



# Bridging Document

WAA 4220 ENV PLN

CDN/ID 10753267

## Integrated Gas

### JINGEMIA 11 TEMPORARY PLUG BRIDGING DOCUMENT

#### Jingemia Oil Production Facility Environmental Plan

This document has been developed to link the works associated with installing a retrievable mechanical plug in Jingemia 11 (the Activity) to the Jingemia Oil Production Facility Environmental Plan (EP). Where the EP does not specifically address the proposed activities and/or the potential environmental risks and management measures associated with the Activity details have been provided in this Bridging Document.

#### Review record

Rev	Date	Reason for issue	Reviewer/s	Consolidator	Approver
0	30/05/2016	Final – issued to DMP for approval	K.Hunt, L.McKay	K.Presley	G.Rooks

Review due: 30/12/2019

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#### THE THREE WHATS

What can go wrong?

What could cause it to go  
wrong?

What can I do to prevent it?

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## 1. Purpose

Origin Energy Resources Limited (Origin) has developed the *Environmental Plan – Jingemia Oil Facility* (CDN/ID 3677693 formerly OEUP-W4200-PLN-ENV-001, Revision 4) (the EP) as an overarching framework for the management of the environmental aspects of Origin's operations at the Jingemia Oil Facility (the Facility). The Facility is currently shut in and operating in care and maintenance mode in accordance with the relevant regulatory approvals and the EP.

During routine inspection and maintenance activities in May 2015, Origin personnel detected and reported to the Department of Mines and Petroleum (DMP) a minor gas leak at the Jingemia 11 cellar. Origin subsequently carried out an investigation into the incident but the exact source of the gas leak could not be determined. The leak continues to be monitored weekly and reported to DMP. To date the leak rate has not changed. A remediation plan and timeframe was submitted to DMP on the 14 March 2016. The remediation plan proposes to wireline and place a retrievable plug in Jingemia 11 in attempt to isolate gas leak pathways (the Activity).

This document, *Jingemia 11 Bridging Document* (CDN/ID 10753267) (the Bridging Document) has been developed to link the Activity to the mitigation and management measures in the EP. Where the EP does not specifically address the Activity and/or the potential environmental risks associated with the Activity details have been provided in this Bridging Document.

## 2. Scope

The scope of this Bridging Document is the wirelining placement of the retrievable plug and associated activities at Jingemia 11, in attempt to isolate gas leak pathways (the Activity).

In the event the Activity is successful (that is the gas leak pathway is isolated), the current care and maintenance activities for the well will be resumed under the current revision of the EP.

In the event the Activity is not successful, a new Bridging Document will be prepared, submitted to DMP and implemented that is specific to those further remediation works.

This Bridging Document has been prepared in accordance with the *Guidelines for the Preparation and Submission of an Environment Plan* (DMP 2012) and provides:

- a description of the activity (section 4);
- the location of activity (section 5);
- the proposed timing of activity (section 6);
- any other specifics not included in the EP being bridged to (section 7 and Appendix A)
- a statement that all risks associated with the Activity are included in, and will be managed as per the management/mitigation measures outlined in the EP being bridged to (section 8); and
- identification of any other documents bridged to (section 9).

## 3. Definitions/Acronyms

Definitions of terms used in this procedure:

Term/Acronym	Definition/Expansion
<b>Origin</b>	Origin Energy Resources Limited
<b>EP</b>	<i>Environmental Plan – Jingemia Oil Facility</i> (CDN/ID 3677693 formerly OEUP-W4200-PLN-ENV-001, Revision 4)
<b>Bridging Document</b>	<i>Jingemia 11 Temporary Plug Bridging Document</i> (CDN/ID 10753267)
<b>Jingemia 11</b>	Oil production well (currently suspended), coordinates 304710 mE, 6752778 mN.
<b>the Facility</b>	<i>Jingemia Oil Production Facility</i>
<b>the Activity</b>	refers to the proposed wirelining placement of a retrievable mechanical plug and associated activities in attempt to isolate the gas leak pathway to the Jingemia 11 cellar.
<b>DMP</b>	<i>Department of Mines and Petroleum</i>

Term/Acronym	Definition/Expansion
bbl	Barrel(s)
kL	Kilolitre(s)
mmscf	Million standard cubic feet
km	Kilometre(s)
NORMs	Naturally occurring radioactive materials
Groundwater Licence	refers to the Licence to Take Water issued by the Western Australian Department of Water under the <i>Rights in Irrigation and Water Act 1914</i>
Environmental Licence	refers to the Environmental Licence issued by the Western Australian Department of Environment Regulation under the <i>Environmental Protection Act 1986</i>
DFES	Western Australian Department of Fire and Emergency Services

#### 4. Description of the Activity

The Activity will be managed in accordance with the Facility's relevant regulatory approvals and legislative requirements as described in section 2 of the EP.

