FREMANTLE PORTS

Certified System Health & Safety AS 4801 | Certified System Environment ISO 14001 | Certified System Quality ISO 9001

Our Ref: SAE.0500
Your ref: L4476/1984/12

4 May 2018

Mr Mike Rowe
Chief Executive Officer - Director General
Department of Water and Environmental Regulation
Locked Bag 33 Cloisters Square
Perth WA 6850

Dear Mr Rowe

NOTIFICATION OF MATERIAL CHANGE - KWINANA BULK TERMINAL (L4476/1984/12) - EXPORT SHIPMENTS OF SPODUMENE

In accordance with Condition 2 and Schedule 2 of Environmental Licence L4476/1984/12 for Kwinana Bulk Terminal please accept this notification of a Material Change relating to an export shipment of 26,090 tonnes of spodumene undertaken on 24 April 2018 and notification to undertake an additional three shipments, up to 35,000 tonnes per vessel, from now until 31 July 2018.

I confirm the product for this shipment is the same as that already exported and that ongoing product testing has been carried out by Fremantle Ports to confirm this.

In support of this notification I provide the following:

- Environmental and Health Risk Assessment (updated 3 May 2018): identifies and rates inherent risks, and rates the residual risk after existing and proposed control measures are implemented to mitigate them. Given the physical and chemical properties of the cargo, and the existing and proposed risk mitigation measures, Fremantle Ports considers there to be a very low environmental and public health risk associated with the receival, storage and export of spodumene (Attachments 1a & 1b).

- Material Safety Data Sheet: Lithium Concentrate 4.0 - 6.5% (Attachment 2).

- Moisture content analysis of spodumene during the trial shipments has confirmed that cargoes have been consistently above the product specific dust extinction moisture (DEM) level of 1.75% (Table 1).

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ABN 78 187 229 472

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Table 1. Spodumene export details for trial shipments undertaken at Kwinana Bulk Terminal December 2017 - March 2018.

Spodumene Export Details	Trial 11	Trial 12	Trial 13	Trial 14	Trial 15
Export volume (tonnes)	33,258	16,100	24,974	26,628	27,064
Arrival date	27 Dec 2017	31 Dec 2017	5 Feb 2018	1 Mar 2018	29 Mar 2018
Departure date	29 Dec 2017	12 Jan 2018	7 Feb 2018	2 Mar 2018	30 Mar 2018
Average moisture %	1.9	2.1	2.0	2.8	3.0

Fremantle Ports understands that the noted shipments under the Material Change notification process will not pre-empt the outcome of the application to amend Environmental Licence L4476/1984/12 for the Kwinana Bulk Terminal premises, submitted by Fremantle Ports on the 15 March 2017.

If you require further information relating to this matter please don't hesitate to contact me on 9430 3566.

Yours sincerely,

Denis Doak
Environmental Manager

TITLE OF RISK ASSESSMENT	PREMISES	LICENSEE	RISK ASSESSMENT DATE
Export of Spodumene at Kwinana Bulk Terminal (KBT)	**Kwinana Bulk Terminal**	**Fremantle Port Authority**	**Updated 03/05/2018**
ASSESSMENT TEAM	**PRESCRIBED PREMISES**	**LICENCE NUMBER**	**FPA RECORD NUMBER**
Melissa Manns (Environmental Advisor), Denis Doak (Environmental Manager)	**Category 58 Bulk material loading or unloading**	**L4474/1976/14**	**SAE.0500**

