



# Decision Document

## *Environmental Protection Act 1986, Part V*

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**Proponent:** Simcoa Operations Pty Ltd

**Licence:** L6341/1988/10

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**Registered office:** 973 Marriott Road  
WELLESLEY WA 6233

**ACN:** 009 064 653

**Premises address:** Kemerton Silicon Smelter  
973 Marriott Road  
WELLESLEY WA 6233  
Being Lot 5548 on Plan 188561 and Lot 5549 on Plan 188562

**Issue date:** Thursday, 9 October 2014

**Commencement date:** Monday, 13 October 2014

**Expiry date:** Saturday, 12 October 2019

### **Decision**

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue an amended licence. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by: Elizabeth Whisson  
Licensing Officer

Decision Document authorised by: Jonathan Bailes  
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*. 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	<b>Category number(s)</b>	<b>Assessed design capacity</b>
	37: Char manufacturing	26 000 tonnes per annum
	44: Metal smelting or refining	50 000 tonnes per annum
Application verified	Date: 24/09/2015	
Application fee paid	Date: N/A	
Works Approval has been complied with	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> N/A <input type="checkbox"/>
Compliance Certificate received	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> N/A <input type="checkbox"/>
Commercial-in-confidence claim	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes <input checked="" type="checkbox"/>	No <input 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"/>
		Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Is the proposal subject to Ministerial Conditions?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
		Ministerial statement No: 813 EPA Report No:
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"/>
	Department of Water consulted Yes <input type="checkbox"/> No <input type="checkbox"/>	
Is the Premises within an Environmental Protection Policy (EPP) Area	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>



### **3 Executive summary of proposal and assessment**

The Kemerton Silicon Smelter is a silicon metal production plant located 17 km north of Bunbury and within the industrial core of the Kemerton Industrial Park (KIP), a strategic industrial area for heavy industry covering over 7,500 ha. The distance between the premises boundary and the nearest residential premises outside the KIP buffer (zoned special residential) is approximately 2 km.

Quartzite, mined north of Moora, is transported to the site and is then combined with charcoal, manufactured on-site and other reductants in submerged arc electric furnaces to produce high purity silicon metal. The metal is then crushed and packaged to customer requirements and shipped primarily through Fremantle. Baghouses are used to cleanse furnace off-gases and the resultant fume is then packaged and sold. The cleaned off gases are then vented to the atmosphere. The key environmental impacts are emissions of noise, dust, water and air emissions, as well as solid wastes.

The smelter is subject to the *Silicon (Kemerton) Agreement Act 1987* for the manufacture of silicon for the State of Western Australia, and Ministerial Statement No. 813 of 2009.

This amendment is to allow brackish wastewater from the reverse osmosis plant and settling pond to be pumped to effluent ponds at the adjacent Kemerton Titanium Dioxide Processing Plant, from where it will be discharged to the environment via an ocean outfall. The disposal of the wastewater via ocean outfall is regulated under Licence L8870/2014/1 operated by Cristal Pigment Australia Ltd. Other administrative changes have also been made to the licence.



## 4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* 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			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
General Conditions	L1.2.1 – L1.2.5	<p>Conditions L1.2.1 - L1.2.4 (General conditions) have been removed in accordance with administrative changes implemented within DER. Condition 1.2.1 has been removed as it not a condition and contains only explanatory text. Condition 1.2.2 has been removed as it is not sufficiently clear or certain. Conditions 1.2.3 and 1.2.4 have been removed as it is the occupier's responsibility to ensure that they comply with relevant legislative requirements for secondary activities such as the storage and handling of environmentally hazardous materials. Unauthorised discharges of environmentally hazardous materials are subject to the provisions of the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p> <p><u>Emission Description</u>  <i>Emission:</i> Stormwater run-off from the large hardstand area within the plant.  <i>Impact:</i> Potential impact on groundwater (depth to groundwater is approximately 7m) and surrounding vegetation.  <i>Controls:</i> Any spills outside of the bunded areas are contained and cleaned up in accordance with the licensee's standard operating procedure. Any spills greater than 5L in volume are investigated via the licensee's incident reporting system. Stormwater is captured in a series of open channels and underground drains. Run-off from the wood block drying pad is directed to an infiltration drain and pond (Block Pad Dam) which captures mulch and wood dust before allowing the water to infiltrate into the ground.</p> <p><u>Risk Assessment</u>  <i>Consequence:</i> Insignificant</p>	<p>Simcoa Operations Pty Ltd – 2014 Kemerton Silicon Smelter Annual Environmental Report, March 2015</p> <p>Simcoa Operations Pty Ltd – Kemerton Silicon Smelter Works Approval Application – Settling Pond Wastewater Transfer Pipeline, September 2012</p>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><i>Likelihood: Unlikely</i> <i>Risk Rating: Low</i></p> <p><u>Regulatory Controls</u> Condition 1.2.5 has been removed as it is not sufficiently clear or certain. The condition does not specify what stormwater infrastructure is required to be constructed and maintained or what if any specific manage actions are required. The risk of stormwater impacting on the surrounding environment has been assessed as low. Sufficient controls are implemented in the licensee's operational procedures, authorised emission points in condition 2.2.1 and monitoring in condition 3.3.1. The licensee must also comply with the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p> <p><u>Residual Risk</u> <i>Consequence: Insignificant</i> <i>Likelihood: Unlikely</i> <i>Risk Rating: Low</i></p>	
<b>Premises operation</b>	1.2.1	Condition 1.2.1 has been included to formally recognise the lined settling pond on site that is used to store brackish wastewater from the RO plant, laboratory and retort sump and treated water from an oil/water separator.	Application supporting documentation
<b>Emissions to land including monitoring</b>	L2.2.1 and L3.3.1	<p>Currently, brackish wastewater is disposed to land via overflowing of the settling pond via an unmetered weir (emission point reference L1). The wastewater transfer project, constructed under Works Approval W5286/2012/1, now enables wastewater to be transferred to the adjacent prescribed premises for disposal to an ocean outfall.</p> <p>It is possible that a plant or equipment outage may prevent the disposal of wastewater via the ocean outfall at the neighbouring premises. Therefore, the wastewater will be required to be stored in the existing settling pond onsite at Kemerton Silicon Smelter. The settling pond at the premises can store the wastewater for approximately two days; however, if the maximum storage capacity of</p>	Application supporting documentation



