Government of Western Australia
Department of Water and Environmental Regulation

Amended Works Approval

Works Approval Number	W6154/2018/1
Works Approval Holder	Albemarle Lithium Pty Ltd
ACN	618 095 471
Registered business address	Mills Oakley Level 7, 135-151 Clarence Street, Sydney NSW 2000
DWER File Number	DER2018/000968
Duration	16/11/2018 to 15/11/2030
Date of issue	16/11/2018
Date of amendment	26 February 2025
Premises	Albemarle Kemerton Plant 109 Kemerton Road Wellesley, WA 6233 Legal description - Part of Lot 254 on Deposited Plan 416516 Certificate of Title Volume 2983 Folio 130 As depicted in the Premises map and defined by the coordinates in Schedule 1

Prescribed premises category description **(Schedule 1, *Environmental Protection Regulations 1987*)**	**Assessed design capacity**	**Assessed production capacity**
Category 31: Chemical manufacturing	125,000 tonnes per year (lithium hydroxide monohydrate) 250,000 tonnes per year (sodium sulphate)	100,000 tonnes per year (lithium hydroxide monohydrate) 200,000 tonnes per year (sodium sulphate)
Category 44: Metal smelting or refining	1,000,000 tonnes per year (spodumene ore concentrate)	
Category 67: Fuel burning	4,800 kg/hr	
Category 73: Bulk storage of chemicals etc.	4,080 m^3 (sulfuric acid) 3,150 m^3 (sodium hydroxide)	

This amended works approval is granted to the works approval holder on 26 February 2025, subject to the following conditions, by:

Alana Kidd
Digitally signed by Alana Kidd
Date: 2025.02.26 07:50:19 +08'00'

Alana Kidd

MANAGER, GREEN ENERGY

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

Works approval history

Date	Reference number	Summary of changes
16/11/2018	W6154/2018/1	Works approval granted
10/03/2021	W6154/2018/1	Amendment to update infrastructure, redefine premises boundary, increase design capacity of processing trains and add additional stacks and emission points.
23/06/2022	W6154/2018/1	Amendment to update infrastructure and legal address, construct and operate waste transfer station.
09/06/2023	W6154/2018/1	Amendment to update street address and change authorised duration and sample frequency for environmental commissioning for train 1.
21/10/2024	W6154/2018/1	Works approval holder-initiated amendment to update legal address, change duration and sampling time frames for environmental commissioning and time limited operations, extend reporting periods in environmental commissioning and time limited operations, change requirement for consecutive air emission sampling runs, update premise map, update calciner stack heights, update reference terms and descriptive wording of infrastructure, and change expiry date. CEO initiated amendment to update time limited operation duration and sampling requirements and notification for recommencement of train 2 commissioning.
26/02/2025	W6154/2018/1	Storage and blending of up to 80,000 tonnes of DBS and DBS-based product for an 18-month period.

Interpretation

In this works approval:

(a) the words ‘including’, ‘includes’ and ‘include’ in conditions mean “including but not limited to”, and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:

  (i) if dated, refers to that particular version; and
  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

This works approval does not provide any implied authorisation for the use of DBS or DBS-based products.

Works approval conditions

Construction phase

Infrastructure and equipment (design and construction)

1. The works approval holder must install and undertake the Works for each processing train and waste transfer station:

(a) for the infrastructure and equipment;

(b) to the corresponding requirements; and

(c) at the corresponding site plan reference;

in Table 1.

Table 1: Infrastructure and equipment requirements (design and construction) table

	Infrastructure and equipment	Requirements (design and construction)	Site plan reference
Lithium Refinery			
1	Processing trains	Five processing trains each with a: • 25,000 tonnes per annum lithium hydroxide monohydrate production design capacity; • 50,000 tonnes per annum sodium sulphate production design capacity; and • pyrometallurgical processing unit followed by a hydrometallurgical processing unit with the components and corresponding specifications set out in this table.	Not referenced
2	Reverse osmosis (RO) water system	Reverse osmosis (RO) plant must have treated water tanks and brine discharge and raw water ponds.	Not referenced
3	Reagent storage including: silos, bins, vessels and tanks for storage of sulfuric acid, caustic, quicklime, limestone and carbon dioxide and diesel.	The materials of reagent storage construction must be substantially immune to attack by any corrosive substance that they may be required to contain. Reagent storage must be sufficiently impervious to retain and to enable the recovery of any spillage.	Not referenced
4	Discharge points to air	All discharges points to air set out in Table 6 must be fitted with stack monitoring ports that meet the requirements of AS 4323.1 and are of sufficient diameter to accommodate apparatus used for the methods specified in Table 6.	Schedule 1: Figure 2 Premises layout and discharge to air location plan
5	Bag filters	All bag filters must be: (a) adequately sized to cater for the for maximum air volume. (b) capable of minimising particulate emissions to less than 50 mg/m^3 (STP dry) during normal operating conditions. (c) fitted with a system for detection of broken bags. (d) fitted with a device to indicate the pressure differential clearly and accurately across the filters. (e) fitted with means for automatically cleaning filter elements.	Schedule 1: Figure 2 Premises layout and discharge to air location plan
6	Calciners	The calciners must consist of a natural gas-fired kiln with dust removal circuit consisting of a bag filter and wet alkaline scrubber venting to atmosphere via a 33 m vent stack and cooling system. Calcine crushing must use a screen and ball mill with a bag filter	

