



Decision Document

Environmental Protection Act 1986, Part V (WA)(CI)

Proponent: Phosphate Resources Ltd

Licence: L8846/2014/1

Registered office: 6 Thorogood Street
BURSWOOD WA 6100

ACN: 009 396 543

Premises address: Christmas Island Phosphates
Christmas Island
INDIAN OCEAN TERRITORIES WA 6798
Being Lot 47 and 48 on Plan 218106, Lot 51 on Plan 218108, Lot 53 on Plan 218110, Lot 197 on Plan 218134, Lot 482 and 488 on Plan 219653, Lot 554 on Plan 221294, Lot 622 on Plan 43303, Lot 637 on Plan 43304, Lot 3001 and 3002 on Plan 41813, and Lot 3022 on Plan 43297.

Grant date: Friday, 24 February 2012

Commencement date: Friday, 24 February 2012

Expiry date: Sunday, 23 February 2025

Decision

Based on the assessment detailed in this document, the Delegated Officer has decided to issue an amended licence. The Delegated Officer considers that in reaching this decision, all relevant considerations have been taken into account.

Decision Document prepared by: Caroline Conway-Physick
Licensing Officer

Decision Document authorised by: Steve Checker
Delegated Officer



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1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986 (WA)(CI)*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.



2 Administrative summary

Administrative details		
Application type	Works Approval <input type="checkbox"/>	
	New Licence <input type="checkbox"/>	
	Licence amendment <input checked="" type="checkbox"/>	
	Works Approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	05	1,200,000 tonnes per annual period
	58	1,200,000 tonnes per annual period
Application verified	Date: N/A (Application received 15/07/2016)	
Application fee paid	Date: N/A	
Works Approval has been complied with	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Compliance Certificate received	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Commercial-in-confidence claim	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Commercial-in-confidence claim outcome	N/A	
Is the proposal a Major Resource Project?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal subject to Ministerial Conditions?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i>)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the Premises within an Environmental Protection Policy (EPP) Area	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If Yes, include details here, eg Site is subject to SO ₂ requirements of Kwinana EPP.		



3 Executive summary of proposal and assessment

Location and siting

Phosphate Resources Limited (PRL) operates a phosphate mine on Christmas Island with associated processing and export operations trading as Christmas Island Phosphates (CIP). The premises extracts phosphate ore across approximately 15% of Christmas Island, producing phosphate rock (> 12 µm) and dust (<120 µm) for sale.

Christmas Island is predominantly national park (63%) in recognition of its unique and sensitive environment with major seabird colonies, special land crab populations, marine habitats and many endemic species. The areas operated under lease (15%) have all been previously cleared and under the lease conditions no primary rainforest can be cleared for mining operations.

CIP is currently recovering stockpiled phosphate ore from previously cleared areas and conducting some in-situ mining, under Mining Lease MCI 70/1A and MCI 70/10, granted by the Commonwealth in 1997. The current lease was re-negotiated with the Commonwealth Government to recover phosphate ore from existing stockpiles and in-situ resources within the existing mining area until 2034.

CIP operates phosphate reclamation, materials handling and processing facilities. CIP inherited infrastructure that was approximately 30 years old, in 1997. There was a 3 year period of inactivity, which left the equipment in a general poor state of repair unable to meet today's standards.

Facilities within the company's operations are grouped as follows:

- Mining Fields: fields within the lease area for the mining and removal of phosphate product;
- ROM/ MLI34: Run of Mine Stockpile Area/mining equipment stand down area;
- Dryers Precinct;
- Cross Country Conveyors (PS10/C1-05);
- Downhill Conveyors (D8-D13): Conveyor system running from top of incline to Ship loading Precinct;
- Wharf/Ship loading Precinct;
- Laboratory: testing and analysis of phosphate product grade;
- Workshops: Fabrication/Fixed Plant Maintenance/Heavy Vehicle Maintenance /Light Vehicle Maintenance /Warehouse area;
- Finance/Administration Offices.

Proposed activities

The Licensee is proposing the inclusion of an incinerator at the premises to be located on Lot 622 on Plan 43303 for the incineration of hydrocarbon contaminated wastes generated at the CIP premises and from Indian Ocean Oil Company (R2391/2014/1), a subsidiary of PRL. The incinerator is designed to operate at a maximum design capacity of 95 kilograms per hour, which is below trigger value for Part 1, Schedule 1 of the *Environmental Protection Regulations 1987 (WA)(CI)*. However, the emissions to air from the incinerator are considered a contributory activity to the overall point source emissions to air and fugitive emissions generated from the operation of the premises, as defined within DER guidance statement, 'Licences and Works Approvals process (September, 2015)'.

The following information has been summarised from the application documentation:

The incinerator may in future take additional hydrocarbon contaminated waste from other suppliers on Christmas Island as part of an improved waste management and minimisation strategy for the Island. This will be controlled under conditions within the Licence.

The incinerator type is a two-stage 'Hot Hearth' incinerator (HSH 100) that recycles its own heat energy, and will be stored within a shipping container which will give improved security of the facility. The incinerator will require diesel for operation.

The incinerator is proposed for the incineration of hydrocarbon contaminated waste only, as defined as:

- Oil filter shells;



- *Waste oil;*
- *Heavy grease;*
- *Oily rags;*
- *Contaminated packaging (paper/ cardboard);*
- *Contaminated plastics (excluding PVC);*
- *Spent oil spill clean-up absorbents;*
- *Contaminated Soil;*
- *Waste cake from Indian Ocean Oil Company hydrocarbon recycling process*

The facility will exclude any hydrocarbon contaminated wastes that have the following incorporated into them:

- *Polyvinyl chloride products (PVC);*
- *Radioactive waste;*
- *mercury thermometers;*
- *hazardous chemicals (e.g. solvents);*
- *Wastes containing chlorine, sulphur, nitrogen and toxic metals.*

The incinerator will be operated only by a trained staff member and will be manned whilst in use.

