



Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986 (WA)(CI)*

Licence Number	L8846/2014/1
Licence Holder	Phosphate Resources Ltd
ACN	009 396 543
File Number	DER2014/002338-2
Premises	Christmas Island Phosphates Christmas Island INDIAN OCEAN TERRITORIES WA 6798 Street address Legal description – 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. As defined by the Premises maps in Schedule 1 attached to the Revised Licence
Date of Report	6 November 2023
Decision	Revised licence granted

**SENIOR INDUSTRY REGULATION OFFICER
REGULATORY SERVICES**

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

Table of Contents

1. Decision summary	1
2. Scope of assessment	1
2.1 Regulatory framework	1
2.2 Application summary	1
2.3 Background and overview of premises	5
2.4 Consolidation of Licence	6
3. Assessment	7
3.1 Review of amendment items 1, 2, 5, 6, 7, 9, 11 and 12	7
4. Risk Assessment for new proposed activities (Items 3 and 4)	7
4.1 Source-pathways and receptors	7
4.1.1 Emissions and controls	7
4.1.2 Receptors	9
4.2 Risk ratings	11
5. Consultation	15
6. Conclusion	15
6.1 Summary of amendments	15
References	19
Appendix 1: Summary of Licence Holder’s comments on risk assessment and draft conditions	20

Table 1: Requested amendments	1
Table 2: Licences consolidated in this amendment	6
Table 3: Licence Holder controls	7
Table 4: Sensitive human and environmental receptors and distance from prescribed activity	9
Table 5. Risk assessment of potential emissions and discharges from the Premises during operation	12
Table 6: Consultation	15
Table 7: Summary of licence amendments and consolidation of licence conditions	16

1. Decision summary

Licence L8846/2014/1 is held by Phosphate Resources Ltd (Licence Holder) for Christmas Island Phosphates (CIP, the Premises), located at Christmas Island, Indian Ocean Territories WA 6798.

This Amendment Report documents the assessment of potential risks to the environment and to public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L8846/2014/1 has been granted.

The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence previously granted in relation to the Premises. The Revised Licence has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Application summary

The Premises is licensed under Part V of the *Environmental Protection Act 1986 (WA)(CI)* (EP Act) for the processing of phosphate ore under Category 5 and for the bulk material loading of the ore onto vessels under Category 58 for export.

On 23 March 2023, the Licence Holder submitted an application to the department to amend Licence L8846/2014/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments, summarised in Table 1, are being sought:

Table 1: Requested amendments

Item	Condition which amendment relates to	Description of proposed amendment (JBS&G, 2023)
1	Definitions	Amendment to the definition of 'Environmental Management Plan' (EMP) to remove the reference to a specific version of the EMP to allow flexibility for the EMP to be updated as required. Requested wording for definition: <i>"Environmental Management Plan means the current version of the Christmas Island Phosphates (CIP) Environmental Management Plan as submitted to the Minister for Territories."</i>
2	General conditions 1.2.4 and 1.2.8	Deletion of conditions due to them no longer being relevant. The conditions relate to the construction and commissioning of the waste incinerator at the premises which has been completed. Construction compliance documentation was submitted to DWER on 24 August 2018, 25 June 2019 and 11 October 2019.