	Infrastructure and equipment	Requirements (design and construction)	Site plan reference
		venting to atmosphere via a 33 m vent stack. Each processing train calciner must have a wet scrubber that must be adequately sized to cater for the maximum air volume. Processing train 3, 4 and 5 calciner kiln exhaust stacks must be installed with silencers. Processing train 3, 4 and 5 calciner ball mill exhaust stacks must be installed with silencers.	
7	Acid roast kilns	The acid vapour scrubbing system on each processing train must be: (a) fitted with a 33m stack (b) venturi scrubbing system (c) sodium hydroxide packed tower scrubber (d) electrostatic precipitators (e) adequately sized to cater for the maximum air volume; (f) capable of minimising SO_3 emissions to less than 100 mg/m^3 (STP dry) during normal operating conditions; (g) fitted with monitoring systems, alarms and interlocks which cease supply of feed to the acid roast kiln when pumps supplying liquor to the acid vapour scrubbing system stop operating. (h) fitted with continuous pH monitors and indicators on the sodium hydroxide scrubber liquor; (i) designed to ensure water scrubber water levels do not drop below the operational levels for the scrubbing system, sludge accumulation is minimised.	
8	Wet scrubbing systems	All wet spray scrubbing systems must be: (a) adequately sized to cater for the maximum air volume. (b) capable of minimising particulate emissions to less than 50 mg/m^3 (STP dry) during normal operating conditions. (c) fitted with monitoring systems, alarms and interlocks which cease supply of feed to the relevant section of the plant when pumps supplying liquor to wet scrubbing units stop operating.	
9	Conveyors	All conveyors external to a building must be enclosed or covered.	Not referenced
10	Tailings building	Southern façade of the building is to be installed with cladding for noise control prior to operation of processing train 5. Tailing's filtration vacuum belt filters fitted with a 16.5 m vacuum vent.	Schedule 1: Figure 2 Premises layout and discharge to air location plan
11	Stormwater Tanks	All common ancillary stormwater tanks and production train tanks must be: (a) Fitted with a leak detection system or positioned within existing bunding and containment system for the processing trains; (b) Fitted with pumps to direct water back into the process water stream (c) Fitted with a high level warning alarm system; and (d) Constructed of high density polyethylene or where tanks are of steel construction have an additional polypropylene liner for leak prevention.	Not referenced
12	DBS and DBS-based products storage areas	Hardstand must consist of clay based imported material. Hardstands in areas 2a and 2b must be graded to drain to	Schedule 1 Figure 4

	Infrastructure and equipment	Requirements (design and construction)	Site plan reference
		collection sump(s).	Stockpile area 1 Stockpile area 2a Stockpile area 2b
Waste transfer station			
13	Waste transfer station	Must have an external bund around a concrete hardstand with an internal 1.54 m^3 concrete sump. Concrete floor must be graded to have all leachate drain towards the concrete sump. Container walls on the eastern and western edges must be built to a minimum of 5.8 m high and 24m long. Waterproof fabric dome must be attached to the container walls and cover the concrete hardstand.	Schedule 1 Figure 3 Waste transfer site plan

Compliance reporting

2. The works approval holder must not depart from the requirements specified in Table 1 except:

(a) where such departure does not increase risks to public health, public amenity or the environment; and

(b) all other conditions in this Works Approval are still satisfied.

3. Subject to condition 4, the works approval holder must provide to the CEO an environmental compliance report from an Engineer that:

(a) lists and describes the completed Works (or portion thereof) and any associated items of infrastructure and equipment in Table 1;

(b) identifies any discharge points listed in Table 10 of Schedule 2 to be Environmental Commissioned;

(c) confirms the Works (or potion thereof) have been constructed with no material defects; and

(d) confirms the item of infrastructure and equipment specified in Table 1 associated with the Works (or portion thereof) have been constructed to the corresponding requirements specified in Table 1.

4. Where a departure from the requirements specified in Table 1 occurs and is of a type allowed by condition 2, the Works Approval Holder must provide to the CEO a description of, and explanation for, the departure along with the report(s) required by condition 3.

Fugitive dust – construction activities

5. The works approval holder must undertake the minimum requirements specified in Table 2 for the Works to minimise the generation of airborne dust from the Premises.

Table 2: Fugitive dust management requirements

Dust control	Requirements
Water carts	Operate when visible dust is generated from ground surface areas and stockpiles on the Premises. Operate proactively subject to weather forecasting over a rolling 24-hour period. Operate when visible dust is reported within the Premises by site personnel.
Dust Suppressants	Applied proactively. Re-apply proactively subject to visual inspection and weather forecasting over a rolling 24-hour period
Vehicles	Defined haul routes for vehicles to traverse sealed surfaces for stockpiling and unsealed surfaces or unformed roads for train development**.**

6. The works approval holder must design, construct, and install groundwater monitoring wells in accordance with the requirements specified in Table 3.

Table 3: Infrastructure requirements – groundwater monitoring wells

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
Groundwater monitoring well(s) Schedule 1 Figure 4 MW04, MW05, MW06, MW07, MW08, MW09, MW10, MW11	<u>Well design and construction:</u> Designed and constructed in accordance with *ASTM D5092/D5092M-16: Standard practice for design and installation of groundwater monitoring bores*. The wells must be constructed with a screened interval capable of detecting groundwater flow and leaching from the premises.	As depicted in Schedule 1 Figure 4 MW04, MW05, MW06, MW07, MW08, MW09, MW10, MW11,	Must be constructed, developed (purged), and determined to be operational by no later than 180 calendar days from the date of issue of this amendment to this works approval.
	<u>Logging of borehole:</u> Soil samples must be collected and logged during the installation of the monitoring wells. A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS1726. Any observations of staining / odours or other indications of contamination must be included in the bore log.		
	<u>Well construction log:</u> Well construction details must be documented within a well construction log to demonstrate compliance with *ASTM D5092/D5092M-16*. The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements, and the elevations of the ground surface protective installations.		
	<u>Well development:</u> All installed monitoring wells must be developed after drilling to remove fine sand, silt, clay and any drilling mud residues from around the well screen to ensure the hydraulic functioning of the well. A detailed record should be kept of well development activities and included in the well construction log.		

Infrastructure	Design, construction, and installation requirements	Monitoring well location(s)	Timeframe
	Installation survey: the vertical (top of casing) and horizontal position of each monitoring well must be surveyed and subsequently mapped by a suitably qualified surveyor.		
	Well network map: a well location map (using aerial image overlay) must be prepared and include the location of all monitoring wells in the monitoring network, easting and northing positions and their respective identification numbers.		

7. The works approval holder must within 30 days of all groundwater monitoring wells, required by condition 6, being constructed, submit to the CEO a well construction report evidencing compliance with the requirements of condition 6.