The Activity will involve:

- mobilising of plant and equipment required to undertake the Activity, including piping, gas vent tank/liquid waste tank, potable water storage and a truck mounted wireline unit consisting of a diesel generator for power generation, crane and bunded diesel storage.
- installing retrievable above ground piping from the well to the 120 bbl gas vent/waste liquid storage tank. The piping installation will be assembled with flanged and hammer union connections, with no welding required. The above ground piping will be constructed from certified piping, maintained in accordance with AS3788:2006 *Pressure equipment – In-service inspection*.
- undertaking a hydrostatic pressure test of the temporary above ground pipework in accordance with Origin Energy's Barriers Standard (INT-1000-35-TS-002). Potable water sourced from either the Jingemia water bore MB1 (in accordance with the Groundwater Licence GWL158764(4)) or Dongara township (from an appropriately licensed facility and then transferred to site by road tanker) will be used for the pressure test. It is estimated approximately 0.08 kL will be required. Once pressure testing is completed, the hydrostatic test water will be transferred to the gas vent/liquid waste tank. All waste liquid will be collected, transported and disposed off site by an appropriately licensed waste contractor.
- setting up the wireline (truck mounted unit containing wire and spooling equipment with a bunded diesel generator), and crane at the Jingemia 11 well site. The well site is on an established hardstand area at the Facility. No clearing or well lease modification will be required.
- running wireline tools into Jingemia 11 to confirm a clear path of known diameter exists to the planned isolation depth. Clearing scale from the walls of the tubing will be completed if necessary, using mechanical wireline tools. The wireline will then be used to run a retrievable mechanical isolation plug into the well, and setting it in accordance with standard industry practice. Finally, a debris catcher will be run into the well using the wireline to ensure the mechanical plug can be latched and retrieved at a later date if necessary.
- pressure bleeding of Jingemia 11 tubing and annulus. Any gas brought to the surface during pressure bleeding will be cold vented via the temporary above ground piping to the gas vent/waste liquid storage tank, which will then be transported and disposed of by an appropriately licensed waste disposal contractor at the end of the Activity. It is estimated that the maximum volume of gas to be vented will be 0.02 mmscf and the maximum volume of liquid brought to the surface will be 0.5 kL.
- topping up the well with inhibited water. After the mechanical plug and debris catcher have been set, Jingemia 11 will be topped up with inhibited water (inhibited to prevent corrosion and microbial bacteria presence as described in section 3.4.1.1, table 3.5 of the EP). This will allow confirmation of whether the Activity has been successful. The estimated volume of inhibited water required is 12.5 kL. Potable water sourced from either the Jingemia water bore

(MB1) or Dongara township (via road tanker) will be used together with the inhibitor, to top up the well.

- performing pressure diagnostics and bubble monitoring to evaluate success of leak elimination. Initially this will be undertaken on an hourly basis while the temporary above ground equipment is packed up and demobilised from site. This will include disconnecting piping and the gas vent/liquid waste tank, all waste and materials associated with the Activity taken away and appropriately disposed of, and the site returned to its current care and maintenance condition. If pressure and bubble monitoring indicate the Activity was unsuccessful, Origin will continue to monitor the leak and the wellhead pressure and report to DMP. This will continue until the well is able to be plugged and abandoned as described in the Jingemia 11 remediation plan. The activities and timing of plugging and abandoning the well are not addressed in this bridging document.

All other waste generated during the Activity will be managed as described in section 3.5, table 3.6 of the EP.

Given the short duration (Section 6) and limited number of personnel (less than 8) involved in the Activity, workers will be accommodated in the nearby township of Dongara. Where possible, the number of vehicles accessing the site each day will be limited through car-pooling.

Refuelling of the diesel generator tank (located on board the wireline truck) and vehicles will be undertaken at an appropriate facility in Dongara and will not be undertaken on site.