The incinerator is to be located approximately 250 m south-south west of the kiln dryers, approximately 55 m west of Murray Road.

Potential emissions

The depth to groundwater is currently unknown for the premises. Groundwater levels are influenced by the location of the unconfined water table within the karst limestone aquifers. Information supplied from 'Water Corporation' show that groundwater depth on the Island varies between 50 metres to 100 metres.

There is no surface water catchment network on the island, with surface water being fed in two areas from natural springs ('Hosnie' and 'Dales'). Mining is not planned or approved on or directly adjacent to these sites and hence there is negligible risk of direct impacts on surface water systems from CIP operations.

The baghouse has continuous pressure monitoring undertaken to ensure that the baghouse filters are operating effectively, and spare filters are kept at the premises to manage dust emissions from the baghouse. In addition, temperature probes are present within the stack.

Management plans have been drafted and implemented for the sedimentation and stormwater management within the Environmental Management Plan revised by the proponent in October 2014. The addition of the incinerator is considered to potentially increase cumulative emissions to air from point source emissions via the incinerator stack.

The closest sensitive receptor to the incinerator is the Christmas Island School premises which is located approximately 424 m north of the incinerator location. The premises adjoins 'unallocated crown land' to the west and east, and 'crown reserve – government use' land to the south. The premises is approximately 560 m east of the Indian Ocean.

Occupation and planning approval

CIP acquired Commonwealth Australia support to undertake mining and export of phosphate within previously mined areas on Christmas Island in 1997, and has a mining lease extension until 2034. This covers approximately 20 km² (15% of Christmas Island land surface).

The incinerator will be located on Lot 622 on Plan 43303 approximately 250 m south-south west of the CIP dryers and approximately 55 m west of Murray Road.



Consultation

The Shire of Christmas Island (Shire) was sent the application submitted to DER for the proposed incinerator, and comments were forwarded to the Licensee on 19 May 2016, from the Shire.

The Shire raised concerns regarding adequate management of emissions to air risks from the proposed incinerator.

Approval of works

The Licensee has confirmed that Planning Approval is not required as the Christmas Island Phospahte Mine operation occurs within Mine Lease area.

This Licence is the result of an amendment sought by the Licensee to include the installation and operation of an incinerator on Lot 622 on Plan 43303 of the premises. The incinerator is for the disposal of hydrocarbon contaminated waste generated on CIP and from Indian Ocean Oil Company (R2391/2014/1), both form part of PRL and potentially in the future from other sources within Christmas Island only.



4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986 (WA) (CI)*, the *Environmental Protection Regulations 1987 (WA) (CI)* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Front page	-	<p>Operation</p> <p>An application for a licence amendment under Section 59 of the <i>Environmental Protection Act 1986</i> was received by DER on 19 July 2016, for Category 60 – Incineration, under Schedule 1 Part 1 of the <i>Environmental Protection Regulation 1987</i>.</p> <p>Category 60 has not been included within the front page of the Licence as the activity does not trigger the category (below 100 kg/ hour), however conditions will be included within the Licence in the management of the incinerator at the premises. is The Delegated Officer considers the incinerator to be a contributory activity to the overall point source emissions to air and fugitive emissions generated from the operation of the premises, as defined within DER guidance statement, 'Licences and Works Approvals Process' (September, 2015).</p>	<p>Application supporting documentation.</p> <p>General Provisions of the <i>Environmental Protection Act 1986</i>.</p> <p>DER guidance statement, 'Licences and Works Approvals Process'</p>
Interpretation	L1.1.1-L1.1.5	<p>Construction and operation</p> <p>Conditions 1.1.1 – 1.1.4 require that terminology used within the Licence is referenced to the appropriate definitions where applicable, and that any reference to a standard or guideline is to the most current version of that standard or guideline.</p> <p>An administrative change has been undertaken to update the definitions within the Licence.</p> <p>Previous Condition 1.1.5, as follows, has been removed from the Licence as the condition is considered an explanatory statement and is not enforceable.</p>	<p>General Provisions of the <i>Environmental Protection Act 1986</i>.</p> <p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p>



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Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><i>'Nothing in the Licence shall be taken to authorise any emission that is not mentioned in the Licence, where the emission amounts to:</i></p> <ul style="list-style-type: none"> (a) <i>pollution;</i> (b) <i>unreasonable emission;</i> (c) <i>discharge of waste in circumstances likely to cause pollution; or</i> (d) <i>being contrary to any written law.'</i> <p>Operation is subject to the general provisions of the <i>Environmental Protection Act 1986</i> and relevant subsidiary legislation.</p>	
General conditions	L1.2.1 L1.2.5-L1.2.9	<p>Construction and Operation</p> <p>Previous Condition 1.2.1 has been updated to specify the types of pollution control and monitoring equipment used at the premises.</p> <p>Previous Condition 1.2.2, relating to the clean up of spills, has been updated to define the types of environmentally hazardous materials within the condition that are regulated under licence. The Delegated Officer considered the previous wording too broad in that it may regulate materials beyond the scope of the licence.</p> <p>Previous Condition 1.2.3 has been updated to remove the term 'environmentally hazardous chemicals' and to specify the types of chemicals that are regulated under the licence. The Delegated Officer considered the previous wording too broad in that it may regulate materials beyond the scope of the licence.</p> <p>Previous Condition 1.2.4, as follows, has been removed:</p> <p><i>'The Licensee shall:</i></p> <ul style="list-style-type: none"> (a) <i>implement all practical measures to prevent stormwater run-off becoming contaminated by the activities on the Premises; and</i> (b) <i>treat contaminated or potentially contaminated stormwater as necessary prior to being discharged from the Premises.</i> 	<p>Application supporting documentation.</p> <p>General provisions of the <i>Environmental Protection Act 1986</i>.</p> <p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i></p> <p>DER's <i>Guidance Statement: Regulatory Principles</i></p> <p>DER's <i>Guidance Statement: Setting Conditions</i></p> <p>DER's <i>Guidance Statement: Licence and works approval process</i></p>



