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**mitsui** E&P  
Australia

**Waitsia Gas Project Stage 2: Response  
to Public Comments – EPA Assessment  
No. 2226**

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## TERMS AND DEFINITIONS

Term or Abbreviation	Definition
AQMP	Air Quality Management Plan
Additional Information	Four documents requested by the EPA subject to a 2 week public review period
ARI	Assessment on Referral Information
DBCA	Department of Biodiversity, Conservation and Attractions
DMIRS	Department of Mines, Industry Regulation and Safety
DOW	Department of Water
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DISER	Department of Industry, Science, Energy and Resources
DWER	Department of Water and Environmental Regulation
EP	Environment Plan
EP Act	Environmental Protection Act 1986
EPA	Environmental Protection Authority
EFG	Environmental Factor Guidance
FVMP	Flora and Vegetation Management Plan
GHGEFG	GHG Emissions Environmental Factor Guidance (EPA)
GHGMP	Greenhouse Gas Management Plan
HDPE	High Density Polyethylene
IBRA	Interim Biogeographic Regionalisation for Australia
MEPAU	Mitsui E&P Australia <i>AWE Perth Pty Limited is the legal entity, operator of the relevant Production Licenses (L1 and L2), the Proponent for the Waitsia Gas Project Stage 2 Proposal and operates under the Mitsui E&amp;P Australia (MEPAU) brand.</i>
NGER Act 2007	National Greenhouse and Energy Reporting Act 2009
PGER Act	Petroleum and Geothermal Energy Resources Act 1967
PIMP	Pipeline Integrity Management Plan
The Proponent	AWE Perth Pty Ltd, operating as Mitsui E&P Australia (MEPAU)
The Proposal	The Waitsia Gas Project Stage 2 – referred to the EPA under section 38 of the <i>Environmental Protection Act 1986</i> (EPA Assessment 2226).
USGS	US Geological Survey
RIWI	Rights in Water and Irrigation Act
WGP	Waitsia Gas Plant
WMP	Water Management Plan
ZRF	Zero Routine Flaring (by 2030 Initiative)

## 1.0 INTRODUCTION

### 1.1 Overview

Mitsui E&P Australia<sup>1</sup> (the Proponent) is seeking environmental approval to construct and operate a 250 terajoules per day gas plant and related infrastructure, located approximately 16 km east-south-east of the Dongara-Port Denison townsites. The Proposal will produce gas from the Waitsia gas field using conventional methods. Hydraulic fracturing (fracking) will not be undertaken as part of this Proposal.

The Proposal (known as the Waitsia Gas Project Stage 2 (WGP2)) includes the construction and operation of the Waitsia Gas Plant (WGP), related wells and gas gathering infrastructure, and will comprise the following:

- The clearing of 17 hectares of native vegetation within a 345 hectare development envelope;
- Construction and operation of a new gas processing plant with a maximum export capacity of 250 terajoules per day;
- Drilling of up to 6 new production wells to supplement the existing 2 wells;
- Installation of a gas gathering system comprising of flowlines and hubs; and
- Installation of a flowline from the proposed gas plant for water reinjection via a disused petroleum production well.

### 1.2 Assessment Process of the Proposal

The Proponent referred the Proposal to the Environmental Protection Authority (EPA) on 23 August 2019 under Section 38, Part IV of the Environmental Protection Act 1986 (EP Act). A public comment period on the referral information (*Environmental Referral Supporting Report*) was held between 6 and 12 September 2019.

The Level of Assessment set for the Proposal by the EPA (EPA Assessment No. 2226) was 'Assessment of Referral Information' (ARI), with additional information required to be prepared by the Proponent.

The Additional Information requested by the EPA was the provision of four documents and to be subject to a 2 week public review period. The EPA has not endorsed these documents but has made them available for public comment as a part of the assessment process. The public review period on the Additional Information was held between 23 April and 7 May 2020 and comprised the following:

- Flora and Vegetation Management Plan (FVMP);
- Greenhouse Gas Management Plan (GHGMP);
- Water Management Plan (WMP); and
- Management of Flaring.

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<sup>1</sup> AWE Perth Pty Limited is the legal entity, operator of the relevant Production Licences (L1 and L2), the proponent for the Proposal and operates under the Mitsui E&P Australia (MEPAU) brand.

The three management plans have been written in accordance with the “Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans” (EPA, 2018 [1]).

### **1.3 Purpose and structure of this document**

The primary purpose of this document is to:

- Provide a summary of submissions received during the public review period,
- Respond to the matters raised in the comments,
- Highlight any changes made to the four review documents as a result of comments, and
- Ongoing stakeholder consultation.

## **2.0 ONGOING STAKEHOLDER CONSULTATION**

The Proponent is committed to continuing to consult with stakeholders throughout the remainder of the environmental assessment process and as part of the ongoing commitment with operational activities in the Waitsia gas field.

Consistent with the EPA's expectations for this document to align with the principles of Environmental Impact Assessment, MEPAU consulted with stakeholders, including but not limited to the Department of Biodiversity, Conservation and Attractions (DBCA) and Department of Water and Environmental Regulation (DWER) during the development of the EPA Environmental Referral Supporting Report. MEPAU will continue to maintain effective communication with local and regional stakeholders throughout the delivery of the Proposal.

A summary of stakeholder consultation outcomes completed as of August 2019 is provided in Table 3-1 of the Environmental Referral Supporting Report (MEPAU, 2019 [2]).

### **3.0 COMMENTS RECEIVED**

#### **3.1 Summary of Comments Received**

In total, 43 public submissions, containing multiple questions and comments (Comments), were received during the two week public review period.

The submissions were reviewed and key Comments<sup>2</sup> regarding the Proposal and/or the Additional Information of the four documents were identified. The key Comments were then assigned to the relevant proponent response tables (see Table 3-1 through Table 3-5 ).

A summary of these submissions is provided below:

- 7 key Comments in relation to the Flora and Vegetation Management Plan (Table 3-1);
- 22 key Comments in relation to the Greenhouse Gas Management Plan (Table 3-2);
- 30 key Comments in relation to the Water Management Plan (Table 3-3);
- 7 key Comments in relation to Management of Flaring (Table 3-4); and
- 8 key Comments in relation to other topics associated with the Proposal (Table 3-5).

In accordance with the public review period set by the EPA *'the EPA is seeking public submission on the additional information prepared'* under Part IV of the *Environmental Protection Act 1986* and that Comments received in relation to the four documents have been responded to.

MEPAU notes that some Comments provided extended beyond the four documents that were subject to public review, however, in the interest of effective stakeholder engagement, further responses are provided in relation to the overall Proposal (see Table 3-5).

#### **3.2 Proponent Response to Submissions**

Detailed responses to all Comments contained in the submissions received are provided in Table 3-1 to Table 3-5.

Each submitter has been allocated an individual "submitter identifier" by the EPA (to maintain confidentiality of the submitter). A summary of all the submitter Comments by identifier is provided for in Attachment 1. Comments have been summarised in Table 3-1 through Table 3-5 under similar themes/topics, and the original comments are not provided verbatim (for confidentiality of the submitter).

In response to Comments, where amendments have been made to the four Additional documents this is noted in Table 3-1 through Table 3-4.

MEPAU notes that Comments submitted during the public review period will also be considered by the EPA, and as an independent authority, the EPA will consider further consider these aspects and provide its advice through the Minister for Environment.

There have been no other changes to the Proposal pursuant to s43A of the EP Act.

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<sup>2</sup> Key comments were defined as comments within public submissions that were either providing specific comments or comments that were similar across a number of public submissions (such comments were grouped into one key comment).



**Table 3-1 Proponent Responses to Comments made in Public Submissions Received - Flora and Vegetation Management Plan (Rev 1)**

Key Comment No.	Submitter Identifier	Comment	Proponent Response (Rev 2 updated)	Page of Amendment/Document
FVMP 1	ANON-WNTE-47DP-W ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47DT-1 ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DS-Z ANON-WNTE-47DK-R ANON-WNTE-477R-J ANON-WNTE-4778-R	Maintaining biological diversity and ecological integrity	<p>Noted.</p> <p>As detailed in the Proposal Environmental Referral Supporting Report<sup>3</sup>, impacts to flora and vegetation were considered. Specifically, the direct and indirect impacts that were evaluated included:</p> <ul style="list-style-type: none"> <li>• Clearing of 17 ha,</li> <li>• Introduction or spread of non-indigenous species (weeds / pathogens), and</li> <li>• Accidental clearing of areas outside of the Proposal Development Envelope.</li> </ul> <p>The assessment determined that with the mitigations identified, biological diversity and ecological integrity of vegetation and will be maintained and the EPA Objective for this factor can be met for the Proposal.</p> <p>Further to the Environmental Referral Supporting Report, the Flora and Vegetation Management Plan (FVMP) clearly identifies trigger and threshold criteria above which response actions are required to be enacted. This will ensure that flora, vegetation (and associated fauna) values are maintained.</p> <p>In addition to this FVMP, all activities are subject to the <i>Petroleum and Geothermal Energy Resources Act 1967</i> and Petroleum and Geothermal Energy resources (Environment) Regulations 1967 requiring an Environment Plan to identify Environmental Performance Objectives (that are aligned with the EPA's Outcomes) and detail the activity specific mitigation measures required to meet these outcomes. The Environment Plan will be assessed and is required to be accepted by the Department of Mines, Industry Regulation and Safety (DMIRS) prior to activities commencing.</p>	N/a
FVMP 2	ANON-WNTE-477Q-H	Potential impacts to Carnaby Black Cockatoo	<p>Noted.</p> <p>As detailed in the Proposal Environmental Referral Supporting Report, the potential impacts to Carnaby's Black Cockatoo were assessed.</p> <p>The outcomes of the assessment concluded:</p> <ul style="list-style-type: none"> <li>• No impacts to Carnaby Black Cockatoo breeding / roosting habitat,</li> <li>• Clearing of 3 ha of native vegetation in good condition that is suitable habitat to support Carnaby Black Cockatoo foraging.</li> </ul> <p>The proposed clearing of potentially suitable foraging habitat represents approximately 1% of unburnt banksia dominated vegetation across the adjacent Yandanogo Nature Reserve (an area of approximately 7,000 ha. (Woodman 2018a<sup>4</sup>)). Woodman (2018) indicates that the potential impact is considered small scale and not regionally significant in the context of Carnaby's Black Cockatoo habitat.</p> <p>The assessment concluded that 3 ha of foraging vegetation had a carrying capacity of &lt;0.2 birds/year (based on regional habitat assessments conducted by Williams <i>et al.</i> 2016<sup>5</sup>).</p> <p>Based upon the nature and scale of the terrestrial fauna impacts associated with this Proposal and with the mitigations identified, the Proposal does not pose a significant impact to the Carnaby's Black Cockatoo.</p>	N/a
FVMP 3	ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-477Q-H	Clearing Impacts	<p>Noted.</p> <p>The Government of WA maintains the Department of Biodiversity, Conservation and Attractions (DBCA) State-wide Vegetation Statistics database<sup>6</sup> which provides statistics on the pre-European and current extent (area in hectares) of the vegetation types of Western Australia within Interim Biogeographic Regionalisation for Australia (IBRA) or IBRA sub-regions. The reports are</p>	N/a

<sup>3</sup> Mitsui E&P Australia Group (MEPAU) (2019), Waitsia Gas Project Stage 2 – Environmental Referral Supporting Report, published report.

<sup>4</sup> Woodman Environmental Pty Ltd. (2018a). Waitsia-03 – Flowline Corridor - Flora, Vegetation and Fauna Assessment.

<sup>5</sup> Williams, M.R., Yates, C.J., Saunders, D.A. and Barret, G.W. (2016). The impact of Hypothetical Landuse Scenarios on the Population Viability of the Endangered Carnaby's [Black-]Cockatoo. Unpublished Report.

<sup>6</sup> Government of Western Australia. 2018. Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full report), Current as of March 2019, Perth Western Australia, Department of Environment and Conservation. Available online from [www.data.wa.gov.au](http://www.data.wa.gov.au)

			<p>updated every two years and can be used to provide a general overview of the status of ecological communities, within IBRA bioregions or sub-regions.</p> <p>In the Proposal Environmental Referral Supporting Document (Section 4.3.3.2 - Vegetation Communities), the relevant statistics were provided using the available data from 2018. This data indicates that all of the vegetation systems proposed to be impacted are relatively well represented with even the smallest vegetation community <i>Eridoon_433</i> estimated to comprise 69% of the pre-European extent remaining (Table 4-4 of the Proposal Environmental Referral Supporting Document).</p> <p>Following a detailed assessment, MEPAU concluded that clearing impacts associated with the Proposal are significant.</p>	
FVMP 4	ANON-WNTE-477X-R	Impacts to Kwongan Heath Vegetation	<p>Noted.</p> <p>MEPAU understand that the objection relates to a Priority or Threatened Ecological Community associated with a "Kwongan Heath". Although the respondent did not identify this community, MEPAU believe the respondent was referring to the Threatened Ecological Community: - <i>Proteaceae dominated kwongan shrublands of the southeast coastal floristic province of Western Australia</i>. These communities are located within the South Coast and Wheatbelt Province.</p> <p>As described in the Environmental Referral Supporting Report, flora and vegetation surveys conducted within the Development Envelope, which were attached to the Environmental Referral Supporting Document as Appendix C (Woodman 2018a, 2018b<sup>7</sup> and 2019<sup>8</sup>) conclude that no Threatened Ecological Communities or Priority Ecological Communities, as listed under the <i>Biodiversity Conservation Act</i> or EPBC Act, have been recorded within the proposed clearing area, or the abutting area.</p> <p>No vegetation communities were identified as Kwongan Heath, and as such the Proposal will not result of any impacts to Kwongan Heath vegetation Threatened Ecological Community.</p>	N/a
FVMP 5	ANON-WNTE-47D8-5	Potential Offsets	<p>Noted.</p> <p>As detailed in the Environmental Referral Supporting Report, impacts to flora and vegetation were considered. Specifically, the direct and indirect impacts that were evaluated included:</p> <ul style="list-style-type: none"> <li>• Clearing of 17 ha,</li> <li>• Introduction or spread of non-indigenous species (weed / pathogens), and</li> <li>• Accidental clearing of areas outside of the Proposal Development Envelope.</li> </ul> <p>The assessment determined that with the mitigations identified, biological diversity and ecological integrity of vegetation and will be maintained and the EPA Objective for this factor can be met for the Proposal. As documented in the Environmental Referral Supporting Report, MEPAU reviewed the impacts having regard to the WA Environmental Offsets Policy and did not determine that actions to offset the predicted outcomes of the Proposal were required.</p> <p>MEPAU reviewed the impacts associated with the Proposal using the EPBC offset assessment guide (DSEWPaC 2012<sup>9</sup>) to provide a quantitative evaluation for the level of impact arising from the Proposal. The guide indicated that the Proposal registered an impact of 5.5. MEPAU determined that this demonstrates the Proposal would result in residual impacts that are not significant, thus reinstating bushland elsewhere through offsets was not required under the WA Offset Policy. For further information please refer to the attached <i>Offsets Policy – Supplementary Information (02) to: Waitsia Gas Project Stage 2: Flora and Vegetation Management Plan – Appendix 2 P-WGP2-054</i>.</p>	Appendix 2 of the FVMP
FVMP 6	ANON-WNTE-47DP-W	Rehabilitation	<p>Noted.</p> <p>FVMP As described in the Environmental Referral Supporting Report, following construction MEPAU plan to rehabilitate some of the areas cleared for flowline installation. The rehabilitation of these areas will be conducted under an Environment Plan approved by DMIRS and developed in accordance with the Petroleum and Geothermal Energy Resources (Environment) Regulations 2012. This plan will detail completion criteria, and methods for achieving these criteria along with a monitoring program to determine when completion criteria are met and the site can be returned to the landowner for ongoing use.</p>	N/a

<sup>7</sup> Woodman Environmental Consulting Pty Ltd (2018b) Xyris Lateral Flora and Vegetation Assessment

<sup>8</sup> Woodman Environmental Pty Ltd (2019) Waitsia Gas Project Stage 2 – Xyris West Vegetation Desktop Review

<sup>9</sup> Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012). Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy. Australian Government, October 2012.

