Stack: 63 mg/m³ (limit: 50 mg/m³, STP dry) Preliminary investigations identified a baghouse leak between the dust receiver and rotary valve, which prevented stable differential pressure and effective filtration. The Calciner was taken offline, the leak was repaired, and a blockage in the pipework was cleared to prevent recurrence. Tianqi advised that no environmental impact was identified because of this non-compliance. • Waste Discharge Notification, investigation closed. • Report of exceedance of TSP limit.
Unauthorised discharges / spills	28/07/2024 5/06/2024 19/08/2022	• Section 72 Spill notification - Kwinana - Tianqi Lithium Kwinana W5977 Tianqi Lithium made a verbal report of a spill of processed water that occurred yesterday due to the rainfall events. The spill went to the wedge pit and overflowed, even while they were pumping to a reservoir it was still overflowing. The receiving environment was within their boundaries/swales (no public access). • Unauthorised discharge to Swale B1 during a heavy rainfall event over the weekend. • Tianqi reported that an overhead pipe separated at the flanch and around 100 litres of sodium hydroxide has run into a stormwater drain.

A complainant collected dust samples (described as a white crystalline powder) from their premises adjacent to Tianqi on 1 April 2025. The material was analysed by Microanalysis Australia on 16 April 2025 using scanning electron microscopy (SEM) with elemental analysis by energy dispersive spectroscopy (EDS). The analysis reported the sample contained spodumene (LiAl(SiO3)2)), with

particles predominantly in the <5 to 500 micrometre size range and major elemental components of aluminium, silicon and oxygen. Department investigation officers inspected the complainant's premises and confirmed the presence of white crystalline powder.

An unannounced site inspection was undertaken by Department investigation officers on 11 June 2025 at Tianqi. The following variances to works approval W5977 Condition 6 (Table 2) design and construction of infrastructure were observed:

- Conveyors from the spodumene shed to the calciners were not enclosed and had open bottoms.
- The spodumene and Tianqi aluminosilicate (TAS) storage sheds were not fully enclosed/sealed. A louvred window was observed on one of the spodumene shed walls and both sheds had multiple roof extraction vents.
- Crystalline powder was observed around the outside of the spodumene and TAS sheds, under the conveyors and in trafficked areas.
- A reverse osmosis plant used to recycle process water had been constructed and was not assessed under a works approval as supporting infrastructure associated with the prescribed premises (see section 3 for further details).
- Reverse osmosis plant wastewater containers were observed to be leaking.

Tianqi committed to increase the frequency of dust sweeping, install new atomiser mist sprayers inside the spodumene shed to settle suspended dust, and replace malfunctioning sprayers at the spodumene shed hopper, storage bay of the alpha spodumene and at the exit point from the hopper to the external conveyor chute (see section 2.3.1 for further details). In addition, Tianqi raised side skirts on the chute area of CV003 and proposed to enclose the transition area towers between 1100-CV-002 and 1100-CV-003 to reduce wind-blown dust between chutes.

Eight odour complaints were made to the Department during time-limited operations of the Train 1 processing plant between early November 2024 and mid-January 2025. The Train 1 calciner operated for 40 days during this period. The feedstock mix used on each operating day comprised a 90:10 mixture of technical grade concentrate and chemical grade feed. In summary:

- on 32 of the 40 operating days, no complaints were received;
- on two days, complaints were received while the calciner was offline; and
- on two days, complaints were received while the calciner was in 'start-up mode' (meaning no feedstock, or reduced feed, was being processed).

Complaints were received over four days when the plant was operating at normal capacity. Given that on half the days complaints were received the calciner was not operating or was operating at substantially reduced capacity, other sources may have contributed to reported odour impacts, including activities at nearby premises.

Tianqi advised that the proposed regenerative thermal oxidiser (RTO), due for completion in 2026, is intended to address odour-related incidents (see section 2.3.3 for further details). The RTO is intended to destroy odorous organic compounds that may be associated with processing of SC6.0 feed grade material. Tianqi advised SC6.0 may contain oleic acids or other fatty acid residues from flotation reagents used in spodumene concentrate production.

Tianqi committed to limit the proportion of SC6.0 concentrate in its feedstock blend to no more than 10 per cent until the approved RTO works are constructed and commissioned in 2026. Until the RTO is operational, Tianqi advised it will use 90 per cent technical grade feedstock that has been heat-treated at the Greenbushes mine site to reduce fatty acid residues, to minimise odour potential and associated complaints.

Sulphur dioxide (SO_2) is a respiratory irritant and can cause short-term irritation to the eyes, nose and throat in exposed people. While direct comparison of stack discharge concentrations to ambient air

criteria is not appropriate, monitoring results for the acid roast scrubber stack indicated elevated discharge concentrations (see Table 3). The acid roast kiln was not included in the works approval sampling program, and the Department has not sought to characterise kiln stack emissions through that program. Noting this, the acid roast kiln is recognised as a potential source of SO_2 if associated gas treatment systems are not effective.

Tianqi also advised it will install an automated dust monitor on the boundary adjacent to the spodumene ore and TAS sheds. Tianqi advised that where dust levels exceed relevant ambient dust criteria, the source will be investigated and, if required, operations will cease until dust emission sources are managed.

2.3.2 Compliance with W5977/2016/1

Tianqi applied for six amendments under works approval W5977 (28 December 2018, 2 September 2020, 23 June 2021, 2 August 2022, 31 January 2024 and 13 August 2024) including an increase in production throughput, commissioning/time limited operations extensions, infrastructure changes, works approval expiry extension, monitoring and reporting changes, and construction of additional pollution control equipment for the train 1 calciner.

Tianqi submitted four certification statements of compliance for engineering construction, on 24 April 2019, 21 May 2019, 12 August 2019 and 4 September 2019. In 2023, Tianqi undertook time limited operations of the calciner in Train 1 of the refinery. A review of the compliance documents indicated the following changes from construction design:

- Spodumene delivery build has a window louvre and ceiling exhaust fans.
- Tianqi aluminosilicate (TAS) storage building has ceiling exhaust fans.
- Conveyor built is not fully enclosed, it has three sides with bottom exposed.
- Wastewater tanks were built without temperature probes, and
- Reverse osmosis plant was built without assessment under a works approval as supporting infrastructure associated with the prescribed premises.

The applicant provided the following summarised information on 18 September 2025 to demonstrate compliance.

- The spodumene shed stores spodumene from the Greenbushes mine, and lime sand used for plant neutralisation. Diesel-powered trucks and front loaders operate in the shed, moving materials to the conveyor feed and lime sand circuit, which can generate emissions such as carbon dioxide (CO), nitrogen oxides (NOx), particulate matter (PM), and volatile organic carbons (VOCs). Without proper ventilation, these gases could accumulate and pose risks to personnel. To address this, Tianqi will install an atomised spray system for dust control and has roof exhaust fans that automatically activate when high CO levels are detected, ensuring a safe working environment. The TAS storage shed is similarly equipped with four exhaust fans triggered by CO sensors to manage vehicle fumes during unloading.
- Fully enclosing the conveyor system is not recommended due to operational and safety concerns, as visibility and access are essential for detecting common damage mechanisms such as roller, pulley, and idler wear, as well as belt misalignment. Regular visual inspections, guided by checklist, are crucial for proactive maintenance and preventing issues like overheating or fires that could arise from undetected faults. While lithium spodumene dust is present around the load chute and tail pulley, the applicant will manage this with the addition of atomised spray systems, regular housekeeping, and a dust sweeper. Additionally, a dust sentry will be installed on the northern perimeter to monitor site dust levels.
- Reverse osmosis (RO) plant (wastewater containers) will have tundishes (funnel shaped devices) connected to pipes to direct all collected water (including spills and leaks) from the

RO plant to the bunded buffer tank area for collection and recirculation. All wastewater tanks are in concrete bunded areas.

- Temperature probes are not required in all tanks, and the risk rating does not change.

The applicant has submitted emission to air reporting associated with time limited operations as part of the licence application. A review of the air emission data to the works approval air emission limits is outlined in section 2.3.4. No other time limited operations or environmental commissioning report other than air emission reporting was required under works approval W5977.

2.3.3 Outstanding works

Tianqi has committed to installing augmented pollution control equipment at the calciner kiln to achieve further destruction of organic compounds not fully combusted in the calcination kiln. The proposed installation of pollution control equipment was assessed and amended under W5977 in March 2024. Tianqi advised that this work has not yet occurred and is proposed to be installed in 2026. Tianqi has requested that this pollution control work, and commissioning be included within the licence conditions, due to works approval W5977 expiring on 30 June 2026. The Department agreed with this approach, noting the licence is appropriate as an effective regulatory tool. The pollution control work includes:

- a wet scrubbing system (to collect metal fume, ultrafine particulates or other gaseous inorganics);
- a new stack through which to discharge treated off-gases originating at the Train 1 calciner; and
- a RTO unit.

2.3.4 Review of discharges to air

Works approval W5977 (conditions 13 and 14) require monitoring of air emissions from the authorised discharge points during time limited operations to ensure emissions do not exceed the set emission limits. Table 3 outlines the air emission data submitted by Tianqi.

Table 3: Works approval W5977 results of air emission monitoring during time limited operations.