8. The report required by condition 7 must:

(a) be certified by the driller that each item of infrastructure or equipment specified in Row 1 of Table 3 meets the corresponding specifications and at the locations set out in Table 3 and Figure 4 and has been constructed with no material defects; and

(b) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person within the company.

Environmental commissioning phase

Environmental commissioning – infrastructure requirements

9. The works approval holder must only commence environmental commissioning of a processing train once the Environmental Compliance Report submitted for the infrastructure for that processing train has been submitted in accordance with condition 3.

10. The works approval holder must notify the CEO in writing 24 hours prior to train 2 being taken out of care and maintenance and restarted for environmental commissioning.

11. Any environmental commissioning activities undertaken for a processing train item of infrastructure specified in Table 4 may only be carried out:

(a) in accordance with the corresponding commissioning requirements; and

(b) for the corresponding authorised commissioning duration.

Table 4: Environmental commissioning and time limited operations requirements.

	Infrastructure / equipment	Requirements (operation)	Authorised duration	Site plan reference
1	All calciners	Must use a bag filter system and wet alkaline scrubber	Environmental Commissioning: For a period not exceeding 365 calendar days in	Schedule 1: Figure 2 Premises layout and discharge to air location
2	All ball mills	Must use a bag filter system		

	Infrastructure / equipment	Requirements (operation)	Authorised duration	Site plan reference
3	All acid roast kilns	Must use a three staged scrubbing system for acid vapour process off-gas from the acid roast kiln comprising the following components: (a) Venturi scrubber; (b) Sodium hydroxide packed wet scrubber; and (c) Electrostatic precipitators.	aggregate for processing train1, commencing 21/06/2022. For a period not exceeding 365 calendar days in aggregate for processing train 2 from the date that condition 7 is sent to the CEO. For a period not exceeding 365 calendar days in aggregate for processing trains 3 ,4 and 5. Time limited operations: For a period not exceeding 180 calendar days in aggregate for processing trains	plan
4	All leaching units	Must use a wet spray scrubbing system		
5	All sodium sulphate dryers	Must use a bag filter system		
6	All crude lithium hydroxide evaporation and crystallisation units	Must use a wet spray scrubbing system		
7	All pure lithium hydroxide evaporation and crystallisation units	Must use a wet spray scrubbing system		
8	All lithium hydroxide monohydrate dryers and coolers	Must use a wet spray scrubbing system		
9	Tailings stockpile building	Must take measures to prevent the generation of visible dust from the stockpile.		
10	Spodumene ore concentrate, acid roasted solids and reagents (limestone and quicklime) storage	Must be stored in dedicated buildings, covered storage areas, warehouses, silos, tanks, or vessels.		
11	Spodumene storage and feed preparation	Spodumene must be in covered storage areas as designed.		
12	Acidified ore storage	Must be stored within naturally ventilated roofed warehouse.		
13	Potassium removal / collection	Must be stored within a naturally ventilated warehouse.		
14	Lithium hydroxide monohydrate packaging and storage	All automated packaging equipment must be housed in an enclosed room under positive air pressure (controlled environment room) in a warehouse. All products must be stored in a naturally ventilated roofed warehouse.		
15	Sodium sulphate anhydrous packaging and storage	All automated packing equipment must be housed within naturally ventilated roofed warehouse.		

	Infrastructure / equipment	Requirements (operation)	Authorised duration	Site plan reference
16	Reverse osmosis (RO) water system	Raw water for the RO System must be stored in raw water tanks. Wastewater from the RO plant must be discharged to brine"		
17	Waste transfer station	Must maintain waterproof fabric dome cover to exclude rainfall within the concrete hardstand. Must maintain container walls on the western and eastern edges. Concrete hardstand bunding is to be maintained to prevent external stormwater from entering the concrete hardstand. Must pump out and dispose of all liquid waste within the concrete sump to prevent overflowing. All liquid waste from the sump must be disposed of at a licensed waste facility. Must have all solid and liquid storage receptacles stored upon the concrete hardstand.		Schedule 1 Figure 3 waste transfer station
18	Three DBS product and materials storage areas that include DBS; DBS-based product; and raw materials.	No more than 80,000 tonnes of DBS and DBS-based product to be stockpiled on site per year. All DBS and DBS-based products must be transported in a covered vehicle. Water carts must be used as required to prevent dust lift from DBS and DBS-based product stockpiles. All contaminated stormwater and leachate from stockpile areas 2a and 2b must be directed to the collection sump(s) and must be sampled according to Condition 25. Contaminated stormwater that meets trigger requirements within Ministerial Statement 1085 Condition 7 Water Management Plan must only be release to the stormwater system. Contaminated stormwater that does not meet the trigger requirements within Ministerial Statement 1085 Condition 7 Water Management Plan must be directed to storage tanks for reuse in the refinery process, or disposed off-site to an authorised facility capable of received that liquid.	Time limited operations: For a period not exceeding 545 calendar days in aggregate	Schedule 1 Figure 4 Stockpile area 1 Stockpile area 2a Stockpile area 2b
19	Proposed and existing monitoring wells	Must be maintained in operatable condition to allow groundwater samples to be taken.	During time limited operations	Schedule 1 Figure 4 MW01A, MW04, MW05, MW06, MW07, MW08, MW09, MW10, MW11, MW27A, MW30B

Environmental commissioning – authorised discharge point for emissions

12. During environmental commissioning, the works approval holder must ensure that the emission(s) specified in Table 10 Schedule 2 are discharged:

(a) only from the corresponding discharge points(s)

(b) only at the corresponding discharge point height; and

(c) only at the corresponding discharge point location,

set out in Table 10 in Schedule 2.

Emission limits

13. During environmental commissioning, the works approval holder must ensure that the emissions from the discharge point listed in Table 5 do not exceed the corresponding limit(s) when monitored in accordance with condition 14.