Sources / Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts	Proponent Controls	LIKELIHOOD (with proponent controls)	CONSEQUENCE (with proponent controls)	RISK RATING (with proponent controls)	Acceptability with treatment	Comments
Direct discharges to surface water (spills) whilst loading product via jetty conveyors (JC01-JC03) and shiploader (AL04) to ships	**Discharge of Spodumene to the marine environment**	Cockburn Sound marine environment	Direct Discharge	Marine environment: Reduced water quality from increased sedimentation or toxicity resulting in declining ecosystem health	1) Mechanical sweeper to remove spilt material from berth. 2) Berth containment. 3) AL04 verification of competency (VOC) 4) Operations shall be managed by experienced stevedore crews with regular inspections undertaken. 5) Inspected by licensee personnel (Environmental Advisor) during ship loading. 6) Loading procedure. 7) CCTV. 8) Incident response procedure including recording, investigation and actioning of incidents. 9) Cockburn sound monitoring defined by Environmental Licence L4474/1976/14 - Annual monitoring of water quality, sediment and mussels for contaminants. 10) Heavy metals analysis and leachate testing. 11) FPA Safety & Environment assessment of new bulk products. 12) Pre & post mechanical shipping checks and infrastructure maintenenace control system. 13) Sheduled post shipping clean of berth.	**Unlikely**	**Moderate**	**Medium (8)**	Acceptable, generally subject to regulatory controls. Risk event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.	
Spillage of product on ships deck (whilst loading of product) resulting in discharge to surface water	**Discharge of Spodumene to the marine environment**	Cockburn Sound marine environment	Direct Discharge	Marine environment: Reduced water quality from increased sedimentation or toxicity resulting in declining ecosystem health	1) All spilt cargo onto ships deck is to be cleaned utilising dry methods only (e.g. sweepers and brooms). 2) Operations shall be managed by experienced stevedore crews with regular inspections undertaken. 3) Inspected by licensee personnel (Environmental Advisor) during ship loading. 4) Incident response procedure including recording, investigation and actioning of incidents. 5) Cockburn sound monitoring defined by Environmental Licence L4474/1976/14 - Annual monitoring of water quality, sediment and mussels for contaminants. 6) CCTV. 7) Heavy metals analysis and leachate testing. 8) FPA Safety & Environment assessment of new bulk products.	**Possible**	**Minor**	**Medium (9)**	Acceptable, generally subject to regulatory controls. Risk event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.	
Discharges to surface water via stormwater runoff from Spodumene stockpile	**Discharge of stormwater contaminated with bulk granular materials to the marine environment**	Cockburn Sound marine environment	Stormwater Discharge	Marine environment: Reduced water quality from increased sedimentation or toxicity resulting in declining ecosystem health	1) Stockpile drainage design and maintenance. 2) Site stormwater drainage network (no direct discharge to Cockburn sound) 3) Stockpiles and stormwater drainage network Inspected by licensee personnel (Environmental Advisor) 4) Incident response procedure including recording, investigation and actioning of incidents. 5) Cockburn sound monitoring defined by Environmental Licence L4474/1976/14 - Annual monitoring of water quality, sediment and mussels for contaminants. 6) Heavy metals analysis and leachate testing. 7) FPA Safety & Environment assessment of new bulk products.	**Rare**	**Minor**	**Low (2)**	Acceptable, generally not controlled. Risk event is acceptable and will generally not be subject to regulatory controls.	
Generation of dust from unloading of spodumene from trucks to EC03 stockpile pad	**Dust from Spodumene during unloading activities**	Closest zoned residential premises is 3,130 meters to the south-west. Closest zoned industrial office building is 600 meters to the north-east.	Air/wind dispersion	Impacts to public health and amenity	1) Sweeper truck to remove dust, spilt and accumulated material from all trafficable areas within the prescribed premise. 2) Stockpile Management Plan. 3) Long distance of operations from the nearest sensitive receptors 4) Inspected by licensee personnel (Environmental Advisor). 5) Coarse Spodumene Concentrate Risk Assessment (Coffey 2017). 6) FPA complaints management system. 7) Moisture content of spodumene at or above DEM level (1.75%) 8) TSP boundary dust monitoring network & reporting required by L4476/1984/12. 9) Real-time dust alarms. 10) FP Dust Management Strategy. 11) Muscovite 1-5% by weight. 12) Respirable silica < national exposure standard 0.1 mg/m^3. 13) Respirable dust < national exposure standard 3.0 mg/m^3.	**Unlikely**	**Moderate**	**Medium (8)**	Acceptable, generally subject to regulatory controls. Risk event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.	
Generation of dust from stockpiling Spodumene	**Dust associated with storage of Spodumene in a stockpile and stockpile management**	Closest zoned residential premises is 3,130 meters to the south-west. Closest zoned industrial office building is 600 meters to the north-east.	Air/wind dispersion	Impacts to public health and amenity	1) Stockpile Management Plan. 2) Long distance of operations from the nearest sensitive receptors . 3) Inspected by licensee personnel (Environmental Advisor). 4) Coarse Spodumene Concentrate Risk Assessment (Coffey 2017). 5) FPA complaints management system. 6) Moisture content of spodumene at or above DEM level (1.75%). 7) TSP boundary dust monitoring network & reporting required by L4476/1984/12. 8) Real-time dust alarms. 9) FP Dust Management Strategy. 10) Sprinklers on EC03 Spodumene pad, and water cart on site. 11) Muscovite 1-5% by weight. 12) Respirable silica < national exposure standard 0.1 mg/m^3. 13) Respirable dust < national exposure standard 3.0 mg/m^3.	**Unlikely**	**Moderate**	**Medium (8)**	Acceptable, generally subject to regulatory controls. Risk event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.	