FVMP 7	ANON-WNTE-47DP-W ANON-WNTE-47D1-X ANON-WNTE-47DE-J	Biosecurity Measures	<p>Noted.</p> <p>The FVMP describes that vegetation in the Proposal area has been subject to weed incursion which can be attributed to historical land clearing and agricultural practices and consequently the FVMP provides a range of both outcome and management based measures for ensuring biosecurity / hygiene risks are mitigated and monitored.</p> <p>Following comment on the FVMP, MEPAU has further detailed the management provisions, including the requirement for a weed and hygiene protocol to be developed.</p> <p>Specific management-based biosecurity provisions are already included in Table 3-3 of the FVMP which include the management of invasive weed species and pathogens. These management actions are considered good industry practice and MEPAU has experience in how to implement these effectively given our other operations in the region. The performance of implementing these management actions will be reported on to the various regulators including DWER and DMIRS.</p>	<p><b>Table 3-2 of the FVMP</b> <b>Table 3-5 of the FVMP</b></p>
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**Table 3-2 Proponent Responses to Comments made in Public Submissions Received - Greenhouse Gas Management Plan (Rev 1)**

Key Comment No.	Submitter	Comment	Proponent Response	Page of Amendment/Document
GHG 1	ANON-WNTE-4778-R ANON-WNTE-477J-A ANON-WNTE-477P-G ANON-WNTE-477Q-H ANON-WNTE-477R-J ANON-WNTE-47D1-X ANON-WNTE-47D2-Y ANON-WNTE-47D3-Z ANON-WNTE-47D5-2 ANON-WNTE-47D6-3 ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DD-H ANON-WNTE-47DE-J ANON-WNTE-47DH-N ANON-WNTE-47DR-Y ANON-WNTE-47DY-6	Monitor the scope of fugitive emissions	<p>The EPA will consider and make a determination through advice to the minister as an independent body. MEPAU notes the comment.</p> <p>Fugitive methane emissions/natural gas product involves economic loss for the Proposal. To avoid economic loss and harm to the environment, mitigation measures have been included to fully minimise any potential loss where possible. The Proposal has determined the following estimates of fugitive methane emissions, generally based on publicly available data:</p> <p><b>WELLS</b></p> <p>Construction = 108 tonnes CO<sub>2</sub>-e based on National Inventory Report 2017 Volume I (published May 2019) (DISER 2019<sup>10</sup>), page 126, Table 3.36</p> <p>Line - Well Completions (tonnes of emissions/drill day)</p> <p>Commissioning = 27 tonnes CO<sub>2</sub>-e based on National Inventory Report 2017 Volume I (published May 2019) (DISER 2019) page 126, Table 3.36</p> <p>Line - Well Completions (tonnes of emissions/event without fracturing)</p> <p>Operations = 2,349 tonnes CO<sub>2</sub>-e per annum based on National Inventory Report 2017 Volume I (published May 2019) (DISER 2019), page 134, Table 3.42</p> <p><b>GAS PLANT</b></p> <p>Construction = Nil</p> <p>Commissioning = 2,508 tonnes CO<sub>2</sub>-e based on appropriate allowances for commissioning volumes.</p> <p>Operations = 28,494 tonnes CO<sub>2</sub>-e per annum based on National Inventory Report 2017 Volume I (published May 2019) (DISER 2019), page 134, Table 3.42 (Line -Gas Processing Plants), and paragraph <i>Gas Processing (1.B.2.b.3)</i>.</p> <p>MEPAU plan to minimise the potential for, and monitor, fugitive emissions by employing the following:</p> <p><b>GAS PLANT</b></p> <ul style="list-style-type: none"> <li>• The use of established and good industry practices during fabrication, construction, installation and commissioning stages of the project with the aim to prevent or minimise fugitive emissions. Development of procedures on all pressure retaining equipment. (e.g. flange management procedures) will occur prior to plant commissioning.</li> <li>• The use of non-hydrocarbon sources (water, air, nitrogen, etc) for initial pressure testing as part of pre-commissioning plans and procedures to confirm and ensure leak free systems before the introduction of hydrocarbons (i.e. an otherwise potential fugitive source).</li> <li>• An entire plant process control and safety system will be utilised to monitor the whole of plant operations and alarm for upset operations. This control system will also record the fuel, flare and emission variables throughout the plant life. The monitoring systems are utilised to look for changes in systems, assess the operational performance of systems, or quantify the changes made by improvements and modifications.</li> <li>• Use of daily production reporting and hydrocarbon accounting systems, identifying discrepancies and imbalances for further investigations. Daily production reporting further builds in to weekly, monthly, quarterly and annual production accounting and emissions reporting.</li> </ul>	Amendments have been made to the GHGMP to reflect this response, notably Table 3-1

<sup>10</sup> Department of Industry, Science, Energy and Resources (DISER), 2019 *National Inventory Report 2017* Commonwealth of Australia <https://publications.industry.gov.au/publications/climate-change/system/files/resources/gas-group/national-inventory-report-2017-volume-1.pdf>

Key Comment No.	Submitter	Comment	Proponent Response	Page of Amendment/Document
			<ul style="list-style-type: none"> <li>Establish a maintenance program to minimise emissions from pressure relief valves, including mandated inspection and testing frequencies and in service monitoring programs.</li> </ul> <p><b>FLOWLINES AND PIPELINES</b></p> <ul style="list-style-type: none"> <li>Flowlines and pipelines are managed under a Pipeline Integrity Management Plan (PIMP) within the authorisation of DMIRS under the <i>Petroleum and Geothermal Energy Resources Act 1967</i>. The PIMP addresses AS2885 pipeline code requirements of conditional monitoring, maintenance and inspection requirements of pipelines. Metering and net accounting of volumes, plus inspections as defined in the PIMP are systems used to monitor for loss of containment incidences and resulting pollution events with flowlines and pipelines.</li> </ul> <p><b>WELL SITE</b></p> <ul style="list-style-type: none"> <li>The piping of instrument air (compressed air) from the plant to the remote well locations (some greater than 6km away). At the wellhead the instrument air is used as the power source to drive control valve actuations. This is considered best industry practise, and differs from some historical industry practices whereby hydrocarbon gases were the power source used to drive control valve actuators. These hydrocarbon gases were potential fugitive emission sources.</li> </ul> <p>These mitigation measures will be detailed in Environment Plans as required by the <i>Petroleum and Geothermal Energy Resources Act 1967</i>, which must be accepted by DMIRS prior to activities commencing.</p> <p>NGERS reporting (under the <i>National Greenhouse and Energy Reporting Act 2009 (NGER Act 2007)</i>) requires emission monitoring to occur from the beginning of the construction phase and continue during the operations of the new wells and the Waitsia Gas Plant – this monitoring includes fugitive emissions. Monitoring of emissions ensures accurate reporting to the Commonwealth Clean Energy Regulator.</p> <p>All emissions associated with the Proposal are required to be reported annually to Australian Government under the requirements of the <i>NGER Act 2007</i>. Further information on monitoring, reporting requirements and penalties for non-compliance can be found at: <a href="http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER">http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER</a>.</p>	
GHG 2	ANON-WNTE-47D3-Z ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DY-6 ANON-WNTE-47D1-X ANON-WNTE-47D5-2 ANON-WNTE-47DD-H ANON-WNTE-477R-J ANON-WNTE-47D2-Y ANON-WNTE-47D6-3 ANON-WNTE-47DE-J ANON-WNTE-47D3-Z ANON-WNTE-4778-R	The Commonwealth Safeguard Mechanism baseline requirements are not strong enough and do not include detailed on ground measurements	<p>The EPA will consider and make a determination through advice to the minister as an independent body. MEPAU notes the comment.</p> <p>The EPA GHG Emissions Environmental Factor Guidance (GHGEFG) states that it does not seek to unnecessarily duplicate other regulatory approaches. Further, the GHGEFG expressly recognises the use of the Safeguard Mechanism for compliance offsets.</p> <p><i>NGER Act 2007</i> requires:</p> <ul style="list-style-type: none"> <li>Under the Safeguard Mechanism, the establishment of a Baseline emission (Benchmark Baseline) for the Proposal with regards to permitted emission levels. Emissions baselines represent the reference point against which emissions performance will be measured under the safeguard mechanism. A safeguard facility must keep its net emissions levels at or below its baseline. (Further information on baseline emission requirements can be found at: <a href="http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines">http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines</a>),</li> <li>Monitoring of all emissions associated with the Proposal (from the beginning of the construction phase and continue during the operations of the new wells and the Waitsia Gas Plant), and</li> <li>Annual reporting of Proposal related emissions to the Commonwealth Clean Energy Regulator. (Further information on monitoring, reporting requirements and penalties for non-compliance can be found at <a href="http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER">http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER</a>).</li> </ul> <p>MEPAU will ensure compliance with all relevant Commonwealth <i>NGER Act 2007</i> requirements.</p>	N/a



Key Comment No.	Submitter	Comment	Proponent Response	Page of Amendment/Document
			<p>The Commonwealth standards Workplace Exposure Standards for Airborne Contaminants dated 27 April 2018<sup>11</sup> and the National Environment Protection (Ambient Air Quality) Measure dated 25 February 2016 specify limits on ground level concentrations.</p> <p>MEPAU will comply with these requirements as a minimum.</p>	
GHG 3	ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DY-6 ANON-WNTE-47D1-X ANON-WNTE-47D6-3 ANON-WNTE-47D2-Y ANON-WNTE-47DE-J ANON-WNTE-47D5-2 ANON-WNTE-47DD-H ANON-WNTE-477R-J ANON-WNTE-477X-R	Air dispersion modelling of fugitive methane emissions from all sources (flaring management plan and greenhouse gas management plans)	<p>MEPAU notes the comment.</p> <p>MEPAU considers it unlikely that there will be a substantial escape of fugitive methane emissions or large emissions associated with the construction of the gas plant or drilling of the wells (refer to Key Comment No. GHG1 regarding fugitive emissions).</p> <p>Given the nature of fugitive emissions, a range of emission levels may occur, potentially zero emissions. Further, where emissions may occur is difficult to determine. Therefore, it is difficult to model fugitive emissions accurately to determine any impacts on air quality.</p> <p>Given approaches to mitigating fugitive emissions (refer to Key Comment No. GHG 1) MEPAU does not consider further modelling is required.</p> <p>Fugitive emissions will be included in NGERs reporting (under the <i>NGER Act 2007</i>). This includes emission monitoring from the beginning of the construction phase and continue during the testing and operations of the new wells and the Waitsia Gas Plant.</p> <p>Monitoring of emissions ensures accurate reporting to the Commonwealth Clean Energy Regulator.</p> <p>MEPAU notes that the drilling of Waitsia-02, Waitsia-03 and Waitsia-04 resulted in the combined emission of ~37,000 t CO<sub>2</sub>-e (an average of 12,352 t CO<sub>2</sub>-e per well) – as reported to the Clean Energy Regulator as part of <i>NGER Act 2007</i> reporting requirements. This was considered relatively high due to a 5-7 day duration of each well test but, as part of uncovering the new Waitsia gas field, was required to ascertain, with reasonable accuracy, the minimum connected reservoir volume. This information was also required to validate reservoir models for the new gas field.</p> <p>Well testing of new wells associated with the Proposal will take considerably less duration (24-28 hour period), given the understanding of the Waitsia reservoir, resulting in considerably lower levels of CO<sub>2</sub> emissions. Given the ambient air concentrations in the region are well below relevant standards<sup>12</sup>, emissions from flaring at wells would not be expected to impact regional air quality. The well testing of new wells and mitigation measures to be put in place, to ensure effective and efficient well testing, will be detailed in Environment Plans as required by the <i>Petroleum and Geothermal Energy Resources Act 1967</i>, which must be accepted by DMIRS prior to drilling activities commencing.</p>	N/a
GHG 4	ANON-WNTE-477Q-H ANON-WNTE-477R-J ANON-WNTE-477X-R ANON-WNTE-47D1-X ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47D6-3 ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DD-H ANON-WNTE-47DD-H ANON-WNTE-47DE-J	The air dispersion modelling fails to include emissions from the wells, flaring at the wells and diesel generators associated with these	<p>MEPAU notes the comment.</p> <p>Air quality emissions from construction and operation of wells, well flaring and diesel generator are insubstantial and will (through disbursement and dilution) not be discernible against background levels within approximately &lt;1.5km from wellheads, well flares and diesel generators.</p> <p>Given the distance to sensitive receptors no sensitive receptors will be impacted by associated air quality emissions. Consequently, to ensure that a conservative risk assessment was conducted, air dispersion modelling was conducted for the WGP given that the plant will be continuously operational for a prolonged period as opposed to flaring emissions from wells which are expected to be limited to 24-48 hour period per wellsite.</p>	N/a

<sup>11</sup> [https://www.safeworkaustralia.gov.au/system/files/documents/1804/workplace-exposure-standards-airborne-contaminants-2018\\_0.pdf](https://www.safeworkaustralia.gov.au/system/files/documents/1804/workplace-exposure-standards-airborne-contaminants-2018_0.pdf)

<sup>12</sup> As detailed in Mitsui E&P Australia Group (MEPAU) (2019), Waitsia Gas Project Stage 2 – Environmental Referral Supporting Report, published report. Appendix E [http://www.epa.wa.gov.au/sites/default/files/Referral\\_Documentation/Appendix%20E%20-%20Air%20Dispersion%20Modelling.pdf](http://www.epa.wa.gov.au/sites/default/files/Referral_Documentation/Appendix%20E%20-%20Air%20Dispersion%20Modelling.pdf)