3	Premises operation – waste acceptance Condition 1.3.3	The Licence Holder has requested amendments to the licence to increase the quantity limit of wastes accepted for incineration from 9 tonnes per annual period, which has been found to be too restrictive, to 20 tonnes per annual period “ <i>based on eight burn cycles per week, 50 weeks per year, with an average of 50 kg of waste incinerated per batch</i> ”. No changes are proposed to the amount of waste stored at the incinerator at any one time.						
4	Premises operation – waste processing condition 1.3.5	<p>The Licence Holder has requested an amendment to Table 1.3.3 for waste processing as follows:</p> <table border="1"> <thead> <tr> <th>Waste type(s)</th> <th>Process</th> <th>Process limits</th> </tr> </thead> <tbody> <tr> <td>All incinerated waste (contaminated solid waste and hazardous waste only)</td> <td>Handling and disposal of waste</td> <td> <ul style="list-style-type: none"> • Shall only take place within the incinerator location as defined within Schedule 1: Maps; • Incinerator to be housed within a lockable, enclosed metal structure placed on a concrete base; • Ensure incinerator preheat temperature is no less than 1,000 °C in secondary chamber; • Secondary combustion chamber temperature is to be no less than 980 °C when waste is incinerated; • Incineration efficiency to be no less than 95% (i.e. waste reduction by volume); • Stack temperature to be no less than 400+ °C during incineration; • Minimum of two second residence time of gas; • No incineration of putrescible wastes, radioactive wastes, mercury thermometers, solvents, chemicals, batteries, paint, mobile phones, ink cartridges, tyres, computers or computer accessories, glass, aluminium cans or polyvinyl chloride products or products containing sulphur, nitrogen or toxic metals to occur; • Ensure incineration of waste is carried out in accordance with the manufacturer’s specifications for waste type segregation and uniform waste feed; • Minimum operating time at optimal temperature is at least 4 hours; • Minimum cool down period prior to ash removal is at least 3 hours; and • Ensure that all residual waste ash generated from the incineration process is disposed of to a licenced facility able to dispose of the waste type generated. </td> </tr> </tbody> </table> <p>The process limits proposed for deletion are considered unachievable and impractical by the licence holder as a significant proportion of the waste for incineration is not flammable such as the steel components in oil filters. The typical waste efficiency for hydrocarbon absorbents and contaminated soils is also very low as they are largely inert.</p> <p>The applicant also states that applying a four-hour minimum operating time is also impractical and inconsistent with the manufacturer’s recommended operating cycle (the pre-determined cycle set by the manufacturer is 90 minutes). Operational experience has demonstrated that the 90-minute cycle is sufficient to ensure complete waste incineration, although the time required depends on the waste type and its calorific value (the lower the calorific value, the longer the time required for incineration).</p> <p>The applicant also raises concerns with the incinerator possibly overheating if a minimum operation time of four hours is used as operational experience has found the incinerator temperatures to rise progressively on subsequent burn cycles.</p>	Waste type(s)	Process	Process limits	All incinerated waste (contaminated solid waste and hazardous waste only)	Handling and disposal of waste	<ul style="list-style-type: none"> • Shall only take place within the incinerator location as defined within Schedule 1: Maps; • Incinerator to be housed within a lockable, enclosed metal structure placed on a concrete base; • Ensure incinerator preheat temperature is no less than 1,000 °C in secondary chamber; • Secondary combustion chamber temperature is to be no less than 980 °C when waste is incinerated; • Incineration efficiency to be no less than 95% (i.e. waste reduction by volume); • Stack temperature to be no less than 400+ °C during incineration; • Minimum of two second residence time of gas; • No incineration of putrescible wastes, radioactive wastes, mercury thermometers, solvents, chemicals, batteries, paint, mobile phones, ink cartridges, tyres, computers or computer accessories, glass, aluminium cans or polyvinyl chloride products or products containing sulphur, nitrogen or toxic metals to occur; • Ensure incineration of waste is carried out in accordance with the manufacturer’s specifications for waste type segregation and uniform waste feed; • Minimum operating time at optimal temperature is at least 4 hours; • Minimum cool down period prior to ash removal is at least 3 hours; and • Ensure that all residual waste ash generated from the incineration process is disposed of to a licenced facility able to dispose of the waste type generated.
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5	Premises operation – waste storage condition 1.3.10	Amendment to remove the requirement for the bunded area used for the storage of hydrocarbon contaminated waste to be concrete bunded. The area was constructed with a bunded metal base and construction compliance documentation was submitted to DWER regarding this as per Condition 1.2.7 of the licence.						

6	Premises operation – North-Arm Cleveland Cascade condition 1.3.11	Amendment to delete the condition for installation of the ‘North Arm’ by no later than 14 May 2017 as the ‘North Arm’ has been installed and is operational.
7	Premises operation – rock shed dust improvements condition 1.3.12	Amendment to delete condition 1.3.12 stating that <i>“The licensee must submit a report confirming completion of the improvements (defined in the improvement report submitted to DER on 30 November 2015) to reduce the rock shed dust emissions from the facility by no later than 15 December 2016.”</i> The condition has been satisfied and therefore, no longer required on the licence.
8	Monitoring of point source emissions to air condition 3.2.1	<p>Amendment requested to reduce the frequency of stack monitoring from quarterly to annually. The Licence Holder provides the following justifications for reducing the frequency:</p> <p><i>“Data gained up to Quarter 4 2018 was used to inform air dispersion modelling (Air Assessments 2019). The assessment concluded that:</i></p> <ul style="list-style-type: none"> <i>• Predicted ground level concentrations (GLCs) from the dryer and incinerator emissions are all below the criteria adopted;</i> <i>• Predicted maximum GLCs from incinerator emissions occur within 50 m of the stack and decrease rapidly with distance; and</i> <i>• The incinerator stack emissions are negligible contributors to the GLCs for most species and averaging periods assessed when considered cumulatively with the dryer emissions.</i> <p><i>A review of the monitoring results gained since 2019 shows that the results are comparable to historical results and as used in the modelling assessment.</i></p> <p><i>Emissions from the dryer are driven by the fuel composition, combustion conditions (including moisture content of the feed material) and performance of the baghouse filters. PRL has invested considerable time and resources in improving management of these aspects to ensure that emissions are controlled:</i></p> <ul style="list-style-type: none"> <i>• The rotary dryers use a consistent fuel source, with the sulfur content limited by Condition 1.3.8 of the licence;</i> <i>• PRL has focussed on process sensors and monitoring to improve burner and combustion management, and management of the bagfilters. This includes:</i> <ul style="list-style-type: none"> <i>○ installation/replacement of sensors (e.g., baghouse differential pressure monitors);</i> <i>○ improved management of data through the Citect SCADA (Supervisory Control and Data Acquisition) system – such as, fuel usage, feed material and product moisture content, and baghouse differential pressures...; and</i> <i>• Maintenance of pressure monitors in the bagfilters as required by Condition 1.3.9 of the licence.</i> <p><i>PRL will continue to focus resources on process operations. An annual frequency is considered sufficient to provide a snapshot of emissions and highlight any significant deviations from the established baseline. If any significant deviations are identified through the annual stack test, PRL will investigate the cause and implement corrective actions as necessary, including carrying out additional stack tests if required.”</i></p>