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		<p>The condition is considered redundant and adequately addressed through the requirements of condition 1.2.1 of the amended Licence.</p> <p>Condition 1.2.5 requires the proponent to ensure that construction meets or exceeds the standards defined within Table 1.2.1. These specifications are consistent with the application requirements submitted by the proponent for the construction of the works.</p> <p>Condition 1.2.6 relates to potential deviations/ departures from the proposed upgrade construction requirements (as based upon any variations to the works specifications, Table 1.2.1), and how these should be addressed, as a result of the installation of the incinerator at the premises.</p> <p>Condition 1.2.7 requires upgrades or minor departures from the defined construction requirements to be listed and submitted through to DER within the construction compliance document, stated within condition 1.2.8. This ensures that departures from the approved works can be assessed and actioned as required.</p> <p>Conditions 1.2.8 and 1.2.9 require the submission of a construction compliance document prior to operation of the premises works upgrade. This will ensure that works are certified as having been constructed in accordance with licence requirements, and that the appropriate testing has been conducted by the proponent for inclusion within the compliance report document.</p>	
Premises operation	L1.3.1-L1.3.7 L1.3.10	<p>Operation</p> <p><u>Emission Description</u></p> <p><i>Emission:</i> Accidental Hydrocarbon spills and leaks from the storage or incinerator area.</p> <p><i>Impact:</i> Potential contamination of surrounding land with hydrocarbons.</p> <p><i>Controls:</i> The proponent has stated within the supporting documentation that the storage area will be covered and constructed with an (impervious) concrete, banded pad. The Licensee has confirmed that spill kits for the management of any</p>	<p>Application supporting documentation.</p> <p>General provisions of the <i>Environmental Protection Act, 1986 (WA)(CI)</i>.</p> <p>Landfill Waste</p>



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		<p>accidental spills of hydrocarbons will be available at the hydrocarbon storage area and at the incinerator. The incinerator site has been constructed and engineered to withstand a '1-in-20' year storm event. The storage area will be covered, bunded and constructed of concrete and the incinerator within an enclosed, bunded, concrete hardstand with the use of lifters to ensure secure placement of hydrocarbons within the incinerator. Waste hydrocarbons will be stored in closed barrels that will be secured during transportation to prevent shifting/ spillage. (Table 4, 'Residual Risk Ranking for Incinerator Operation' pg. 14-15, application supporting documentation). The proponent will undertake staff training and have a dedicated operator who will ensure that the site is manned whilst in operation to minimise the risk of accidental spills. An operations manual will be available for the site and a dedicated phone number made available for the receipt and recording of all complaints related to the use of the incinerator.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Possible <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u> Condition 1.3.3 defines the type of wastes that are allowed to be received to the premises for disposal via the proposed incinerator. This has been based on the incinerator model specifications (Table 2 & 3, pgs. 6-8, application supporting documentation) and sections 3.3 and 4.5 (application supporting documentation) relating to the type of wastes proposed for incineration, with limitations specified for the management of potential contaminants emitted via the incinerator stack. The small scale incinerator operation criteria as defined within Table 1.3.3 of the Licence will further assist this process.</p> <p>Condition 1.3.4 requires the Licensee to contact the CEO in the event that that waste is received to the premises that is not permitted as defined within condition 1.3.3, Table 1.3.2.</p>	<p>Classification and Waste Definitions 1996 (as amended).</p> <p>Directive 2000/76/EC of the European Parliament and of the Council, December 2000 on the incineration of waste (European Union Standards, 2000).</p> <p>United States Environmental Protection Agency (USEPA) Emission guidelines for Small Municipal Waste Combustion Units, 2003.</p> <p>DER's <i>Guidance Statement: Regulatory Principles.</i></p> <p>DER's <i>Guidance Statement: Setting Conditions.</i></p>



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		<p>Condition 1.3.5 defines the process limits within Table 1.3.3, for the incineration of the identified waste types at the premises to ensure correct operation of the incinerator. This condition is related to condition 1.3.3 of the Licence and has been based on the submitted operating specifications of the proposed incinerator. Table 1.3.3 defines the limitations for the types of wastes that can be incinerated, as per Section 4.2, Table 3 and Section 4.6 of the application supporting documentation).</p> <p>Condition 1.3.6 requires the Licensee to undertake specific management actions in the event of failure, malfunction or abnormal operation of the incinerator. This condition ensures that appropriate operational systems are in place in the event of an abnormal operational event and to reduce the potential for pollution or environmental harm occurring as a result of such an event.</p> <p>Condition 1.3.7 requires the Licensee to ensure that the incinerator is not restarted until all issues identified have been addressed and recorded adequately.</p> <p>Condition 1.3.10 requires all hydrocarbon contaminated waste received at the premises is stored within a covered, concrete bunded storage area. As the premises will be receiving additional hydrocarbon contaminated wastes from external sources, the premises must ensure that there is appropriate storage available that will prevent any potential pollution or environmental harm occurring. The Licensee has stated, within Section 5.1, pg. 12 of the submitted supporting documentation, that storage will be “<i>completely under cover on an impervious concrete pad</i>” and “<i>the site is to be constructed with impervious bunded areas under cover to capture any possible spills...</i>”.</p> <p><u>Residual Risk</u> <i>Consequence</i>: Minor <i>Likelihood</i>: Unlikely <i>Risk Rating</i>: Moderate</p>	