TITLE OF RISK ASSESSMENT	PREMISES	LICENSEE	RISK ASSESSMENT DATE
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ASSESSMENT TEAM	**PRESCRIBED PREMISES**	**LICENCE NUMBER**	**FPA RECORD NUMBER**
Melissa Manns (Environmental Advisor), Denis Doak (Environmental Manager)	Category 58 Bulk material loading or unloading	L4474/1976/14	SAE.0500

Sources / Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts	Proponent Controls	LIKELIHOOD (with proponent controls)	CONSEQUENCE (with proponent controls)	RISK RATING (with proponent controls)	Acceptability with treatment	Comments
Generation of dust from loading product via stockpile to FEL to EC03 conveyor to JC01 conveyor to AL04 ship loader to ship	**Dust associated with handling of Spodumene during loading activities**	Closest zoned residential premises is 3,130 meters to the south-west. Closest zoned industrial office building is 600 meters to the north-east.	Air/wind dispersion	Impacts to public health and amenity	1) Mechanical sweeper to remove dust, spilt and accumulated material from berth. 2) Operations shall be managed by experienced stevedore crews with regular inspections undertaken. 3) Weather monitored and discharge rate reduced or delayed in response to adverse weather conditions, operations stopped wind >55km/hr. 4) Long distance of operations from the nearest sensitive receptors 5) Inspected by licensee personnel (Environmental Advisor) during ship loading. 6) Coarse Spodumene Concentrate Risk Assessment (Coffey 2017) 7) FPA complaints management system. 8) Moisture content of spodumene at or above DEM level (1.75%). 9) TSP boundary dust monitoring network & reporting required by L4476/1984/12. 10) Real-time dust alarms. 11) FP Dust Management Strategy. 12) Wind shields and sprinklers on Jetty conveyor (JC01). 13) Muscovite 1-5% by weight. 14) Respirable silica < national exposure standard 0.1 mg/m^3. 15) Respirable dust < national exposure standard 3.0 mg/m^3.	**Unlikely**	**Moderate**	**Medium (8)**	Acceptable, generally subject to regulatory controls. Risk event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.	
Generation of noise from loading product via stockpile to FEL to EC03 conveyor to JC01 conveyor to AL04 ship loader to ship	**Noise associated with loading activities**	Closest zoned residential premises is 3,130 meters to the south-west. Closest zoned industrial office building is 600 meters to the north-east.	Air/wind dispersion	Impacts to public health and amenity	1) Long distance of operations from the nearest sensitive receptors . 2) FPA complaints management system. 3) FEL, conveyors and shiploading infrastructure emit low level of noise.	**Rare**	**Slight**	**Low (1)**	Acceptable, generally not controlled. Risk event is acceptable and will generally not be subject to regulatory controls.	
Generation of noise from unloading of trucks to EC03 stockpile pad	**Noise associated with additional trucking movements**	Closest zoned residential premises is 3,130 meters to the south-west. Closest zoned industrial office building is 600 meters to the north-east.	Air/wind dispersion	Impacts to public health and amenity	1) Stockpile Management Plan. 2) Long distance of operations from the nearest sensitive receptors . 3) FPA complaints management system.	**Rare**	**Slight**	**Low (1)**	Acceptable, generally not controlled. Risk event is acceptable and will generally not be subject to regulatory controls.	