9	Monitoring of inputs condition 3.4.1	<p>Amendment to Table 3.4.1 to include monitoring of process outputs as well as inputs for the incineration process as follows:</p> <table border="1"> <thead> <tr> <th>Input/Output</th> <th>Parameter</th> <th>Units</th> <th>Averaging period</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Diesel fuel or recycled waste-oil other fuel oils</td> <td>Volume</td> <td>Litres (L)</td> <td>Monthly</td> <td>Continuous</td> </tr> <tr> <td>Waste accepted for incineration</td> <td>Waste type</td> <td>N/A</td> <td>N/A</td> <td>Each load accepted at the premises</td> </tr> <tr> <td>Ash removed from the incinerator</td> <td>Quantity</td> <td>Kilograms (kg)</td> <td>Monthly</td> <td>Each time the incinerator is emptied.</td> </tr> <tr> <td>Ash removed off-site</td> <td>Quantity</td> <td>Kilograms (kg)</td> <td>Monthly</td> <td>Each load removed from the premises.</td> </tr> <tr> <td>Hydrocarbon contaminated soil</td> <td>Volume</td> <td>Kilograms (kg)</td> <td>Monthly</td> <td>Each load disposed of within any kiln at the Premises.</td> </tr> <tr> <td>Hydrocarbon contaminated waste</td> <td>Volume</td> <td>Kilograms/ tonnes</td> <td>Monthly</td> <td>Each load received to the storage area prior to incineration. Each load disposed of to incinerator or to a licenced facility (including residual ash).</td> </tr> </tbody> </table> <p>The Licence Holder has requested this so that more meaningful information can be obtained to prepare reports and allow monitoring of other parameters such as efficiency of incineration (waste inputs vs ash outputs).</p>	Input/Output	Parameter	Units	Averaging period	Frequency	Diesel fuel or recycled waste-oil other fuel oils	Volume	Litres (L)	Monthly	Continuous	Waste accepted for incineration	Waste type	N/A	N/A	Each load accepted at the premises	Ash removed from the incinerator	Quantity	Kilograms (kg)	Monthly	Each time the incinerator is emptied.	Ash removed off-site	Quantity	Kilograms (kg)	Monthly	Each load removed from the premises.	Hydrocarbon contaminated soil	Volume	Kilograms (kg)	Monthly	Each load disposed of within any kiln at the Premises.	Hydrocarbon contaminated waste	Volume	Kilograms/ tonnes	Monthly	Each load received to the storage area prior to incineration. Each load disposed of to incinerator or to a licenced facility (including residual ash).
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10	Monitoring of ambient air quality condition 3.5.1	<p>Amendment requested to remove the use of a tapered element oscillating microbalances (TEOM) monitor to monitor ambient air quality due to ongoing operational issues with the equipment. Amendments to Table 3.5.1 are proposed as follows:</p> <table border="1"> <thead> <tr> <th>Monitoring point reference and location</th> <th>Parameter</th> <th>Units</th> <th>Averaging period</th> <th>Frequency</th> <th>Method</th> </tr> </thead> <tbody> <tr> <td rowspan="2">TEOM 2 sampler</td> <td>Dust as particulates PM₁₀</td> <td rowspan="2">µg/m³</td> <td rowspan="2">24 hrs</td> <td rowspan="2">Continuous</td> <td rowspan="2">AS 3580.9.3</td> </tr> <tr> <td>Dust as Total suspended particles (TSP)</td> </tr> <tr> <td>Portable dust monitors</td> <td>Dust as particulates PM₁₀ Dust as TSP</td> <td>µg/m³</td> <td>Hourly</td> <td>During ship loading activities</td> <td>AS 3580.9.3</td> </tr> </tbody> </table> <p>The TEOM monitors have not been found suitable for use in high humidity and coastal environments as they are sensitive to moisture. The Licence Holder believes that the portable monitors that are already being used to monitor air quality during ship loading are sufficient to monitor dust emissions from the premises.</p>	Monitoring point reference and location	Parameter	Units	Averaging period	Frequency	Method	TEOM 2 sampler	Dust as particulates PM ₁₀	µg/m ³	24 hrs	Continuous	AS 3580.9.3	Dust as Total suspended particles (TSP)	Portable dust monitors	Dust as particulates PM ₁₀ Dust as TSP	µg/m ³	Hourly	During ship loading activities	AS 3580.9.3																
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11	Meteorological monitoring condition 3.7.1	<p>Amendment to Table 3.7.1 for meteorological monitoring to be undertaken at the weather station located on the ‘South Arm’ of the ship loading system instead of with the TEOM monitor.</p>																																			
12	Process monitoring condition 3.6.1	<p>Amendment requested to delete condition 3.6.1 which states:</p> <p><i>“The Licensee must submit a report to the CEO after the first year of operation of the incinerator, based on the analysis of collected monitoring data for the incinerator stack emissions (as per condition 3.2.1), which:</i></p> <ul style="list-style-type: none"> <i>(a) Includes the constituents of the waste types that have been disposed of via incinerator; and</i> <i>(b) Includes predicted ground level concentrations at the nearest sensitive receptors. “</i> <p>This condition has been satisfied.</p>																																			

Items 8, 10 and 11 listed above require advice from the department’s Air Quality Branch and will be assessed as a separate department-initiated amendment at a later date. All remaining items will be assessed and addressed in this Amendment Report.

No changes to the throughputs for Category 5 or Category 58 have been requested by the

Licence Holder.