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	ANON-WNTE-47DR-Y ANON-WNTE-47DY-6			
GHG 5	ANON-WNTE-4778-R ANON-WNTE-477R-J ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DE-J ANON-WNTE-47DK-R ANON-WNTE-47DS-Z	Reduction of net GHG emissions over the life of the project	<p>The EPA will consider and make a determination, through advice to the Minister, as an independent body. MEPAU notes the comment.</p> <p>On the 28<sup>th</sup> of August 2019 the West Australian State Government released the “Greenhouse Gas Emissions Policy for Major Projects” (Policy) (five days after the submission of the Proposal).</p> <p>The Policy states an environmental objective <i>"To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change"</i>. The Policy further states, in support of that objective:</p> <ul style="list-style-type: none"> <li>• "When the EPA applies this guideline in assessing a proposal, the EPA will require proponents to develop a Greenhouse Gas Management Plan ... that demonstrates their contribution towards the aspirations of net zero emissions by 2050".</li> <li>• "At a minimum , a Greenhouse Gas Management Plan should outline: <ul style="list-style-type: none"> <li>○ Intended reductions in scope 1 emissions over the life of the proposal;</li> <li>○ Regular interim and Long-term Targets that reflect an incremental reduction in scope 1 emissions over the life of the proposal; and</li> <li>○ Strategies which demonstrate that all reasonable and practicable measures have been applied to avoid, reduce and offset a Proposal's scope 1 emissions over the life of the proposal".</li> </ul> </li> </ul> <p>The express language of the Policy makes clear that the Proposal’s scope 1 emissions are to be reduced "over the life of the proposal". The GHGMP aligns with the Policy.</p> <p>MEPAU notes that there are public concerns about the policy and that it should achieve net zero emissions from the commencement of a proposal. MEPAU interprets that net zero emissions should be achieved by 2050.</p> <p>Some submitters expressed concern that the GHGMP provided for a process for setting long term interim targets rather than specifying those interim targets up front. That concern has been addressed through the inclusion of Emission Reduction Targets (at five yearly intervals to the planned end of the Waitsia Gas Plant in 2043).</p> <p>The Policy committed the West Australian Government to working with the Australian Government’s interim target of emission reductions of 26 to 28 per cent by 2030 and to the aspiration of net zero greenhouse gas emissions by 2050. Further, the Policy supports the development of GHGMPs. Such documents should:</p> <ul style="list-style-type: none"> <li>• Outline strategies to avoid, reduce, mitigate and offset the Proposal’s direct (scope 1) emissions contributing towards the State’s aspiration of net zero by 2050;</li> <li>• Allow proponents to propose their own timeframes and interim targets;</li> </ul> <p>The Proposal’s GHGMP details:</p> <ul style="list-style-type: none"> <li>• Strategies to avoid, reduce, mitigate and offset the proposal’s Scope 1 emissions contributing towards the States aspiration. Table 4-1 has been updated to demonstrate mitigation efforts at the Proposal design stage;</li> <li>• Emission Reduction Targets that align with the Australian Government’s interim target of emission reductions of 26 to 28 per cent by 2030; and</li> <li>• Emission Reduction Targets that directly align with the West Australian Governments aspiration of net zero greenhouse gas emissions by 2050.</li> </ul> <p>Achieving Targets will result in the progressive reduction of the Proposal’s CO<sub>2</sub> emissions either directly (via avoidance or reduction mitigations) or indirectly (via offsets).</p>	<b>Amendments have been made to the GHGMP to reflect this response</b>
GHG 6	ANON-WNTE-47D4-1	Benchmarking and measurement of baseline emissions	MEPAU notes the comment.	<b>N/a</b>

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			<p>Management Action 2 (MA2) in the GHGMP, to establish a Proposal Baseline emission, is in relation to the Commonwealth Safeguard Mechanism under <i>NGER Act 2007</i>. Further information on baseline emission requirements can be found at <a href="http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines">http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines</a>.</p> <p>All emissions associated with the proposal (including fugitive emissions) are required to be reported annually to Australian Government under the requirements of the <i>NGER Act 2007</i>.</p> <p>Further information on monitoring and reporting requirements can be found at <a href="http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER">http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER</a>.</p>	
GHG 7	ANON-WNTE-47D4-1	Emissions monitoring should commence from the beginning of the construction phase and continue during the operations of the new wells and the processing plant	<p>NGERS reporting (under the <i>NGER Act 2007</i>) requires emission monitoring to occur from the beginning of the construction phase and continue during the operations of the new wells and the Waitsia Gas Plant. Monitoring of emissions ensures accurate reporting to the Commonwealth Clean Energy Regulator. MEPAU intends to comply with its emission monitoring obligations under the <i>NGER Act 2007</i> and will carry out the monitoring in the requisite period. All emissions associated with the Proposal are required to be reported annually to Australian Government under the requirements of the <i>NGER Act 2007</i>. Further information on monitoring, reporting requirements and penalties for non-compliance can be found at: <a href="http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER">http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER</a>.</p> <p>MEPAU will comply with all the annual compliance reporting under the Proposal's Ministerial Statement conditions (along with the requirement for publication).</p>	N/a
GHG 8	ANON-WNTE-47D4-1	Measuring emissions should include existing wells	<p>The referred proposal (and therefore the GHGMP) addresses those existing wells that will be operated as part of the Proposal.</p> <p>Other existing wells (e.g. Waitsia-1) do not form part of the referred Proposal, and therefore are not addressed in the GHGMP.</p> <p>Emissions from existing wells that are not part of the Proposal will continue to be reported under the <i>NGER Act 2007</i> (which requires reporting on an operator, rather than proposal, basis).</p>	N/a
GHG 9	ANON-WNTE-47D4-1	The Management plan mentions the use of solar panels as greenhouse gas abatement strategy (Page 28). However, it discards even small-scale application for the project (Page 15). This does not demonstrate the proponent's sincerity for greenhouse gas mitigation.	<p>MEPAU notes the comment.</p> <p>The use of small-scale solar has been incorporated into the design of the plant.</p> <p>As detailed in Table 2-5 of the GHGMP:</p> <ul style="list-style-type: none"> <li>Solar panels and batteries will be utilised at remote well sites for control systems, safety systems, communications and localised lighting demands (this removes the need for the use of diesel generators at the well site), and</li> <li>A solar power system will be installed to provide power to the Administration and Control Building.</li> </ul> <p>Table 4-1 has been amended to indicate that the use of Solar will mitigate 28 <i>CO<sub>2</sub>-e mitigated (Tonnes CO<sub>2</sub>/year)</i>.</p> <p>As detailed in Table 2-5 of the GHGMP, as part of the continuous review of the GHGMP MEPAU will review the practicality of employing renewables where reasonably practicable.</p>	<b>Amendments have been made to the GHGMP to reflect this response, notably Table 4-1</b>
GHG 10	ANON-WNTE-477R-J ANON-WNTE-477P-G	Burning of condensate	<p>In order to meet emissions criteria and in accordance with industry good practice, an incinerator was included in the design to destroy contaminants that would otherwise be emitted to the atmosphere. In order to destroy the contaminants, a fuel source is required.</p> <p>Whilst the fuel source was most likely to be natural gas, MEPAU included the option of burning of condensate in the incinerator in the original referral<sup>13</sup> to the EPA to preserve optionality.</p>	N/a

<sup>13</sup> Mitsui E&P Australia (MEPAU) (2019), Waitsia Gas Project Stage 2 – Environmental Referral Supporting Report, published report. [http://www.epa.wa.gov.au/sites/default/files/Referral\\_Documentation/Supporting%20Document\\_7.pdf](http://www.epa.wa.gov.au/sites/default/files/Referral_Documentation/Supporting%20Document_7.pdf)



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			As the design has progressed, the option to use condensate is no longer being pursued. The option to use natural gas is being pursued as it is simpler and provides greater operational reliability.	
GHG 11	ANON-WNTE-477P-G	Disposal of extracted CO <sub>2</sub>	<p>Section 2.1.4 of the GHGMP states that CO<sub>2</sub> extracted from the gas will be emitted to atmosphere. This section is re-stated below for ease of reference:</p> <p><i>A GHG emissions assessment was developed and accounts for all upstream (reservoir) and processing (WGP) emissions. The assessment includes consideration of all GHGs listed under the NGER Act 2007, with total emission represented as tonnes carbon dioxide equivalent (tCO<sub>2</sub>-e).</i></p> <p><i>Total Scope 1 emissions are estimated to be ~300,000 tCO<sub>2</sub>-e per year (tCO<sub>2</sub>-e/yr), assuming an average reservoir carbon dioxide (CO<sub>2</sub>) concentration of 6.0 mol%<sup>[2]</sup>, an exported gas production rate of 250 TJ/day and operation 365 days per year. Total Scope 1 emissions includes ~180,000 tCO<sub>2</sub>-e/yr related to reservoir CO<sub>2</sub> removal and ~120,000 tCO<sub>2</sub>-e/year from the WGP operations (refer to Table 2-3).</i></p> <p><i>The Proposal will export an estimated 250 TJ of gas per day. Therefore, the Proposal will have an estimated GHG intensity of 3.29 tCO<sub>2</sub>-e/TJ including reservoir CO<sub>2</sub>. The GHG intensity when considering gas processing emissions only is estimated to be 1.32 tCO<sub>2</sub>-e/TJ (of the total 3.29 tCO<sub>2</sub>-e/TJ).</i></p> <p><i>Annual GHG emissions related to the reservoir sourced CO<sub>2</sub> that must be removed as part of processing will vary depending on the CO<sub>2</sub> mol% of the Waitsia gas reserve (CO<sub>2</sub> reservoir content ranges from 4.5 mol% in the north of the reservoir to 7.5 mol% in the south with an expected average of 6.0 mol%).</i></p> <p>The reduction measures for this emission (along with other GHG emissions) is otherwise addressed in the GHGMP.</p>	N/a
GHG 12	ANON-WNTE-477X-R	Reference to the Air Quality Guideline	<p>The GHGMP has been updated to remove reference to the Air Quality Guidelines.</p> <p>In October 2019 the EPA confirmed the level of assessment as “Referral information with additional information required”. The preliminary key environmental factors included “Air quality”. MEPAU was directed to prepare an Air Quality Management Plan (AQMP) outlining the greenhouse gas emissions from the proposal, benchmarking of emissions and mitigation measures considering the guidance provided in the Air Quality Environmental Factor Guidance (AQEFG).</p> <p>At this time there was no draft GHG Emissions Environmental Factor Guidance. In December 2019, the transition from the AQEFG to a specific GHGEFG commenced with the release of the draft GHG Emissions Environmental Factor Guidance (GHGEFG). At this point, MEPAU embraced the GHGEFG and ensured its consideration in the development of the AQMP. At this point the AQMP became the GHGMP. As the GHGEFG was still in draft form, the AQEFG was still the main environmental factor guidance (EFG) document.</p> <p>On the 16 April 2020 the GHGEFG was released by the EPA as final. The transition to the GHGEFG to support the development of the GHGMP was complete.</p> <p>Unfortunately, the GHGMP submitted for public review to the EPA in April, with the public review period commencing the 23 April 2020, had consideration to both AQEFG and GHGEFG.</p> <p>Amendments have been made to GHGMP to be consistent only with the GHGEFG.</p>	<b>Amendments have been made to the GHGMP, notably Table 1-1 and Table 2-4, to be consistent only with the GHGEFG</b>
GHG 13	ANON-WNTE-477X-R	Compliance with the GHG Guideline and objective	<p>The GHGMP is consistent with the Policy's objective to reduce net GHG emissions to net zero by 2050. See Key Comment No. GHG 5.</p> <p>The Proposal (now EPA No. Assessment 2226) was referred to the EPA on the 23rd August 2019. At this time the Environmental Referral Supporting Report detailed a position that CO<sub>2</sub> emissions weren't considered significant by MEPAU given that they would lead to an increase of 0.4% State's annual GHG emissions based on the 2013-2014 figure of 83.4 Mt (this total was based on recent published figures given that contributors to CO<sub>2</sub> emissions and levels of contribution vary annually). The 0.4% figure is not cited in the Greenhouse Gas Management Plan (GHGMP).</p>	N/a

<sup>[2]</sup> Based on a reservoir range of 4.5 mol% in the north to 7.5 mol% in the south

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			The GHGMP aligns with the West Australian Government’s commitment to Commonwealth Interim Targets (recommended by the IPCC), and further commits to decreasing emissions to 2050. The Policy expressly does not require “no net emissions” over the life of the Proposal.	
GHG 14	ANON-WNTE-477X-R	Irrationality in applying the Policy	There is public concern that the application of the Policy (whereby any net positive emission is authorised) would be inconsistent with the EPA's functions under the <i>Environmental Protection Act 1986</i> . The <i>Environmental Protection Act 1986</i> provides for environmental protection. The Policy expressly references the EPA's section 15 objective to "use its best endeavours to protect the environment and to prevent, control and abate pollution and environmental harm". The Policy further states: "The section 15 objective, combined with the established link between GHG emissions and the risk of climate change, and the broad acknowledgement that the warming climate will impact the Western Australian environment, means that the EPA can consider the effects of proposals which would increase the State's emissions, and contribute to environmental harm". The Policy also notes that "Australia is currently contributing around 1.3 per cent of global GHG emissions".	N/a
GHG 15	ANON-WNTE-477X-R	Insufficient Information on Scope 3 Greenhouse Gas emissions	The Guideline states that the EPA "may" request "credible estimates" of Scope 1, 2 and 3 GHG emissions (annual and total) over the life of a proposal. A Scope 3 Emissions estimate has been included in the GHGMP.	Amendments have been made to the GHGMP, notably Table 2-4
GHG 16	ANON-WNTE-477X-R	Total GHG emissions	In the scenario where average production levels for the 20 year life of the Waitsia Gas Plant are based on: <ul style="list-style-type: none"> <li>• Average exported gas production of 250 TJ/day with an estimated emission of 300,000 tCO<sub>2</sub>-e per year (tCO<sub>2</sub>-e/yr);</li> <li>• Average reservoir carbon dioxide (CO<sub>2</sub>) concentration of 6.0 mol%; and</li> <li>• Operation 365 days per year -</li> </ul> Then, total CO <sub>2</sub> -equivalent emissions are estimated to be 6.3 million tCO <sub>2</sub> -e. MEPAU will work with the EPA and the West Australian Government to set targets that significantly reduces this estimated amount.	N/a
GHG 17	ANON-WNTE-477X-R	Insufficient Emissions Reductions Proposed	The submitter references the Pluto, Wheatstone and Gorgon projects. The approach to managing the reduction of CO <sub>2</sub> emissions at a State and Commonwealth level have evolved since the conditioning of emission reduction for the Pluto, Wheatstone and Gorgon projects. Such mega projects have the potential of annual Scope 1 CO <sub>2</sub> emissions close to, if not greater than, the total full potential CO <sub>2</sub> emissions from the Waitsia Gas Plant over the life of the gas plant (as detailed in Key Comment No. GHG 16) . The Pluto, Wheatstone and Gorgon projects (including a requirement for geo-sequestration) are considered by MEPAU as not being an appropriate comparison to this Proposal. On the 28 <sup>th</sup> of August 2019 the West Australian State Government released the “Greenhouse Gas Emissions Policy for Major Projects” (five days after the submission of the Proposal). The policy committed the West Australian Government to working with the Australian Government’s interim target of emission reductions of 26 to 28 per cent by 2030 and to the aspiration of net zero greenhouse gas emissions by 2050. Further, the policy supports the development of GHGMPs. Such documents should: <ul style="list-style-type: none"> <li>• Outline strategies to avoid, reduce, mitigate and offset the Proposal’s direct (scope 1) emissions contributing towards the State’s aspiration of net zero by 2050;</li> <li>• Allow proponents to propose their own timeframes and interim targets;</li> </ul> The Proposal’s GHGMP details: <ul style="list-style-type: none"> <li>• Strategies to avoid, reduce, mitigate and offset the Proposal’s Scope 1 emissions contributing towards the States aspiration. Table 4-1 has been updated to demonstrate mitigation efforts at the Proposal design stage.</li> </ul>	Amendments have been made to the GHGMP to reflect this response