Process Minerals International

SAFETY DATA SHEET

PRODUCT NAME **LITHIUM CONCENTRATE (4.0-6.5%)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier name	**PROCESS MINERALS INTERNATIONAL PTY LTD**
Address	1 Sleat Rd, Applecross, Perth, WA, 6163, AUSTRALIA
Telephone	+618 9329 3600
Fax	+618 9329 3603
Emergency	+618 9329 3600
Web site	http://www.processminerals.com.au
Synonym(s)	SPODUMENE CONCENTRATE
Use(s)	LITHIUM SOURCE • ORE PROCESSING
	An inorganic material used in manufacturing of ceramics, glass, glazes, foundry, steel, aluminum and lithium products.
SDS date	21 August 2015

2. HAZARDS IDENTIFICATION

NOT CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Risk Phrases

None allocated

Safety Phrases

None allocated

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN Number	None Allocated	**Transport Hazard Class**	None Allocated
Packing Group	None Allocated	**Hazchem Code**	None Allocated

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	CAS Number	EC Number	Content
QUARTZ (CRYSTALLINE SILICA)	14808-60-7	238-878-4	5 to 10%
SPODUMENE	-	-	75 to 85%
FELDSPAR-GROUP MINERALS	68476-25-5	270-666-7	<20%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	Remainder

Ingredient notes No respirable crystalline silica quartz present.

4. FIRST AID MEASURES

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
Advice to doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flammability Non flammable. May evolve toxic gases if strongly heated.

Fire and explosion No fire or explosion hazard exists.

Extinguishing Use an extinguishing agent suitable for the surrounding fire.

Hazchem code None allocated.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

Environmental precautions Prevent product from entering drains and waterways.

Methods of cleaning up Contain spillage, then collect and place in suitable containers for reuse or disposal. Avoid generating dust.

References See Sections 8 and 13 for exposure controls and disposal.

7. STORAGE AND HANDLING

Storage Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

Handling Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Quartz (respirable dust)	SWA (AUS)	--	0.1	--	--

Biological limits No biological limit allocated.

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended.

PPE

Eye / Face Wear dust-proof goggles.

Hands Wear PVC or rubber gloves.

Body When using large quantities or where heavy contamination is likely, wear coveralls.

Respiratory Where an inhalation risk exists, wear a Class P1 (Particulate) respirator. At high dust levels, wear a Powered Air Purifying Respirator (PAPR) with Class P3 (Particulate) filter or a Full-face Class P3 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance GRANULAR SOLID
Odour VERY FAINT FATTY ODOUR
Flammability NON FLAMMABLE
Flash point NOT RELEVANT
NOT RELEVANT

Boiling point	
Melting point	NOT AVAILABLE
Evaporation rate	NOT RELEVANT
pH	NOT RELEVANT
Vapour density	NOT AVAILABLE
Specific gravity	3
Solubility (water)	INSOLUBLE
Vapour pressure	NOT RELEVANT
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

Chemical stability	Stable under recommended conditions of storage.
Conditions to avoid	Avoid contact with incompatible substances.
Material to avoid	Incompatible with acids (e.g. nitric acid).
Hazardous Decomposition Products	May evolve toxic gases if heated to decomposition.
Hazardous Reactions	Polymerization is not expected to occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Low toxicity. Under normal conditions of use, adverse health effects are not anticipated. Adverse health effects associated with silica, such as the development of silicosis (lung fibrosis) are not anticipated, unless respirable quartz dust is created and chronic exposure occurs.
Eye	Low to moderate irritant. Contact may result in mild irritation, lacrimation and redness.
Inhalation	Irritant. Over exposure may result in irritation of the nose and throat, with coughing. Avoid dust generation / inhalation.
Skin	Low irritant. Prolonged or repeated exposure to dust may result in mechanical irritation and dermatitis.
Ingestion	Low toxicity. Ingestion may result in gastrointestinal irritation, nausea and vomiting. However, due to product form ingestion is considered unlikely.
Toxicity data	No LD50 data available for this product.

12. ECOLOGICAL INFORMATION

Toxicity	This product is not anticipated to cause adverse effects to animal or plant life if released to the environment in small quantities.
Persistence and degradability	Not applicable.
Bioaccumulative potential	This product is not expected to bioaccumulate.
Mobility in soil	This product has low mobility in soil.
Other adverse effects	No information provided.

13. DISPOSAL CONSIDERATIONS

Waste disposal	Ensure product is covered with moist soil to prevent dust generation and dispose of to approved Council landfill. Contact the manufacturer/supplier for additional information (if required).
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	None Allocated	None Allocated	None Allocated
Proper Shipping Name	None Allocated	None Allocated	None Allocated
Transport Hazard Class	None Allocated	None Allocated	None Allocated
Packing Group	None Allocated	None Allocated	None Allocated

Environmental hazards No information provided

Special precautions for user

Hazchem code None Allocated

15. REGULATORY INFORMATION

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Inventory Listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Prepared by

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