2.3 Background and overview of premises

The Licence Holder operates the following facilities on the premises:

- **Mining Fields:** CIP is currently recovering stockpiled phosphate ore and conducting in situ mining of phosphate under Mining Leases MCI 70/1A, MCI 70/10, MCI 70/17, MCI 70/18, and MCI 70/19.
- **Run of Mine (ROM):** the processing stockpile to which material from mining areas and recoverable stockpiles is transported to. Phosphate rock is blended and transferred to the dryers through the apron feeder and conveyors (W4/W5).
- **Dryers Precinct:** There are two drying kilns on site. Phosphate rock is processed through treatment with heated air (700°C and above) inside the drying kilns, to meet 4-6% market moisture requirements. A fuel oil burner is used to generate the heat for the dryers. The drying process generates phosphate fines which then pass through cyclones which collect particles $\geq 30 \mu\text{m}$. Remaining fines ($< 30 \mu\text{m}$) which are not captured by the cyclones are collected by the baghouse system. Fines from both the cyclones and baghouse are directed to the Dryers Storage Silos. Rock product from the dryers is conveyed through a screen and crushing plant and then transferred to the Dryers Storage Silos.
- **Cross Country Conveyors (PS10/C1-05) from Dryers Precinct to Downhill Silos:** This conveyor belt system transports phosphate rock and dust to the Downhill Silos.
- **Downhill Conveyors (D8-D13) from top of incline to Ship Loading Precinct:** Phosphate rock from the Downhill Silos is transported by this conveyor belt system to the Wharf Precinct's Rock Storage Bin (75, 00 m³ capacity). Dust is transferred inside the airslide system to storage silos (each 2,000 m³ capacity) at the Wharf Precinct. Phosphate rock and dust is then transported to the ship loading precinct and dust bagging area respectively.
- **Wharf/Ship Loading Precinct for loading and dust bagging area:** Dust from storage silos is bagged into 50 kg bags and palletised for loading onto ships for export. Floor gates and conveyor belts transfer phosphate rock from the rock bin to two cantilever arms that are used to load phosphate rock directly into the ship holds using Cleveland Chutes.
- **Laboratory:** for testing and analysis of phosphate product grade by conducting acid digests. Test waste outputs are treated (all laboratory waste effluent is discharged to a neutralising system) to ensure that they are within the pH range of 6.0 – 8.5 prior to disposal to the leach drain.
- **Workshops:** for mobile plant maintenance, maintenance and repair of mine electrical equipment, fixed plant maintenance (including conveyors and cantilevers), repair and maintenance of site infrastructure.
- **Offices:** The premises has two offices. One is the Administration/Finance Office and the other is the Drumsite Office.
- **Incinerator:** Currently used for the incineration/disposal of hydrocarbon-contaminated wastes.

A Dust Management Committee is in place for the monthly review of operational areas and investigation of improvements which can be made to reduce dust emissions.

CIP has undertaken various actions to reduce dust emissions over the years to meet their licence obligations, including the following:

- On 12 April 2017, CIP submitted a report to DWER confirming completion of the

improvements outlined in the improvement report submitted to the Department on 30 November 2015 to reduce rock shed dust emissions from the facility.

- On 28 Feb 2018, CIP submitted a report to DWER to satisfy management actions required in Table 1.3.4 of the existing licence. The report advised the following:
 - Wood screen and crusher infrastructure: that build-up on infrastructure had been cleaned, shade cloth screen was installed along the open side of conveyors and side rubbers were inspected and replaced where required to inhibit dust lift off into the environment;
 - Cross Country Rock Silos 11-14/ Dust Silos 11-12: build-up on infrastructure had been removed, holes had been patched, 3 silos had been completed, and repair works remained on repairment/replacement of roofing structures or side walls emitting dust.
 - Dust bagging silos 1-4: Repair works on silos had commenced and would take approximately 3 months. Repair/replacement of roofing structures planned;
 - Baghouse DRIBH05: The baghouse installation was completed on 21 September 2017, including testing and recommissioning in accordance with design and manufacturer’s specifications.
- Installation of the North Arm Cleveland Chute, which was completed in July/August 2018.

The incinerator was constructed and commissioned under an amendment to the licence issued on 23 September 2016. Construction and Compliance documentation for the incinerator was received by DWER on 24 August 2018. DWER requested further information in relation to the documentation, with the final outstanding information provided to DWER on 11 October 2019. Confirmation that the Compliance Report was accepted was provided to CIP by DWER on 7 November 2019.

On completion of the incinerator commissioning and trials, the report required by Condition 3.6.1 of the licence, which included the constituents of the waste types disposed of via the incinerator and the predicted ground level concentrations at the nearest sensitive receptors, was provided to DWER on 25 June 2019.

2.4 Consolidation of Licence

As part of this amendment package the department has consolidated the licence by incorporating changes made under the Amendment Notices as summarised in Table 2.

Table 2: Licences consolidated in this amendment

Instrument	Issued	Summary of approval
L8846/2014/1	30/01/2018	Amendment Notice 1 – Amendments to the Licence as a result of an Inspection undertaken in August 2017.

The obligations of the Licence Holder have not changed in consolidating the licence. The department has not undertaken any additional risk assessment of the Premises related to previous Amendment Notices.