Key Comment No.	Submitter	Comment	Proponent Response	Page of Amendment/Document
			<ul style="list-style-type: none"> <li>Emission Reduction Targets that align with the Australian Government’s interim target of emission reductions of 26 to 28 per cent by 2030.</li> <li>Emission Reduction Targets that directly align with the West Australian Governments aspiration of net zero greenhouse gas emissions by 2050.</li> </ul>	
GHG 18	ANON-WNTE-477X-R	Long term reduction targets	The GHGMP has been amended to include Emission Reduction Targets that directly align with the West Australian Governments aspiration of net zero greenhouse gas emissions by 2050.	<b>Amendments have been made to the GHGMP to reflect this response, notably Section 4.3.</b>
GHG 19	ANON-WNTE-477X-R	Reliance on Commonwealth and State government policy and legislation	MEPAU notes, that as the WA Government Policy outlines, climate change is a global abatement and impact concern, which cannot be addressed solely at the local level. This is highlighted by the submitter's reference to the IPCC’s recent Special Report on Global Warming of 1.5°C. The submitter's comment does not outline how the findings of that report translate into a purely Western Australian context (let alone a local project specific context). Accordingly, State and Commonwealth jurisdictional targets are relevant environmental considerations.	<b>N/a</b>
GHG 20	ANON-WNTE-477X-R	Measures to avoid, reduce and offset GHG emissions	Through the design phase of the Proposal MEPAU have avoided emissions through best practice design. Table 4-1 of the GHGMP has been updated to demonstrate mitigation efforts at the Proposal design stage that have led to the reduction of emissions by 121,528 Tonnes CO <sub>2</sub> /year. The GHGMP has been updated to include Emission Reduction Targets set at 5 year intervals.	<b>N/a</b>
GHG 21	ANON-WNTE-47DD-H	Self-monitoring of baselines	<p>The EPA GHG Emissions Environmental Factor Guidance states that it does not seek to unnecessarily duplicate other regulatory approaches. Therefore, MEPAU will ensure compliance with existing Commonwealth <i>NGER Act 2007</i> requirements.</p> <p>NGERS reporting (under the <i>NGER Act 2007</i>) requires emission monitoring to occur from the beginning of the construction phase and continue during the operations of the new wells and the Waitsia Gas Plant. Monitoring of emissions ensures accurate reporting to the Commonwealth Clean Energy Regulator.</p> <p>All emissions associated with the Proposal are required to be reported annually to Australian Government under the requirements of the <i>NGER Act 2007</i>. Further information on monitoring, reporting requirements and penalties for non-compliance can be found at <a href="http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER">http://www.cleanenergyregulator.gov.au/NGER/Reporting-cycle/Complying-with-NGER</a>.</p> <p>NGER Act 2007 requires the establishment of a Baseline emission (Benchmark Baseline) with regards to permitted emission levels. Emissions baselines represent the reference point against which emissions performance will be measured under the safeguard mechanism. A safeguard facility must keep its net emissions levels at or below its baseline.</p> <p>Further information on baseline emission requirements can be found at: <a href="http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines">http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/Baselines</a>.</p>	<b>N/a</b>
GHG 22	ANON-WNTE-477Q-H	Enforceable measures for GHGMP	<p>This submitter expressed concern that there be enforceable measures to ensure emissions comply with the Policy and Government requirements.</p> <p>In addition to <i>NGER Act 2007</i> reporting (as discussed above) and as noted in the GHGMP, MEPAU expects the GHGMP to be regulated through a condition of a Ministerial Statement (and consequently) enforceable through section 48 of the <i>Environmental Protection Act 1986</i>.</p>	<b>N/a</b>

**Table 3-3 Proponent Responses to Comments made in Public Submissions Received - Water Management Plan (Rev 0)**

Key Comment No.	Submitter Identifier	Comment	Proponent Response (Rev 1 updated)	Page of Amendment/Document
WMP 1	ANON-WNTE-477R-J ANON-WNTE-477P-G	Number of reinjection wells	<p>As described in Section 2.10.2 of the Environmental Referral Supporting Report, Waitsia Gas Plant Produced Formation Water (PFW) is proposed to be re-injected into the following disused production wells:</p> <ul style="list-style-type: none"> <li>• Hovea-11</li> <li>• Hovea-13ST 1</li> <li>• Eremia-04</li> </ul> <p>A described in Section 4.6.5.2 of the Environmental Referral Supporting Report, MEPAU noted that <u>at least two</u> re-injection wells would be available to receive PFW, with only one being used at any one time.</p> <p>Consequently, the Environmental Referral Supporting Report provided for three re-injection wells that could potentially be used.</p>	N/a
WMP 2	ANON-WNTE-47DB-F	Engagement with the Southern Yamatji	<p>MEPAU understand that Ejaro Spring is not a registered or other heritage site as defined by the <i>Aboriginal Heritage Act 1972</i>. However, MEPAU understand the importance of Ejaro Spring and has considered this site accordingly in both the Environmental Referral Supporting Report and Water Management Plan. Specifically, the Water Management Plan includes water drawdown impact assessment and proposes ongoing monitoring prior to and throughout the life of the Proposal. As detailed in the Environmental Referral Supporting Report, MEPAU does not plan to directly impact Ejaro Spring as the site is located outside of the Development Envelope and on private land.</p> <p>As detailed in the Environmental Referral Supporting Report, MEPAU is committed to engaging with Traditional Owner monitors and seek subject matter expert advice as required to help further ensure appropriate protection of any heritage values.</p> <p>As documented in the Environmental Referral Supporting Report, and proven through recent engagement with the SY and YMAC on other projects in the region, MEPAU will honour the intent of a draft Heritage protocol with the Southern Yamatji Peoples and ensure existing heritage assessments are acceptable. If required, additional heritage assessments will be undertaken, and any additional mitigations detailed in the assessment would be implemented.</p>	N/a
WMP 3	ANON-WNTE-47DB-F	Studies at Ejaro Spring	<p>As detailed in the WMP, and in response to comments on the WMP, MEPAU propose to undertake additional baseline monitoring to understand seasonal variation of groundwater levels in the region. Specifically, MEPAU plan to install a groundwater logger that continuously measures groundwater level as soon as possible to gather as much baseline data as possible prior to the installation of the extraction bores.</p> <p>As detailed in the Flora and Vegetation Management Plan, MEPAU plan to conduct a baseline flora and vegetation survey at Ejaro Spring to document the vegetation diversity and condition prior to the activity commencing.</p>	<b>Section 3.3.4 and Table 3-4 of the WMP</b>
WMP 4	ANON-WNTE-47DB-F	Ethnobotanical survey	<p>As detailed in the Environmental Referral Supporting Report, MEPAU is committed to engaging Traditional Owner monitors and seek subject matter expert advice as required to help further ensure appropriate protection of any heritage values. In accordance with MEPAU's draft Heritage agreement, MEPAU will conduct a heritage assessment of the disturbance footprint and fully implement any recommendations as requested by the Southern Yamatji. This may include the requirements for a locality specific ethno-botanical survey.</p>	N/a
WMP 5	ANON-WNTE-47DB-F	Ongoing engagement with the Southern Yamatji	<p>Noted.</p> <p>As documented in the Environmental Referral Supporting Report, and evidenced through recent engagements with the SY and YMAC, MEPAU will honour the intent of a draft Heritage protocol with the Southern Yamatji Peoples. Further, MEPAU look forward to continuing the partnership with the Southern Yamatji Peoples and continuing engagement throughout the life-cycle of the Proposal.</p>	N/a
WMP 6	ANON-WNTE-477Q-H	Produced wastewater disposal	<p>Noted.</p> <p>As described in the Environmental Referral Supporting Report, design investigations concluded that re-injection with supplementary storage (evaporation ponds) is the most efficient and effective method for Produced Formation Water management.</p>	N/a

			For further information regarding geological separation of targeted injection formation (the Dongara Sandstone Formation) and the Yarragadee please refer WMP 16.	
WMP 7	ANON-WNTE-47D3-Z ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47DT-1 ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DD-H ANON-WNTE-477Q-H ANON-WNTE-477R-J ANON-WNTE-477X-R ANON-WNTE-477C-3	Water consumption and the use of water for drilling of future wells	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the comment.</p> <p>As detailed in the Water Management Plan (WMP), MEPAU has conservatively estimated the volumes of extracted groundwater required to support the Waitsia Gas Plant as being in the order of 60,000 kL /annum for the life of the Proposal (approximately 20 years). This volume is specific to the extraction bores proposed to be continually operational and located within the WGP. The reason MEPAU has focused on this aspect of the proposal is that extraction of water within the WGP will be continual for the life of the facility, and sustained extraction has the potential for groundwater drawdown to occur.</p> <p>The volume of water extracted at the WGP does not include water extracted for drilling, as water will not be sourced from the WGP extraction bores. Given the distance of proposed well sites to the WGP (refer Figure 1-2 of the Environmental Referral Supporting Document), and as it is standard practice for well construction, as part of the wellsite preparation a new extraction bore will be installed on the wellsite through which drilling water will be sourced. Installing extraction bores on the well sites prevents the need for additional driving and associated HSE risks. MEPAU estimates that each well would require (on average) 2,500 kL of water to be constructed, and has evaluated the risk of drawdown at each extraction bore as being negligible because:</p> <ul style="list-style-type: none"> <li>• The well sites are located at a distance of some kilometres from each other</li> <li>• The volume of water required per well is limited</li> <li>• Water will only be extracted at each well site as it is needed (i.e water is not extracted at each well site simultaneously)</li> <li>• The drilling program will be conducted over a period of 12-18 months, and</li> <li>• Extraction activities are one-off / non-continuous.</li> </ul> <p>MEPAU discounted the potential for cumulative drawdown impacts from drilling water extraction based upon groundwater drawdown equations (Theis equation) that indicate over a 14 day period which is a conservative continuous pumping duration for these activities, no drawdown would be expected within 500 m of the extraction site.</p>	N/a
WMP 8	ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47DT-1 ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DD-H ANON-WNTE-477Q-H ANON-WNTE-477R-J ANON-WNTE-477X-R ANON-WNTE-477C-3	Water consumption estimates (processing) and consideration of drilling planned and future wells?	<p>Noted.</p> <p>As detailed in the WMP, MEPAU conservatively estimates that volume of groundwater required to support the facility is in the order of 60,000 kL /annum for the life of the Proposal.</p> <p>These estimates are based upon the Operation of a 250 TJ Facility producing at capacity. Thus, regardless of the number of wells required to supply the facility, the volume of water required to process the reservoir fluids can be no higher than the annual estimate provided in the WMP as the Plant cannot exceed production capacity.</p> <p>The estimate provided in the Proposal and WMP are based upon the description of the Proposal in the Environmental Referral Supporting Document. MEPAU understand that any additional wells or future stages beyond those addressed in the Proposal, would require further assessment by the EPA under the <i>Environmental Protection Act 1986</i>.</p>	N/a
WMP 31	ANON-WNTE-47DP-W	Managing re-injection well integrity	<p>Noted.</p> <p>As stated in the Environmental Referral Supporting Report, a comprehensive assessment of the technical issues regarding re-injection for the Proposal concluded that re-injection is an appropriate method of PFW disposal. The assessment considered numerous wells and assessed their history, integrity, injectivity and in some cases conducted modelling to determine maximum injectivity volumes.</p>	N/a



			<p>The integrity of the wells chosen for re-injection integrity has been assessed, with advice provided to DMIRS in preparation for subsequent operational regulatory approvals under the PGER Act. These wells will be tested to ensure well integrity on an ongoing basis.</p> <p>As described in the environmental Referral Supporting Report, the Petroleum and Geothermal Energy Resources (PGER) (Resource Management and Administration) Regulations 2015 require a Well Management Plan to be accepted by DMIRS that describes all well activities relating to the planning, design, construction and management of a well throughout its life cycle. As such well integrity verification and validation measures are described in the Well Management Plan which is assessed and accepted by DMIRS prior to any activities commencing. A Well Management Plan is required for both producing wells and injection wells.</p> <p>All well integrity verification and validation measures (amongst other requirements) documented in the Well Management Plan are subject to regular DMIRS inspection and audits.</p>	
WMP 10	<p>ANON-WNTE-47D3-Z ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-477R-J</p>	<p>Water re-injection sites – management and monitoring</p>	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the public comment.</p> <p>Re-injection of produced formation water is standard industry practice and has been occurring at other facilities within the Perth Basin for well over a decade. Reinjection occurred at MEPAU’s Hovea and Eremia Assets for the duration of Production life from 2003 - 2012. These activities are currently managed under Part V of the <i>Environmental Protection Act 1986</i>, and through activity specific Environment Plans developed under the Petroleum and Geothermal Energy Act 1967 / Petroleum and Geothermal Energy (Environment) Regulations 2012.</p> <p>DWER has regulatory authority under Part V of the <i>Environmental Protection Act 1986</i> (the Act) for the licensing of prescribed premises. Licences issued under Part V of the Act include conditions that relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them. Specifically, MEPAU understand that re-injection of formation water would be captured under the site operating licence. The types of monitoring that are generally undertaken for re-injection activities under the licence include:</p> <ul style="list-style-type: none"> <li>• Volume of water injected,</li> <li>• Well Head Pressure,</li> <li>• Casing Pressure and</li> <li>• Surface Casing Pressure.</li> </ul> <p>In addition to this, DWER requires that well integrity is tested and reported every three years. Monitoring outcomes are provided to DWER annually in the form of an Annual Environment Report.</p> <p>DMIRS has responsibilities under the Petroleum and Geothermal Energy (Environment) Regulations to ensure that all Petroleum Activities have an Environment Plan in place that describes how impacts and risks will be managed. Specifically, under the regulations:</p> <ol style="list-style-type: none"> <li>1. Any chemical used down hole (such as during re-injection) need to be publicly disclosed, assessed and accepted by the DMIRS (Regulation 9), and</li> <li>2. Maximum permissible concentration of hydrocarbons and monitoring frequency for produced formation water reinjected into wells must be specified in an Environment Plan (Regulation 8), that is assessed and accepted by DMIRS.</li> </ol> <p>Volumes of water injected and outcomes from hydrocarbon concentrations monitoring are reported under the PGER(E)R to DMIRS annually.</p>	N/a
WMP 11	<p>ANON-WNTE-47DT-1 ANON-WNTE-47DD-H ANON-WNTE-477Q-H ANON-WNTE-477R-J</p>	<p>Evaporation Ponds – management and maintenance.</p>	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the comment.</p> <p>Evaporation ponds are planned to be used for contingency storage of produced formation water. The only chemicals that would be commingled in the formation water are operational chemicals to maintain the integrity of the infrastructure such as corrosion inhibitor. As detailed in Section 4.6.5.2 of the Environmental Referral Supporting Report, the ponds will be lined with two layers of High Density Polyethylene (HDPE) with leak detection to ensure that in the unlikely scenario that the integrity of one layer fails</p>	N/a