## 5. Location of the Activity

The Facility is situated in the Shire of Irwin, in the northern Perth Basin, approximately 10 kilometres (km) south east of Dongara and 360 km north of Perth. The Facility is located on unallocated crown land, being Lot 12751 Plan 37432 within Exploration Permit EP413 and Production Licence L14. Access to the Facility is via a 3 km long sealed access road, off the Brand Highway.

Jingemia 11 is one of eight wells associated with the Facility (all of which are currently shut in) and is located immediately to the west of the Facility's administration building, within the fenced Oil Production Plant (Figure 1, Figure 2 and Figure 3).





Figure 1: Locality Plan



Figure 2: Photograph of Jingemia 11

## 6. Timing of the Activity

It is proposed to commence the Activity in early July 2016 subject to delivery of long lead items including the retrievable mechanical plug. Wirelining, placing of the retrievable plug and pressure bleeding of the well will be undertaken during daylight hours and are estimated to take 7 days to complete. Pressure monitoring of the well tubing and annulus will then be undertaken on a weekly basis by an Operator. The data will be collected and analysed with reporting of all results to DMP by mid August 2016.

## 7. Existing Environment

A detailed description of the existing environment is provided in section 4 of the EP.

## 8. Risk Assessment

A review of the existing EP risk assessment has been undertaken. The review found:

- Risk ID 01, 02, 03, 04 and 06 are applicable to the Activity. These risks have been re-assessed in light of the Activity. The relevant existing controls, along with any additional controls necessary to adequately manage the risk has been summarised in Table 1 below.
- One of the existing EP risks (Risk ID 05 – Clearing extend past previously disturbed area) is not applicable to the Activity. Therefore, the risk ranking and controls have not been provided in Table 1 below.
- Two additional risks were identified for the Activity (Risk ID 07 and 08). These have been risk assessed, controls identified and are included in Table 1 below.

The risk assessment and review was undertaken in accordance with the methodology provided in section 5 of the EP.



Table 1: Summary of Potential Environmental Risks and Controls associated with the Activity

Risk ID	Risk Title	Residual Risk Ranking	Controls
01 – Site activities will initiate a bushfire	There is a chance that cold venting of gas could be ignited and cause a fire or bushfire negatively impacting fauna, flora, and air quality.	Medium	<p><b>Existing EP controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>• Permit to Work for Hot Work activities</li> <li>• Weed control within 20 metre radius of plant</li> <li>• Department of Fire and Emergency Services (DFES) burning permits</li> <li>• Designated smoking area with adequate disposal</li> <li>• Fire extinguishers</li> <li>• Dongara Fire Brigade and Bushfire response</li> </ul> <p><b>Additional controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>• Fire fighting equipment located at the well lease during the Activity</li> <li>• Continuous gas monitoring undertaken in accordance with permit to work system</li> <li>• Work scheduled during low risk bushfire season</li> <li>• Jingemia 11 located within the cleared, fenced oil production plant boundary</li> </ul>
02 – Site activities will result in the inadequate disposal of liquid and solid wastes	There is a chance that liquid brought to the surface during pressure bleeding could be accidentally released to grade negatively impacting soil and shallow groundwater quality.	Low	<p><b>Existing EP controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>• Groundwater monitoring as per relevant Environmental Licence (L8339/2009) and Groundwater Licence (GWL158764(4)) conditions</li> <li>• Licensed contractors to remove wastes</li> <li>• Waste segregation</li> <li>• Waste water disposal system</li> </ul> <p><b>Additional controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>• Temporary above ground piping hydrostatic pressure tested prior to use</li> <li>• Certified piping used for installation</li> <li>• Lifting over pressurised equipment avoided where practicable</li> <li>• Potable water utilised for hydrostatic pressure test</li> <li>• Upon completion of pressure test, hydrostatic test water transferred to the liquid waste tank and disposed of by an appropriately licensed waste contractor</li> <li>• Isolations verified as per the permit to work system</li> </ul>