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Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>Previous Condition 1.3.1, Table 1.3.1 'Throughput limits' has been updated to include a throughput limit for Category 60 – Incineration. This has been defined as per the specifications submitted within Table 2 and Table 3 of the Licence amendment supporting documentation.</p> <p>Previous Condition 1.3.2 (a) has been updated to define 'non-hydrocarbon' waste in order to allow the incineration of hydrocarbon contaminated waste within the incinerator.</p> <p>Previous Condition 1.3.2 (b) has been updated to require that any contaminated soils stored at the premises are within a 'bunded' facility. Humidity and rainfall (approximately >2,000 mm/ year) on the island is high and has the ability to compromise the integrity of the sealed metal drums containing the contaminated waste, thereby potentially resulting in discharge to land.</p>	
Point source emissions to air including monitoring	L2.2 L3.2	<p>Operation See Appendix A for full risk assessment.</p> <p>No air quality modelling was submitted within the application to determine the appropriateness of chimney height in relation to air emissions, with the diameter of the chimney determined by the manufacturer. The proponent stated that <i>"the HSH design is [considered] an efficient two stage controlled air incinerator that addresses the 3 T's of time, temperature and turbulence for the exiting gases. In addition, the HSH100 is rated to destroy less than 100kg's per hour of hydrocarbon waste. We therefore do not think modelling is relevant"</i>. The Delegated Officer accepts this statement due to the rate of hydrocarbon burning/incineration (which is lower than moderately-sized plant), the infrequency of operation. However, due to proximity to receptors, Condition 3.6.1 requires the proponent to submit a 'once off' report to the CEO, after the first year of operation of the incinerator at the premises. The report is to be based on condition 3.2.1; to determine the constituents of the waste types placed within the incinerator for the operational period and submit predictive ground level concentrations at the nearest sensitive receptors for emissions to air.</p>	<p>General provisions of the <i>Environmental Protection Act, 1986</i>.</p> <p>Application supporting documentation.</p>



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		<p>Assessment of the waste cake to be received from IOOC will be required prior to incineration to gain a better understanding of the potential parameters that will be proposed for incineration. This will be managed under works approval W5975/2016/1 and subsequent new licence for IOOC waste hydrocarbon recycling process initiative and not within this Licence amendment process.</p> <p>Previous Condition 2.2.1 has been amended to include an additional emission point reference for the incinerator stack. This will be defined within Schedule 1: Maps of the premises.</p> <p>Previous Condition 3.2.1 has been amended to include the additional emission point to air from the proposed incinerator stack with additional monitoring parameters. The parameters have been defined according to the expected analytes from the waste types proposed for incineration, and as defined within the supporting documentation (Sections 3.2, 4.5 and 4.6). This includes the incineration of the waste cake from IOOC as defined within W5975/2016/1 supporting documentation.</p>	
Emissions to land including monitoring	L2.3	<p>Operation</p> <p><u>Emission Description</u> <i>Emission:</i> Discharge of hydrocarbons from the wash down areas. <i>Impact:</i> Potential contamination of surrounding land by accidental discharge to ground of hydrocarbons. <i>Controls:</i> The proponent undertakes wash down of all vehicles on concrete hardstands with roll over bunds. Discharged hydrocarbon contaminated wash down water is passed through oil/ water separators which are then drained and waste oil removed for disposal to Indian Ocean Oil Company for reuse/ recycling. Weekly checks of oil/ water separators and wash down areas is undertaken.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Possible</p>	<p>General provisions of the <i>Environmental Protection Act, 1986.</i></p> <p>Application supporting documentation.</p>



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		<p><i>Risk Rating: Moderate</i></p> <p><u>Regulatory Controls</u> Condition 2.3.2 has been amended to reduce the emission limit for TRH from 30 mg/L to 10 mg/L in line with other Licenced premises across the State for any emissions from wash down areas. The reduction in the limit is considered appropriate by the Delegated Officer considering the significance of the biodiversity conservation status of the island, karstic geology and proximity to other sensitive receptors (National Park), and considering the volume of hydrocarbon waste to be received to the premises is to increase from external sources.</p> <p><u>Residual Risk</u> <i>Consequence: Minor</i> <i>Likelihood: Unlikely</i> <i>Risk Rating: Moderate</i></p>	
Monitoring of inputs and outputs	L3.4	<p>Operation</p> <p><u>Emission Description</u> <i>Emission:</i> Discharge of residual ash from the incineration process. <i>Impact:</i> Potential contamination of surrounding land or surface water area from residues from the incineration process that will contain concentrated levels of organic compounds, metals/ metalloids or other potential contaminants. <i>Controls:</i> The proponent has confirmed that residual ash will be disposed of to licenced facility able to accept the waste type.</p> <p><u>Risk Assessment</u> <i>Consequence: Minor</i> <i>Likelihood: Possible</i> <i>Risk Rating: Moderate</i></p> <p><u>Regulatory Controls</u> Conditions 1.3.3 to 1.3.5 defines the waste acceptance and waste processing</p>	<p>General provisions of the <i>Environmental Protection Act 1986</i>.</p> <p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p> <p>Landfill Waste Classification and Waste Definitions 1996 (as amended).</p> <p>DER's Guidance Statement: Regulatory Principles.</p>