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		<p>the pond is exceeded, wastewater will be pumped into a concrete culvert in the existing open drain (emission point reference L3). A totalising flow meter is installed on the discharge pipe from the settling pond pump so as to monitor the volume of wastewater discharged in this manner.</p> <p>Emission point reference L1, the existing settling pond overflow point, will remain in the licence as an overflow point in case of a failure of the settling pond transfer pump that may result in the pond reaching capacity and overflowing at this point as per current practice. Condition 2.2.1 has been amended to include emission point reference L3 to allow wastewater to be discharged on site when disposal of the wastewater to Kemerton Titanium Dioxide Processing Plant is unavailable. Condition 3.3.1 has been amended to include monitoring of emission point L3 in the event wastewater is required to be pumped to the concrete culvert. Condition 3.3.1 has also been amended to require daily monitoring of the overflow of the settling pond (emission point L1) as opposed to weekly as it is expected discharge at point L1 will only be required on a few occasions for short durations.</p>	
Fugitive emissions	N/A	<p><b>Operation</b> <u>Emission Description</u> <i>Emission:</i> Potential for dust emissions through the handling of raw materials, unsealed surfaces, furnace off-gases (direct venting), wood processing and charcoal screening operations, furnace baghouse and crystalline quartz in silica fume. <i>Impact:</i> Potential to adversely affect human health, visual amenity and surrounding vegetation and fauna. The closest sensitive premises, residential, are located approximately 1.7 km from the premises. <i>Controls:</i> Separation distance. The licensee minimises dust emissions from the plant using some methods including, but not limited to:</p> <ul style="list-style-type: none"> <li>- Wetting down raw material stockpiles using fixed and mobile sprinklers before loading or handling raw materials that could generate dust;</li> <li>- Bituminising high traffic areas;</li> <li>- Washing quartz before offloading at Kemerton;</li> <li>- Mulching non-traffic areas of the plant;</li> <li>- Using covered conveyors;</li> </ul>	<p>Application Supporting Documentation</p> <p>Simcoa Operations Pty Ltd – Environmental Monitoring and Management Plan, November 2015</p> <p>Simcoa Operations Pty Ltd – Kemerton Silicon Smelter – Annual Environmental</p>



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Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<ul style="list-style-type: none"> <li>- Enclosing raw material transfer points;</li> <li>- Using mist sprinklers on the charcoal loading hopper at the charcoal retorts and transfer points in the smelter;</li> <li>- Storing materials such as silica fume, charcoal fines and charcoal in sheds, silos and bunkers;</li> <li>- Performing regular preventative maintenance on dust control equipment such as the baghouse and dust collectors; and</li> <li>- Conducting monthly ventilation audits to ensure proper operation of dust control equipment.</li> </ul> <p>As per current licence conditions, the licensee monitors total suspended particulates (TSP) using a high volume air sampler at the west boundary (AQ1) and Leschenault parklands (AQ2) twice between 1 October and 31 May each year, with results reported to DER in the annual environment report. The submerged arc furnaces generate large volumes of particulates in the form of amorphous silica fume, which are entrained in the furnace off-gases. During normal operation, these off-gases are cleaned by passing them through fabric filter bags in the smelter baghouse. On rare occasions, the off-gases bypass the baghouse and vent directly to the atmosphere. This may occur if there is a power failure, high-temperature alarm in the baghouse, or failure of the baghouse fans. In these circumstances venting from the smelter building is necessary to protect workers that could be engulfed by dust. When this occurs interlocks immediately cut power to the furnaces and prevent prolonged discharge of dust. The frequency of direct venting has fallen significantly since the cooling radiators of the baghouse fans were upgraded in 2007. This upgrade has minimised most incidents of fan overheating, the most frequent cause of direct venting. The licensee's Environmental Monitoring and Management Plant (EMMP), last updated November 2015, details the source of dust at the premises, how they are managed, monitored, reaction strategies and contingency plans.</p> <p><u>Risk Assessment</u> Consequence: Minor Likelihood: Possible</p>	<p>Report 2014, March 2015</p> <p><i>Environmental Protection Act 1986</i> (EP Act)</p>





DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><i>Risk Rating: Moderate</i></p> <p><u>Regulatory Controls</u> In accordance with administrative changes implemented within DER, generic fugitive conditions have been removed. Dust management at the site is implemented through the site's EMMP and continue to be monitored through current licence condition 3.5.1. The licensee is also required to notify DER within 28 calendar days of any period of direct venting of furnace off-gases. Given these controls, no further conditions regulating dust have been included on the licence. The substantive offences of the EP Act provide enforceable prohibitions for dust emissions that result in pollution or environmental harm.</p> <p><u>Residual Risk</u> <i>Consequence: Minor</i> <i>Likelihood: Possible</i> <i>Risk Rating: Moderate</i></p>	
Odour	N/A	<p><b>Operation</b></p> <p><u>Emission Description</u> <i>Emission:</i> Potential offensive odours and vapours from the charcoal retort during operation. <i>Impact:</i> Nuisance and potential health impacts. The closest sensitive premises, residential, are located approximately 1.7 km from the premises. <i>Controls:</i> Separation distance. The charcoal retorts have been designed with a double chamber at the top and bottom of the retorts to avoid escape of odorous gases while charging and discharging. The pressure is also automatically controlled slightly lower than atmospheric pressure to prevent gas escape and is electronically monitored. Daily operational checks are carried out to identify potential issues that could cause odorous emissions. In the event of a gas emission due to over pressure or power failure in the retort the gas is automatically diverted to a flare stack, which incinerates any escaping gas. In the event of power failure, the charcoal plant off-gas incinerator is held online by use of an auxiliary power generator that powers an</p>	<p>Application Supporting Documentation</p> <p>Simcoa Operations Pty Ltd – Environmental Monitoring and Management Plan, November 2015</p> <p>Simcoa Operations Pty Ltd – Kemerton Silicon Smelter – Annual</p>



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Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>auxiliary combustion air fan to ensure complete combustion of any odorous volatile matter presenting in the incinerator. Gas emissions and odour are managed by the licensee through their Environmental Monitoring and Management Plan, last updated November 2015.</p> <p><u>Risk Assessment</u>  <i>Consequence:</i> Insignificant  <i>Likelihood:</i> Unlikely  <i>Risk Rating:</i> Low</p> <p><u>Regulatory Controls</u>            Odour emissions have been assessed as low risk. In accordance with administrative changes implemented within DER, generic odour conditions have been removed as the risk is low and the substantive offences of the EP Act provide enforceable prohibitions for odour emissions that result in pollution or environmental harm. Potential odour impacts will continue to be managed through the site's EMMP.</p> <p><u>Residual Risk</u>  <i>Consequence:</i> Insignificant  <i>Likelihood:</i> Unlikely  <i>Risk Rating:</i> Low</p>	<p>Environmental Report 2014, March 2015</p> <p><i>Environmental Protection Act 1986</i> (EP Act)</p>
Monitoring of inputs and outputs	L3.4.1	<p>Wastewater from the settling pond will be pumped to effluent ponds on the adjacent Kemerton Titanium Dioxide Processing Plant, managed by Cristal Pigment Australia Ltd, where it will be disposed of via ocean outfall. The discharge of wastewater to the ocean outfall is regulated by DER under Cristal Pigment Australia Ltd.'s Licence L8870/2014/1, which includes wastewater acceptance conditions, emission limits and monitoring conditions.</p> <p>The licensee has implemented controls to ensure that the transfer of wastewater is managed appropriately. These include continuous monitoring for a variety of parameters, weekly onsite testing of the wastewater, and totalising flow meters at</p>	<p>Application supporting documentation</p> <p>Simcoa Operations Pty Ltd – Kemerton Silicon Smelter – Works Approval Compliance Report, Settling Pond</p>



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		both ends of the pipeline to allow detection of leaks in the transfer pipeline. Conditions 3.4.1 and 4.2.1 have been updated to require the licensee to monitor and report the quantity of wastewater transferred.	Wastewater Transfer Pipeline, November 2015
<b>Information</b>	L5.1.2, L5.2.2(a), L5.3.1	Previous conditions L5.1.2, L5.2.2(a) and part of L5.3.1 have been removed in accordance with administrative changes implemented within DER.	N/A
<b>Licence Duration</b>	N/A	The licence is due to expire on Saturday, 12 October 2019. There have been no changes made to the duration of the licence as a result of this amendment.	N/A



## 5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
03/12/2015	Proponent sent a copy of draft instrument	No comments received	N/A

## 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