In consolidating the licence, the CEO has:

- updated the format and appearance of the Licence;
- revised licence condition’s numbers, and removed any redundant conditions and realigned condition numbers for numerical consistency; and
- corrected clerical mistakes and unintentional errors.

The full consolidation of licence conditions as they relate to this Revised Licence are detailed in Section 6.1. Previously issued Amendment Notices will remain on the department’s website for future reference and will act as a record of the department’s decision making.

3. Assessment

3.1 Review of amendment items 1, 2, 5, 6, 7, 9, 11 and 12

The deletion or amendment of conditions specified in amendment items 1, 2, 5, 6, 7, 9, and 12 do not change the risk assessment previously undertaken for the operation of the premises. Item 1 is an administrative change, whereas items 2, 5, 6 and 7 relate to conditions which have been met as discussed in Section 2.3 and are therefore redundant.

Item 9 requests the monitoring of inputs and outputs table to be amended to provide more relevant information for reporting. The Delegated Officer considers the requested amendments to be suitable. However, it is noted that the amendment does not capture the monitoring of the amount of waste loaded into the kiln for incineration. This information is considered to be valuable to determine the incineration efficiency and therefore, the requirement to monitor the waste load disposed of to the kiln will be retained.

The change requested to undertake meteorological monitoring from the ‘South-Arm’ of the ship loading system (Item 11) is considered acceptable if undertaken in accordance with AS 3580.14 and monitoring of all parameters stipulated on the existing licence will be retained. However, the location for meteorological monitoring may be reconsidered during the forthcoming department-initiated amendment for air quality monitoring requirements.

4. Risk Assessment for new proposed activities (Items 3 and 4)

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence Holder controls

Emission	Sources	Potential pathways	Controls
Gaseous and particulate emissions from the incinerator	Increase in quantity of waste accepted for incineration (does not include increase in amount of waste stored prior to incineration)	Air/windborne pathway	<ul style="list-style-type: none"> Technical parameters of the incinerator (e.g. chamber temperature and gas residence time) will remain unchanged and have been designed to ensure that hazardous carbon waste is sufficiently combusted. Incinerator operating regime will remain unchanged (process limits and management actions of the current
Odour			

Emission	Sources	Potential pathways	Controls
	Reduced incinerator minimum operating time		<p>licence will still apply).</p> <ul style="list-style-type: none"> • The weight of waste incinerated per day will continue to be within throughput limits as required under the existing licence (max. 70% of the volume of the 1.7m³ chamber per batch). • The maximum rated capacity of the incinerator is 95 kg/hr which is less than the 100 kg/hr design capacity threshold for a Category prescribed premises under the EP Act. • The operational capacity of the incinerator is estimated to be around 36 kg/hr which is significantly less than the incinerators maximum rated capacity. • The incinerator operates for less than 600 hours per year from two cycles per day, up to four days a week. • The emissions from the incinerator are estimated to contribute to 0.05% of total emissions authorised by the licence from the dryers stack and emissions testing has confirmed that pollutants pose a low risk to sensitive receptors. • The pre-determined incinerator cycle set by the manufacturer is 90 minutes and operational experience has demonstrated this cycle time to be sufficient to ensure complete waste incineration. • In cases where longer incineration times are required for treatment of contaminated soils/absorbents where a lack of aeration can inhibit combustion, the material will be treated in the first cycle of the day and allowed to aerate before re-treating in a second cycle (this is to ensure complete removal of hydrocarbon contamination).
Contaminated stormwater	Storage of waste prior to incineration	Overland runoff to surface water	<ul style="list-style-type: none"> • The amount of waste stored at the incinerator at any one time will not change.
Leachate	Incorrect disposal of waste remains after incineration	Seepage to soils and groundwater	<ul style="list-style-type: none"> • Remaining debris after incineration will be transferred to a skip bin ready for disposal at the Shire of Christmas Island's tip site.

4.1.2 Receptors

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

Table 4 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020)).

Table 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Unallocated Crown Land (UCL)	Surrounds significant areas of the Prescribed Premises boundary (west and east)
Christmas Island District High School	Appx. 500 m north of the incinerator
Residential premises	Appx. 650m north of incinerator
Environmental receptors	Distance from prescribed activity
Groundwater	Approximately 50 m – 100 m bgl, fresh to brackish quality
Christmas Island National Park	Directly surrounds the prescribed premises boundary
Surface waters: Indian Ocean 'Hosnie' springs 'Dales' springs	Appx. 560 m west of southern area premises boundary (where incinerator is located) >4 km south-east from prescribed premises boundary >10 km south-west from prescribed premises boundary The Delegated Officer considers that due to the distance from the premises to 'Hosnie' and 'Dales Springs' that they are unlikely to be affected by emissions and have not been considered further in the risk assessment.