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		<p>requirements to be implemented by the Licensee which will assist in the control of what types are permitted for incineration and the optimal conditions under which they are to be incinerated.</p> <p>Condition 3.4.1, table 3.4.1 'Monitoring of inputs/ outputs' has been amended to record hydrocarbon contaminated waste types received for disposal to the incinerator or disposed of to licenced landfill, including residual ash from the incineration process.</p> <p><u>Residual Risk</u> <i>Consequence</i>: Minor <i>Likelihood</i>: Unlikely <i>Risk Rating</i>: Moderate</p> <p>The Christmas Island Waste Depot used for current waste disposal at Christmas Island has been identified as potentially requiring a new location due to the sensitivity of groundwater resources on the Island.</p>	<p>DER's Guidance Statement: Setting Conditions.</p>
Process monitoring	L3.6	<p>Operation See Appendix A for full risk assessment.</p> <p>Condition 3.6.1 require the proponent to submit a 'once off' report to the CEO, after the first year of operation of the incinerator at the premises. The report is to be based on condition 3.2.1; to determine the constituents of the waste types placed within the incinerator for the operational period and submit predictive ground level concentrations at the nearest sensitive receptors for emissions to air. These conditions are as a result of the proponent:</p> <ul style="list-style-type: none"> • not identifying the potential emissions from the type of incinerator proposed; • not supplying any modelling data on the potential risk from emissions from the incinerator in respect to the type of wastes being proposed for incineration; • not supplying sufficient information on the details and procedures for the management of the operation; 	<p>General provisions of the <i>Environmental Protection Act, 1986</i>.</p> <p>DER's Guidance Statement: Regulatory Principles.</p> <p>DER's Guidance Statement: Setting Conditions.</p>



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		<ul style="list-style-type: none"> not confirming the suitability of the stack height for managing emissions to air; not supplying sufficient information relating to control/ monitoring of the emissions or potential mitigation measures in the event of unacceptable emission levels being identified. <p>Advice received from DER Environmental Sciences has been taken into consideration within this section, as defined within Section 5 of the Decision Document.</p>	
Meteorological monitoring	L3.7	<p>Operation An administrative change has been undertaken to change the numbering within the section from 3.6 to 3.7 as a result of the inclusion of a new section 3.6 'Process Monitoring', as above.</p>	-
Improvements	L4.1	<p>Operation The improvement programme Table 4.1.1 has been updated to remove obsolete improvements that have been completed and to update the table by renumbering the pending improvement conditions defined.</p> <p>'IR1' improvement condition has been changed from the Licensee being required to submit a report for improvements to the Rock Shed, to now require the Licensee to confirm completion of improvements to the Rock Shed. The Licensee submitted a report to DER on 30 November 2015 (A1014856) identifying the type of improvements that were to be implemented to reduce fugitive emissions (dust) from the Rock Shed. The improvement condition 'IR1' now requires that the Licensee complete all upgrades by 15/12/2016, as advised by Joy Wickenden (Senior Environmental Advisor, Christmas Island Phosphate Mine). This condition has been removed from Section 4.1 and placed within the Licence as condition 1.3.12.</p> <p>'IR2' improvement condition has been extended due to delays in equipment being shipped to Christmas Island from the mainland. An extension has been given until 14 May 2017 to take into account climatic considerations which inhibit the ability of the proponent to undertake significant works on the 'North Arm' and that the</p>	<p>General provisions of the <i>Environmental Protection Act 1986</i>.</p> <p>Application supporting documentation.</p> <p>DER's Guidance Statement: Regulatory Principles.</p> <p>DER's Guidance Statement: Setting Conditions.</p> <p>DER's Guidance Statement: Licence and Works Approval Process.</p>



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>installation process is only expected to take between 6-7 weeks. No further extension to this improvement condition will be approved beyond the proposed extension date. This improvement condition was proposed in 2014 and has been extended previously due to supply issues however is considered a critical improvement to the management of dust emissions at the wharf precinct. The improvement condition has been removed out of section 4.1 and placed within the Licence as condition 1.3.11.</p> <p>'IR3' improvement condition has been removed as the proponent submitted a report to DER in October 2014 outlining options for the management of product in the downhill conveyor between D9 and D13. Improvements are progressing and additional updates on the progress of dust management from the downhill conveyor system are expected towards the end of 2016.</p> <p>An update on improvement conditions IR1-IR3 was received from the Licensee (Joy Wickenden) on 3 August 2016 confirming progress.</p> <p>The last three improvement conditions IR3-IR5 have been removed from section 4.1 and placed within Section 1.3, 'Premises conditions' of the amended Licence L8846/2014/1. These improvements are only triggered in the event of elevated sulphur content being identified in the fuel source received to the premises, which is determined through batch sampling prior to receipt of the fuel, and requires the Licensee to undertake specific actions. No alteration has been undertaken to the original improvement conditions content for any of the IR3-IR5 improvement conditions, as previously documented within the Licence conditions.</p> <p>Section 4.1 of the Licence is therefore removed.</p>	
Information	L5.1.2 L5.2.1	<p>Operation Section 5 has had an administrative change to renumber it to Section 4.</p> <p>Previous Condition 5.1.2 has been removed from the Licence as the condition is considered redundant. The Licensee is required under Section 61 of the the</p>	<p>General provisions of the <i>Environmental Protection Act 1986</i>.</p> <p>DER's Guidance</p>