Table 5: Discharges to air limits

Discharge point and location on Schedule 1: Premises layout and discharge to air location plan	Emission	Limit [1]
Calciner off gas stacks (1-1, 1-2, 1-3, 1-4 and 1-5)	NOx	350 mg/m^3
	TSP	50 mg/m^3
Roast scrubber vent stacks (4-1, 4-2, 4-3, 4-4 and 4-5)	SO_3	100 mg/m^3
	TSP	50 mg/m^3
Ball mill off gas stacks (3-1, 3-2, 3-3, 3-4 and 3-5)	TSP	50 mg/m^3
Sodium sulphate dryer stacks (16B-1, 16B-2, 16B-3,16B-4 and 16B-5)		
Lithium hydroxide dryer off gas vents (11-1, 11-2, 11-3, 11-4 and 11-5)		
Lithium hydroxide cooler off gas vents (12-1, 12-2, 12-3, 12-4 and 12-5)		

Note 1: All units are referenced to STP dry.

Environmental commissioning – monitoring

14. The works approval holder must monitor emissions during environmental commissioning:

(a) from the discharge point;

(b) at the corresponding monitoring location;

(c) for the corresponding parameter;

(d) at the corresponding frequency;

(e) for the corresponding averaging period;

(f) in the corresponding unit; and

(g) using the corresponding method;

set out in Table 6.

Table 6: Monitoring of discharges to air during environmental commissioning and time limited operations.

Discharge point and location on Schedule 1: Premises layout and discharge to air location plan	Parameter	Frequency	Averaging period	Unit[1,2]	Method[3,4]
Pyrometallurgical units					
Calciner off gas stacks (1-1, 1-2, 1-3, 1-4 and 1-5)	TSP	**Environmental Commissioning:** Two separate sample events separated by at least one week within: • the 180 aggregate calendar day environmental commissioning period for processing train 2 starting 15 November 2024 and • the 180 aggregate calendar day environmental commissioning period for processing trains 3, 4, and 5. **Time Limited Operations:** One sample event every 180-calendar day period during time limited operations.	60 minutes	mg/m^3 g/s	USEPA Method 5 or 17
	PM_{10}				USEPA Method 201A
	$PM_{2.5}$				
	NOx (as NO_2)				USEPA Method 7E
	Flow rate			m^3/s	USEPA Method 2
Ball mill off gas stacks (3-1, 3-2, 3-3, 3-4 and 3-5)	TSP			mg/m^3 g/s	USEPA Method 5 or 17
	PM_{10}				USEPA Method 201A
	$PM_{2.5}$				
	Flow rate			m^3/s	USEPA Method 2
Roast scrubber vent stacks (4-1, 4-2, 4-3, 4-4 and 4-5)	TSP			mg/m^3 g/s	USEPA Method 5 or 17
	PM_{10}				USEPA Method 201A
	$PM_{2.5}$				
	SO_2				USEPA Method 8
	SO_3				
	Flow rate			m^3/s	USEPA Method 2
Hydrometallurgical units					
Lithium hydroxide dryer off gas vents (11-1, 11-2, 11-3, 11-4 and 11-5); Lithium hydroxide cooler off gas vents (12-1, 12-2, 12-3, 12-4 and 12-5); and Sodium sulphate dryer stacks: (16B-1, 16B-2, 16B-3,16B-4 and 16B-5)	TSP	**Environmental Commissioning:** Two separate sample events separated by at least one week within: • the 365 aggregate calendar day environmental commissioning period for processing trains 1, 2, 3, 4, and 5 **Time Limited Operations:** One sample event every 180-calendar	60 minutes	mg/m^3 g/s	USEPA Method 5 or 17
	PM_{10}				USEPA Method 201A
	$PM_{2.5}$				
	Flow rate			m^3/s	USEPA Method 2

Discharge point and location on Schedule 1: Premises layout and discharge to air location plan	Parameter	Frequency	Averaging period	Unit[1,2]	Method[3,4]
		days period during time limited operations			

Note 1: All units are referenced to STP dry.
Note 2: Concentrations for the calciner off gas stack to be corrected to STP at 3% oxygen on a dry basis
Note 3: Duplicate sample runs conducted consecutively on the same sampling day *where practicable, otherwise on the next available day.*
Note 4: Where any USEPA method refers to USEPA Method 1 for the sampling plane, this must be read as referral to AS 4323.1

15. The works approval holder must ensure that sampling required by condition 14 is undertaken at sampling locations in accordance with the current version of AS 4323.1.

16. The works approval holder must ensure that all non-continuous sampling and analysis undertaken required by condition 144 is undertaken by a holder of NATA accreditation for the relevant methods of sampling and analysis.

Environmental commissioning reporting

17. The works approval holder must submit to the CEO an Environmental Commissioning Report within 60 calendar days of the completion date of environmental commissioning of:

(a) all infrastructure for each processing train; and

(b) the waste transfer station

as set out in condition 1.

18. The works approval holder must ensure the Environmental Commissioning Report required by condition 17 of this works approval includes the following:

(a) a summary of the environmental commissioning activities undertaken, including timeframes and amount of spodumene ore processed, lithium hydroxide monohydrate and sodium sulphate anhydrous materials produced and kg/hr fuel burnt;

(b) results of monitoring undertaken as required in condition 14 including a comparison to any specified limits in the works approval;

(c) copies of original monitoring, laboratory and analysis reports submitted to the works approval holder from third parties

(d) a review of the works approval holder's performance and compliance against the conditions of this works approval; and

(e) where they have not been met, measures proposed to meet the manufacturer's design specifications and the conditions of this works approval, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

19. The works approval holder may only commence time limited operations of infrastructure identified in condition 1 for each processing train, where the Environmental Commissioning Report as required by condition 17 has been submitted by the works approval holder.

20. The works approval holder may conduct time limited operations of the infrastructure specified in condition 1 for each processing train:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 19; or

(b) from the day the works approval holder:

(i) meets requirements of conditions 19, and
(ii) submits a licence application to operate that infrastructure listed in condition 1 before the expiry of condition 200 a,

is authorised to operate until such time as a licence for that infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986.*

Time limited operations infrastructure requirements

21. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding requirement set out in Table 4.