			<p>this would be identified, with a secondary barrier in place to ensure no release to the environment occurs. As detailed in Section 4.6.5.2 of the Environmental Referral Supporting Report, the liners would meet the Department of Water (DOW) Water Quality Protection Note 26 Liners for containing pollutants, using synthetic membranes - requirements. Specifically, the Water Quality Protection Note 26 includes that sufficient freeboard (at least 50 cm) should be maintained to prevent unintended overflow of water from storms with an average return frequency of at least 20 years, plus capacity to store rainfall resulting from a 90 percentile wet season, after allowance for any evaporative water loss and the effects of any water reuse recovery system.</p> <p>Regulatory condition for the use of the evaporation ponds to minimise the potential for pollution will be also be achieved through an EP Act, Part V Prescribed Premises licence. Licences issued under Part V of the Act include conditions that relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them. Specifically, the evaporation ponds will need to be constructed, commissioned and operated in accordance with the Works Approval Application conditions, associated Commissioning Plan and Operating Licence.</p>	
WMP 12	ANON-WNTE-47D4-1 ANON-WNTE-477Q-H	Ejarno Spring and regional groundwater - Baseline and operational monitoring	<p>Noted.</p> <p>In response to received comments, MEPAU proposes to undertake additional baseline monitoring to better understand the seasonal variation of groundwater levels in the region. Specifically, MEPAU plan to install a groundwater logger that continually measures groundwater level as soon as possible to gather as much baseline data as possible prior to the operation of the extraction bores. Further quarterly samples will be obtained to better understand groundwater quality in the locality.</p> <p>The WMP includes clear triggers to enable response actions to be implemented. These response actions include the required for increased monitoring frequency (within three months) where environmental trigger criteria are exceeded. The collection of additional baseline data will enable Trigger and Threshold criteria to be reviewed to ensure triggers are appropriate and specific to the locality. This will ensure that any impacts attributed to the proposal can be rectified to ensure surface and groundwater quality in the vicinity of the proposal is maintained.</p>	<b>Section 3.3.4 and Table 3-4 of the WMP</b>
WMP 13	ANON-WNTE-47DU-2 ANON-WNTE-47DD-H ANON-WNTE-4778-R	Wastewater testing for NORMS	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the comment.</p> <p>In December 2019, MEPAU conducted NORMs testing on the production facilities at Xyris and Hovea which are currently producing from the Waitsia Gas Field<sup>14</sup>. Sampling did not identify NORMs in any of the inspections. Samples were also taken from liquids removed from the processing facilities and did not show elevated levels of NORMs with the samples indicating concentrations are well below the Australia Drinking Water Guideline radioactive screening level of 0.5 gross alpha decays per litre.</p>	<b>N/a</b>
WMP 14	ANON-WNTE-47D3-Z ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47DT-1 ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-477R-J	Pollution reporting	<p>Noted.</p> <p>As well as the Environmental Protection Act, Petroleum activities are subject to the requirements of the <i>Petroleum and Geothermal Energy Resource Act 1967</i>. Under both of these acts, MEPAU is required to comply with the various incident reporting requirements.</p> <p>Under Regulation 30 of the Petroleum and Geothermal Energy (Environment) Regulations, recordable incident reports are provided to DMIRS monthly to describe any breach of environmental performance objectives and standards. Under Regulation 28, DMIRS is required to be notified of reportable incidents within two hours, with a written report provided within three days after the incident. A reportable incident is described as:</p> <p>(b) an incident arising from the activity if — (i) the incident has caused, or has the potential to cause, an adverse environmental impact; and (ii) under the environmental risk assessment process described in the environment plan for the activity, that environmental impact is categorised as moderate or more serious than moderate”.</p> <p>These events are also required to be summarised and reported to DMIRS in the Annual Environmental Performance Report under Regulation 16.</p>	<b>N/a</b>

<sup>14</sup> ALARA (2020) Mitsui E&P – NORM Survey Report (ALARA-RAD-1046-RPT-001)

			Under Section 72(1) of the <i>Environmental Protection Act 1986</i> , the Chief Executive Officer of DWER is to be notified as soon as practicable after the discharge of a waste that has caused or is likely to cause pollution, material or serious environmental harm, with a written report provided of the prescribed details of that discharge.																																																																	
WMP 15	ANON-WNTE-47DH-N	Will reinjected wastewater contain drilling fluid and mud?	<p>Noted.</p> <p>The wastewater planned to be reinjected will not include drilling fluids and chemicals. Drilling fluids and cuttings would be stored in lined mud / evaporation sumps approved by DMIRS. Once the liquid component has evaporated, the remnant solids are sampled for presence of potential contaminants. And depending on the results of the samples, disposed offsite at an appropriately licensed facility.</p>	N/a																																																																
WMP 16	ANON-WNTE-47DP-W ANON-WNTE-47DF-K ANON-WNTE-47DV-3 ANON-WNTE-47DN-U ANON-WNTE-47DZ-7 ANON-WNTE-47D5-2 ANON-WNTE-47DU-2 ANON-WNTE-477P-G ANON-WNTE-477F-6 ANON-WNTE-477R-J	Does reinjecting formation water pose a threat to useable (freshwater) aquifers and subsequently, other users?	<p>Noted.</p> <p>Re-injection of produced water is standard industry practice and has been occurring at other facilities within the Perth Basin. Reinjection occurred at MEPAU’s Hovea and Eremia Assets for the duration of Production life from 2003 –2012.</p> <p>The water re-injection process involves the collection, storage, treatment and conveyance of PFW to be reinjected into the pressure depleted, hydrocarbon bearing, Dongara Sandstone formation located approximately 2 km below ground level (Figure T1).</p> <p>Reservoir fluids (hydrocarbons and associated formation water) were produced from the Dongara Sandstone Formation between 1971 to 2016, and during this period approximately 7,800 000kL of formation water was re-injected. MEPAU estimate that during the production phase, the net volume of fluid extracted from the formation (accounting for the volume reinjected) is in the order of 80,000,000 kL. Consequently, there is sufficient capacity for further injection.</p> <p>Ongoing monitoring undertaken by MEPAU following cessation of production from the Dongara Sandstone Formation in 2016 has verified that there is sufficient capacity showing that formation pressure is well below the initial hydrostatic conditions.</p> <p>Based upon the operational history of the Dongara Sandstone Formation, MEPAU have a detailed understanding of the local subsurface geology. Specifically, the stratigraphy (or formation layers) of the field is shown in Figure T1. Table T1 provides the known formation thickness at each of the proposed re-injection wells.</p> <p><b>Table T1: Stratigraphy of the Proposed Re-injection Wells</b></p> <table border="1"> <thead> <tr> <th>Formation Top</th> <th>Hovea-13ST1 Depth mTVDSS</th> <th>Hovea-11 Depth mTVDSS</th> <th>Eremia-04 Depth mTVDSS</th> </tr> </thead> <tbody> <tr> <td>Yarragadee Sandstone</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> </tr> <tr> <td>Cadda Formation</td> <td>1166.5</td> <td>1155.0</td> <td>747.7</td> </tr> <tr> <td>Cattamarra Coal Measure</td> <td>1202.5</td> <td>1167.0</td> <td>789.6</td> </tr> <tr> <td>Eneabba Formation</td> <td>1295.9</td> <td>1381.2</td> <td>1214.0</td> </tr> <tr> <td>Lesueur Sandstone</td> <td>1642.0</td> <td>1412.3</td> <td>1507.1</td> </tr> <tr> <td>Woodada Formation</td> <td>Not present</td> <td>1509.0</td> <td>1681.1</td> </tr> <tr> <td>Kockatea Shale</td> <td>1740.0</td> <td>1595.9</td> <td>1739.9</td> </tr> <tr> <td>Basal Limestone Marker</td> <td>1883.7</td> <td>1870.5</td> <td>2045.0</td> </tr> <tr> <td>Dongara Sandstone</td> <td>1904.0</td> <td>1904.3</td> <td>2075.8</td> </tr> <tr> <td>Wagina Sandstone</td> <td>1960.5</td> <td>1949.7</td> <td>2085.1</td> </tr> <tr> <td>Carynginia Formation</td> <td>2005.3</td> <td>2016.6</td> <td></td> </tr> <tr> <td>Total Depth</td> <td>2026.8</td> <td>2043.9</td> <td>2134.8</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Kockatea Gross Thickness (m)</td> <td>143.7</td> <td>274.6</td> <td>305.1</td> </tr> <tr> <td>Top Dongara SS to Base Yarragadee SS (m)</td> <td>737.5</td> <td>749.3</td> <td>1328.1</td> </tr> </tbody> </table>	Formation Top	Hovea-13ST1 Depth mTVDSS	Hovea-11 Depth mTVDSS	Eremia-04 Depth mTVDSS	Yarragadee Sandstone	0.0	0.0	0.0	Cadda Formation	1166.5	1155.0	747.7	Cattamarra Coal Measure	1202.5	1167.0	789.6	Eneabba Formation	1295.9	1381.2	1214.0	Lesueur Sandstone	1642.0	1412.3	1507.1	Woodada Formation	Not present	1509.0	1681.1	Kockatea Shale	1740.0	1595.9	1739.9	Basal Limestone Marker	1883.7	1870.5	2045.0	Dongara Sandstone	1904.0	1904.3	2075.8	Wagina Sandstone	1960.5	1949.7	2085.1	Carynginia Formation	2005.3	2016.6		Total Depth	2026.8	2043.9	2134.8					Kockatea Gross Thickness (m)	143.7	274.6	305.1	Top Dongara SS to Base Yarragadee SS (m)	737.5	749.3	1328.1	N/a
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			<p>The Cattamarra Coal Measures and Kockatea Shale formations provide geological seals between the Dongara Sandstone Formation and the Yarragadee Aquifer (Mory and Iasky 1996<sup>15</sup>). Consequently, there is a ~700 m separation between the Dongara Sandstone Formation and the Yarragadee Aquifer, of which greater than 140 m is considered to provide a natural geological seal.</p> <p>Pressure monitoring of the Dongara Gas Field undertaken by MEPAU (Figure T2) following cessation of production shows that formation pressures remain unchanged, indicating that no critically stressed or reactive faults are present.</p> <p>On the basis that:</p> <ol style="list-style-type: none"> <li>1. The Dongara Sandstone Formation which is well below the initial hydrostatic conditions thus has more than sufficient capacity to receive formation water generated from the Proposal</li> <li>2. Monitoring and modelling indicates that hydrostatic pressures within the Dongara Sandstone Formation will not cause pressures to exceed the initial levels,</li> <li>3. Monitoring and modelling indicate that hydrostatic pressures within the Dongara Sandstone Formation will not cause pressures to exceed the initial levels,</li> <li>4. Stratigraphy confirms that the Yarragadee aquifer is separated from the Dongara sandstone formation by &gt;700 m, with at least 140 m thickness providing a natural geological seal, and</li> <li>5. Pressures are regularly monitored and reported to government in accordance with the various regulatory requirements (see additional response to comments below).</li> </ol> <p>MEPAU has assessed that re-injection of formation water into a historic hydrocarbon bearing formation does not pose a significant risk to the Yarragadee aquifer.</p>	
WMP 17	ANON-WNTE-47DD-H ANON-WNTE-47D4-1 ANON-WNTE-47DK-R ANON-WNTE-477Q-H	If additional wells are drilled, will this increase the estimations of formation water (currently estimated at ~1 million cubic metres of wastewater) required to be injected?	<p>Noted.</p> <p>Produced water (or formation water) is a combination of water that is condensed in the gas at reservoir conditions and formation water from the edge of the gas field. Based upon extended field appraisal, and simulation modelling of the gas field, MEPAU has estimated that there is ~7.9 bbls of formation water per MMscf of gas produced (or 44.4 m<sup>3</sup> water per million m<sup>3</sup> gas). Estimations for full field life range from 800,000 m<sup>3</sup> to 1,600,000 m<sup>3</sup>. The volume provided in the Environmental Supporting Referral Document (~1,000,000 m<sup>3</sup>) was based upon a mid (P<sub>50</sub>) estimation.</p> <p>As detailed in WMP 16, MEPAU estimates that the net volume of fluid extracted from the Dongara Sandstone Formation (accounting for the volume that was reinjected) is in the order of 80,000,000 kL (m<sup>3</sup>) indicating that there is more than sufficient capacity for further injection regardless of if additional formation water volumes are encountered.</p> <p>Monitoring undertaken by MEPAU following cessation of production from the Dongara Sandstone Formation has verified that there is sufficient capacity showing that formation pressure is well below the initial hydrostatic conditions.</p>	N/a
WMP 18	ANON-WNTE-47D4-1	The Management Plan commits to ongoing monitoring for weeds and dieback. Also, a baseline survey is to be conducted for vegetation around Ejarno Springs. However, there is no commitment to ongoing monitoring of changes in ecosystems related to the re-injection of	<p>Noted.</p> <p>As detailed in WMP 16, the Dongara Sandstone Formation is geologically separated from the Yarragadee and Superficial Aquifers. Consequently, the reinjection activity does not pose a threat to flora and fauna that rely on these resources.</p> <p>For further information regarding the geological separation of injection waters please refer to WMP 16.</p>	N/a

<sup>15</sup> Mory, A.J. and Iasky, R.P. (1996). Stratigraphy and structure of the onshore northern Perth Basin, Western Australia: Western Australia Geological Survey, Report 46.

		wastewater, related to the project.		
WMP 19	ANON-WNTE-47D3-Z ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DJ-Q ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DM-T ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DD-H ANON-WNTE-47D4-1 ANON-WNTE-477Q-H ANON-WNTE-477R-J ANON-WNTE-477X-R	The correlation between deep well re-injection and felt seismic activity	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the public comment.</p> <p>Re-injection of produced water is standard industry practice and has been occurring at other facilities within the Perth Basin. Re-injection occurred at MEPAU’s Hovea and Eremia Assets for the duration of Production life from 2003 –2012.</p> <p>The water re-injection process involves the collection, storage, treatment and conveyance of PFW to be re-injected into the Dongara Sandstone formation approximately 2 km deep (Figure T1). The Dongara Sandstone Formation is a depleted historic hydrocarbon bearing formation, with pressures well below the initial hydrostatic conditions thus has more than sufficient capacity to receive formation water generated from the Proposal.</p> <p>Pressure monitoring undertaken by MEPAU (Figure T2) following cessation of production from the Dongara Sandstone Formation shows that formation pressures remain unchanged, indicating that no critically stressed or reactive faults are present.</p> <p>Monitoring of seismic activity within the North Perth Basin between May 2017 and April 2018 (Seismology Research Centre 2018<sup>16</sup>) did not record any seismic activity within the Development Envelope, indicating that the Proposal is located within a seismically quiet area. The closest recorded seismic event (0.7MLv) was recorded over 34 km away offshore.</p> <p>The US Geological Survey (USGS) (2017) state that not all wastewater injection wells induce earthquakes. MEPAU note that comparing the Australian Landscape to the US is difficult given that there are approximately 35,000 active wastewater disposal wells, 80,000 active enhanced oil-recovery wells, and tens of thousands of wells that are hydraulically fractured every year in the United States. Even with all of this activity, only a few dozen of these wells are known to have induced felt earthquakes (Rubinstein and Mahani 2015<sup>17</sup>).</p> <p>As described by the USGS, MEPAU understands that a combination of many factors is necessary for injection to induce felt earthquakes. These include:</p> <ul style="list-style-type: none"> <li>• The injection rate and total volume injected;</li> <li>• The presence of faults that are large enough to produce felt earthquakes;</li> <li>• Stresses that are large enough to produce earthquakes; and</li> <li>• The presence of pathways for the fluid pressure to travel from the injection point to faults (USGS 2017<sup>18</sup>).</li> </ul> <p>On the basis that:</p> <ol style="list-style-type: none"> <li>1. The Dongara Sandstone Formation is depleted and well below initial hydrostatic pressure,</li> <li>2. Monitoring has verified that no critically stressed or reactive faults are present,</li> <li>3. Historic monitoring of seismic data indicates the proposal area is seismically quiet,</li> <li>4. Re-injection of formation water has occurred within the Perth Basin.</li> </ol> <p>Based upon research and monitoring results, MEPAU does not support the inference that there would be a direct correlation between deep-well injection and felt seismic activity associated with the Proposal.</p>	N/a
WMP 20	ANON-WNTE-47D3-Z ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DX-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X	Aquifer wastewater re-injection modelling	<p>Noted.</p> <p>Given that there is no interaction between the Dongara Sandstone Formation, which is a depleted historic Hydrocarbon bearing formation, and the Yarragadee aquifer, MEPAU did not conduct additional re-injection modelling.</p> <p>For further information regarding geological separation of the Dongara Sandstone Formation and the Yarragadee Aquifer, please refer to WMP 16.</p>	N/a

<sup>16</sup> Seismology Research Centre (2018). North Perth Basin Seismic Monitoring Network Annual Report 2018.

<sup>17</sup> Rubinstein, J.L. and Mahani, A.B. (2015). Myths and Facts on Wastewater Injection, Hydraulic Fracturing, Enhanced Oil Recovery, and Induced Seismicity. Seismological Research Letters, 86(4), 1060-1067. doi:10.1785/0220150067.

<sup>18</sup> US Geological Survey. (2017) Induced earthquakes, myths and misconceptions. <https://earthquake.usgs.gov/research/induced/myths.php>.