Discharge point	Parameter	Unit	Sample event average						Limits set on works approval W5977
			November 2023	January 2024	May 2024	July 2024	December 2024	May 2025	
Calciner Fan Stack 1200-SK-001	NOx	mg/m3 at 3% O2 STP dry	320	320	<9	350	83	120	**350**
	CO2	mg/m3 at STP dry	2.3	2.8	2.2	2.4	2.6	3.3	
	TSP	mg/m3 at STP dry	<2[1]	<2[1]	<2[1]	<2[1]	<3[1]	<3	**50**
Calciner refeed (feed) 1210-BH-001	TSP	mg/m3 at STP dry	40	**58**	**140**	**600**	**330**	12	**50**
	PM10	mg/m3 at STP dry	22	39	77	410	220	7.2	
Calciner refeed (discharge) 1210-BH-002	TSP	mg/m3 at STP dry	46	<2[1]	**98**	**63**	2.4[1]	**160**	**50**
	PM10	mg/m3 at STP dry	11	<2[1]	**85**	43	2.4[1]	110	
Spodumene mill 1230-SK-001	TSP	mg/m3 at STP dry	<2[1]	<2[1]	<3[1]	<3[1]	Not tested, was not operational	<2[1]	**50**
	PM10	mg/m3 at STP dry	<2[1]	<2[1]	<3[1]	<3[1]		<2[1]	
Acid roast scrubber 1340-SK-001	TSP	mg/m3 at STP dry	10	Not tested, was not operational	Not tested, was not operational	<2[1]	41	Not tested, was not operational	**50**
	PM10	mg/m3 at STP dry	5.4			<2[1]	21		
	SO2	mg/m3 at STP dry	350			760	3200		
	SO3	mg/m3 at STP dry	2.4			1.2	0.65		**100**
Sodium sulfate heater 1710-VL-017	TSP	mg/m3 at STP dry	16	<1.9	3.8	<2.9[1]	<2[1]	<2[1]	
	PM10	mg/m3 at STP dry	7.1	<1.9[1]	2.4	<2.9[1]	<2[1]	<2[1]	**50**
	NOx	mg/m3 at STP dry	<4	<4	<4	<4	<4	**<2**	
	NOx	mg/m3 at 3% O2 STP dry	**<700**	**<600**	**<400**	<300	<200	60 (at 15% O2 STP dry)	**350**

Note 1- Reported insufficient particulate matter collected on the filter to perform accurate particle size analysis.

Red bold highlights exceedance to emission limits set under W5977/2016/1

Orange highlights elevated SO2 levels

Air emissions exceeded set limits for; total particulate matter (PM) and nitrogen oxides (NOx) nine times during time limited operations. Tianqi has submitted notifications of non-compliance for the exceeded emission limits under W5977 condition 21. Exceedances of total particulate matter at the calciner refeed stacks (feed end and discharge end) were investigated and found to have resulted from leaks between the dust receiver and rotary valve, and incorrect installation of baghouse clamps. Tianqi has advised that they will maintain an annual baghouse inspection and bag replacement frequency as a strategy to ensure efficiency of the baghouse. A visual ongoing monitoring of the bag break detectors has also been implemented on the calciner and mill baghouses.

Nitrogen oxides (NOx) and sulphur trioxide (SO_3) consistently demonstrated acceptable levels for emission limits. It is noted that NOx levels for the sodium sulfate heater exceeded limits initially, but recent monitoring demonstrated meeting emission limits outlined in works approval W5977.

Sulphur dioxide emissions from the acid roast scrubber did not have limits specified in the works approval. While direct comparison between stack discharge concentrations and ambient air quality criteria is not appropriate, the results highlight the relatively high discharge concentrations. Monitoring indicated stack concentrations of 350, 760 and 3,200 mg/m³ (Table 3), which are substantially higher than the Environmental Protection Policy (Air Quality) 1999 Area A ambient air quality criterion of 1.4 mg/m³ (1,400 µg/m³). These elevated discharge levels indicate a potential for impacts in areas closest to the stack prior to dispersion. It is noted that air dispersion modelling demonstrated concentrations at the nearest residential receptor in Medina to be acceptable (see section 4). In addition, the acid roast kiln was not included in the works approval sampling program.

The delegated officer reviewed the variability in stack emission sample results for nitrogen oxides and total suspended particulates, noted exceedances of emission limits, and acknowledged that some refinery operations were not sampled due to inactivity. To provide confidence following the inconsistencies in the emission data provided, quarterly emission sampling for the first three years of operation, followed by biannual sampling thereafter is required, to demonstrate reliable emission data. Additionally, any emission points that have not been sampled will need to be validated using data submitted through the National Pollutant Inventory (NPI) for the purpose of annual fee verification.

The delegated officer also considered the complaints received, including ongoing impacts to human health and amenity, the stack discharge data (refer to Table 3), findings from the site inspection, and the fact that the conveyors and spodumene shed were not constructed in accordance with Works Approval W5977/2016/1. Tianqi's proposed dust and odour control measures were also considered. As a result, the delegated officer has determined to condition implementation of Tianqi's outstanding controls, along with the following additional measures to manage dust and odour emissions from the premises:

- Weekly sweeping/wet vacuuming of the spodumene shed driving platform to minimise dust tracking outside the building;
- Daily sweeping/wet vacuuming of the external hardstand area between the spodumene and TAS sheds when vehicle movement occurs between them;
- Daily sweeping/wet vacuuming of external hardstand underneath the conveyors linking the spodumene shed and calciner when in use;
- Weekly sweeping/wet vacuuming of hardstand areas around the plant from 1 October to 31 May (inclusive);
- Development of a Trigger Action Response Plan (TARP) linked to the proposed dust boundary monitor;
- Inspections of wedge pits during winter and following any rainfall events exceeding 40 mm within a 12-hour period;
- A copy of the latest National Pollution Inventory (NPI) or equivalent is provided yearly to demonstrate annual fee calculations of all emissions from the premises (to identify emissions for fee verification);

- Sampling of the calciner for oleic acid using speciated volatile organic compounds (SVOC) using Ektimo 344 or other suitable method; and
- Sample PM10 for calciner, acid roast scrubber and sodium sulphate heater stacks.

The Department also conducts scheduled and ad hoc inspections as part of its Compliance program.

2.4 Operational aspects

Operations

The lithium refinery can operate on a continuous 24-hour per day basis, 365 days per year with consideration of the six-month shelf-life of the LMH product. The refinery operates the processing train in batches with definite start and stopping cycles of the hydro and pyro operations. The applicant states that the plant is designed with a proposed plant operating factor of 83%, accounting for planned shutdown and refractory re-line on the calciner every two years.

The lithium refinery will process approximately 156,810 dry tonnes per annum (tpa) of spodumene ore concentrate to produce up to 24,000 tpa of lithium hydroxide monohydrate (LiOH H_2O, LHM), 43,000 tpa dry sodium sulphate anhydrous (Na_2SO_4, SSA); along with the following by-products:

- 175,900 tpa Tianqi aluminosilicate (TAS) (this is a form of de-lithiated beta spodumene (DBS) that does not contain the gypsum/limestone as a comingled product); and
- 26,100 tpa gypsum/limestone product (gyplime).

Specific details regarding the process of refining lithium hydroxide from spodumene concentration are the subject of an exemption from publication claim by the applicant based on commercial-in-confidence details under Schedule 1 of the *Freedom of Information Act 1992* (WA). The exempted information has been considered by the delegated officer in the assessment and determination of the application, but has been excluded from the published version of this decision report.

Figure 1 provides an indicative schematic process flow.

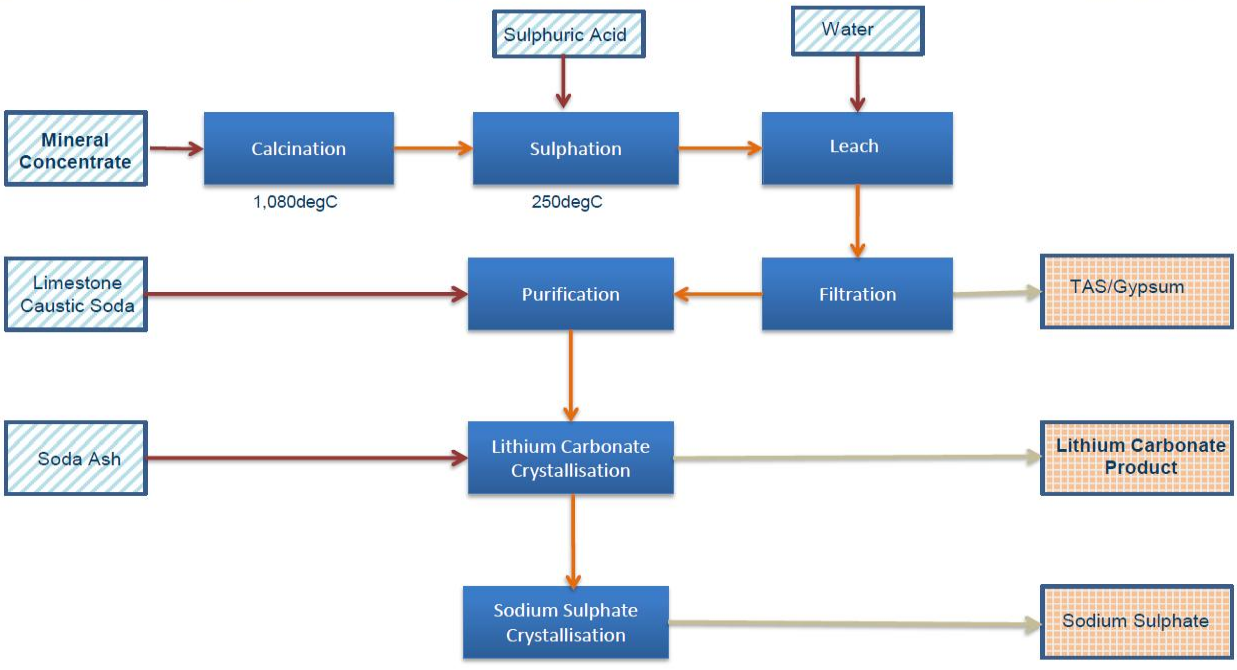

Figure 1: Indicative schematic flowsheet for processing mineral concentrate to lithium product

Source: Kwinana Industries Council website www.kic.org.au (Presentation - 05/11/2013) accessed on 31/08/2016

A summarised description of the key operations is as follows:

- **Feed Handling and Thermal Conversion:** Operations begin with the offloading and storage of spodumene concentrate, which is conveyed into the processing plant via covered systems to control dust and maintain product integrity. The material is pre-dried and heated using calciner off-gas before entering a direct-fired rotary calciner, where α-spodumene is converted to the more reactive β-spodumene at ~1100°C. The calcined product is then cooled and milled to fine particle size to enable efficient chemical reaction in downstream stages.
- **Acid Roasting and Gas Treatment:** Milled spodumene is mixed with 98% sulphuric acid and roasted at ~250°C in a rotary kiln, forming lithium sulphate—the key soluble lithium compound for extraction. Off-gases from roasting are treated via a multi-stage system (cyclone, quench vessel, venturi scrubber, packed tower, and wet electrostatic precipitators) to remove dust and acid mist before safe atmospheric release.
- **Leaching, Neutralisation, and Impurity Removal**: Roasted solids are slurried and transferred to leach tanks, where lithium sulphate dissolves into solution. Filtration separates the insoluble residue (TAS), which is washed and dispatched off-site. The leach liquor undergoes neutralisation with limestone, producing gypsum, which is filtered and removed. The partially purified solution is further treated through impurity removal tanks, using sodium hydroxide, sodium carbonate, and diatomaceous earth to precipitate remaining impurities such as magnesium and calcium. Resulting solids are filtered out, leaving a pregnant leach solution (PLS) suitable for lithium recovery.
- **Lithium Hydroxide Production:** The PLS is concentrated in a falling-film evaporator equipped with mechanical vapour recompression, optimizing lithium content for reaction. In the lithium hydroxide reactor, sodium hydroxide is added to convert lithium sulphate into lithium hydroxide, with solids removed via candle filtration. The solution then enters the Glauber's salt crystallisation system, where cooling to –5°C crystallises out sodium sulphate decahydrate, significantly reducing sodium levels ahead of final product crystallisation.
- **Three-Stage Crystallisation for Battery-Grade LHM:** High purity is achieved through three successive crystallisation stages, each involving controlled evaporation, cooling, cyclone classification, centrifugation, and re-dissolution. This multi-stage sequence progressively removes sodium, potassium, and other trace contaminants, producing an ultra-high-purity lithium hydroxide monohydrate crystal product. The LiOH solids are then dried in vacuum belt dryers and transferred to automated bagging lines for packaging into 450 kg bags.
- **Sodium Sulphate By-Product Recovery:** Sodium sulphate removed as Glauber's salt is remelted and processed through a forced-circulation evaporative crystalliser to produce anhydrous sodium sulphate, which is centrifuged, dried in a fluidised-bed dryer, and packaged into 1000 kg bags as a commercial by-product.
- **Utilities and Supporting Systems:** The facility relies on an extensive network of supporting systems including Kwinana Water Recycling Plant (KWRP) process water, potable water, cooling towers, steam generation, compressed air, decarbonated air, reagent storage (sulphuric acid, caustic, sodium carbonate, DE, and limestone), and waste-water management infrastructure. See below for further information.

Process wastewater and contaminated stormwater

Kwinana Water Recycling Plant (KWPP) is the primary water source for the refinery processing plant. Secondary water is made up from demineralised (demin) water, contaminated and uncontaminated stormwater, and condensate/cooling water from heat exchangers. All process water is stored in tanks or wedge pits. The truck wheel wash drains to the wedge pits, and the accumulated slurry removed in dryer months.

All contaminated stormwater and process wastewater is treated via a reverse osmosis plant with treated wastewater reused in the process and the concentrated wastewater (slurry) stored in tanks

that are removed daily offsite for treatment and disposal by a licenced waste control carrier.

Stormwater

The internal stormwater drainage system for the premises has been designed to conform to local government engineering requirements for industrial areas. The stormwater drainage system is designed to retain all stormwater runoff onsite equivalent to the 100 year 24-hour annual recurrence interval (ARI) event. Low dust producing areas have all stormwater directed to swales placed around the perimeter of the premises. The higher dust producing areas (spodumene and TAS shed areas and immediate surrounds) are considered contaminated and direct all contaminated stormwater to the wedge pits via graded hardstands, sumps and pumps.

Solid waste and co-products

The processing of spodumene ore produces TAS, gypsum and limestone. The TAS is stored within the TAS shed and removed offsite in a covered truck and taken to landfill at Red Hill Waste Management, Red Hill. Gypsum/limestone (gyplime) is sold as a by-product and stored in the TAS shed and taken by covered truck to Kojonup Dolomite, Chittinup, as an agricultural soil improver.

Other solid material from the spodumene ore processing consist of perlite that is used as a filter aid and is neutralised and filtered out with the gyplime.

The calciner can produce shredded scale from abnormal operations resulting in clinkering events. The clinker waste from the calciner is removed, tested and disposed of at a landfill facility.

2.5 Legislative considerations

Environmental Protection Policies (EPPs) are statutory policies developed under Part III of the EP Act. The Environmental Protection (Kwinana)(Atmospheric Wastes) Policy Approval Order 1999 (Kwinana EPP) and Environmental Protection (Kwinana)(Atmospheric Wastes) Regulations 1992 (Kwinana EPP Regulations) provide ambient air quality standards and ambient air quality limits for sulphur dioxide and particulates.

The Kwinana EPP defines three areas (Area A, B and C) where:

- Area A is the area of land on which heavy industry is located;
- Area B is outside Area A and is zoned for industrial purposes from time to time under a Metropolitan Region Scheme or a town planning scheme;
- Area C is beyond Areas A and B, predominantly rural and residential.

The lithium refinery resides within Area A. Table 5 and Table 9 outlines the Kwinana EPP emissions limits against the proposed emission modelling.

2.6 Other relevant approvals

Planning approvals

The premises are zoned ‘heavy industries (class 1 and 2) under the City of Kwinana District Planning Scheme No. 2 as Area 15 – Kwinana Industrial Strip and Metropolitan Region Scheme. Development approval was granted by the local government on 29 August 2018 (DA9204).

Dangerous Goods Safety Act 2004 (WA)

The application includes the operation of infrastructure items used for the storage, transfer and use of chemicals classified as Dangerous Goods under the *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007.*

Dangerous Goods legislation in W.A. is administered by the Department of Mines, Petroleum and Exploration (DMPE). The applicant has obtained a Dangerous Goods licence DGS022471 to operate the bulk reagent, fuel and gas storage facilities to comply with the requirements of the *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007*.

3. Review of Groundwater data

Tianqi undertake groundwater monitoring of 10 bores located within the superficial aquifer within the Cockburn Groundwater Area that is regulated under the *Rights to water and Irrigation Act 1914* (RIWI). Tianqi provided in May 2025 water quality groundwater data taken over 35 parameters. Data from 13 parameters, are outlined in Table 4.

Groundwater flow is from a southeast to northwest direction with groundwater bores MW04, MW09 and ASUS-MW03 upgradient of MW10. MW10 is located adjacent to the reverse osmosis (RO) plant operations and a swale. Thirteen out of the 35 parameters tested appear elevated in monitoring bore MW10, the most significant is elevated lithium levels (highlighted red).

Table 4: May 2025 groundwater data (applicant supplied)

Bore	Bicarbonate Alkalinity as CaCO3	Total Alkalinity as CaCO3	Arsenic	Cadmium	Chromium	Copper	Lead	Lithium	Nickel	Zinc	Total Kjeldahl Nitrogen as N	Total Nitrogen	Total Phosphorus a
Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MW04	286	286	0.003	<0.0001	0.008	<0.001	<0.001	0.007	<0.001	<0.005	0.6	6.0	0.04
MW09	193	193	0.004	<0.0001	0.005	0.001	<0.001	0.003	<0.001	<0.005	0.5	5.4	0.10
ASUS-MW03	274	274	0.003	<0.0001	0.003	<0.001	<0.001	0.012	<0.001	<0.005	0.9	6.7	0.08
MW10	588	588	0.035	0.0002	0.060	0.016	0.028	**8.09**	0.016	0.107	5.1	12.6	3.04

Tianqi has indicated that groundwater monitoring bore MW10 was located immediately next to a stormwater swale and elevated water quality parameters likely to be reflective of stormwater, noting that the elevated levels are likely a result of poor housekeeping of the hardstand that diverts stormwater directly into the swales. Tianqi has indicated that five bores will be monitored in the future (MW05, MW02A, MW01, MW04 and MW03) for biannual sampling for pH, total dissolved solids, electrical conductivity, water level, metals (total): arsenic, cadmium, chromium, copper, nickel, lead, zinc, and lithium.

The delegated officer has considered the groundwater quality data, and the applicant's proposed sampling, and determined to condition the following to manage the impact of soil and groundwater contamination from the premises:

- Biannual groundwater monitoring of 5 monitoring bores over 35 parameters;
- Spill, leaks and overtopping of containment notifications and reporting of clean up actions;
- All brine and reject industrial wastewater to be carted offsite by an authorised liquid waste carrier; and
- Reverse osmosis plant is maintained and operated free of leaks.

It should also be noted an annual report is required to be submitted to the department.

4. Air quality impact assessment report

Tianqi included an Emissions Impact assessment (EIA) for air emissions undertaken by Environmental and Air Quality Consulting Pty Ltd (EAQ). The EIA included:

- List of sensitive receptors.
- Recently measured stack emissions for total suspended particulate (TSP), oxides of nitrogen (NOx), sulphur dioxide (SO_2), sulphur trioxide (SO_3) and carbon monoxide (CO).
- Metrological modelling.
- Air dispersion modelling (Calmet processor and Calpuff model).
- Comparison of predicted pollutant ground level concentrations (GLC) with relevant air quality criteria (DWER Works Approval W6577 emission limits and Kwinana Environmental Protection Policy 1999 and Regulations 1992.)

Eight sensitive receptors including the premises four boundary corners were identified. The Air Quality Assessment (AQA) considered train 1 air emissions with a 160,000 tonnes per annum throughput of spodumene ore, including the pollution controls works proposed to be carried over from works approval W5977. This includes calciner fan, calciner refeed feed end, calciner refeed discharge end; spodumene mill, roast kiln, acid roast scrubber, sodium sulphate, and steam generator stacks.

A summary of the ground level concentrations (GLC) predictions of short-term exposure for key pollutants from the refinery are presented in the EIA. The GLC are based on the existing and impending (cumulative) Train 1 emissions. Comparison of GLCs with standard criteria is outlined below from Table 5 to Table 9 below.

Table 5: TSP predicted maximum receptor ground level concentrations for normal operations of one processing train and comparison with standards at receptors.