Time limited operations – authorised emission points

22. During time limited operations, the works approval holder must ensure that the emissions specified in Table 10 Schedule 2 are discharged only from the corresponding discharge point(s) and only at the corresponding discharge point location(s).

Time limited operations – emission limits

23. During time limited operations, the works approval holder must ensure that the emissions from the discharge point listed in Table 5 do not exceed the corresponding limit(s) when monitored in accordance with condition 24.

Monitoring during time limited operations

24. The works approval holder must monitor air concentrations during time limited operations for concentrations of the identified parameters in accordance with Table 6.

25. The works approval holder must monitor ambient groundwater and sumps during time limited operations for concentrations of the identified parameters in accordance with Table 7.

Table 7: Monitoring of ambient groundwater and sump concentrations during time limited operations.

Discharge point	Monitoring location	Chemical Suites and Units	Unit	Frequency	Averaging period	Sampling Methods	Analytical Method
MW01A MW04 MW05 MW06 MW07 MW08 MW09 MW10 MW11 MW27A MW30B Sumps	As depicted in Schedule1,	^Groundwater level (only monitoring wells)	mAHD and mbgl	Time limit operations for groundwater -monthly June to October (inclusive) and every November, February and May Time limited operations	Spot sample	AS/NZS 5667.11 and AS/AZS 5667.1	Insitu level meter
		^pH	no unit				Insitu mutli parameter probe.
		^Electrical conductivity	µSc/m				
		^Redox	Eh				
		Dissolved oxygen	mg/L or µg/L				NATA approved method
		Total acidity					
		Total alkalinity					
		Total dissolved organic carbon					

located in stockpile area 2a and 2b	Figure 4 as MW01A MW04 MW05 MW06 MW07 MW08 MW09 MW10 MW11 MW27A MW30B Stockpile area 2a Stockpile area 2b	Total dissolved solids		<u>for sumps</u> before disposal to stormwater system.			
		Calcium					
		Sodium					
		Potassium					
		Magnesium					
		Chloride					
		Sulfate					
		Bicarbonate					
		Sodium					
		Fluoride					
		Aluminum					
		Cadmium					
		Lithium					
		Antimony					
		Arsenic					
		Chromium					
		Iron					
		Lead					
		Manganese					
		Nickel					
		Zinc					
		Cobalt					
		Uranium					
		Thorium					
		Beryllium					
		Caesium					
		Lanthanum					
		Molybdenum					
		Rubidium					
		Silicon					
		Vanadium					

^ In-field, non-NATA accredited analysis permitted.

NB-Alternate analytical methods, including in-house laboratory methods are acceptable, provided alternate methods are comparable with those specified and the laboratory undertaking analysis hold relevant NATA accreditation.

26. The works approval holder must record the results of all monitoring activity required by conditions 24 and Condition 25**.**

Time limited operations compliance reporting

27. The works approval holder must submit to the CEO a report on the time limited operations within 60 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.

28. The works approval holder must ensure the report required by condition 27 includes the following:

(a) a summary of the time limited operations, including timeframes and amount of spodumene ore processed, lithium hydroxide monohydrate, sodium sulphate anhydrous materials produced, and kg/hr fuel burnt.

(b) results of monitoring undertaken as required in conditions 24, and Condition 25, including comparison to any limits or triggers specified in this works approval or Ministerial Statement 1085 Condition 7 Water Management Plan (latest CEO endorsed revision) and any actions to be implemented with timeframes.

(c) copies of original monitoring, laboratory and analysis reports submitted to the works approval holder from third parties.

(d) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report.

(e) where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting - general

Record keeping

29. The works approval holder must record the following information in relation to complaints received relating to emissions from the Premises:

(a) the name and contact details of the complainants (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the Works Approval Holder to investigate or respond to any complaint.

30. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;

(b) any maintenance of infrastructure that is performed while complying with conditions 1, 11 and 21;

(c) monitoring programmes undertaken in accordance with conditions 14 and 24, and 25**;** and

(d) complaints received under condition 29.

31. The works approval holder must maintain accurate books including information, reports, and data in relation to the Works and the books must:

(a) be legible;

(b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;

(c) be retained for at least 7 years from the date the books were made;

(d) be available to be produced to an inspector or the CEO.

Non-compliance notification

32. The works approval holder must, within seven days of becoming aware of any non-compliance with an emission limit specified in conditions 133 and 23 of the Works Approval, notify the CEO in writing of that non-compliance and include in that notification the following information:

(a) which emission limit was not complied with;

(b) the time and date when the non-compliance occurred;

(c) if any environmental impact occurred as a result of the non-compliance and if so what that impact is and where the impact occurred;

(d) the details and result of any investigation undertaken into the cause of the non-compliance;

(e) what action has been taken and the date on which it was taken to prevent the non-compliance occurring again; and

(f) what action will be taken and the date by which it will be taken to prevent the non-compliance occurring again.

Definitions

In this Works Approval, the terms in Table 8 have the meanings defined.

Table 8: Definitions

Term	Definition
AS 4323.1	means the Australian Standard AS4323.1 *Stationary Source Emissions Method 1: Selection of sampling positions*
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
CO	Carbon monoxide
Condition	means a condition to which this Works Approval is subject under s.62 of the EP Act.
DBS	means delithiated beta spodumene
DBS-based product	means any products mixed with delithiated beta spodumene.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Works Approval Holder in writing and sent to the Works Approval's address for notifications, as described at the front of this Works Approval, in relation to: (a) compliance with the EP Act or this Works Approval; (b) the Books or other sources of information maintained in accordance with this Works Approval; or (c) the Books or other sources of information relating to Emissions from the Premises.
DWER	Department of Water and Environmental Regulation
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
NATA	National Association of Testing Authorities
NOx	Nitrogen oxides
PM	Particulate matter
Primary Activities	refers to the Prescribed Premises categories listed on the front of this Works Approval.
Operating	means the acceptance of spodumene feed material and reagents (limestone, quicklime, sulfuric acid and caustic) to the Premises and the subsequent introduction of spodumene feed material to a processing train for the production of lithium hydroxide monohydrate product.