	ANON-WNTE-47DE-J ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DD-H ANON-WNTE-47D4-1 ANON-WNTE-477R-J ANON-WNTE-477X-R			
WMP 21	ANON-WNTE-47D3-Z ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DM-T ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DS-Z ANON-WNTE-47DD-H ANON-WNTE-477R-J ANON-WNTE-477P-G	Regulation and monitoring of formation water re-injection	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the comment.</p> <p>Re-injection of produced water is standard industry practice and has been occurring at other facilities within the Perth Basin for well over a decade. These activities are currently managed under Part V of the <i>Environmental Protection Act 1986</i>, and the <i>Petroleum and Geothermal Energy Act 1967 / Petroleum and Geothermal Energy (Environment) Regulations 2012</i>.</p> <p>DWER has responsibilities under Part V of the <i>Environmental Protection Act 1986</i> for the licensing of prescribed premises. Licences issued under Part V of the Act include conditions that relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them. Specifically, re-injection of formation water would be captured under MEPAU’s operating licence. The types of monitoring that are generally undertaken for re-injection activities and reported to DWER include:</p> <ul style="list-style-type: none"> <li>• Volume of water injected,</li> <li>• Well Head Pressure,</li> <li>• Casing Pressure and</li> <li>• Surface Casing Pressure.</li> </ul> <p>In addition to this, DWER require that well integrity is tested and reported every three years.</p> <p>DMIRS has responsibilities under the Petroleum and Geothermal Energy (Environment) Regulations to ensure that all Petroleum Activities have an Environment Plan in place that describes how impacts and risks will be managed. Specifically, under the regulations:</p> <ol style="list-style-type: none"> <li>1. Any chemical used down hole (such as during re-injection) need to be publicly disclosed, assessed and accepted by DMIRS (Regulation 9), and</li> <li>2. Maximum permissible concentration of hydrocarbons and monitoring frequency for produced formation water reinjected into wells must be specified in an Environment Plan (Regulation 8), that is assessed and accepted by DMIRS.</li> </ol> <p>For further information regarding geological separation of the Dongara Sandstone Formation and the Yarragadee Aquifer, please refer to WMP 16.</p>	N/a
WMP 22	ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-477R-J	Use of evaporation ponds	<p>Noted.</p> <p>As described in the Environmental Referral Supporting Report, evaporation ponds are planned to be used for contingency storage of produced formation water to supplement the re-injection system. This will ensure that any down-time associated with re-injection system will enable the plant to remain operational. Any water stored in the evaporation ponds will remain until it has evaporated..</p> <p>MEPAU’s decision to use wastewater evaporation ponds is an industry standard contingency strategy. Design investigations concluded that re-injection with supplementary storage is the most efficient method for PFW management. Evaporation ponds were assessed as suitable for contingency storage as they will meet DWER’s Water Quality Protection Note requirements. As detailed in the Environmental Referral Supporting Document, the ponds will be lined with two layers of High Density Polyethylene (HDPE) with leak detection to ensure that in the unlikely scenario that the integrity of one layer fails this would be identified, with a secondary barrier in place to ensure no release to the environment would occurs.</p>	N/a
WMP 23	ANON-WNTE-477Q-H ANON-WNTE-477P-G	Reporting of spills	Noted.	N/a

			<p>Construction and operation of petroleum facilities are subject to both the <i>Environmental Protection Act 1986</i> and <i>Petroleum and Geothermal Energy Resources Act 1967</i>. Each petroleum activity is required to have an Environment Plan (EP) developed, assessed and approved by the Department of Mines, industry Regulation and Safety prior to commencing the activities. The EP identifies all spill risks and demonstrates how these risks are reduced to As Low As Reasonably Practicable. This includes documenting the required mitigation measures and setting an Environmental Performance Standard for each mitigation to demonstrate how all Environmental Performance Objectives will be achieved.</p> <p>Incident reporting is covered under Regulations 28, 29 and 30 of the Petroleum and Geothermal Energy Resources (Environment) Regulations (PGER(E)R) 2012. Under Regulation 30, a ‘Recordable Incident’ is defined as “a breach of an environmental performance objective or environmental performance standard, in the environment plan that applies to the activity, that is not a reportable incident”. Recordable incident reports are provided to DMIRS monthly to describe any breach of environmental performance objectives and standards.</p> <p>‘Significant’ spills would be considered a ‘Reportable Incident’, defined as “an incident relating to an activity that has caused, or has the potential to cause an adverse environmental impact; and under the environmental risk assessment process the environmental impact is categorised as moderate or more serious than moderate”, under Regulations 28 and 29. In the event that a spill may cause a moderate or higher environmental impact, MEPAU will comply with the regulatory requirements and would notify DMIRS of reportable incidents within two hours, with a written report provided within three days after the incident. These events are also required to be summarised and reported to DMIRS in the Annual Environmental Performance Report under Regulation 16.</p>	
WMP 24	ANON-WNTE-47DD-H	<p>Waste sludge and contaminated material disposal sites.</p> <p>The disposal of contaminated soil and equipment is diverted to waste disposal companies.</p> <p>Much of this waste is likely to be contaminated by NORM.</p>	<p>Noted.</p> <p>Construction and operation of petroleum facilities are subject to both the <i>Environmental Protection Act 1986</i> and <i>Petroleum and Geothermal Energy Resources Act 1967</i>. Each petroleum activity is required to have an Environment Plan (EP) developed and assessed by the Department of Mines, industry Regulation and Safety prior to commencing the activities. The EP identifies all spill risks and demonstrates how these risks are reduced to As Low As Reasonably Practicable. This includes documenting the required mitigation measures, and setting an Environmental Performance Standard for each mitigation to demonstrate how all Environmental Performance Objectives will be achieved.</p> <p>With regards to waste management, the Environment Plan will provide an overview as to how activity specific waste will be managed, with both solid and liquid waste disposal required to be reported in quarterly reports to the Department of Mines, Industry Regulation and Safety.</p> <p>All waste will be disposed of in accordance with the relevant legislation.</p> <p>Based on monitoring of existing operations and NORMs research, NORMs are not expected to be encountered. For information regarding NORMS refer to WMP 13.</p>	N/a
WMP 25	ANON-WNTE-47DD-H	Disposal of solid waste	<p>Noted.</p> <p>As stated in the Environmental Referral Supporting Report, MEPAU will segregate and store wastes prior to their collection and treatment/disposal by an external contractor engaged by MEPAU.</p> <p>Any contaminated soils and wastes are suitably managed by utilising an appropriately licensed contractor (licensed under the Environmental Protection (Controlled Waste) Regulations 2004), thus reducing the risk of accidental release events given they will be experienced in transfer and transport of waste. These contractors will ensure that waste is disposed of at a licensed facility (licensed under the Environmental Protection (Controlled Waste) Regulations 2004).</p> <p>The management of waste is a well-practiced activity with standard management practices implemented across the industry and by MEPAU at its existing operations. MEPAU has extensive experience and understanding of the release pathways, and the management measures required to manage these. Further, waste management is subject to regular inspection and audit under the <i>Petroleum and Geothermal Energy Resource (Environment) Regulations 2012</i>.</p>	N/a
WMP 26	ANON-WNTE-47D9-6 ANON-WNTE-47DC-G ANON-WNTE-47D6-3	Maintaining the quality of surface and groundwater.	<p>Noted.</p> <p>The objective of the WMP is to develop a management plan that meets the EPA Outcome:</p>	Table 3-4 of the WMP Table 3-5 of the FVMP



	ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47DT-1 ANON-WNTE-47D2-Y ANON-WNTE-4773-K ANON-WNTE-477X-R		<p><i>To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.</i></p> <p>As detailed in the WMP, groundwater modelling was undertaken to quantify the potential risk associated with the Proposal. Modelling indicates that the groundwater drawdown experienced over a prolonged period of time is within historical seasonal variation, indicating that both direct and indirect impacts arising from groundwater drawdown are not expected to be significant. MEPAU propose to undertake baseline monitoring and surveys to further understand the seasonal groundwater characteristics and flora and vegetation values of Ejarno Spring prior to construction activities commencing.</p> <p>The amended baseline studies proposed are included in Table 3-4 of the WMP and Table 3-5 of the FVMP. These will help further inform quantitative trigger and threshold criteria to ensure they are suitable and appropriate for the Proposal.</p> <p>Both the WMP and FVMP include clear Trigger and Threshold Criteria and subsequent response actions to be implemented to ensure any suspected changes to groundwater level and quality arising from the Proposal, and subsequent impacts to Ejarno Spring can be further studied and mitigated accordingly.</p> <p>The identified response actions will ensure that any impacts attributed to the proposal can be rectified to ensure surface and groundwater quality and the subsequently flora and vegetation values of Ejarno spring are maintained.</p> <p>In addition to the WMP, the Petroleum and Geothermal Energy Resources (Environment) Regulations requires operators to fully disclose all chemicals used down-hole during drilling operations. The chemicals used are assessed and approved by DMIRS for use and then made publicly available on its website.</p> <p>Along with the monitoring program included in the WMP, activity specific monitoring would be undertaken. Specifically, at each of the wellsites, MEPAU undertakes baseline water quality studies before drilling operations begin, then conducts water quality monitoring following drilling and reports the results to regulatory authorities. As per the WMP, samples are comprehensively analysed by a NATA certified laboratory and copies of the analysis are provided to the landowners and appropriate regulatory body.</p>	
WMP 27	ANON-WNTE-47DF-K ANON-WNTE-47DH-N ANON-WNTE-477Q-H ANON-WNTE-47D5-2 ANON-WNTE-477P-G	Impact of water extraction	<p>Noted.</p> <p>In accordance with the Rights in Water and Irrigation Act (RIWI) 1914, DWER allocates water use via licences within the sustainable volume available for a groundwater resource. DWER have determined that the Dongara subarea of the Arrowsmith groundwater area has an allocated limit of over 4,500,000 kL/year (DoW 2010). Consequently, the Proposal accounts for only 1.3% of the Allocation limit.</p> <p>Given that the proposal only accounts for 1.3% of the allocation limit, MEPAU has assessed that this would not cause a significant impact given that allocation is available (DoW 2010) and it does not comprise a significant portion of the local allocation.</p> <p>An evaluation of other licensed groundwater users within close proximity of the WGP was undertaken to understand if the extraction of groundwater would affect other users. The outcomes of the model indicate that anticipated impacts on water levels for neighbouring licensed abstractions is predicted to be negligible or very minor due to the distance from the Proposal site. Specifically, the closest extraction licence known to be for horticultural purposes is over 4.5 km away from the WGP extraction wells.</p>	N/a
WMP 28	ANON-WNTE-47DX-5 ANON-WNTE-47DJ-Q ANON-WNTE-47DP-W ANON-WNTE-47DV-3 ANON-WNTE-47DZ-7 ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DU-2 ANON-WNTE-47DS-Z	Impact of water extraction on the Yarragadee	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU noted the comment.</p> <p>In accordance with the <i>Rights in Water and Irrigation Act (RIWI) 1914</i>, DWER allocates water use via licences within the sustainable volume available for a groundwater resource. DWER has determined that the Dongara subarea of the Arrowsmith groundwater area has an allocated limit of over 4,500,000 kL/year (DoW 2009<sup>19</sup>). Consequently, the Proposal accounts for only 1.3% of the Allocation limit.</p> <p>Given that the proposal only accounts for 1.3% of the allocation limit, MEPAU do not believe that this surmounts to a significant impact given that allocation is available (DoW 2010<sup>20</sup>) and it does not comprise a significant portion of the local allocation.</p>	N/a

<sup>19</sup> Department of Water (DoW) (2009). Arrowsmith groundwater area subarea reference. Plan companion for the Arrowsmith groundwater area allocation plan, August 2009. Government of Western Australia.

<sup>20</sup> Department of Water (DoW) (2010). Arrowsmith groundwater allocation plan. Water resource allocation planning series, Report no.18, August 2010. Government of Western Australia.

	ANON-WNTE-47DK-R ANON-WNTE-477Q-H ANON-WNTE-477R-J ANON-WNTE-4778-R ANON-WNTE-477P-G ANON-WNTE-477C-3 ANON-WNTE-477F-6		Any extraction of groundwater within a proclaimed groundwater area is subject to a licence issued by DWER under the <i>Rights in Water and Irrigation Act 1914</i> where a cumulative assessment of all extraction in the groundwater area is complete to ensure allocation limits are not exceeded – this is done independent of the applicant - such that local and regional cumulative impacts are considered.  Under the RIWI Licence, volumes extracted are required to be monitored and reported to DWER annually to confirm compliance with the licence and confirm that extraction above licence allocation does not occur.																																		
WMP 29	ANON-WNTE-47D4-1 ANON-WNTE-477Q-H	Content of the Water Management Plan	<p>Noted.</p> <p>The Water Management Plan has been developed to address the specific requirements of the EPA, and provide conservative maximum consumption estimates to enable the impacts to groundwater to be appropriately assessed. Consequently, the primary focus of this Plan is groundwater quality and level management as the major environmental values adjacent to the WGP include other groundwater users and Ejarno Spring. Protection of these sensitivities require the depth to groundwater to be maintained so as to not significantly impact the hydrological regime and alter the ecosystem. It was not to assess options for reducing water consumption.</p> <p>An overview of the water uses and estimations of consumption are included in Table T2.</p> <p>The volume included in the WMP of 60,000 kL/annum for the life of the program includes ~20% contingency during operation which MEPAU believes was suitable to provide a conservative worst case assessment to be undertaken. Even with the contingency volumes included, modelling indicates that any drawdown is expected to be within the range of natural variation.</p> <p><b>Table T2: Water Consumption associated with the WGP extraction bores</b></p> <table border="1"> <thead> <tr> <th>Use</th> <th>Construction (average) (kL a year)</th> <th>Operation (average) (k/L a year)</th> </tr> </thead> <tbody> <tr> <td>Dust suppression</td> <td>20,665</td> <td>3,775</td> </tr> <tr> <td>General Washdown</td> <td>14,600</td> <td>3,650</td> </tr> <tr> <td>Site Compaction</td> <td>20,623</td> <td></td> </tr> <tr> <td>Road Construction</td> <td>699</td> <td></td> </tr> <tr> <td>General Use</td> <td>2,920</td> <td>1,460</td> </tr> <tr> <td>Personnel</td> <td></td> <td>1,483</td> </tr> <tr> <td>Process Consumption</td> <td></td> <td>38,544</td> </tr> <tr> <td>Fire Event Testing</td> <td></td> <td>1,250</td> </tr> <tr> <td>Yearly Shutdown</td> <td></td> <td>460</td> </tr> <tr> <td><b>Total</b></td> <td><b>59,507</b></td> <td><b>50,622</b></td> </tr> </tbody> </table>	Use	Construction (average) (kL a year)	Operation (average) (k/L a year)	Dust suppression	20,665	3,775	General Washdown	14,600	3,650	Site Compaction	20,623		Road Construction	699		General Use	2,920	1,460	Personnel		1,483	Process Consumption		38,544	Fire Event Testing		1,250	Yearly Shutdown		460	<b>Total</b>	<b>59,507</b>	<b>50,622</b>	N/a
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WMP 30	ANON-WNTE-47DM-T	Groundwater drawdown modelling past 5 years (for the duration of the Proposal).	<p>Noted.</p> <p>Over time, there will be a long-term levelling off in drawdown and MEPAU set-up the model to determine what the most likely impacts will be in the near-term. Longer-term modelling has not been undertaken, however MEPAU is confident based upon the results of the five year model, that drawdown of the Superficial aquifer (being 0.06 m) (and subsequently impacts to Ejarno Spring) over an extended period would only likely reduce the groundwater level in the order of centimetres. As detailed in the WMP which explains that seasonal variation is between 0.3 and 1.7m, any additional drawdown is still expected to be well below natural variation.</p>	N/a																																	