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><i>Environmental Protection Act 1986</i>, for ensuring compliance to the conditions of the Licence at all times, whilst in force.</p> <p>Previous Condition 5.2.1, Table 5.2.1 has been amended to include additional reporting requirements in relation to any management actions undertaken within the course of the reporting year. A summary of any actions undertaken to rectify the situation is to be submitted to DER within the AER. The amendment is in relation to conditions 1.3.6 and 1.3.7 being incorporated into the Licence as a result of the amendment process. In addition, reporting of the annual assessment of incinerator monitoring data, as defined by condition 3.6.1, has been included.</p> <p>An administrative change has been undertaken to conditions to ensure numbering of conditions is correct within Table 5.2.1.</p> <p>Schedule 1: Maps has been updated to include 'A2' within the Map of monitoring points for the incinerator stack, within Lot 622 on Plan 43303.</p>	<p>Statement: Regulatory Principles.</p> <p>DER's Guidance Statement: Setting Conditions.</p>
Schedule 2	Annual Audit Compliance Report template	<p>The Annual Audit Compliance Report template has been removed as a result of DER procedural changes. The requirements of the template are considered adequately captured within condition 4.1.2 of the amended Licence, which reflects the requirements of reporting non-compliances within the reporting period.</p> <p>The notification of a Licence limit breach template has been left within Schedule 2 and defined within condition 4.3.1 of the Licence through the Licence amendment process for use of the template. This was previously omitted as the preferred form/format for use, but present within the Licence. The notification is to be submitted within the Annual Environmental Report submission for review.</p>	<p>DER's Guidance Statement: Regulatory Principles.</p> <p>DER's Guidance Statement: Setting Conditions.</p>
Licence Duration	N/A	<p>The Licence duration was extended by amendment undertaken on 29 April 2016 to 23 February 2025. The Licensee was notified by letter of the change to duration period.</p> <p>No planning approval is required for the Lease area. No other statutory approvals have been identified as potentially limiting the proposed licence amendment process.</p>	<p>DER's Guidance Statement: Licence Duration.</p>



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		There are no current issues or concerns that would require an amendment to the current Licence duration.	



5 Advertisement and consultation table

Date	Event	Comments received/ Notes	How comments were taken into consideration
23/08/2016	Proponent sent a copy of draft instrument	<p>Comments received back from Joy Wickenden (Senior Environmental Advisor) via email on 12 September 2016 for the following:</p> <ol style="list-style-type: none"> 1. <u>Pg 9, Table 1.2.1:</u> The shipping container will be located in a restricted access mining lease. It will not be fenced nor gated. However, the incinerator shipping container and fuel source container will be locked. Skips that house the hydrocarbon waste will also be locked. 2. <u>Pg 10, condition 1.3.2 (b):</u> Removal of the requirement to seal drums for the storage of contaminated soil — contaminated product is stored within a hardstand, covered and bunded area, therefore the risk of contamination to the environment due to water inundation is very low. 3. <u>Pg 11, Table 1.3.3:</u> Oil filters form part of the hydrocarbon wastes to be incinerated. The waste includes rags which have been used for cleaning up/wiping hands and are contaminated with oil. The filter caps are metal and after the burning of residual hydrocarbon will be disposed of at the OP Scrap Metal Yard. 4. <u>Pg 16, Table 4.1.1:</u> IR1 - An extension of the completion date to 15 December 2016 is requested. The extended wet 	<p>Changes to the Licence in consideration of the comments received, have been undertaken as follows:</p> <ol style="list-style-type: none"> 1. Condition changed to define 'restricted area'; 2. Condition changed to remove 'sealed drums'; 3. Condition changed with the removal of oil filter canisters. It is considered that the requirement to ensure incineration efficiency is compliant to <95 % as adequate for the management of waste types and volumes loaded within the incinerator to ensure incineration efficiency is maintained; 4. IR1 - improvement condition has been extended until 15 December 2016. No further extension will be given to this improvement condition in the future; 5. IR2 – improvement condition has been extended until 14 May 2017. No further extension will be considered in the future. This improvement condition is considered a critical improvement in the upgrade and management of dust emissions at the wharf precinct as part of the shiploading operation, and has been a requirement within the Licence since late 2014.



Date	Event	Comments received/ Notes	How comments were taken into consideration
		<p>season and dust containment issues which arose during the installation of the new roofing, have required works on the Rockbin to be extended to November 12'12016. This is to allow for the retrofitting of foam filler required to manage dust containment.</p> <p>5. <u>Pg 16, Table 4.1.1:</u> IR2 - An extension of the completion date to 14 May 2017 is requested due to the extended wet season and equipment unavailability which has impacted on the projected works.</p>	
21/07/2016	Consultation undertaken with interested parties: Shire of Christmas Island	<p>Colin Wheadon, Shire of Christmas Island was emailed by DER on 21 July 2016 requesting confirmation of Planning Approval requirements for Christmas Island Phosphate Mine. The proponent has been made aware of the requirement to confirm any planning approval requirements necessary from the Shire, via email on 21 July 2016. The Shire forwarded the planning approval query to Peter Wood, Department of Planning, for comment on 25 July 2016, as the Shire is unclear as to the requirement for planning approval.</p>	<p>'Range to Reef Environmental' submitted an email on 16 August 2016 confirming that planning approval is not required for the installation of the incinerator as this activity is to occur on Mining Lease area only.</p>
26/08/2016		<p>An email was received by DER from the Shire (Colin Wheadon) on 26 August 2016 confirming that no planning approval is required, as follows:</p>	