Term	Definition
Processing train	means a pyrometallurgical processing unit followed by a hydrometallurgical processing unit
SO_2	Sulfur dioxide
SO_3	Sulfur trioxide
STP dry	means standard temperature and pressure (0^{o}Celsius and 101.325 kilopascals respectively) dry
TSP	Total Suspended Particulate
USEPA	United States (of America) Environmental Protection Agency
USEPA Method 2	means *USEPA Method 2 Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)*
USEPA Method 5	means *USEPA Method 5 Determination of Particulate Matter Emissions from Stationary Sources*
USEPA Method 7E	means *USEPA Method 7E Determination of Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)*
USEPA Method 8	means *USEPA Method 8 Determination of Sulfuric Acid and Sulfur Dioxide Emissions from Stationary Sources*
USEPA Method 17	means *USEPA Method 17 Determination of Particulate Matter Emissions from Stationary Sources*
USEPA Method 201A	means *USEPA Method 201A Determination of PM_{10} and $PM_{2.5}$ Emissions from Stationary Sources (constant sampling rate procedure)*
Works Approval	refers to this document, which evidences the grant of the Works Approval by the CEO under s.54 of the EP Act, subject to the Conditions.

Schedule 1: Maps

Premises map

The Premises is shown in the map below (Figure 1) and the boundary defined by the coordinates in Table 9 of Schedule 1.

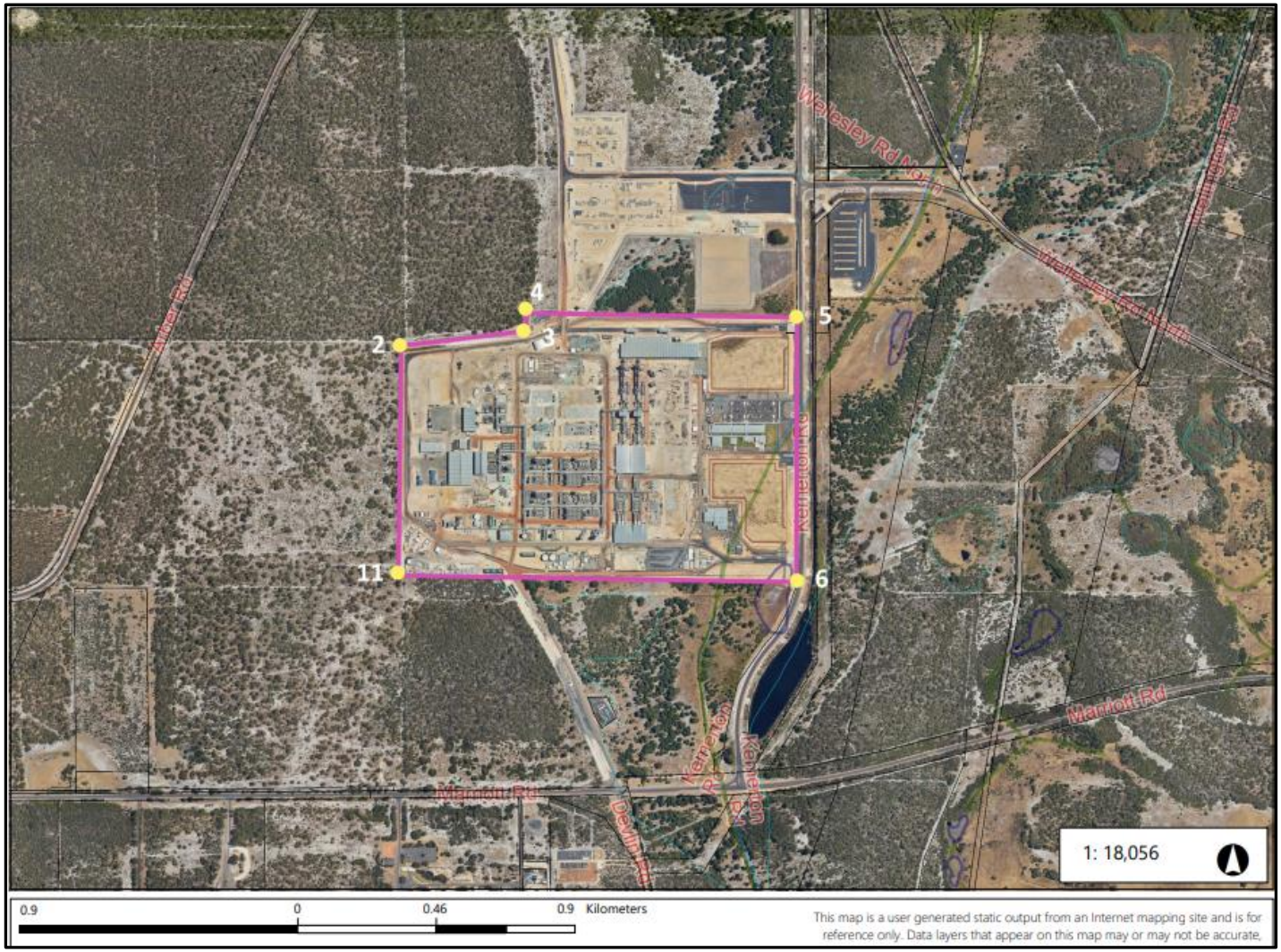

Figure 1 Location of premises

Premises layout and discharge to air location plan

The premises site layout and discharge points to air are outlined in Figure 2.

Figure 2 Site layout and discharge points to area

Waste transfer station layout

The waste transfer station layout is indicated in Figure 3.