Receptor	Averaging period	Predicted GLC ($\mu g/m^3$)	[1]DWER AGV ($\mu g/m^3$)	[2]Kwinana EPP Area A limit ($\mu g/m^3$)	[2]Kwinana EPP Area B limit ($\mu g/m^3$)	[2]Kwinana EPP Area C limit ($\mu g/m^3$)	[3]NEPM ($\mu g/m^3$)
NW corner of premises	24 hour	1.27	82	260	260	150	No standard
SW Corner of premises		1.53					
NE corner of premises		1.43					
SE corner of premises		1.89					
NE Road Bend		0.79					
Kwinana Waste – to – Energy Plant		1.37					
Medina Residential		0.21					
Kwinana Motorplex		0.57					

Table 6: PM_{10} and $PM_{2.5}$ predicted maximum receptor ground level concentrations for normal operations of one processing train and comparison with standards at receptors.

Receptor	Parameter	Averaging period	Predicted GLC ($\mu g/m^3$)	[1]DWER AGV ($\mu g/m^3$)	[3]NEPM ($\mu g/m^3$)
NW corner of premises	PM_{10}	24 hour	1.27	46	50
SW Corner of premises			1.53		
NE corner of premises			1.43		
SE corner of premises			1.89		
NE Road Bend			0.79		
Kwinana Waste – to – Energy Plant			1.37		
Medina Residential			0.21		
Kwinana Motorplex			0.57		
All receptors		Annual	No data		25
	$PM_{2.5}$	24 hour			20
		Annual			7

Table 7: CO predicted maximum receptor ground level concentrations for normal operations of one processing train and comparison with standards at receptors.

Receptor	Averaging period	Predicted GLC ($\mu g/m^3$)	[1]DWER AGV ($\mu g/m^3$)	[3]NEPM ($\mu g/m^3$)
NW corner of premises	1 hour	1.17	30,000	No standard
SW Corner of premises		0.61		
NE corner of premises		1.02		
SE corner of premises		0.93		
NE Road Bend		0.55		
Kwinana Waste – to – Energy Plant		0.68		
Medina Residential		0.20		
Kwinana Motorplex		0.42		
NW corner of premises	8 hour	0.23	10,000	9.0 ppm 1,031.5 $\mu g/m^3$
SW Corner of premises		0.20		
NE corner of premises		0.31		
SE corner of premises		0.21		
NE Road Bend		0.30		
Kwinana Waste – to – Energy Plant		0.30		
Medina Residential		0.08		
Kwinana Motorplex		0.29		

Table 8: NOx predicted maximum receptor ground level concentrations for normal operations of one processing train and comparison with standards at receptors.

Receptor	Averaging period	Predicted GLC ($\mu g/m^3$)	[1]DWER AGV ($\mu g/m^3$)	[3]NEPM ($\mu g/m^3$)
NW corner of premises	1 hour	19.4	246	0.08 ppm 150.5 $\mu g/m^3$
SW Corner of premises		10.1		
NE corner of premises		17.0		
SE corner of premises		15.7		
NE Road Bend		9.1		
Kwinana Waste – to – Energy Plant		11.2		
Medina Residential		3.32		
Kwinana Motorplex		6.95		
NW corner of premises	8760 hour (Annual)	0.22	56	0.015ppm 28.2 $\mu g/m^3$
SW Corner of premises		0.16		
NE corner of premises		0.23		
SE corner of premises		0.14		
NE Road Bend		0.25		
Kwinana Waste – to – Energy Plant		0.20		
Medina Residential		0.03		
Kwinana Motorplex		0.19		

Table 9: SO_2 predicted maximum receptor ground level concentrations for normal operations of one processing train and comparison with standards at receptors.

Receptor	Averaging period	Predicted GLC ($\mu g/m^3$)	[1]DWER AGV ($\mu g/m^3$)	[2]Kwinana EPP Area A limit ($\mu g/m^3$)	[2]Kwinana EPP Area B limit ($\mu g/m^3$)	[2]Kwinana EPP Area C limit ($\mu g/m^3$)	[3]NEPM ($\mu g/m^3$)
NW corner of premises	1 hour	65.7	524	1400	1,000	700	0.075ppm 196.5 $\mu g/m^3$
SW Corner of premises		20.4					
NE corner of premises		14.1					
SE corner of premises		23.9					
NE Road Bend		12.9					
Kwinana Waste – to – Energy Plant		39.8					
Medina Residential		5.6					
Kwinana Motorplex		13.9					
NW corner of premises	24 hour	15.6	210	365	200	200	0.02ppm 52.4 $\mu g/m^3$
SW Corner of premises		2.83					
NE corner of premises		3.29					

Receptor	Averaging period	Predicted GLC ($\mu g/m^3$)	[1]DWER AGV ($\mu g/m^3$)	[2]Kwinana EPP Area A limit ($\mu g/m^3$)	[2]Kwinana EPP Area B limit ($\mu g/m^3$)	[2]Kwinana EPP Area C limit ($\mu g/m^3$)	[3]NEPM ($\mu g/m^3$)
SE corner of premises		4.43					
NE Road Bend		1.86					
Kwinana Waste – to – Energy Plant		4.36					
Medina Residential		0.60					
Kwinana Motorplex		1.52					
NW corner of premises	8760 hour (Annual)	Not provided	52	80	60	60	No standard
SW Corner of premises							
NE corner of premises							
SE corner of premises							
NE Road Bend							
Kwinana Waste – to – Energy Plant							
Medina Residential							
Kwinana Motorplex							

Note 1: DWER (2019) Guideline: Air Emissions (Draft), Perth, Western Australia
Note 2: Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999 and Environmental Protection (Kwinana) (Atmospheric Wastes) Regulations 1992 (Kwinana EPP), noting that Medina residential area is in Area C and Tianqi in Area A.
Note 3: National Environment Protection (Ambient Air Quality) Measure 2021 and 2025 (NEPM), National Environment Protection Council Act 1994.

4.1.1 Review of air quality assessment

The department reviewed the methodology of air quality modelling presented in the EIA. There is potential for effects from coastal fumigation due to the proximity of the coast, relative tall stacks and buoyant source emissions configuration. The model used (CALPUFF) in the assessment is an appropriate model for the current application where coastal fumigation impacts are important.

The department concluded the EIA methodology to be appropriate, however identified it does not fully meet the requirements of the department's Air Quality Modelling Guidance Notes (2006) as plant upset condition scenarios were not considered, nor cumulative impacts and their limitations in the meteorological methodology.

Limitation summary

- The EIA made a comparison of predicted GLC with air guideline values in DWER's Guideline: Air Emissions (Draft) (2019), Kwinana EPP and NEMP (2021). Noting the guideline has not been updated to incorporate national air quality standards updated by the Variation to the Ambient Air Quality NEPM – for 2025, the delegated officer compared the predicted GLC with these recent criteria (refer to Tables 5-9). Predicted GLC are all well within the relevant air quality criteria.
- It was noted that annual GLC's were not provided for sulfur dioxide. The delegated officer considered that the 24 hour and 1-hour GLCs were well within their perspective standards and considered that it was unlikely that sulfur dioxide would exceed annual GLC standards.
- The department noted that emission rate values used in the modelling assessment (Table 3-3) are significantly lower than those cited in the decision report for Works Approval W5977/2016/1 (Table 19). For example, the emission rates used in the assessment for NOx,

SO_2, and CO were 1.7 g/s, 0.11 g/s, and 0.2 g/s, respectively, compared to the 4.5 g/s, 3.7 g/s, and 7.5 g/s cited in the decision report. The department understands that emission rates used in the modelling assessment were calculated from stack testing data. Calculated emission rates from stack testing data can be representative under certain conditions, but there are factors that may affect the accuracy and reliability of the data such as sampling period and frequency, operational consistency and emission variability. Future sampling events should clarify the inconsistency between the emission data presented.

- Tianqi analyzed Bureau of Meteorology (BoM) data from the Garden Island and Jandakot stations to find the representative year for modelling, however, used surface observations data from BoM Garden Island and Mandurah stations. Garden Island's wind speeds are typically higher and are not representative of wind speeds in Kwinana.
- The EIA interpolated small meteorological gaps and used the pollution air model (TAPM)-derived upper air data to fill larger gaps. Issues identified with this approach are that when there are substantial discrepancies between observed and modelled wind data, the resulting inconsistencies can distort wind fields and reduce the reliability of dispersion modelling.
- The EIA did not include an analysis demonstrating that TAPM-generated meteorology is representative of the site. Where TAPM is known to overestimate the frequency of low wind speeds, contributing to uncertainty in the modelling results. The department was unable to validate the meteorological datasets as they were not included with the submitted modelling files.

Tianqi advised that a revised EIA will be submitted to the department within 12 months from the issue of the licence that will consider upset conditions and rerun meteorological dataset that have been validated against observed BoM local data. The delegated officer has therefore conditioned the requirement for a revised EIA to be submitted within 12 months from the issue date of the licence, noting that the train has been operating under time limited operations (under W5977).

5. Noise assessment report

The main noise sources from the operations of the lithium refinery are fans, stacks, burners, ball mills, generators, crusher, centrifuges, boiler, compressors, trucks and forklifts. Tianqi submitted a noise report within their *Works Approval Application Supporting Documentation Appendix B – Noise Assessment: Approvals for Lithium Processing Plant – prepared for MSP Engineering Pty Ltd – GHD Pty Ltd (June 2016)* (Noise Assessment Report*).*

Noise modelling demonstrated that predicted noise levels for the lithium refinery during normal operations under neutral meteorological conditions (LA10 noise level of 10dBA) and worst-case meteorological conditions (LA10 noise level of 14dBA) are well below the night assigned LA10 noise level of 35 dBA at the closest residential noise sensitive receptors at Medina. Cumulative impacts have also been considered in the noise assessment.

5.1.1 Review of noise assessment

Tianqi's operational noise assessment was conducted by using Computer Aided Noise Abatement (CadnaA), which is based on the CONCAWE algorithm. The department considered this noise prediction package for noise modeling to be acceptable. The noise modeling configurations, such as the plant layout, the topography and ground absorption, and the weather conditions, all seem reasonable. The identification of the major equipment items and their assigned sound power levels for the noise modeling also seem reasonable. The department considered the predicted operation noise levels to be reliable and the operational noise model to be technically sound.