Date	Event	Comments received/ Notes	How comments were taken into consideration
14/07/2016 & 21/7/2016	DER Environmental Sciences – Air Quality Branch	<p>“Regards development upon the existing mining lease this does not require planning approval, provided all health and safety/environmental aspects are covered which it would appear that is the case these proposed works can proceed.”</p> <p>Technical advice received from Philippe Najean on 2 August 2016. Key points identified:</p> <ul style="list-style-type: none">• Lack of details and procedures submitted about the management of the operation;• The proponent refers to the manufacturer specifications but has not indicated how they will demonstrate compliance with this commitment through site-specific operational procedures or how the incinerator emissions will be monitored and maintained within the accepted range;• The variation of the components of the waste stream fed to the incinerator is a significant source of uncertainty in the air quality risk assessment. Mitigation of this risk depends on the skill of the operator to develop and maintain procedures for managing the waste mix being fed into the incinerator;• Emissions rates for the proposed incinerator have not been provided. This information is critical for an air quality assessment.	<p>Advice from DER Environmental Services – Air Quality Branch will be considered within the construction of the Licence amendment process.</p> <p>Conditions will be incorporated into the Licence stipulating manufacturer’s operational requirements for the incinerator at optimal level as compared against the EU standards.</p> <p>Waste types for acceptance and processing will be stipulated within the Licence with limits on type and volume for incineration.</p> <p>Additional monitoring parameters will be considered for point source emissions to air and ambient air quality monitoring.</p>



6. Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High



Appendix A

The Licensee has proposed the installation of an incinerator on Lot 622 on Plan 43303 with the inclusion of Category 60 – Incineration, with additional conditions proposed for the Licence.

The primary risk of emission for the incinerator (Hot Hearth ‘HSH100’) is point source emissions to air from the incinerator stack.

Although the incinerator is to operate below the 100 kg/ hour trigger value defined within Schedule 1, Part 1 of the *Environmental Protection Regulations 1987*, the emission from the incinerator stack are considered a contributory activity, and as such is being proposed for inclusion into the Licence with conditions.

The Licensee has not undertaken any modelling for emissions to air and has confirmed that the incinerator will be constructed to the following specifications (Section 4.2, Table 2, application supporting documentation):

SPECIFICATION	CHARACTERISTIC	NOTES
Burning Rate	95 kg/hr.	Used to rate and size the incinerators. Usually incinerators would function at 80% of their burn rate.
Chamber Capacity	Primary Combustion Chamber (PCC)*: 1.7m ³ Secondary Combustion Chamber (SCC)*: 1.8m ³ .	Larger capacity requires more heat and thus a faster burn rate.
Chamber Temperature	Primary Chamber: 600 C to 800 C. Secondary Chamber: 900 C to 1100 C.	
Internal Construction	Insulating Silicate Board, High Temperature Castables and Firebricks.	To retain heat and remain safe.
Operation control	Microprocessor or PLC	
Fuel type/usage	Diesel Fuel or Gas 25 – 65 Ltr/Hr.	Depends on the waste. Items of high calorific value such as hydrocarbons and organics would require less fuel.
Power Usage	3 kW/ hr. @ 15Amps	
Origin of technology design	Australia	
Warranty	12 months conditional	

The NSI Model HSH100 General Waste Incinerator specifications documentation identifies the following:

The incinerator will operate in a controlled excess air mode, by which the necessary supply of blower-forced air enters into the primary chamber at pre-set cycle times through orifices located along both side walls of the primary chamber.



At pre-set cycle times, the secondary combustion chamber is also fed with a controlled supply of blower-forced air providing a fast rate of secondary combustion and optimum fuel efficient destruction of smoke and volatile, toxic waste gases. The higher temperature secondary combustion chamber is located underneath the primary chamber. This provides free radiant heat to rise up into the primary chamber combustion hearth to aid solid waste destruction. The recycled heat assists in maintaining temperature and assist in fuel saving.

To assist general combustion, the incinerator is fitted with one two-stage (High-Low) primary burner and one two-stage (High-Low) secondary burner. The microprocessor control system, linked to the thermocouples in the primary and secondary chambers, maintains the burners in their correct operating stage (high or low) to ensure optimum pre-set temperatures and fuel economy are maintained during the entire combustion process.

The secondary combustion process is considered to be designed to meet stringent air emission standards for volatile dioxin (PCDD) and furan (PCDF) substances. Following adequate high temperature secondary chamber treatment, the gases enter the vertical flue stack and exit to atmosphere.

The design of the HSH100 incinerator has been determined by the proponent to have taken into consideration the emission limits as specified in the United States Environmental Protection Agency (USEPA) Emission guidelines for Small Municipal Waste Combustion Units (Application supporting documentation, 'Incinerator Implementation and Operation' abridged version, 3 May 2016).

The key operation parameters for the small scale intermittent incinerator is proposed as follows as compared against relevant standards (Section 4.2, Table 3, application supporting documentation):

PARAMETER	DETAIL	RECOMMENDATION [EPA (1990) UNDP (2003)]	HSH100 (Proposed incinerator)
Capacity	Destruction rate, safety boxes capacity	Proper sizing is important. Ideally, unit should burn for long periods (~4 hrs.) to save fuel.	Primary Chamber: 1.7m ³ . Secondary Chamber: 1.8m ³ .
Temperatures	Primary Chamber Secondary Chamber	540° to 980° C 980° to 1200° C >850/1100* C (S. African and EU standards) >1000/1100* C (Indian and Thai standards) * more than 1% chlorinated organic matter in waste.	Primary Chamber: 600° C to 800° C. Secondary Chamber: 900° C to 1100° C.
Residence times	Gas (secondary chamber)	>1 second.	Not less than 2 seconds.