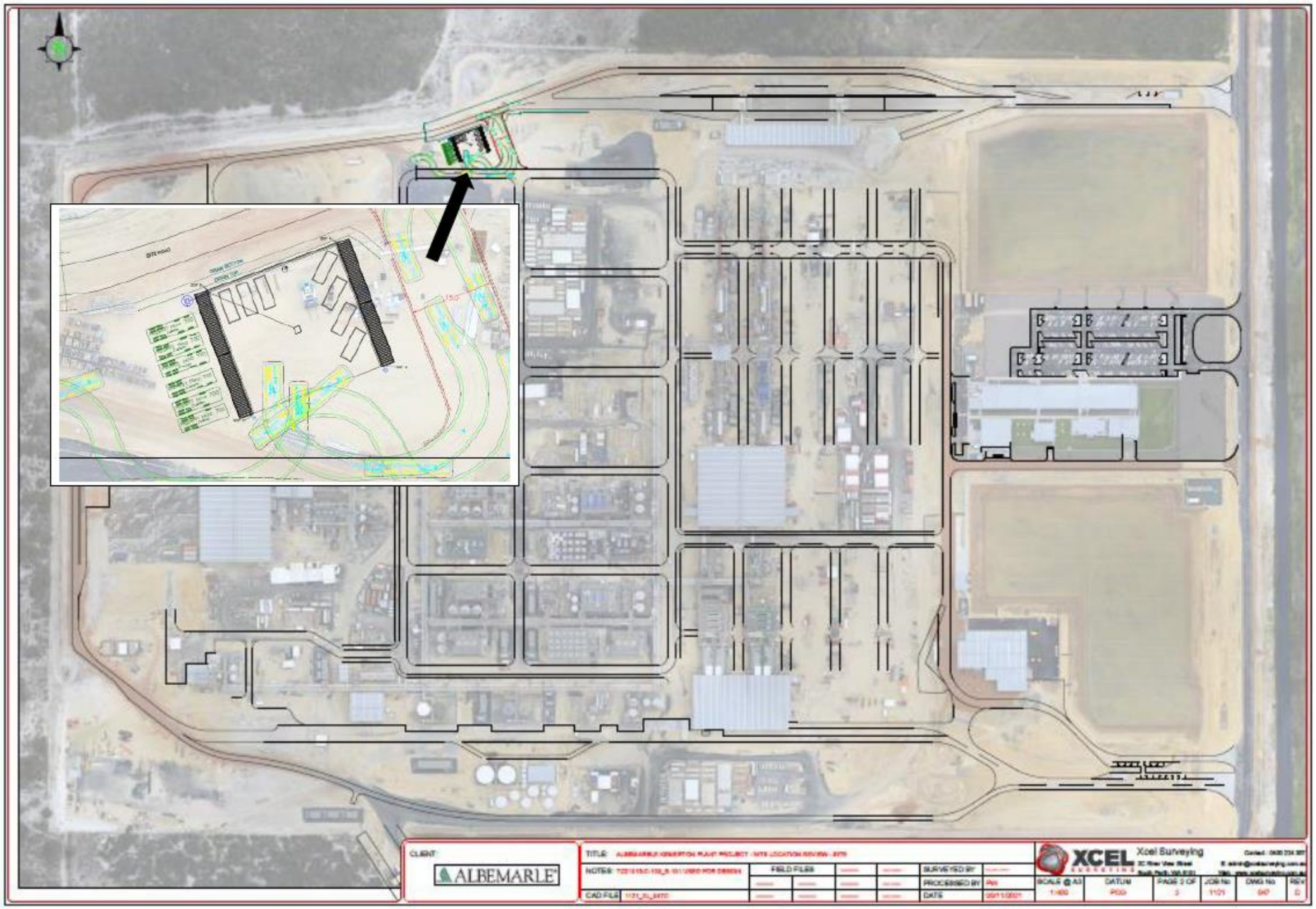

Figure 3 Waste transfer station site layout.

DBS material layout areas and water quality monitoring locations

The ambient ground monitoring and sump locations are indicated in Figure 4.