Figure T1 Stratigraphy of L1/L2 in the Perth Basin

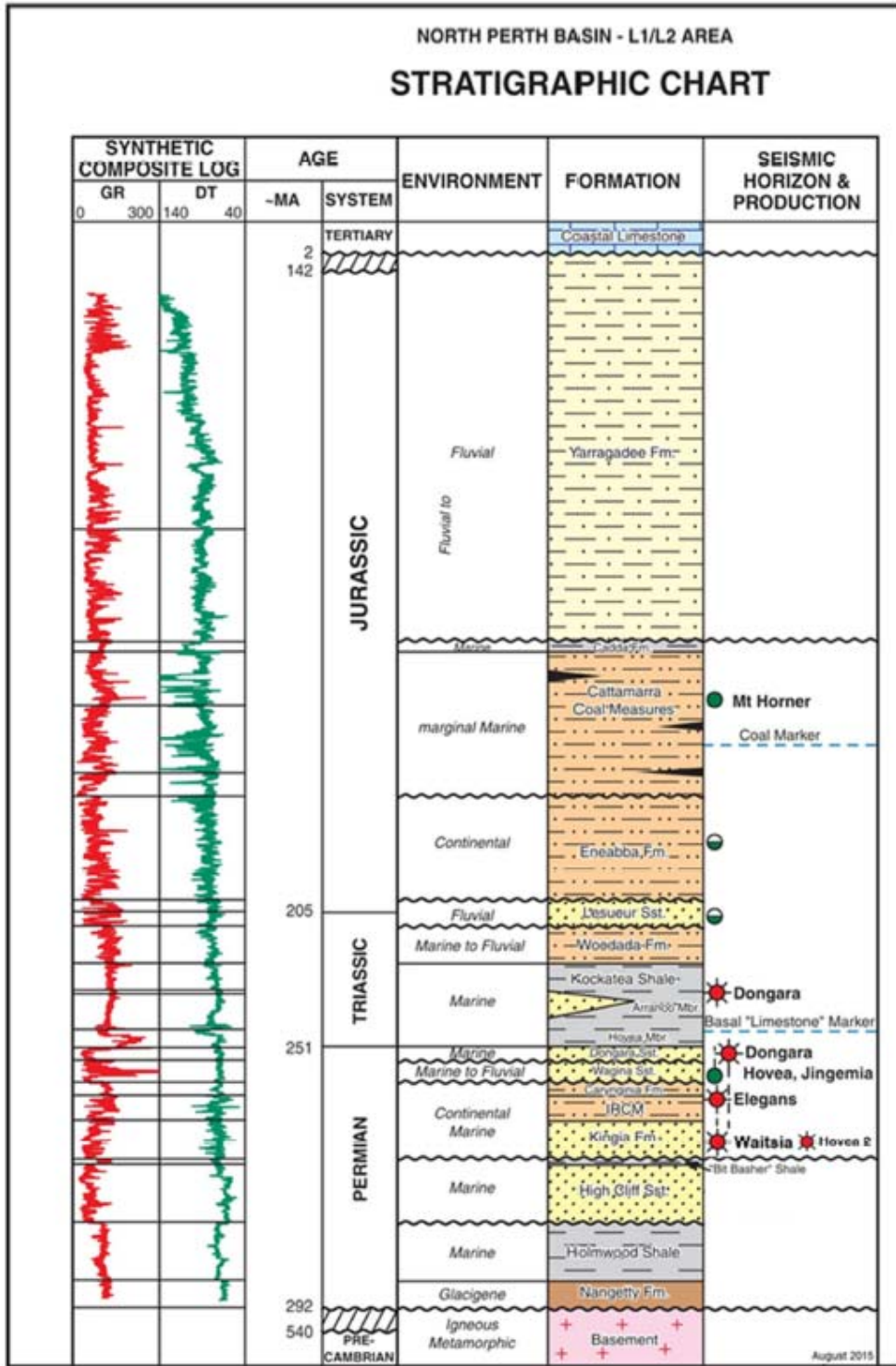
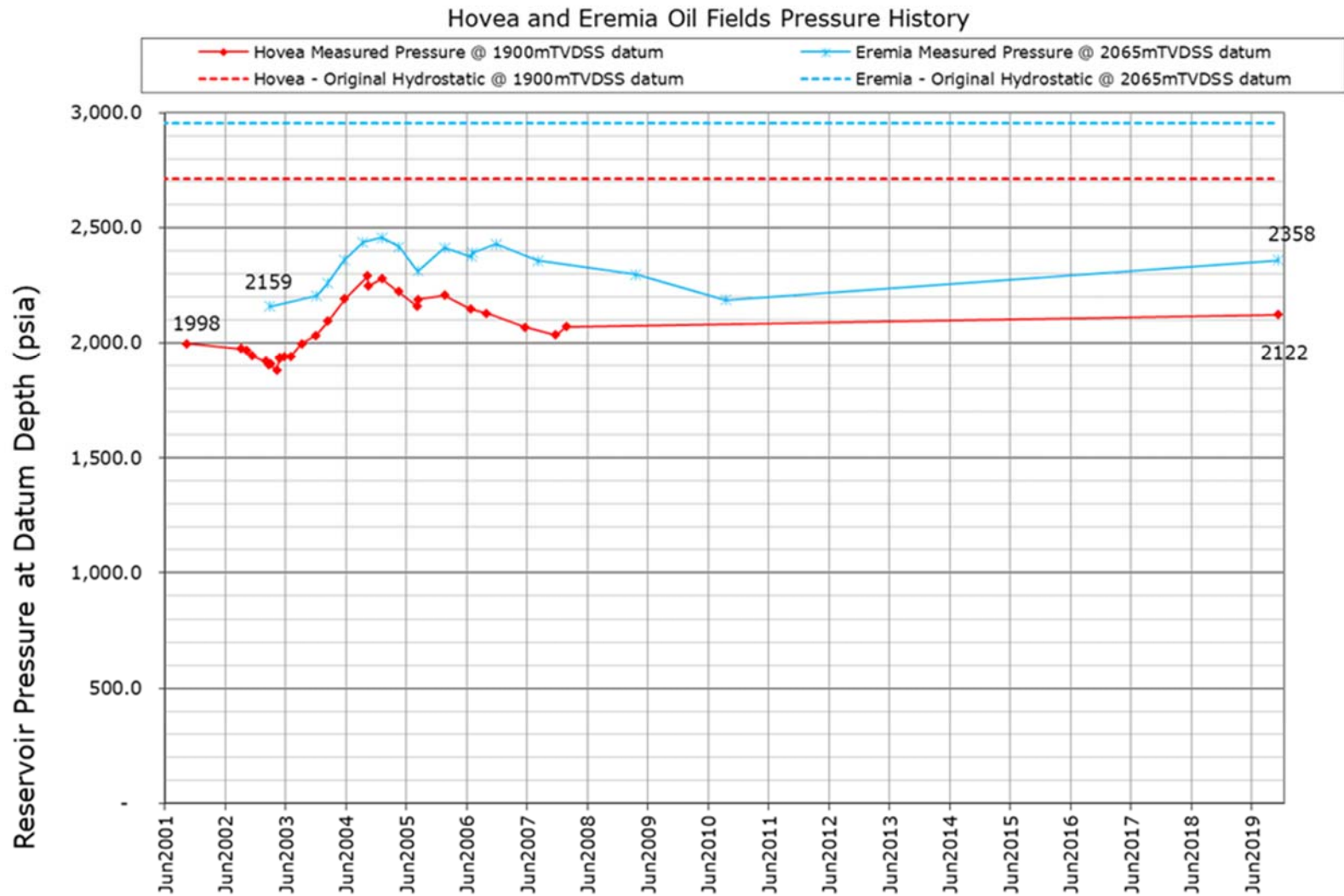


Figure T2 Pressure monitoring of the Dongara Sandstone Formation





**Table 3-4 Proponent Responses to Comments made in Public Submissions Received - Management of Flaring (comments on Rev 0)**

Key Comment No.	Submitter Identifier	Comment	Proponent Response (Rev 1 updated)	Page of Amendment/Document
F 1	ANON-WNTE-47D3-Z ANON-WNTE-47DN-U ANON-WNTE-47DH-N ANON-WNTE-477Q-H ANON-WNTE-4778-R	Impacts from flaring and mitigations	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the public comment.</p> <p>As included in Section 2.6 and Section 4.7 of the Environmental Referral Supporting Document, flaring will be used at the Waitsia Gas Plant and occasionally for the six development wells for limited time and duration.</p> <p>As detailed in the Management of Flaring supporting information; a line of sight assessment for all houses within close proximity or the WGP was completed. As identified in the assessment, given the distance and elevation from the sensitive receptors to the Waitsia Gas Plant, flare stack, safety flaring and non-routine flaring are not expected to create a significant visual amenity impact to nearby sensitive receptors, whether during day or night period. . The assessment results were shared with nearest neighbours as well as the broader community at Community Information Exchange Sessions.</p> <p>As detailed in the management of flaring supporting document, a flare system has been selected that meets industry standards including API 537 and 521, and will comprise a constant pilot flame that will be enclosed such that no flame will be visible during normal operations, and a smokeless flame during normal operations. As detailed in the Environmental Referral Supporting Report, MEPAU reviewed and assessed a wide range of processing technologies to identify the method that provided the most effective and therefore lowest impact technology for the Proposal.</p> <p>Flaring during field development well flow tests will be significantly reduced from earlier well flow tests as the necessary gas field data has already been obtained from the previously drilled and tested exploration and appraisal wells. Flaring operations for the new development wells included in the Proposal will only be required for a short duration that includes completion fluid unloading and flowing pressure test to confirm each the production capacity of each development well. Specifically, MEPAU expect that the flaring duration at each production well site will be complete within 24-48 hours.</p> <p>The reason that well flow testing can be significantly reduced is that once the wells are connected to the Waitsia Stage Gas Plant, additional testing can be conducted from the plant. During flaring at each wellsite, management will include best-practice mitigations including the use of a flare silencer once the completion fluid unloading process has been completed. These activities are additionally regulated under the Petroleum and Geothermal Energy Resources Act 1967 that requires an Environment Plan documenting the impacts and demonstrating that the impacts and risks are reduced to ALARP to be assessed and accepted by the DMIRS.</p> <p>No wells adjacent to the Ejarno Spring area are required to be flow tested.</p> <p>Given the proximity to sensitive receptors, the mitigations in place and the conditions detailed in the Management of Flaring document, MEPAU is confident the activities can be conducted without significant impact or disturbance to the identified sensitive receptors.</p>	N/a
F 2	ANON-WNTE-47DR-Y ANON-WNTE-47D8-5 ANON-WNTE-47DJ-Q ANON-WNTE-47DA-E ANON-WNTE-47DY-6 ANON-WNTE-47D6-3 ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47DT-1 ANON-WNTE-47D2-Y ANON-WNTE-47D5-2 ANON-WNTE-47DS-Z ANON-WNTE-47DD-H ANON-WNTE-47D4-1	Historic impacts from Waitsia discovery well flaring	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the comment.</p> <p>MEPAU acknowledges that during the flow test at the Waitsia gas field discovery well site, a complaint was received from a local resident. MEPAU responded promptly and advised her that the flow test would end earlier than initially planned. Following the complaint, personnel met with other local residents with similar concerns and undertook an independent third-party investigation to more clearly identify the cause of the concerns. In the interest of open and transparent engagement the results were widely shared including with the EPA and local residents. Based upon the outcomes of the investigation, flow test planning and management improvements were made and used for the four remaining well flow tests with no complaints lodged</p>	N/a

	ANON-WNTE-477Q-H ANON-WNTE-477R-J ANON-WNTE-4778-R ANON-WNTE-477X-R ANON-WNTE-477P-G			
F 3	ANON-WNTE-47D4-1 ANON-WNTE-477P-G	Monitoring of Methane	<p>Noted.</p> <p>The Management of Flaring Supporting document was developed in response to the EPA’s request for a Management Plan to address management of flaring and in particular the Zero Routine Flaring by 2030 Initiative. Management, measurement and reduction of emissions is dealt with under the Greenhouse Gas Management Plan and the two documents should be reviewed together.</p> <p>As detailed in the GHGMP, MEPAU does not consider it likely that there will be a substantial escape of methane or large methane losses associated with the operation of the gas plant (refer to GHG 1 regarding fugitive emissions). To ensure safety, avoid harm to the environment and avoid economic loss, mitigation measures of testing, monitoring and improving will be employed where practical.</p> <p>All emissions, including methane, will be recorded and reported in accordance to the NGER Act 2007.</p>	N/a
F 4	ANON-WNTE-47D4-1 ANON-WNTE-47DC-G	Reporting of flaring for safety reasons or non-routine flaring and exceedance of licence conditions.	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the public comment.</p> <p>Flaring activities are currently managed under Part V of the <i>Environmental Protection Act 1986</i>, and through activity specific Environment Plans developed under the <i>Petroleum and Geothermal Energy Act 1967 / Petroleum and Geothermal Energy (Environment) Regulations 2012</i>.</p> <p>DWER has regulatory authority under Part V of the <i>Environmental Protection Act 1986</i> (the Act) for the licensing of prescribed premises. Licences issued under Part V of the Act include conditions that relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them. Specifically, MEPAU understand that any flaring activities would be captured under their operating licence. The types of monitoring that are generally undertaken for flaring activities under the licence include:</p> <ul style="list-style-type: none"> <li>• Point source emission to air, and are generally required to report: <ul style="list-style-type: none"> <li>○ Total volume of gas flared,</li> <li>○ Nitrogen dioxide,</li> <li>○ Sulfur Dioxide,</li> <li>○ Carbon monoxide, and</li> <li>○ Hydrogen Sulfide.</li> </ul> </li> </ul> <p>Monitoring outcomes are provided to DWER in the form of an Annual Environment Report. As such, MEPAU can confirm that these records are provided as a part of standard industry reporting to the Government.</p> <p>Any exceedance of operating licence conditions are required to be recorded and investigated – with the outcomes included as a part of Annual Environmental Reports to DWER.</p>	N/a
F 5	ANON-WNTE-47D4-1	Notification of non-routine flaring.	<p>Agreed.</p> <p>MEPAU will develop operational protocols that include triggers for engagement with key stakeholders, including notification of non-routine flaring. A trigger is to be included in the protocols to engage with potentially affected stakeholders prior to non-routine flaring events.</p>	N/a
F 6	ANON-WNTE-47D4-1	Zero Routine Flaring.	<p>Noted.</p> <p>In February 2019, the WA State Government endorsed the “Zero Routine Flaring by 2030 Initiative” (ZRF) introduced by the World Bank 2019<sup>21</sup>).</p>	N/a

<sup>21</sup> The World Bank (2019). Zero Routine Flaring by 2030. Available online from: <https://www.worldbank.org/en/programs/zero-routine-flaring-by-2030>.