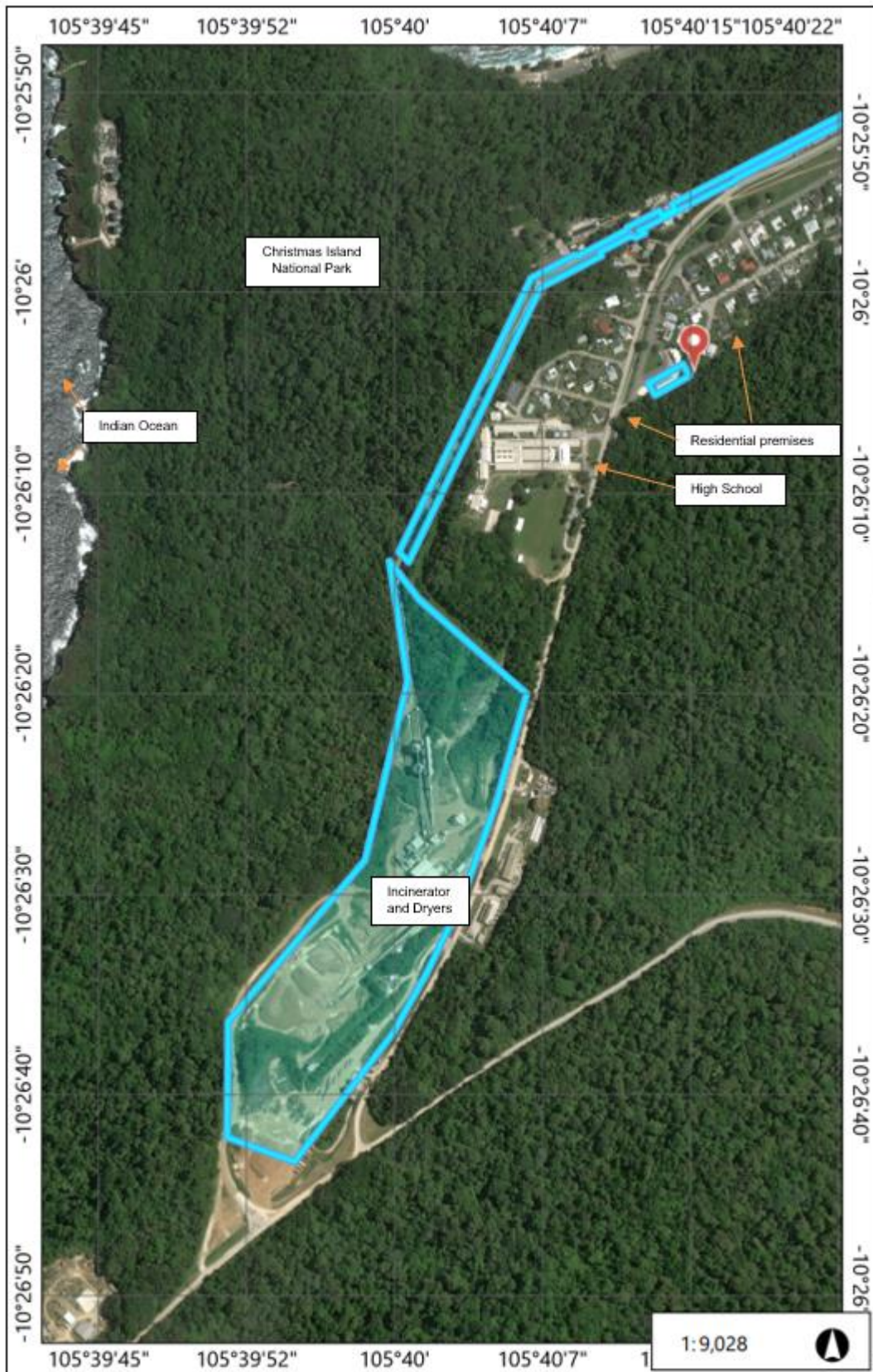


Figure 1: Distance to sensitive receptors from incinerator

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 4.1. Where linkages are incomplete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 4.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The Revised Licence L8846/2014/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation								
<p>Increase in quantity of waste accepted for incineration annually (does not include increase in amount of waste stored prior to incineration)</p> <p>Reduced minimum operating time of incinerator.</p>	Gaseous and particulate emissions	Air/windborne pathway causing impacts to health and amenity	<p>Residential premises appx 650 m north of incinerator</p> <p>Christmas Island District High School</p>	Refer to Section 4.1	<p>C = Minor</p> <p>L = Unlikely</p> <p>Medium Risk</p>	Y	<p>Condition 1, 5, 7, 8, 10, 11, 12, 13, 14, 15, 17, 23, 25, 27, 31, 33, 34, 36</p>	<p>The types of wastes incinerated, maximum quantities incinerated in any one day, and processes will remain the same.</p> <p>The frequency of wastes incinerated may increase. However, the Delegated Officer considers that the existing waste processing conditions within the licence are sufficient to manage the risk of gaseous and particulate emissions from this increase.</p> <p>The incinerator will still remain below the threshold for a prescribed premises.</p> <p>The minimum four-hour operating time for the incinerator is based on the recommendations from the EPA (1990) and UNDP (2003) that the unit should burn for long periods (~4 hours) to save fuel.</p> <p>The Delegated Officer acknowledges that some waste types may require a shorter burning time to others depending on their calorific value. The</p>