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Risk ID	Risk Title	Residual Risk Ranking	Controls
03 – Site activities will result in the loss of containment of fuels, chemicals and hazardous materials	There is a chance that storage, handling and transport of diesel, oil and other chemicals could be accidentally released to grade contaminating soil and shallow groundwater.	Low	<p><b>Existing EP controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>Bundling is adequate for volumes and types of product stored</li> <li>Emergency Spill Kits and spill response trailer</li> <li>Load in/Load out Procedure</li> <li>Well integrity and Site Inspection Checklists, including bunding checks</li> <li>Transport companies are appropriately licensed and competent</li> <li>Crude inventory minimised</li> <li>Emergency Response Procedures</li> <li>Groundwater monitoring of water bores</li> </ul> <p><b>Additional controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>Only small volumes of chemicals (20 litres of biocide/corrosion inhibitor) will be stored at the well lease and for a short duration</li> <li>No refuelling of plant and equipment required at the well lease</li> <li>Spill kit located on wireline truck</li> </ul>
04 – Environmental impact of Naturally Occurring Radioactive Materials	There is a chance that NORMs brought to the surface as a result of wireline activities or the unauthorised access to or disturbance of the existing NORMs storage area occurs negatively impacting the soil, groundwater and ecology.	Low	<p><b>Existing EP controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>Containment of NORMs in a dedicated storage area</li> <li>Dedicated NORMs storage area is fenced and access restricted</li> <li>Operator awareness/training</li> <li>Radiation Safety Officer appointed</li> <li>Monitoring of scale build up in pipes</li> <li>Periodic inspection of the NORMs storage compound to ensure no loss of containment</li> </ul> <p><b>Additional controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>Site induction to be completed by all personnel prior to commencing the Activity, with restricted areas identified such as the NORMs storage area</li> <li>The Jingemia 11 work area will be clearly defined to ensure no work, lay down of plant and equipment, access occurs in unauthorised locations</li> <li>Any material brought to the surface will be inspected by Radiation Safety Officer and disposed of as directed and in accordance with legislative / regulatory authority requirements</li> </ul>

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Risk ID	Risk Title	Residual Risk Ranking	Controls
05 – Clearing extend past previously disturbed area	Risk is not applicable. All work is within previously cleared, established well lease. Access to the site is via existing road. No earthmoving or clearing equipment required for the Activity.	Not applicable	No controls required
06 – Site activities will cause amenity (noise, dust, light, odour emissions) impacts	There is a chance that cold venting of gas could negatively impact air quality.	Low	<b>Existing EP controls specific to the Activity:</b> <ul style="list-style-type: none"> <li>Remote location of facility</li> </ul> <b>Additional controls specific to the Activity:</b> <ul style="list-style-type: none"> <li>Given limited duration and volume of venting required (less than 0.02 mmscf), the impact is considered negligible in context of the region's air shed. Therefore no additional controls specific to the Activity are specified.</li> </ul>
	There is a chance that operation of plant and equipment could generate noise levels that negatively impact sensitive receptors/fauna.	Low	<b>Existing controls specific to the Activity:</b> <ul style="list-style-type: none"> <li>Limited activity on site resulting in negligible noise disturbance to neighbours or fauna</li> </ul> <b>Additional controls specific to the Activity:</b> <ul style="list-style-type: none"> <li>Daylight hour operation of plant and equipment</li> <li>Limited work duration (approximately 7 days)</li> <li>Jingemia 11 located within the fenced Oil Production Plant away from receptors</li> <li>Closest receptors approximately 2 km north-west</li> <li>Plant and equipment will be maintained and operated in accordance with manufacturer specifications</li> <li>Volume to vent is minimal and controlled (0.02 mmscf)</li> </ul>
07 – Site activities negatively impact groundwater quality	There is a chance that placement of retrievable mechanical plug does not isolate leak pathways and therefore does not mitigate possible impacts to	Medium	<b>Existing EP controls specific to the Activity:</b> <ul style="list-style-type: none"> <li>No existing controls as this is a new risk identified specific to the Activity</li> </ul> <b>Additional controls specific to the Activity:</b> <ul style="list-style-type: none"> <li>Wireline tools will be available at site in case scale deposits obstruct placement of the retrievable mechanical plug</li> </ul>