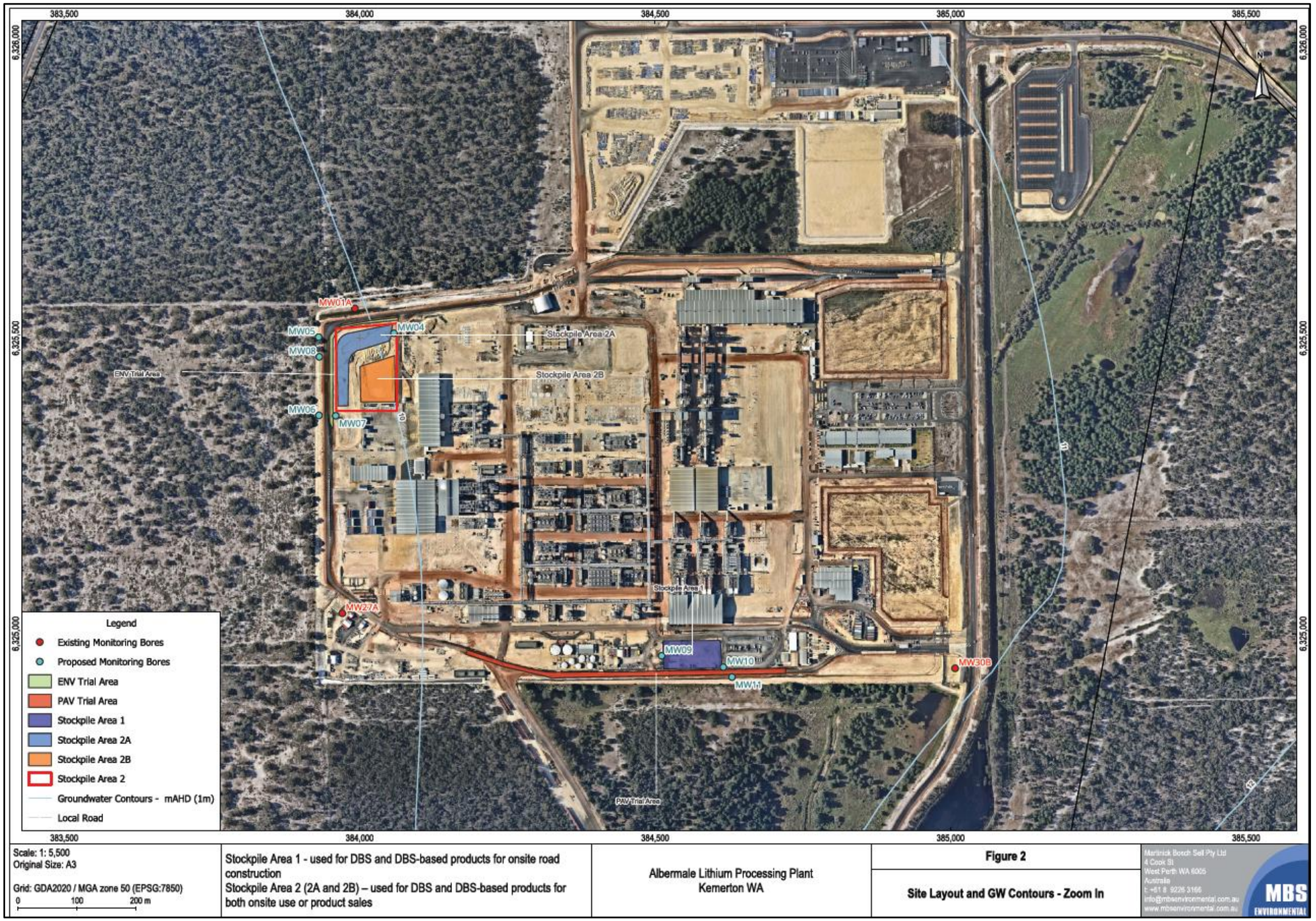

Figure 4 Location of three stockpile areas and ambient groundwater and sumpwater quality sites.

Premises boundary

The Premises boundary depicted on the Premises Map in Schedule 1 is defined by the Geocentric Datum of Australia (GDA) 1994 coordinates in Table 9.

Table 9: Premises boundary coordinates

Transect reference on Premises map	Easting	Northing
2	383939.43	6325552.48
3	384288.8	6325594.08
4	384288.8	6325644.08
5	385056.44	6325644.08
6	385056.44	6324913.07
11	383922.97	6324913.07

Schedule 2: Authorised discharge points to air

Table 10: Authorised discharge points to air during environmental commissioning and time limited operations.

Emissions	Discharge point	Discharge point height (m)	Discharge point location on Schedule 1: Premises layout and discharge to air location plan
Pyrometallurgical units			
PM, NOx, SO_2, CO	Calcining off gas stacks	at least 33	Processing train 1: Location 1-1
			Processing train 2: Location 1-2
			Processing train 3: Location 1-3
			Processing train 4: Location 1-4
			Processing train 5: Location 1-5
	Roast flue gas stacks	33	Processing train 1: Location 5-1
			Processing train 2: Location 5-2
			Processing train 3: Location 5-3
			Processing train 4: Location 5-4
			Processing train 5: Location 5-5
PM	Ball mill off gas stacks	33	Processing train 1: Location 3-1
			Processing train 2: Location 3-2
			Processing train 3: Location 3-3
			Processing train 4: Location 3-4
			Processing train 5: Location 3-5
PM, SO_2, SO_3	Roast scrubber vent stacks	33	Processing train 1: Location 4-1
			Processing train 2: Location 4-2
			Processing train 3: Location 4-3
			Processing train 4: Location 4-4
			Processing train 5: Location 4-5
PM, SO3	Acidified solids warehouse vents	N/A	Location 19-0
Hydrometallurgical units			
PM	Leach vent stacks	15	Processing train 1: Location 8-1
			Processing train 2: Location 8-2
			Processing train 3: Location 8-3
			Processing train 4: Location 8-4
			Processing train 5: Location 8-5
	Vacuum vent stacks	16.5	Processing train 1: Location 9-1
			Processing train 2: Location 9-2
			Processing train 3: Location 9-3
			Processing train 4: Location 9-4
			Processing train 5: Location 9-5
	Lithium hydroxide dryer off gas vent stacks	25	Processing train 1: Location 11-1
			Processing train 2: Location 11-2
			Processing train 3: Location 11-3
			Processing train 4: Location 11-4
			Processing train 5: Location 11-5
	Lithium hydroxide cooler off gas vent stacks	25	Processing train 1: Location 12-1
			Processing train 2: Location 12-2
			Processing train 3: Location 12-3
			Processing train 4: Location 12-4
			Processing train 5: Location 12-5
	Lithium carbonate vent stacks	26	Processing train 1: Location 13-1
			Processing train 2: Location 13-2
			Processing train 3: Location 13-3
			Processing train 4: Location 13-4
			Processing train 5: Location 13-5
	Crude lithium hydroxide crystalliser		Processing train 1: Location 14-1
			Processing train 2: Location 14-2

Emissions	Discharge point	Discharge point height (m)	Discharge point location on Schedule 1: Premises layout and discharge to air location plan
	vent stacks	26	Processing train 3: Location 14-3
			Processing train 4: Location 14-4
			Processing train 5: Location 14-5
	Pure lithium hydroxide crystalliser vent stacks	26	Processing train 1: Location 15-1
			Processing train 2: Location 15-2
			Processing train 3: Location 15-3
			Processing train 4: Location 15-4
			Processing train 5: Location 15-5
PM, NOx, SO_2, CO	Sodium sulphate dryer flue gas stacks	20	Processing train 1: Location 16A-1
			Processing train 2: Location 16A-2
			Processing train 3: Location 16A-3
			Processing train 4: Location 16A-4
			Processing train 5: Location 16A-5
	Sodium sulphate dryer dust collector exhaust stack	20	Processing train 1: Location 16B-1
			Processing train 2: Location 16B-2
			Processing train 3: Location 16B-3
			Processing train 4: Location 16B-4
			Processing train 5: Location 16B-5
	Sodium sulphate dryer scrubber exhaust stack	20	Processing train 1: Location 16C-1
			Processing train 2: Location 16C-2
			Processing train 3: Location 16C-3
			Processing train 4: Location 16C-4
			Processing train 5: Location 16C-5
Steam boilers 1, 2, 3, 4, 5 and 6			
PM, NOx, SO_2, CO	Steam boiler flue gas vent stacks	20	Location 17-0