Air flows	Total combustion air Supply and distribution of air in the incinerator Mixing of combustion gas and air in all zones Particulate matter entrainment into flue gas leaving the incinerator.	140 – 200% Adequate Good mixing Minimize by keeping moderate air velocity to avoid fluidization of the waste, especially if high (>2%) ash waste is burned.	>175% Air ducting to aid combustion. 70% maximum loading to allow for circulation Moderate air velocity.
Controls and Monitoring	Temperature and many other parameters	Continuous for some, periodic for others	Fully programmable logic control system for temperature control and load timer status (continuous).
Waste	Waste destruction efficiency Uniform waste feed Minimizing emissions of HCl, D/F, metals, other pollutants Load/charge only when incinerator.	>90% by weight Uniform waste feed, and avoid overloading the incinerator Avoid plastics that contain chlorine (polyvinyl chloride products. Avoid heavy metals such as mercury (thermometers).	>95% waste reduction by volume (dependent on number of filters) 70% maximum loading suggested No heavy metals incinerated. Limited plastics to wrapping, containers and filter shells.

Effective operational control is essential towards ensuring that the waste types incinerated are undertaken at an optimal level thereby minimising that degree of contaminants potentially emitted. Control of incinerator temperature, burning time and residence time are important factors for management as are the load volumes per batch and waste batch mixing. Training of a dedicated operator has been confirmed by the proponent in the management of the incinerator and the development of an operations manual and incinerator procedure (Section 4.9, pg. 11 and Table 4 'Residual Risk Ranking for Incinerator Operation', pg. 14, of the application supporting documentation).

The recommended rate of destruction is 70% of the nominal rate of 95 kg/ hour which equates to 66 kg/ hour. Therefore, for a cycle of 4 hours, a maximum load of 264 kg of material loaded per batch is expected to ensure compliance to manufacturer's recommended loading rate (based on the estimation of volume for the mass of waste as submitted by the proponent).

Emission Description

Emission: Discharge of fine metallic fractions, carbon, volatile dioxin (PCDD) and furan (PCDF) substances, lead, cadmium, arsenic, benzene and polycyclic aromatics via the incinerator stack from the incineration process.

Impact: Reduction of local air quality and impact on the amenity, health and welfare of sensitive receptors (Christmas Island School premises boundary, approximately 424 m north of the incinerator location).

Controls: The proponent has confirmed that premises will operate the incinerator during day time working hours limited to Monday to Thursday and by a trained, dedicated operator. Operation of the incinerator will not be continuous and will depend on waste availability, availability of personnel and other operational priorities. The incinerator will not be left unattended whilst in operation. Optimal



incineration takes a minimum of 4-6 hours per load, therefore the latest time the incinerator will start-up will be approximately 10am on any day of proposed incineration. The incinerator has been designed to comply with certain aspects of the EU Directive and USEPA standards on incinerators as per Table 3 of the application supporting documentation (shown above). The proponent has determined that the risks for dangerous air emissions from the incineration process in the immediate area is moderate risk and for the community the risk has been defined as low. This has been based on the incinerator being considered “technologically advanced in line with EU and USEPA specifications [and that] emissions testing during the initial use” will be undertaken.

The incinerator does not include any bed scrubbers and thermal oxidisers which are required in order to reduce toxic airborne compounds for incinerators with capacities of 100 kg/ hour or higher. The proponent has determined that as the incinerator has been designed to be operational below this threshold (95 kg/ hour) it is considered of lower risk/ significance.

Risk Assessment

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

Conditions 1.3.2 and 1.3.3 stipulate waste types received and incinerated with limits specified, for the control of emissions from the stack.

Condition 1.3.4 will require management action in the event of failure, abnormal operation of the incinerator.

Condition 2.2.1 identifies the air emission point for the incinerator to ensure that all combustion gas emissions generated exit the incinerator at the stack to ensure efficient processing of heat and combustibles.

Condition 3.2.1 requires the monitoring of emissions from the incinerator stack on a quarterly basis to assess the impacts of emissions from the stack and potential impacts to the receiving environment. This is essential as the application did not supply any modelling for the proposed infrastructure or the waste types proposed.

Condition 3.6.1 requires the proponent to submit a ‘once off’ report to the CEO, after the first year of operation of the incinerator at the premises. The report is to be based on condition 3.2.1; to determine the constituents of the waste types placed within the incinerator for the operational period and submit predictive ground level concentrations at the nearest sensitive receptors for emissions to air. These conditions are as a result of the proponent:

- not identifying the potential emissions from the type of incinerator proposed;
- not supplying any modelling data on the potential risk from emissions from the incinerator in respect to the type of wastes being proposed for incineration;
- not supplying sufficient information on the details and procedures for the management of the operation;
- not confirming the suitability of the stack height for managing emissions to air;
- not supplying sufficient information relating to control/ monitoring of the emissions or potential mitigation measures in the event of unacceptable emission levels being identified.

The annual analysis of the monitoring data will assist in determining the degree of risk by DER from the operation of the incinerator.



The incinerator is only marginally below (5 kg/ hour) the trigger threshold level (100 kg/ hour) in its design, and is located approximately 424 m from the Christmas Island School premises boundary. Air emissions into the localised airshed may contribute to reduced air quality of the area. No modelling of the proposed incinerator type for use has been submitted or predicted ground level concentrations at the nearest sensitive receptor under optimal operational conditions with the waste type proposed for incineration. Additional analysis is required as conditioned in the amended Licence (Section 3) to assist DER in determining the degree of risk posed from the operation.

Residual Risk

Consequence: Moderate

Likelihood: Possible

Risk Rating: Moderate