			<p>MEPAU re-emphasises their commitment to the ZRF and notes that the ZRF relates to routine flaring only and not safety flaring, exploration testing or non-routine flaring.</p> <p>As noted in Section 3.1 of the Flaring Management Plan, the only flaring of gas expected is for safety and non-routine purposes. MEPAU notes that flaring effectively reduces the volume of gas available for export to market and is thus minimised, as far as is practicable, due to both commercial and environmental considerations.</p>	
F 7	ANON-WNTE-477Q-H	Managing the risk of fire associated with flaring	<p>Noted.</p> <p>For specific information on impacts from flaring and mitigations please refer to Comment F 1.</p> <p>Under the <i>Bush Fires Act 1954</i>, gas flaring is a prescribed activity, with prescribed measures that are required to be implemented in the event that flaring is required during a Total Fire Ban. In the event flaring is required to be undertaken during restricted or prohibited burning times, a 25A exemption is required to be sought.</p> <p>MEPAU will comply with all legislation and approvals including the <i>Bush Fires Act 1954</i> and the 25A exemption.</p> <p>In addition to the requirements of the <i>Bush Fires Act 1954</i>, there will be additional fire mitigation measures in place documented in the various regulatory documents (including the Emergency Response Plan and Environment Plan) to further reduce the likelihood of a fire event occurring.</p>	N/a

**Table 3-5 Proponent Responses to Comments made in Public Submissions Received : Other comments on the Proposal**

Key Comment No.	Submitter Identifier	Comment	Proponent Response (Rev 2 updated)	Page of Amendment/Document
O 1	ANON-WNTE-4778-R ANON-WNTE-477A-1 ANON-WNTE-477P-G ANON-WNTE-477R-J ANON-WNTE-47D1-X ANON-WNTE-47D2-Y ANON-WNTE-47D3-Z ANON-WNTE-47D6-3 ANON-WNTE-47D8-5 ANON-WNTE-47DA-E ANON-WNTE-47DC-G ANON-WNTE-47DD-H ANON-WNTE-47DE-J ANON-WNTE-47DG-M ANON-WNTE-47DJ-Q ANON-WNTE-47DK-R ANON-WNTE-47DM-T ANON-WNTE-47DN-U ANON-WNTE-47DP-W ANON-WNTE-47DR-Y ANON-WNTE-47DS-Z ANON-WNTE-47DT-1 ANON-WNTE-47DU-2 ANON-WNTE-47DY-6 ANON-WNTE-47DZ-7	Hydraulic Fracture Stimulation and the Proposal	<p>The Proposal does <b>not</b> include any hydraulic fracture stimulation.</p> <p>The Waitsia gas field was a notable discovery as it identified a significant free-flowing reservoir at depth (&gt;3 km), which was unexpected. The comment about significant potential source beyond Waitsia Stage 2 was primarily in recognition of this improved geological understanding and in anticipation that additional exploration in the Perth Basin, triggered by the Waitsia discovery, could discover other free-flowing gas reservoirs at depth. This has since happened with renewed exploration activity in the Perth Basin and the success of the West Eregulla and Beharra Deep-01 drilling campaigns conducted in 2019.</p> <p>The Waitsia Gas Field is free flowing (as detailed in the Environmental Referral Supporting Document (Sections 1.2.1, 1.2.4 and Section 2.2), MEPAU Greenhouse Gas Management Plan page 8, MEPAU Water Management Plan page 2 and the MEPAU Flora and Vegetation Management Plan page 8).</p> <p>MEPAU acknowledges the Government of Western Australia’s <i>Implementation Plan - Implementation of the Government’s response to the Independent Scientific Panel Inquiry into Hydraulic Fracture Stimulation in Western Australia</i> (2019)<sup>22</sup> available at <a href="https://www.hydraulicfracturing.wa.gov.au/">https://www.hydraulicfracturing.wa.gov.au/</a> <a href="https://www.hydraulicfracturing.wa.gov.au/">https://www.hydraulicfracturing.wa.gov.au/</a>.</p> <p>Further, MEPAU acknowledges Action 7 of the plan that requires “All applications for onshore hydraulic fracture stimulation exploration and production proposals to be referred to the EPA for assessment under the EP Act.”</p> <p>This means that any application for hydraulic fracture stimulation would require referral to the EPA for assessment under the EP Act. MEPAU does not have any plans for hydraulic fracture stimulation so is not seeking approval for using this technique.</p>	N/a
O 2	ANON-WNTE-47DP-W ANON-WNTE-47DN-U ANON-WNTE-47DM-T ANON-WNTE-47DH-N ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-477Q-H ANON-WNTE-4778-R	Agriculture, tourism, and the Proposal co-existing	<p>Noted.</p> <p>Agriculture, gas field development and tourism have coexisted in the Dongara area for almost 60 years since the Dongara gas field discovery well, Yardarino-1, was drilled in 1964. The area has won multiple tourism awards and the region is well-known for its agricultural productivity. These results help show how well tourism, agriculture and onshore petroleum activities can coexist.</p> <p>Two other facilities are located on the same property as the proposed WG2 gas plant site with the first facility constructed in 2003. Over this time, the landowner has continued to run a successful agricultural business and is willingly hosting the WG2 gas plant on the same property. The Proposal production wells and infrastructure are located primarily on neighbouring agricultural properties owned mainly by inter-generational farming families who have long-standing business relationships with the onshore petroleum industry and other industry sectors.</p> <p>MEPAU acknowledges the vital role of good quality water to the land users in the area and the regional ecosystem.</p> <p>The Shire of Irwin provides a prime example of various sectors coexisting and contributing to the regional economy over many decades.</p>	N/a

<sup>22</sup> Implementation of the Government’s response to the Independent Scientific Panel Inquiry into Hydraulic Fracture Stimulation in Western Australia (2019). Government of Western Australia. Available from <https://www.hydraulicfracturing.wa.gov.au/>

Key Comment No.	Submitter Identifier	Comment	Proponent Response (Rev 2 updated)	Page of Amendment/Document
O 3	ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-477Q-H ANON-WNTE-477P-G	Social Licence to operate and health	<p>The EPA will consider and make a determination through advice to the minister as an independent body.</p> <p>MEPAU notes the public comment.</p> <p>MEPAU recognises the importance of gaining and retaining a ‘social licence to operate’ for our activities in addition to regulatory licensing and approvals, MEPAU believes community and stakeholder engagement, especially with local communities in which we operate, is an integral part to successfully planning and undertaking our activities. This underpins the ongoing engagement with community immediate to our operations as well as with the broader Dongara and Mid West community and other key stakeholders.</p> <p>Engagement activities range from holding a number of community information exchange sessions, direct engagement, site tours, electronic updates, direct mailouts, social investment/sponsorship, newspaper advertisements, media liaison, supporting local businesses and being members of the Mid West Chamber of Commerce and Industry and the Mingenew Irwin Group.</p> <p>MEPAU was pleased to sponsor the independently facilitated Shire of Irwin Community Roundtable, which was established in 2016, in response to interest by local residents in our activities. The Roundtable provided a clear line of communication for a range of MEPAU activities in the Mid West (especially the Waitsia Gas Project) between local community members, landowners, local business, government, local not-for-profit groups and MEPAU, as well as each other. Roundtable meetings were suspended following overall participant feedback they felt adequately informed about the Proposal. Minutes of the meetings, including attendance records and responses to questions raised are available on the facilitator’s website: <a href="https://mitsuiepmidwest.com.au/our-community-commitment/community-engagement/community-roundtable-notes/">Shire of Irwin Community Roundtable</a><sup>23</sup>.</p> <p>In addition, MEPAU held discussions with the local shires where MEPAU operate so that community leaders are aware of our plans and can provide feedback.</p> <p>MEPAU has established a dedicated Mid-West stakeholders website (<a href="https://mitsuiepmidwest.com.au/">https://mitsuiepmidwest.com.au/</a>) so that people can access relevant local information. The website includes regular activity newsfeeds and a newsfeed subscription option. Additional information about relevant social licence activities is available on the <a href="https://mitsuiepmidwest.com.au/mid-west-stakeholders-website/">MEPAU Mid West Stakeholders website</a><sup>24</sup>.</p> <p>The purpose of this engagement was to keep stakeholders informed from the beginning of the Proposal planning phase and to seek their ongoing feedback. The input provided showed support for the Proposal, a conventional development, and has been very useful. It was conveyed to project designers and decision-makers and is now being used during approvals processes.</p> <p>Further engagement is planned as MEPAU develops its forward exploration and development plans and MEPAU welcome people getting in touch directly if they have a query or suggestion.</p> <p>The Western Australian oil and gas industry is highly regulated and MEPAU is committed to upholding the highest standards for environmental, health, safety and operational performance at every stage of our activities.</p> <p>In Western Australia, a whole of government approach is taken to ensuring activities are acceptable from an environmental as well as a health and safety perspective. Several government agencies are involved. MEPAU’s activities are assessed, approved and monitored by the Western Australia State regulator, the Department of Mines, Industry Regulation and Safety (DMIRS).</p> <p>Other government agencies , involved in the approval processes for the Proposal, include the:</p> <ul style="list-style-type: none"> <li>• Department of Aboriginal Affairs</li> <li>• Department of Agriculture, Water and the Environment</li> <li>• Department of Biodiversity, Conservation and Attractions</li> <li>• Department of Water and Environmental Regulation</li> <li>• Department of Health, and the</li> </ul>	N/a

<sup>23</sup> <https://mitsuiepmidwest.com.au/our-community-commitment/community-engagement/community-roundtable-notes/>

<sup>24</sup> <https://mitsuiepmidwest.com.au/>



Key Comment No.	Submitter Identifier	Comment	Proponent Response (Rev 2 updated)	Page of Amendment/Document
			<ul style="list-style-type: none"> <li>Environmental Protection Authority</li> </ul> <p>As detailed in the Environmental Referral Supporting Report and management plans that are the subject of this public review. A number of monitoring programs are planned to be implemented during the Proposal construction, development and decommissioning phases.</p> <p>The monitoring programs include gathering baseline environmental data (such as air quality, water quality and soil quality) prior to commencing activities. During the construction and operation of the Proposal, these monitoring events will continue and outcomes will be reported to both DWER and DMIRS under the <i>Environmental Protection Act 1986</i> and the <i>Petroleum and Geothermal Energy Resources Act 1967</i>.</p> <p>Should the outcomes of these studies indicate a change to baseline levels, further investigation would be conducted and if required, corrective / management measures would be implemented.</p>	
O 4	ANON-WNTE-47D1-X ANON-WNTE-47DE-J ANON-WNTE-47DD-H ANON-WNTE-477Q-H ANON-WNTE-477P-G	Decommissioning and rehabilitation	<p>The EPA will consider and make a determination through advice to the minister as an independent body. MEPAU notes the public comment.</p> <p>The Proposal is subject to both the <i>Environmental Protection Act 1986</i> and the <i>Petroleum and Geothermal Energy Resources Act 1967</i> (PGER Act). The PGER Act provides for the removal of property through decommissioning and rehabilitation (Section 101). These activities are required to be undertaken by the titleholder in accordance with an Environment Plan that has been assessed and accepted by the Department of Mines, Industry Regulation and Safety under the <i>Petroleum and Geothermal Energy Resources (Environment) Regulations 2012</i>.</p> <p>Legally enforceable operating conditions are placed upon all operational activities under legislation and project specific approvals. The Proposal addresses decommissioning and rehabilitation in the Environmental Referral Supporting Report (Section 2.12). Decommissioning activities of this Proposal include evaporation of water in evaporation ponds, scrubbing and disposal of liners, removal of infrastructure, site reinstatement and rehabilitation.</p> <p>Rehabilitation, similarly, is required to be detailed in a project Specific Environment Plan. This plan will detail completion criteria, and methods for achieving these criteria along with a monitoring program to determine when completion criteria are met. As decommissioning criteria is met, land will be progressively returned to the landowner for ongoing use, All Environment Plans are regularly audited by DMIRS to verify compliance and environmental performance.</p> <p>MEPAU works closely with landowners throughout all phases of the activity, including decommissioning and rehabilitation. MEPAU has considerable experience with decommissioning infrastructure within the Mid-west. DMIRS maintains a record of all wells, construction methodology, treatment and their current status, and since 2014, MEPAU has been undertaking well site decommissioning and rehabilitation as part of a campaign to rehabilitate well sites which are no longer required for production or future field development.</p>	N/a
O 5	ANON-WNTE-47DD-H	Risk Assessment Terminology	<p>The risk assessment process is an integral part of project planning and regulatory approvals processes. During project planning, MEPAU undertakes comprehensive risk assessment to identify all of the potential impacts a project might have as well as proposed management measures. Phrases such as ‘minimal risk’ and ‘As Low As Practicable’ are standard terms used in internationally accepted risk assessment processes that are supported by well researched methodology.</p>	N/a
O 6	ANON-WNTE-47DE-J	Local employment and benefits	<p>In a purely financial sense MEPAU contributes more than \$7 million a year to the Mid-West economy. MEPAU pay wages and enters into contracts with local businesses. MEPAU also partners with the community to undertake local community investment projects.</p> <p>Almost all of our Mid-West staff are part of the regional community rather than flying in and flying out or driving in and driving out. As a company MEPAU is actively involved with the community to ensure the Mid-West remains a great place to live. The gas MEPAU produces helps fuel the Western Australian economy and provides heating and cooking to Western Australian homes.</p> <p>Part of our commitment of being a good neighbour is to support local businesses. MEPAU awarded more than \$10 million in contracts to Mid-Western businesses during the Waitsia Stage 1A development. This is in addition to the more than \$7</p>	N/a

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			million the company spent annually in the Mid-West through wages, sponsorship and ongoing contracts. The Waitsia Stage 1 Expansion is continuing the use of local service providers and contractors.	
O 7	ANON-WNTE-477Q-H	Significance of the impact	As described in the Environmental Supporting Information Report, MEPAU has conducted a comprehensive evaluation of the impacts and risks associated with the Proposal. The footprint of the Proposal was reduced through the use of existing cleared and degraded vegetation areas as much as practicable.  The outcomes of that assessment as documented in the Environmental Supporting Information Report and subsequent Management Plans, are that the Proposal does not have the potential to cause a significant impact with the identified mitigation and management requirements in place.	N/a
O 8	ANON-WNTE-477P-G	EPA role in ensuring significant environmental impacts now and into the future are prevented.	The operations of the EPA are governed by the <i>Environmental Protection Act 1986</i> which stipulates that the objective of the EPA is to: 'use its best endeavours – a) to protect the environment; and b) to prevent, control and abate pollution and environmental harm.'  Information about the EPA's oversight of on the environmental acceptability of development proposals is provided on the EPA's website: <a href="https://www.epa.wa.gov.au/pages/step-step-through-proposal-assessment-process">About environmental impact assessment</a> <sup>25</sup> .	N/a

<sup>25</sup> <https://www.epa.wa.gov.au/pages/step-step-through-proposal-assessment-process>

#### 4.0 REFERENCES

1. Environmental Protection Authority (EPA) (2018). Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans. Accessed online: <https://www.epa.wa.gov.au/forms-templates/instructions-part-iv-environmental-management-plans>
2. Mitsui E&P Australia (MEPAU) (2019) Waitsia Gas Project Stage 2 – Environmental Referral Supporting Report. Accessed online: [http://www.epa.wa.gov.au/sites/default/files/Referral\\_Documentation/Supporting%20Document\\_7.pdf](http://www.epa.wa.gov.au/sites/default/files/Referral_Documentation/Supporting%20Document_7.pdf)



## **ATTACHMENTS**

## **ATTACHMENT 1: EPA RESPONSE INDEX – SUBMITTER IDENTIFIERS**

**ANON-WNTE-4773-K**

WMP 26

**ANON-WNTE-4778-R**

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F 2  
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GHG 1  
GHG 2  
GHG 5  
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O 2  
WMP 13  
WMP 28

**ANON-WNTE-477A-1**

O 1

**ANON-WNTE-477C-3**

WMP 28  
WMP 7  
WMP 8

**ANON-WNTE-477F-6**

WMP 16  
WMP 28

**ANON-WNTE-477J-A**

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**ANON-WNTE-477P-G**

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WMP 26

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