The nearest sensitive receptor at Medina residential area is 2.35 km to the southeast. In considering the large buffer distance and the size of the operation, the department agrees with the Noise Assessment report conclusions that operation noise from the operation of the lithium refinery will comply with the noise regulations. The predicted operation noise level was well below the assigned

noise level at Medina, thus the department agreed that noise from the operation of the lithium refinery will not make a significant contribution to the cumulative noise emission levels from Kwinana Industrial Area (KIA). It can also be agreed that noise from the lithium refinery operations will meet the assigned noise level at the boundary with its neighboring industrial premises.

Validation monitoring has not been proposed by the Noise Assessment Report, which may not be unreasonable due to the predicted low level of risk. However, as the cumulative noise emission from KIA was found higher than the night-time assigned noise levels at Medina, a more conservative approach may be required for any new facilities operating in the KIA. Therefore, the delegated officer has determined that post construction noise emissions verification is required. This will formally demonstrate that noise from the lithium refinery will not contribute to the cumulative noise emission levels from KIA, as predicted. If this cannot be demonstrated, the Department may choose to amend the licence and impose additional controls. It is noted that Tianqi indicated that noise verification monitoring would occur in 2025/26.

6. 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.

6.1 Source-pathways and receptors

6.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this decision report are detailed in Table 10 below. Table 10 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 10: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Moving and installation of pollution augmentation equipment.	Air / windborne pathway	Movement is mainly on bituminised hardstands Works approval W5977/2016/1 operational requirements including: water carts use when dust is visible, vehicle speed less than 25 km/hr on unsealed roads, cessation of activity when dust lift off during high wind conditions occurs.
Noise		Air / windborne pathway	Construction works during daytime hours.
Operation			
Contamination of soils and groundwater and surface water from direct discharge	Leaks, spills and overtopping of containments and operation of reverse osmosis plant, wastewater recycling pipelines and sumps and wedges.	Direct discharge to land	Hardstand, bunding and grading of materials handling and processing areas is hardstand with bunding and graded towards the contaminated stormwater catchment system including sumps and two wedge pits. The Stage 1 Hydro Area is contained and fully bunded. Stormwater runoff from outside the bunded areas directed to a swale. Stormwater catchments delineated and designed to manage stormwater depending on the risk of contamination. Stormwater catchment from the south-eastern site area will runoff into the

Emission	Sources	Potential pathways	Proposed controls
			southern swales. The remainder of the eastern site area will runoff into two eastern swales. The western site area will runoff into two western swales and smaller swales internal to this area. Stormwater catchments from the northern site area (between the pyro areas and the spodumene building) will runoff into the western swale within this area. Stormwater runoff from the northern site road (delivery of raw materials and exit of waste-by products), Stage 1 pyro area and Stage 1 hydro area is directed to wedge pits to facilitate the removal of suspended solids. This stormwater is harvested for reuse as process water. Two concrete lined wedge pits facilitate sedimentation then direct water back into a secondary tank, and pump to a storage tank for future use as process water. The wedge pits are capable of settling out approximately 90% of suspended solids. Solids and slurry are removed in drier months by a waste controller. The treatment chamber of the wedge pits is sized for storage requirements based on a 1 in 1 year ARI storm of 1 hour duration. The pits will treat the first 20mm of rainfall which occurs within each sub-catchment during a storm event. The low-intensity storms wash the areas and prevent sediment from entering the environment. Storage Tanks A and B store treated stormwater from the wedge pit. Tanks have been sized to store a 1 in 2-year ARI storm of 72-hour duration. Design principle is that any stormwater that may contact the spodumene delivery system or any areas where there is an opportunity for process spillage will be contained and delivered to the process water tank. Immediate areas around tanks and pumping equipment have been designed with bunds to contain any spillage from those specific units and have sump pumps to return that material to the normal process stream. Fuel storage – is a small-scale package unit with inbuilt bund. Acid and caustic storage – small scale storage at atmospheric pressure with bund for full tank contents. In summer, basins/wedge pits will dry out, and waste will be removed by a waste controller. RO plant wastewater tanks are on bunded concrete hardstand. RO pipes are above ground and have tundish to assist with delivery of spills and leaks to buffer bund area. All tanks have sensor levels with automatic system shut off at controller panel. Spills or leaks in pipework or filters will cause valves to shut and notification at controller panel. Brine and concentrated wastewater are removed by a waste controller and removed offsite daily. Chemical and fuel tanks stored on concrete bunded hardstand to AS1940:2017 (storage and handling of flammable and combustible liquids) and AS 3780:2023 – Storage and handling of corrosive substances. Wedge pits are inspected daily in wet season to assess overflow risk. Reject tanks are emptied at a minimum daily, by a waste contractor. 5 Groundwater monitoring bores are monitored monthly for standing water levels and biannually for pH, TDS, EC, water level and the following metals (total): arsenic, cadmium, chromium, copper, nickel, lead, zinc, lithium.
Contamination of soil, ground and surface water from direct discharge leachate and contaminated stormwater	Leachate and contaminated stormwater from the storage of solid waste and spodumene materials.	Direct discharge to land, groundwater and surface water systems.	All the spodumene ore, alpha spodumene, TAS and gypsum-limestone is stored within enclosed sheds. Drainage from spodumene and TAS sheds is directed to sumps and wedge pits. Wedge pit de-sludge occurs once a year. Spill kits (both solid and liquid) are located throughout the premises and maintained. Perlite is stored with gyplime in the TAS shed. General waste is placed in lidded landfill bins on a hardstand and removed

Emission	Sources	Potential pathways	Proposed controls
			offsite by a waste contractor. Road sweepers occur fortnightly.
Noise	Operation of the refinery including movement of vehicles.	Air/windborne pathway	Purpose built enclosures provided were required for large plant items to achieve noise levels of less than 85 dBA at 1 m, consistent with occupational health and safety requirements. Selection of equipment and plant items to limit noise emissions. Where practical and feasible, motor drives, gearboxes, pumps, etc. would be specified and selected to achieve a noise level of less than 85 dBA at a distance of 1 m. Purpose built enclosures for compressors. Selection of plant, equipment and vehicles to limit noise emissions including servicing and fitment of mufflers where appropriate. Plant, equipment and vehicles were found to be excessively noisy to be removed from the site or stood down until repairs or modifications made. Management of Complaints. Noise verification monitoring scheduled at premises boundaries and closest sensitive receptor at Medina.
Dust	Receipt, storage and handling of raw materials (spodumene, limestone and gypsum); and Storage and handling of lithium hydroxide product and by-products (TAS, sodium sulphate, gypsum/limestone).		An enclosed building for unloading and stockpiling spodumene concentrate and limestone feed materials. Truck entry and exit points are fitted with automated roller door systems that are closed during tipping activities. Water sprayed onto ore stockpile to increase moisture content as required. Water sprayer on hopper to reduce dust. Atomiser fine misting sprayers placed in sheds at conveyor loading points to reduce suspended dust. Spillages vacuumed up or washed to a collection point. Dust extraction systems at load points, conveyor belts, transfer points and dump points. An enclosed building for stockpiling and loading aluminosilicate (TAS) and neutralisation agent (gypsum/limestone mixture) waste by-products into trucks. Truck entry and exit points are fitted with automated roller door systems that are closed during tipping activities. Semi-enclosed conveyor system. Dust enclosures on the transition area tower from 1100-CV-002 to 1100-CV-003 from southwestern winds blowing between the chutes scheduled to be installed. Dust skirts raised on side skirts on CV003 and to close the chute gaps. An enclosed building for sodium sulphate waste by-product storage. LiOH packaging • Fully automated bag filling system to package LiOH into rated product bags. Each bag filling line comprises a loading silo, robotic bag placer, empty bag/reel stack system, weighing system, bag heat sealing system, sampling system, labelling system and conveying system. • Due to caustic nature of material, equipment is in an enclosed room inside the warehouse which during normal operations; personnel only enter to reload the empty bag reel, obtain sample bags, and routine checking of equipment. • All storage and packaging equipment are fully enclosed to prevent contact with CO2 gas in the atmosphere (source of contamination), and a nitrogen purge of equipment may be employed to assist further. • Outside of the LiOH packaging room, a palletising robot will palletise the sealed 25 kg bags onto pallets which are dispensed by a pallet dispensing machine. A plastic wrap turntable will automatically wrap the pallet of 25 kg bags. 450 kg bags are double stacked, via a forklift, onto a pallet and then plastic wrapped by the same plastic wrapping device. • Sealed areas within the product warehouse are used for loading product

Emission	Sources	Potential pathways	Proposed controls
			pallets into sea containers. Electric pallet movers are used for loading product pallets into sea containers. Sealed areas closed off via electric powered roller doors to prevent ingress of debris into the product warehouse. Mobile equipment • Spodumene is transported to the site in covered trucks. • TAS will be removed from the site in covered trucks. All unloading and loading vehicles servicing the spodumene and/or TAS sheds drive through a wheel scrubber before exiting premises. Hardstand sweeper sweeps fortnightly all trafficable areas. Spodumene will be delivered with an approximate 8% moisture content. Dust monitoring proposed on the northern boundary closest to the spodumene shed, trigger levels set to NEPM levels and investigation of exceedances resulting in possible cease of operations.
Gaseous air emissions (NOx, SO_2/SO_3, CO), odour (organic compounds), metal fume and particulates	Calciner, spodumene mill, acid roast kiln, acid roast scrubber, acid leach, steam generator, sodium sulphate stacks		Calciner stack: • Baghouse filter with excess capacity to allow isolation of broken bag chamber and continual operation. • Broken bag detection system. • Baghouse filter dust, fed back to the calciner. • Enclosed system feeding calcined spodumene to the spodumene ball mill. • Sulphur dioxide emissions minimised by the low sulphur content of spodumene. Spodumene mill baghouse filter directs dust back into milled product bin. Acid roast kiln has indirect natural gas fired kiln, meaning inner tube holds the product and outer tube heats the inner tube so that only products of gas combustion are emitted. Acid roast scrubber stack has an off-gas scrubber train where: • Both ends of the acid-roast kiln are sealed, with fugitive acid fumes extracted for treatment. • Venturi scrubber, entrainment separator and wet electrostatic precipitator (H2SO4 <20 ppm, PM10 <50 µg/m3). • Pressurised emergency water quench vessel. • Dust/standby pumps for all duties. Acid leach stack slurry collected in a slurry tank from the acid roasting kiln and slurry goes through a leach circuit. The process is enclosed. Steam generator releases products of natural gas combustion only. Sodium sulphate stack has a wet scrubber where: • three stage evaporation, crystallisation, and solution • process to create LiOH crystals. • the process is enclosed with condensate reused within the process. • sodium sulphate within leftover liquid from the crystallisation process is fed to a fluidised bed dryer with a wet scrubber for particulate emissions Resubmit an EIA within 12 months of issue of licence with additional controls if deemed necessary.
	Calciner off-gases (via RTO and wet scrubbing system)		Monitoring of discharges to air for TSP, $PM_{10,}$ NOx and flow rate as per existing works approval (condition 15) to continue. NOx and TSP emission limits as per existing works approval (condition 14). Scheduled installation of low burner RTO with precision temperature control and