Licence: L8846/2014/1

Risk Event					Risk rating ¹	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood			
								Delegated Officer considers that if the incinerator is operated in accordance with manufacturer's instructions (including recommended operating time), and minimum temperatures and gas residence times are met, then removing the requirement to operate the incinerator at optimal temperature for four hours is unlikely to increase the risk of gaseous and particulate emissions.
	Odour			Refer to Section 4.1	C = Minor L = Unlikely Medium Risk	Y		N/A
Insufficient removal of contamination in waste through incineration process	Contaminated stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Local authority reserves Christmas Island National Park	Refer to Section 4.1	C = Minor L = Rare Low Risk	Y	Condition 3,10, 27, 36	The Delegated Officer considers that removing the control from the licence for the incinerator efficiency (waste reduction by volume) to be at least 95% should not significantly increase the risk of emissions. The licence holder has demonstrated that a waste incineration efficiency of at least 95% is not possible for wastes such as oil filters and contaminated soil as incineration only removes moisture, organic
Incorrect disposal of waste remains after incineration	Leachate	Seepage to soils and groundwater causing ecosystem disturbance and impacting groundwater	Indian Ocean Groundwater dependent ecosystems	Refer to Section 4.1	C = Minor L = Rare Low Risk	Y		

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
		quality						<p>matter and hydrocarbons, leaving behind the inert material. All waste remains should be capable of being adequately managed through the existing licence conditions and controls proposed by the licence holder.</p> <p>An additional condition has been included for incinerator efficiency to be reported through the Annual Environmental Report for the premises.</p>

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

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

5. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website (19/04/2023)	None received	N/A
Application advertised in The Islander Christmas Island Community Newsletter (5/05/2023)	None received	N/A
Local Government Authority advised of proposal (19/04/2023)	None received	N/A
Department of Infrastructure, Transport, Regional Development, Communications and the Arts (19/04/2023)	None received	N/A
Department of the Premier and Cabinet	None received	N/A
Licence Holder was provided with draft amendment on 4/09/2023	Refer to Appendix 1	Refer to Appendix 1

6. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

6.1 Summary of amendments

Table 7 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 7: Summary of licence amendments and consolidation of licence conditions

Existing condition	Revised licence condition/new licence condition	Proposed amendment/Conversion notes
1.1.1 – 1.1.4	Table 16 Definitions table	Redundant conditions. Revised to current licensing format. ACN, Annual Audit Compliance Report (AACR), ARI, books, CEO, Department, emission, Environmental Management Plan, licence, and licence holder added to Definitions table.
1.2.1	Condition 2	The second part of the condition relating to ambient air monitoring equipment has been moved to the Infrastructure and equipment requirements table (Table 1). Licensee has been changed to Licence Holder as per current Licensing format.
1.2.2	Condition 3	Licensee has been changed to Licence Holder as per current Licensing format.
1.2.3	Condition 4	Licensee has been changed to Licence Holder as per current Licensing format.
1.2.4 – 1.2.8	N/A	Deleted. Conditions have been fulfilled by the Licence Holder and are no longer required.
1.3.1, Table 1.3.1	Condition 5, Table 2	Licensee has been changed to Licence Holder as per current Licensing format.
1.3.2	Condition 6	Licensee has been changed to Licence Holder as per current Licensing format.
1.3.3, Table 1.3.2	Condition 7, Table 3	Licensee has been changed to Licence Holder as per current Licensing format. Table has been updated to list the different waste types/categories accepted for incineration and their specifications. Requirement for wastes for final disposal to be removed to an “off-site” licensed facility only has been removed to give the Licence Holder the flexibility to dispose of wastes to an onsite licensed facility if appropriate.
1.3.4	Condition 8	Licensee has been changed to Licence Holder as per current Licensing format and the condition has been amended to refer to updated table number.
1.3.5, Table 1.3.3	Condition 10, Table 4	Licensee has been changed to Licence Holder as per current Licensing format and the condition has been amended to refer to updated table number. Waste type has been updated to “all wastes for incineration” and the following process limits have been removed as requested in the amendment application due to them not being practical: <ul style="list-style-type: none"> • Incineration efficiency to be no less than 95% (i.e. waste reduction by volume); • Minimum operating time at optimal temperature is at least 4 hours;
1.3.6, Table 1.3.4	Condition 11, Table 5	Licensee has been changed to Licence Holder as per current Licensing format and the condition has been amended to refer to updated table number. Table has been updated to incorporate amendments from Amendment Notice 1.
1.3.7	Condition 12	Licensee has been changed to Licence Holder as per current Licensing format and the condition has been amended to refer to updated condition number 11.

Existing condition	Revised licence condition/new licence condition	Proposed amendment/Conversion notes
1.3.8	Condition 1	Condition has been moved to the Infrastructure and equipment requirements table
1.3.9	Condition 1	Condition has been moved to the Infrastructure and equipment requirements table
1.3.10	Condition 9	Condition amended to cover the storage of all wastes and refers to the designated storage area for waste to be incinerated in Condition 1, Table 1. It also includes updated storage times and conditions for all wastes.
1.3.11	N/A	Redundant condition. Deleted from licence as the Cleveland Cascading chute system has been installed.
1.3.12	N/A	Redundant condition. Deleted from licence as the required report confirming completion of improvements to the rock shed was submitted.
1.3.13	Condition 13	Licensee has been changed to Licence Holder as per current Licensing Format
1.3.14	Condition 14	Licensee has been changed to Licence Holder as per current Licensing Format
1.3.15	Condition 15	Licensee has been changed to Licence Holder as per current Licensing Format
1.3.16, Table 1.3.4	N/A	Condition is from Amendment Notice 1. Condition has been addressed and therefore, has been deleted as no longer required.
2.1.1	Condition 16	Licensee has been changed to Licence Holder as per current Licensing Format. Condition has been updated to refer to conditions 17, 18, 19 and 20, which are the same conditions which were under existing licence Section 2.
2.2.1, Table 2.2.1	Condition 17, Table 6	Licensee has been changed to Licence Holder as per current Licensing Format. Condition has been updated to refer to Figure 9 instead of “ <i>on the map of emission points</i> ”. Baghouse numbers DRIBH05 & DRIBH06 have been included in the table to reflect the amendments made in Amendment Notice 1.
2.3.1, Table 2.3.1	Condition 18, Table 7	Licensee has been changed to Licence Holder as per current Licensing Format. Table amended to incorporate the amendments in Amendment Notice 1.
2.3.2, Table 2.3.2	Condition 19, Table 8	Licensee has been changed to Licence Holder as per current Licensing Format.
2.4	Condition 20	Licensee has been changed to Licence Holder as per current Licensing Format. Condition amended to refer to “ <i>Environmental Management Plan</i> ” instead of a specific plan as per existing condition which states “ <i>Environmental Management Plan 2012-2017’ (as amended from time to time)</i> .” This amendment was supported by the Delegated Officer as it allows for the Environmental Management Plan to be updated and improved upon as required.
3.1.1	Condition 21	Licensee has been changed to Licence Holder as per current Licensing Format.