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Risk ID	Risk Title	Residual Risk Ranking	Controls
	groundwater quality.		<ul style="list-style-type: none"> <li>Pressure diagnostics will be undertaken to determine success of retrievable mechanical plug</li> <li>If successful (the gas leak pathway is isolated) then : <ul style="list-style-type: none"> <li>Ongoing pressure monitoring by operators at least weekly</li> </ul> </li> <li>If unsuccessful (gas leak pathway is not isolated) then: <ul style="list-style-type: none"> <li>Commence planning for plug and abandonment of well</li> <li>Continue to assess the well on a twice weekly basis, monitoring and performing pressure bleeds as necessary</li> </ul> </li> <li>Groundwater monitoring as per the Environmental Licence (8339/2009) and Groundwater Licence (GWL158764(4)) conditions</li> </ul>
08 – Transportation of plant, equipment and people to and from site could harm native fauna/stock	There is a chance that transportation of plant, equipment, and people to and from site could collide with native fauna /stock.	Low	<p><b>Existing EP controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>No existing controls as this is a new risk identified specific to the Activity</li> </ul> <p><b>Additional controls specific to the Activity:</b></p> <ul style="list-style-type: none"> <li>Short duration of works</li> <li>Where possible trips will be minimised by car pooling</li> <li>Driver training</li> </ul>

## 9. Other Relevant Documents

This document should be read in conjunction with the EP. Unless otherwise stated in this document the management measures and commitments made in the EP apply to the Activity. Other relevant documents relevant to the management of the Activity include (but are not limited to):

- Emergency Response Plan – Beharra Springs & Jingemia (CDN/ID 3677589 formerly OEUP-W4100-PLN-SAF-002)
- Jingemia Production Facility Safety Case (WAA-4200-PLN-SAF-00001)
- Well Management Plan - Jingemia 11 (CDN/ID 9837028)
- Environmental licence (8339/2009)
- Groundwater licence (GWL158764(4))
- Naturally Occurring Radioactive Materials (NORMs) Management Plan – Jingemia Production Facility (CDN/ID 8057719)

## 10. References

Department of Mines and Petroleum (DMP 2012). *Guidelines for the Preparation and Submission of an Environment Plan*, accessed on 13 May 2016 at <http://www.dmp.wa.gov.au/Documents/Environment/ENV-PEB-177.pdf>

Origin Energy Resources Limited (Origin 2015). *Environmental Plan – Jingemia Oil Facility* (CDN/ID 3677693 formerly OEUP-W4200-PLN-ENV-001, Revision 4)

Origin Energy Resources Limited (Origin 2016a). *Jingemia Production Facility Safety Case* (WAA-4200-PLN-SAF-00001)

Origin Energy Resources Limited (Origin 2016b). *Well Management Plan – Jingemia 11* (CDN/ID 9837028)

Origin Energy Resources Limited (Origin 2016c). *Naturally Occurring Radioactive Materials (NORMs) Management Plan – Jingemia Production Facility* (CDN/ID 8057719)

Origin Energy Resources Limited (Origin 2016d). *Emergency Response Plan – Beharra Springs & Jingemia* (CDN/ID 3677589 formerly OEUP-W4100-PLN-SAF-002)

Standards Australia (2006). *Pressure equipment – In-service inspection* (AS3788:2006), accessed at <http://www.saiglobal.com>

## 11. Document information and history

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### CONTROLLED COPY DISTRIBUTION

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**DOCUMENT HISTORY**

Rev	Date	Changes made in document	Reviewer/s	Consolidator	Approver
A	16/05/16	Draft – issued for internal review	L.McKay	K.Presley	
B	27/5/16	Draft – issued for internal review	K.Hunt / G.Rooks	K.Presley	

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## Appendix A Cross Reference to EP

**Table 2: Linkage between this Bridging Document and the EP**

EP Section	Relevant section of the Bridging Document
Section 1 Introduction	No change with exception of Activity Scope, refer to section 2 of this Bridging Document.
Section 2 Legislation and Other Requirements	No change. All activities will continue to be undertaken in accordance with applicable legislative and regulatory authority approval requirements.
Section 3 Description of the Activity	No change except where noted in section 4 of this Bridging Document.
Section 4 Existing Environment	No change. Refer to section 4 of the EP for Description of the Environment.
Section 5 Risk Assessment	Risk assessment for the Activity has been undertaken. Where appropriate existing risks and controls identified in the EP have been included in table 1 of this Bridging document. Two additional risks not included in the EP risk assessment have been included in this Bridging Document. The review and update of the risk assessment was completed in accordance with methodology provided in section 5 of the EP.
Section 6 Performance Objectives, Standards and Criteria	No change. Section 6 of the EP will continue to apply to the Activity.
Section 7 Implementation Strategy	No change. Section 7 of the EP will be applied to the Activity.