Emission	Sources	Potential pathways	Proposed controls
			a wet scrubbing system for treatment of off-gas from the calciner baghouse. Decommissioning of the existing calciner off-gas stack and installation of a new stack for discharge of off gas from the RTO/Wet scrubbing system will occur. Reduced use of SC6.0 feedstock to 10% whilst augmented pollution control works are undertaken and use technical grade feedstock (heat treated at Greenbushes mine to minimise oleic and fatty acid residues).
Scrubber effluent (dilute caustic - sodium fluoride)	Wet scrubbing system and scrubber effluent tank	Direct discharge to land, overland flow and seepage through soil due to loss of containment event/s	The effluent tank is carbon steel with rubber lining. The tank will be kept within a bunded area equal to 110% of tank volume. Effluent is constantly recirculated around the tank through a heat exchanger to keep the tank's temperature below 50°C The volume of the tank is 70 m^3, with four days of storage for a nominal blow-down from the scrubbers. The tank has a live volume of 50 m^3.

6.1.2 Receptors

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

Table 11 below provides a summary of potential human and environmental receptors that may be impacted because of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020)).

Table 11: Sensitive human and environmental receptors and distance from prescribed activity.

Human receptors	Distance from prescribed activity
Nearest residential premises	The suburb of Medina. The closest dwelling is 2.35 km south-east of the premises boundary.
Perth Motorplex	500 metres east of the premises boundary.
Industrial complexes	Adjacent to Tianqi on the north, west and southern boundaries.
Environmental receptors	**Distance from prescribed activity**
Cockburn Sound - The environmental value of Cockburn Sound is described in the *State Environmental (Cockburn Sound) Policy 2005 (the need to protect the intrinsic values of the Sound, including it's ecological, social, economic, scientific, educational, cultural, recreational and aesthetic values)*	Approx. 1.2 km west of the premises boundary.
Cockburn Sound Groundwater Area (proclaimed under *Rights to Water and Irrigation Act 1914*) (RIWI)	Groundwater encountered at 6 m relative to ground level or 1 m relative to Australian Height Datum (AHD). (Groundwater information sourced from the Perth Groundwater Atlas (www.water.wa.gov.au)) Groundwater moves east to west towards the ocean.
Groundwater users of the proclaimed Cockburn Superficial Swan Aquifer	100 metres north of the premise boundary. 400 metres south of the premises boundary. 600 metres east of the premises boundary. 700 metres west of the premises boundary.

6.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers potential source-pathway and receptor linkages as identified in Section 6.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 6.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant'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 applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 12.

Licence L2981/2025/1 that accompanies this decision report authorises emissions associated with the operation of the premises i.e. 1-train lithium refinery and associated activities.

The conditions in the issued licence, as outlined in Table 12 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 12: 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	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Construction of RTO, wet scrubbing system, and new stack including vehicle movements	Dust Noise	Air/windborne pathway causing impacts to health and amenity	Medina residential dwellings 2.35 km south-east, industrial complexes adjacent to the premises on the north, west and southern boundaries.	Dust lift-off controls, water cart use and speed of vehicle controls. Refer to Applicant controls Table 10	Minimal impact at local scale to amenity C = Slight The risk event will probably not occur in most circumstances L = Unlikely **Low Risk**	Y	No conditions	The works component has been risk assessed previously in works approval W5977/2016/1. The delegated officer referred to the risk assessment for construction noise and dust emissions for the premises in Works Approval W5977and formed the view that there are no aspects of proposed construction works that would cause the risk profile for fugitive dust and noise emissions to increase from the previous assessment. The types of controls determined in the previous assessment are adequate and appropriate to control fugitive dust and noise during construction work (typically works will occur on hardstand surface during the daytime). Therefore, the delegated officer considers that further detailed risk assessment is not required and considers the risk to be low.
Operation								
Raw material and waste material receipt, storage and handling including: • Transport of raw and waste materials within premises • Receipt and stockpiling of spodumene feed material, limestone and waste materials • TAS and gypsum waste by-product storage and handling.	Fugitive dust	Air/windborne pathway causing impacts to health and amenity.	Medina residential dwellings 2.35 km south-east, industrial complexes adjacent to the premises on the north, west and southern boundaries.	Covered trucks. Enclosed building for unloading and loading spodumene ore and waste products. Automated truck entry points, spillages swept on road, wheel wash on final exit, spodumene arrived at 8% moisture content, sprayers to reduce dust at transfer points and dust suspension, dust monitored on the northern boundary. Refer to Applicant controls Table 10.	Occasional medical treatment from adverse health effects, high level of impacts to amenity at local scale. C = Moderate The risk event will probably occur in most circumstances L = Likely **High Risk**	N	**Condition 2** **Condition 21** **Condition 22**	The delegated officer considered the applicant's proposed infrastructure, operational and dust monitoring controls. The enclosed but not sealed storage sheds, the site visit inspection and complaints regarding fugitive dust requiring medical assistance and impact to amenity and determined that the risk to sensitive receptors was high for impacts to health and amenity. The delegated officer considered the applicants' controls and considered them insufficient to manage dust emissions and applied the following regulatory controls: • Minimum weekly dust sweeping around the trafficable hardstand areas from 1 September to 31 May inclusive. • Minimum daily sweeping along the truck route between the spodumene and TAS sheds when vehicle movement through the sheds has occurred and underneath external conveyors linking the spodumene shed and calciner when in use. • Weekly sweeping of the spodumene driving platform. • Maintenance of sprayers in the spodumene shed over the hoppers and alpha spodumene storage bay and mist sprayers throughout the spodumene shed. • Development of a TARP for the dust monitoring from the automated dust monitor with actions. • Submit any Environmental third-party report to the CEO. The delegated officer considers that the applicants' controls are appropriate to manage the assessed risk and will be specified in the licence.
	Noise			Noise verification monitoring and complaints management. Refer to Applicant controls Table 10.	Low level impact to amenity C = Minor The risk event will probably not occur in most circumstances L = Unlikely **Medium Risk**	Y	Conditions 10 - 12	The delegated officer considered the applicants proposed infrastructure, operating and noise verification controls, and determined the risk to sensitive receptors to be medium. The delegated officer determined that the applicant's controls were sufficient to manage the risk. The applicants' noise verification monitoring is required to verify that the noise barriers have assisted in complying with the EP Noise Regulations at the residence located 2.35 km west of the premises.
Processing and refining materials including transfer through the process including: • Stack emissions • New Calciner (via RTO and wet scrubbing system) • New Wet scrubbing system and scrubber effluent tank • Process wastewater recycling • Reverse osmosis (RO) plant	Fugitive dust			Semi- enclosed conveyors, hardstand swept fortnightly, transition tower to have dust enclosure constructed, skirts raised and chute gaps covered. Refer to Applicant controls Table 10.	Occasional medical treatment from adverse health effects, high level of impacts to amenity at local scale. C = Moderate The risk event will probably occur in most circumstances L = Likely **High Risk**	N	**Condition 2** **Condition 16** Condition 23 -26	The delegated officer considered the applicant's proposed infrastructure and operational controls, the infrastructure requirements in works approval W5977/2016/1, the site visit in June 2025 and the reported complaints and determined the risk to sensitive receptors to be high. The delegated officer noted that conveyors were not fully enclosed with openings on the underside and that spodumene dust was noted to be consistent on the ground underneath the conveyor transfer areas. The delegated officer determined that the applicant's controls were insufficient to manage the risk of dust emissions affecting health and amenity of the closest receptors. The delegated officer determined to regulate the following controls: • Weekly dust sweeping of hardstands. • Complaints management reporting. • Installation of dust enclosures. The delegated officer considers that the applicant's controls are appropriate to manage the assessed risk and will be specified in the licence.
	Noise			Noise verification monitoring and complaints management.	Low level impact to amenity C = Minor The risk event will probably	Y	Conditions 2, 10 - 12	The delegated officer considered the applicant's proposed infrastructure, operating and noise verification controls, and determined the risk to sensitive receptors to be medium. The delegated officer determined that the applicant's controls were sufficient to manage the risk. The applicants' noise verification monitoring is required to verify that the noise barriers have assisted in complying with the EP Noise Regulations at the