Existing condition	Revised licence condition/new licence condition	Proposed amendment/Conversion notes
3.1.2	Condition 22	Licensee has been changed to Licence Holder as per current Licensing Format.
3.1.3	Condition 23	Licensee has been changed to Licence Holder as per current Licensing Format.
3.1.4	Condition 24	Licensee has been changed to Licence Holder as per current Licensing Format.
3.2.1, Table 3.2.1	Condition 25, Table 9	Licensee has been changed to Licence Holder as per current Licensing Format.
3.3.1, Table 3.3.1	Condition 26, Table 10	Licensee has been changed to Licence Holder as per current Licensing Format. Table has been amended to include monitoring points and increase monitoring frequency to monthly as per Amendment Notice 1.
3.4.1, Table 3.4.1	Condition 27, Table 11	Licensee has been changed to Licence Holder as per current Licensing Format. Table has been amended to include the monitoring of waste inputs and ash outputs.
3.5.1, Table 3.5.1	Condition 28, Table 12	Licensee has been changed to Licence Holder as per current Licensing Format.
3.5.2	Condition 29	Licensee has been changed to Licence Holder as per current Licensing Format.
3.6.1	N/A	Condition deleted as it has been addressed.
3.7.1	Condition 1	Condition moved to Table 1 Infrastructure and equipment requirements
3.7.2	Condition 30	Licensee has been changed to Licence Holder as per current Licensing Format. Table updated to refer to the weather station located on the North-Arm of the ship loading system
4.1.1	Conditions 34 and 35	Redundant condition. Updated to current licence format.
4.1.2	Condition 33	Updated to current licence format.
4.1.3	Condition 31	Updated to current licence format.
4.1.5	Condition 32	Licensee has been changed to Licence Holder as per current Licensing Format.
4.2.1, Table 4.2.1	Condition 36, Table 14	Updated to current licence format and to incorporate Amendment Notice 1 amendments.
4.3.1, Table 4.3.1	Condition 37, Table 15	Updated to refer to updated condition numbers.
Schedule 1: Maps	N/A	Maps updated in accordance with Amendment Notice 1, labelled with Figure numbers, and renamed.

References

1. Christmas Island Phosphates (CIP) 2021, *Annual Environmental Report August 2021*
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
4. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. JBS & G Australia Pty Ltd 2023, *Licence L8846/2014/1 – Christmas Island Phosphates – Licence Amendment Application*

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

Condition	Summary of Licence Holder's comment	Department's response
Figure 9	The Licence Holder provided some initial comments on 14 September 2023 which requested that Figure 9 (Map of emission points to land from laboratory) be edited as sampling is conducted at the Buffer Tank (L4) discharge point and not at sampling locations 2 and 3 shown on the map (as these were disabled).	The Department requested that the Licence Holder provide an amended map of emission points to land from the laboratory, or alternatively, proposed that the caption for Figure 9 could be changed to make it clearer that L4 is the only emission point.
-	The Licence Holder requested on 4 October for an extension until the end of October to review the drafts and provide further comments.	The time extension was granted by the Department.
-	<p>The Licence Holder provided the following further comments on 24 October 2023:</p> <ol style="list-style-type: none"> 1. That references to putrescible waste be removed as there is no intention of storing or burning putrescible wastes at the incinerator facility. 2. The Licence Holder confirmed that they were happy with the change to the caption for Figure 9. 3. That the reference to the meteorological monitoring station at the South Arm be changed to a more generic "Shiploading Yard" as the location may change depending on future monitoring installations. 	<p>The licence does not permit the storage or incineration of putrescible wastes. The Delegated Officer has removed the reference to putrescible wastes in the Licence Holder Controls Table (Table 2) of the Decision Report.</p> <p>The Delegated Officer has amended the wording for the caption to Figure 9 to "Map of emission point (L4) to land from laboratory".</p> <p>The Delegated Officer has determined that specifying a more generic location for the meteorological monitoring station is not appropriate. The Shiploading Yard is not labelled clearly on any premises maps to be referred to. As the air quality monitoring requirements on the licence will be reviewed by the Department in the near future, any changes to the location of the meteorological monitoring station as a result of air quality monitoring installations can be considered at this time.</p>