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
• Wastewater removal				Enclosures for compressors, purpose built enclosures on large plant items that achieve noise Refer to Applicant controls Table 10.	not occur in most circumstances. L = Unlikely **Medium Risk**			residence located 2.35 km west of the premises. Additional controls may be imposed by the Department via a licence amendment if deemed necessary.
	Process water leaks, spills, overflows, containment ruptures including stormwater contamination and scrubber effluent (dilute caustic - sodium fluoride)	Discharge to land and infiltrate groundwater. Groundwater hydraulic link to Cockburn Sound contaminating groundwater.	Contamination of soil and groundwater. Groundwater, hydraulic link to the marine environment (Cockburn Sound) approx. 1.3 km west, RIWI users of the groundwater in all directions within 700 m of the premises.	Stormwater catchments delineated and designed to manage stormwater depending on the risk of contamination. Wedge pits directed to process recycling and desludged once year. RO plant has shut off valves. Scrubber tank is steel with rubber lining, bunded within 110% volume, four days storage for scrubber blow downs. 9 monitoring bores. Refer to Applicant controls Table 10.	Mid-level onsite impacts, low level local scale impacts C= Moderate The risk event could occur at some time L= Possible **Medium Risk**	N	**Condition 7** **Condition 22**	The delegated officer considered the applicant's proposed infrastructure, operating, controls, the site visit in June 2025, the groundwater water quality data, and reported spill incidents and determined the risk to sensitive environmental receptors to be medium. The delegated officer determined that the applicants' controls were insufficient to manage the risk of soil and groundwater contamination and determined to regulate controls to manage the risk. Regulatory controls imposed are: • Biannual groundwater monitoring of 5 bores over 35 parameters (with data review, further controls may be required if issues are identified). • Notification requirements of any containment spill, leak or overtopping and reporting details of the clean-up actions. The delegated officer considers that the applicants' controls are appropriate to manage the assessed risk and will be specified in the licence. Annual reporting and review of data will also occur with additional controls able to be imposed via a licence amendment if required.
	Point source emissions to air comprising NOx SO_2, SO_3, CO, particulates odour (organic compounds) and metal fume	Point source emissions to air comprising NOx SO_2, SO_3, CO, particulates odour (organic compounds) and metal fumes)	Medina residential dwellings 2.35 km south-east, industrial complexes adjacent to the premises on the north, west and southern boundaries.	Stacks with baghouses, RTO and wet scrubber systems. Enclosed acid leach system, mill baghouse deposits dust into bin, and low sulphur content of spodumene used. Monitoring stack emissions, reduce use of SC6.0 feed stock. Refer to Applicant controls Table 10.	Occasional medical treatment from adverse health effects, high level of impacts to amenity at local scale. C = Moderate The risk event could occur at some time L= Possible **Medium Risk**	N	Condition 2 **Condition 3** **Condition 4** Conditions 13 -15 **Condition 16** **Condition 22** **Cond 23**	The delegated officer considered the applicant's proposed infrastructure and operational controls, the outstanding infrastructure works not completed from works approval W5977/2016/1, the air emission data (see section 2.3.4), the site visit in June 2025 the reported dust and odour complaints, and Environmental Impact Assessment (EIA) limitations and determined the risk to sensitive receptors to be medium. The delegated officer determined that the applicant's controls were insufficient to manage the risk of dust emissions affecting health and amenity of the closest receptors. The delegated officer determined to regulate the following controls: • Quarterly air emission sampling for three years, then twice yearly thereafter. • Complaints management reporting. • Five yearly stack sampling of the acid roast kiln, and steam generator stacks 1 and 2 (to identify emissions for fee verification). • Sampling of the calciner for oleic acid using speciated volatile organic compounds (SVOC) using Ektimo 344 or other suitable method. • Sample PM10 for calciner, acid roast scrubber, sodium sulphate heater stacks. • Notification of non-compliance • Copy of the latest National Pollution Inventory (NPI) or equivalent that can demonstrate annual calculations of all emissions from the premises. • Construction of the RTO and wet scrubber. The delegated officer considers that the applicant's controls are appropriate to manage the assessed risk and will be specified in the licence. Additionally, the officer determined that operations may commence following the installation of the augmented pollution control equipment. Environmental commissioning was deemed unnecessary, as the risk profile of point source air emissions is not expected to change, and quarterly monitoring will provide sufficient oversight. The application, including the air emissions Environmental Impact Assessment (EIA), indicates that emissions from the pollution control equipment are expected to remain within the limits specified in the works approval and proposed licence. Ground-level concentrations (GLCs) are predicted to stay well within relevant air quality criteria. The combination of previously assessed controls and the additional pollution control equipment—namely the Regenerative Thermal Oxidiser (RTO) and wet scrubber—is considered adequate and appropriate to manage the risk of air emission impacts to health and amenity (noting that the three monthly sampling over a three year period will validate the effectiveness of the RTO and wet scrubber on air emissions.
Product storage and handling (operation) • Lithium hydroxide monohydrate	Fugitive dust	Air/windborne pathway causing impacts to health and amenity	Medina residential dwellings 2.35 km south-east, industrial complexes adjacent to the premises on the north, west and	All bagging and packaging are undertaken in an enclosed building. Fully automated bagging and filling system. Bags are	Low level impact to amenity C = Minor The risk event will probably not occur in most	Y	Condition 2	The delegated officer considered the applicant's proposed infrastructure and operational controls, the infrastructure requirements in works approval W5977/2016/1 and determined the risk to sensitive receptors to be medium. The delegated officer determined that the applicant's controls were sufficient to manage the risk of dust emissions affecting health and amenity of the closest receptors. The delegated officer considers that the applicants' controls are appropriate to manage the assessed risk and

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of licence	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
and sodium sulphate anhydrous bagging, handling and storage			southern boundaries.	loaded onto pallets into sea containers within sealed areas of the building. Refer to Applicant controls Table 10.	circumstances L = Unlikely **Medium Risk**			will be specified in the licence.
	Noise			Undertaken in enclosed shed. Refer to Applicant controls Table 10.	Low level impact to amenity C = Minor The risk event will probably not occur in most circumstances L = Unlikely **Medium Risk**	Y	Conditions 2, 10 - 12	The delegated officer considered the applicants proposed infrastructure, operating and noise verification controls, and determined the risk to sensitive receptors to be medium. The delegated officer determined that the applicant's controls were sufficient to manage the risk. The applicants' noise verification monitoring is required to verify that the noise barriers have assisted in complying with the EP Noise Regulations at the residence located 2.35 km west of the premises
Chemical storage	Breach of containment causing discharge to land or stormwater contamination.	Discharge to land and infiltrate groundwater. Groundwater hydraulic link to Cockburn Sound and RIWI users.	Groundwater, hydraulic link to the marine environment (Cockburn Sound) approx. 1.3 km west, RIWI users of the groundwater in all directions within 700 m of the premises.	Chemical and fuel tanks stored on concrete bunded hardstand to AS1940:2017 (storage and handling of flammable and combustible liquids) and AS 3780:2023 – Storage and handling of corrosive substances. Refer to Applicant controls Table 10.	Mid-level onsite impacts, low level local scale impacts. C= Moderate The risk event will probably not occur in most circumstances L = Unlikely **Medium Risk**	N	**Condition 7** **Condition 22**	The delegated officer considered the applicants proposed infrastructure and operating controls, including concrete bunded hardstand and management of chemical substances to Australian Standards and determined the risk to sensitive receptors to be medium. The delegated officer noted that the applicant had reported four self-reported chemical spills from the storage and handing or overflow of the wedge pits into surrounding swales. The delegated officer determined that the applicant's controls were insufficient to manage the risk. The delegated officer determined to regulate the following controls: • Biannual groundwater monitoring of 5 bores over 35 parameters. • Notification requirements of any containment spill, leak or overtopping and reporting details of the clean-up actions. The delegated officer considers that the applicants' controls are appropriate to manage the assessed risk and will be specified in the licence. Results will be reviewed as part of the annual environmental report.

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

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

7. Consultation

Table 13 provides a summary of the consultation undertaken by the department.

Table 13: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 25 June 2025	None received	The delegated officer noted this information.
City of Kwinana advised of the proposal on 25 July 2025 and 22 September 2025.	The City of Kwinana did not reply.	The delegated officer noted this information.
Kwinana Industrial Council advised of the proposal on 25 July 2025 and 22 September 2025.	The Kwinana Industrial Council replied on the 23 September 2025 and indicated they had no comment.	The delegated officer noted this information.
DEMIRS advised of the proposal on 25 June 2025.	DEMIRS (now Department of Mines, Petroleum and Exploration (DMPE)) replied on 28 July 2025 indicated that they do not regulate processing plants.	The delegated officer noted this information.
Local industrial stakeholder advised of proposal on 25 June 2025.	Local industrial stakeholder replied on 7 July 2025 outlining ongoing dust and odour issues causing amenity and health issues, dust sample analysis was undertaken, and results were provided by the stakeholder. (see section 2.3.1 for further details)	The delegated officer noted this information and has reviewed this information in Section 2.3.1.
Applicant was provided with draft documents on 28 January 2026	The applicant responded on the 24 February 2026. Refer to Appendix 1	Refer to Appendix 1

8. Decision

The delegated officer has determined to grant Licence L2981/2025/1 to Tianqi Lithium Kwinana Pty Ltd for the operation of its lithium hydroxide processing plant at Kwinana Beach, WA. The decision follows a comprehensive assessment of environmental and public health risks associated with emissions and discharges during construction and operation.

Key considerations included:

- Historical non-compliances and complaints related to dust, odour, and air emissions.
- Air quality and groundwater monitoring data showing exceedances and elevated parameters.
- Proposed and additional regulatory controls to manage dust, odour, noise, and water contamination.
- Infrastructure and operational controls, including future installation of pollution control equipment (RTO and wet scrubber).
- Consultation outcomes with stakeholders and regulatory bodies.

Licence conditions will include:

- Quarterly air emissions sampling (initially), transitioning too biannual.
- Biannual groundwater monitoring of five bores.
- Dust and odour control measures including sweeping schedules, dust enclosures and a trigger action response plan.
- Noise verification monitoring.
- Air quality modelling.
- Spill and leak notification and reporting requirements.

The licence is granted subject to these conditions to ensure environmental protection and public health safeguards.

9. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Australian Government 2025, *National Environment Protection (Ambient Air Quality) Measure, 2021 and 2025*, Canberra, Australia
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. DER 2016, Tianqi Lithium Kwinana Pty Ltd (formerly Tianqi Lithium Australia Pty Ltd), *Decision Report for Works Approval W5977/2016/1, issued 20 September 2026*, Perth Western Australia
4. Department of Water and Environmental Regulation (DWER), 2019, *Draft Guideline: Air emission, October 2019*, Perth, Western Australia.
5. DWER 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
6. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
7. DWER 2024, *Tianqi Lithium Kwinana Pty Ltd Amendment Report for Works Approval W5977/2016/1, issued 13 August 2024*, Perth western Australia
8. DWER 2025, *Tianqi Lithium Kwinana Pty Ltd Works Approval W5977/2016/1, issued 25 July 2025*, Perth western Australia.
9. Environmental and Air Quality Consulting Pty Ltd (EAQ), 2025, *Emissions Impact assessment (EIA) for air emissions for Tianqi Lithium Pty Ltd Kwinana*, Perth, Western Australia.
10. GHD Pty Ltd 2016, Noise Assessment: *Approvals for Lithium Processing Plant – prepared for MSP Engineering Pty Ltd – GHD Pty Ltd (June 2016)*, Perth, Western Australia.
11. Tianqi Lithium Kwinana Pty Ltd, 2025, *Application and supporting documents for a licence*, Perth, Western Australia.

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

Condition	Summary of applicant's comment	Department's response
Licence		
Front page	Registered address is incorrect	The delegated officer has updated the registered business address as outlined in the ASIC extract received on 25 February 2026.
Condition 2 Table 1	The applicant has requested the following: 1e- revise the condition as addition of skirts could compromise infrastructure foundations 2a- condition is deleted as the ball mill does not operate with a bag filtration system. 4a- condition is deleted as the leaching and crystallisation units operate within fully enclosed vessels and have no discharge points. 5a, b, and c – are deleted as the sodium sulfate heater stack is not fitted with a bag filtration system and emissions do not exceed 20% of the discharge limits listed in Table 7. 6a, b, c – are deleted as the LHM dryer and coolers do not generate any emissions to atmosphere. 7e and 8e – revise condition to only vehicles leaving the premise go through the wheel wash is impractical and not safe for all vehicles to go through the wash. Local vehicle dust movements will be captured from housekeeping cleaning. 10b -request that wet vacuuming underneath conveyor is weekly rather than daily. The plant will transition to SC6.0 feedstock by June 2026 that has a higher moisture content and creates less dust. 10c – request that spodumene hopper and 110-CV-001 is listed as they are the only transfer points with misters. 11b – request that wet vacuuming between TAS and spodumene sheds is weekly rather than daily and in cases of	1e, 7e, 8e, 10c, 13a, 13b - The delegated officer updated this condition. 2a, 4a, 5a, 5b, 5c, 6a, 6b, 6c - The delegated officer will delete condition requirement. 10b, 11b - The delegated officer will update this condition and include the required weekly wet vacuum sweeping and when visible dust lift occurs or spillages.

Condition	Summary of applicant's comment	Department's response
	spillages. The condition is impractical. 13a, b -request that concrete hardstand removed as the standards outline storage requirements e.g. that double walled tanks are not required to be stored with a bunded concrete area.	
Condition 5 Table 4	Applicant requested that November is changed to October for monitoring purposes as equal time intervals between sampling is preferrable.	The delegated officer has updated the condition.
Condition 7 Table 5	Applicant requested that: • insitu sampling include, redox and dissolved oxygen • that parameters uranium, thorium, beryllium, caesium, lanthanum, molybdenum, rubidium, vanadium and thallium are removed as they are not relevant to lithium processing.	The delegated officer has updated the condition for insitu sampling. The delegated officer will remove molybdenum, vanadium and thallium from consideration, while the remaining constituents will be retained. The spodumene ore used for refining is sourced from the Talison Greenbushes mine, which is a lithium–caesium–tantalum pegmatite. As a result, trace minerals and micas may occur, including uranium, thorium, beryllium, caesium, lanthanum and rubidium. A licence amendment may be considered in the future if monitoring demonstrates that these trace elements are not present in groundwater after several years of refining operations.
Condition 13	a(iv) – Applicant requested the removal of oleic acid and lithium oxide as they are not sampled from emissions points (Table 4) and therefore not possible for air dispersion modelling for GLCs.	The delegated officer notes this request, and agrees to remove noting that the applicant is required to use low oleic acid spodumene until the RTO and wet scrubber are built.
Condition 14	14(c) – Applicant requested that the requirement against NEPM standards are removed and replaced with *Environmental Protection (Kwinana) (Atmospheric Wastes) Regulations 1992 (*EPP Kwinana), indicating that NEPM is not relevant. 14(d) Applicant requested the removal of assessing the lithium refinery's contribution to cumulative air emissions from the Kwinana Industrial Area, with specific reference to the receptor at Medina, as they do not have access to Kwinana data shed and the ability to estimate emission from within the Kwinana Industrial area. 14(g) Applicant has indicated that emission should be specified as predicted average and maximum ground level concentrations of NOx, SOx, TSP, PM10, PM2.5 and VOCs	14(c) - The National Environment Protection (Ambient Air Quality) Measure (NEPM) standards are considered applicable, as they establish nationally consistent benchmark concentrations for ambient air pollutants to protect human health. The delegated officer considers that NEPM provides an appropriate reference framework for assessing potential air emissions from the refining process. In addition, the Environmental Protection (Kwinana) (Atmospheric Wastes) Policy applies due to the location and industrial nature of the activity, and provides region-specific criteria for managing cumulative air quality impacts. Both NEPM standards and the Environmental Protection (Kwinana) Policy will therefore be required for comparison against ground level concentrations (GLCs), to ensure that emissions are assessed against both national health-based benchmarks and local environmental protection objectives. 14(d)-The requirement does not depend on access to emissions data from other industries. Tianqi can meet this requirement by using measured background concentrations to represent the cumulative environment in the Kwinana Industrial Area. This approach reflects the combined influence of all sources and allows Tianqi modelling to show the refinery's increment above

Condition	Summary of applicant's comment	Department's response
		that existing background level, including at Medina. Furthermore, Tianqi can adopt background emissions using data from DWER monitoring stations (for e..g. South Lake, North Rockingham, and Wattleup) for modelled pollutants. Condition will not be removed. 14(g) The delegated officer agrees.
Condition 19 and Table 8 (definitions)	The applicant has requested that the annual period is from 1 January to 31 December with AER/AACR reporting by 1 March, as these reporting periods will align with Tianqi's corporate reporting timeframes making the reporting more efficient.	The delegated officer agrees.
Condition 20 Table 6	The applicant requested the following: 8(i) – delete term surface water monitoring as this is not undertaken. 8(j) – remove last 5 years of data and replace will all available data.	8(i), 8(j) - The delegated officer agrees.
Condition 23 Table 7	1) -The applicant indicated that the RTO works will be completed by 30 June 2026. 2a) – The applicant has requested to remove permanent installation of dust controls and add options for establishing further dust controls will be investigated by June 2026 and reported to DWER by 31 July 2026. 2(b) – Dust control options will be constructed and implemented by 31 December 2026.	The delegated officer has included the deadline of 30 June 2026 for all construction works on the RTO to be finalised and agrees to the revised investigation, reporting and installation requirements for dust controls.
Decision report		
Section 2.3.1	Tianq indicated that the section refers to unsubstantiated impacts to Tianqi, where comments could imply that a government entity has asserted that Tianqi has caused harm to the health of people in Kwinana. The applicant requested that the section be reviewed and any unambiguous evidence removed. In particular, the reference that no samples from the acid roast kiln were provided and can produce sulphur dioxide. Noting that Tianqi were not required to sample the acid roast kiln stack and the report implies that Tianqi has not met its obligations.	The delegated officer updated the report to ensure it remains factual and avoids implying unsubstantiated impacts. Specifically, references to "health issues" were reframed as reported symptoms rather than confirmed impacts, and wording was added to make clear that complaints alone do not establish causation or identify the source. The text was also amended to clarify that the acid roast kiln was not required to be sampled under the works approval sampling program, so the report does not imply a failure to meet obligations. Information about sulphur dioxide (SO_2) was retained only as a general statement about it being a respiratory irritant, and not as any finding that Tianqi caused harm to people in Kwinana. Finally, the site inspection content was kept

Condition	Summary of applicant's comment	Department's response
		as observations recorded by officers, without drawing conclusions about harm or health impacts.
Section 2.3.2	Tianqi has advised that the report alleges a reverse osmosis (RO) plant was constructed without a works approval, and has stated that works approval risk assessments apply only to prescribed activities. Tianqi further notes that the RO plant does not itself trigger a prescribed premises category and has requested that the reference to unauthorised installation be removed.	The Department acknowledges that a reverse osmosis plant, in isolation, does not constitute a prescribed activity under Schedule 1 of the EP Regs. However, works approvals under Part V of the EP Act are not limited solely to the core production process. They also apply to infrastructure associated with, or supporting, a prescribed premises where that infrastructure may cause emissions, discharges, or environmental harm. In assessing works approvals, the Department is required to consider the risk of spills, leaks and overtopping of containment infrastructure, including supporting infrastructure that handles process waters, waste streams or contaminants. This assessment is necessary to ensure that pollution risks are appropriately prevented, controlled or mitigated. Infrastructure such as an RO plant therefore require assessment where it forms part of the overall waste or water management system of a prescribed premises, or where failures could result in discharges to land, surface water or groundwater. Accordingly, the reference in the report is not intended to suggest that the RO plant is itself a prescribed activity. Rather, it reflects that the Department must assess whether supporting infrastructure associated with a prescribed premises should have been included in the works approval to address environmental risks, including containment integrity and potential spill or overtopping scenarios. On this basis, removal of the reference to unauthorised installation is not supported. However, the delegated officer has clarified the wording to better reflect the regulatory intent and avoid any implication that the RO plant independently triggers a prescribed premises category.
Section 2.3.4	Tianqi advised that the information on sulphur dioxide emissions from the acid roast kiln scrubber stack was not appropriate for comparing concentrations at an authorised discharge point with ambient air, and requested that it be deleted.	The delegated officer notes this comment and has revised the paragraph and stated that comparison between stack discharge levels and ambient air are not appropriate to add context.
Section 4.1.1	The applicant indicated that the report is critical of air quality monitoring undertaken to estimate potential air quality impacts. Tianqi indicated that recent air quality modelling report was not provided to the Department and attached an updated report.	There was no air quality modelling report attached to the comments provided by Tianqi. The department can only response to information that it has received. Any changes to air quality conditions can be undertaken in a licence amendment should an updated air modelling report indicate the need.