



# Works Approval Supporting Information

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## West Erregulla Processing Plant and Pipeline

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## DOCUMENT TRACKING

<b>Project Name</b>	West Erregulla
<b>Project Number</b>	16294
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## ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from AGI Operations

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Template 2.8.1

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# 1. Introduction

## 1.1. Proposed Works Approval and Licence

Australian Gas Infrastructure Operations Pty Ltd (AGI Operations; the Proponent) propose to construct and operate a gas processing plant and pipeline near Dongara, Western Australia, collectively referred to as the West Erregulla Gas Project (WER). The WER involves the processing of gas from upstream wells (third party) and transport of the gas via a new interconnecting pipeline to the Dampier to Bunbury Natural Gas Pipeline (DBNGP).

The WER is located in the Shire of Irwin and Shire of Three Springs, approximately 230 kilometres (km) north-east of Perth and 50 km south-east of Dongara, WA (Figure 1-1)

Construction of the WER will have a maximum Disturbance Footprint of 90 hectares (ha) within a Development Envelope of 213 ha (the prescribed premises boundary), and consists of:

- A gas processing facility (referred to by the Proponent as the WEF), with a nominal design flow capacity of 87 terajoules per day (TJ/d).
- A 16.5 km interconnecting buried gas pipeline between the WEF and the DBNGP tie-in point. The pipeline will be installed at a shallow depth and above the water table.
- A West Erregulla custody transfer metering facility located at the Main Line Value Compound MLV93 on the DBNGP approximately 400 km north of Perth.
- Supporting infrastructure including but not limited to power generation, flare system, water treatment package, water evaporation pond, back-up diesel system, and communications within the WEF.
- An onsite 4 bed self-contained accommodation unit.

### 1.1.1. Location

The prescribed premises boundary will extend across a portion of the following lots (Table 1). Existing land uses in the region are petroleum and mineral exploration and operations, conservation, tourism, and agricultural activities.

**Table 1: Lot details**

Lot on Plan	Description	Tenure
Reserve 38963 on DP 185714	MLV 93 (DBNGP)	Access Right
Lot 12452 on DP 195105	Vacant Crown Land	Access Right
Lot 12626 on DP 026785	Road Reserve (Mt Adams Road)	Access Right
Lot 10935 on DP 031035	DBNGP Access Easement	Access Right
Lot 10935 on DP 033147	Vacant Crown Land	Easement
Lot 10936 on DP 210775	Vacant Crown Land	Easement
Lot 10937 on DP 210775	Vacant Crown Land	Easement
Lot 10938 on DP 210774	Vacant Crown Land	Easement
Lot 10938 on DP 210774	Vacant Crown Land	Section 79 Lease
Public Road	Road Reserve (Natta Road)	Road Reserve (Natta Road)

### 1.1.2. Purpose of this document

This document has been prepared to support a works approval application by the Proponent pursuant to Part V of the *Environmental Protection Act 1986* (EP Act) to construct and operate a category 10 prescribed premises (oil and gas production from wells). It provides additional technical information required under the application and presents the information relevant to the understanding and management of potential impacts associated with the proposed premises.

### 1.1.3. Out of scope for works approval and license application

Wellhead connections and gathering lines from wellheads to the midstream tie-in point are not included in the scope of works for the WER. These are being constructed by other parties and are not included in the Proponent's approval scope.

## 1.2. Project schedule

Construction of the gas plant is proposed to commence in Q4 2023 and be completed by Q4 2024 if needed. While the construction of the pipeline is proposed to commence in mid-2023 and be completed by Q4 2023. Commissioning will occur following the completion of construction works for the gas plant and is expected to take four months, with an approximate completion time of March 2025.

A more detailed summary of milestone dates is outlined in Table 2 below.

**Table 2: Summary of milestone dates**

Milestone	Date
Gas Plant Construction Mobilisation	1 November 2023
Gas Plant Construction Complete	6 December 2024
Pipeline Construction Mobilisation	21 July 2023
Pipeline Construction Complete	21 November 2023
Commissioning Commencement	9 December 2024
First Gas	15 March 2025

### 1.3. The Proponent

The proponent and nominated operator is Australian Gas Infrastructure Operations Pty Limited (AGI Operations), a related company to DBNGP Nominees (WA) Pty Ltd, the owner of the DBNGP.

AGI Operations is part of the Australian Gas Infrastructure Group (AGIG) and is a wholly owned subsidiary of a consortium comprising CK Infrastructure Holdings Limited, CK Asset Holdings Limited and Power Asset Holdings Limited, all of which are listed companies on the Hong Kong Stock Exchange having a combined market capitalisation of approximately A\$84 billion (together the CKI Consortium)



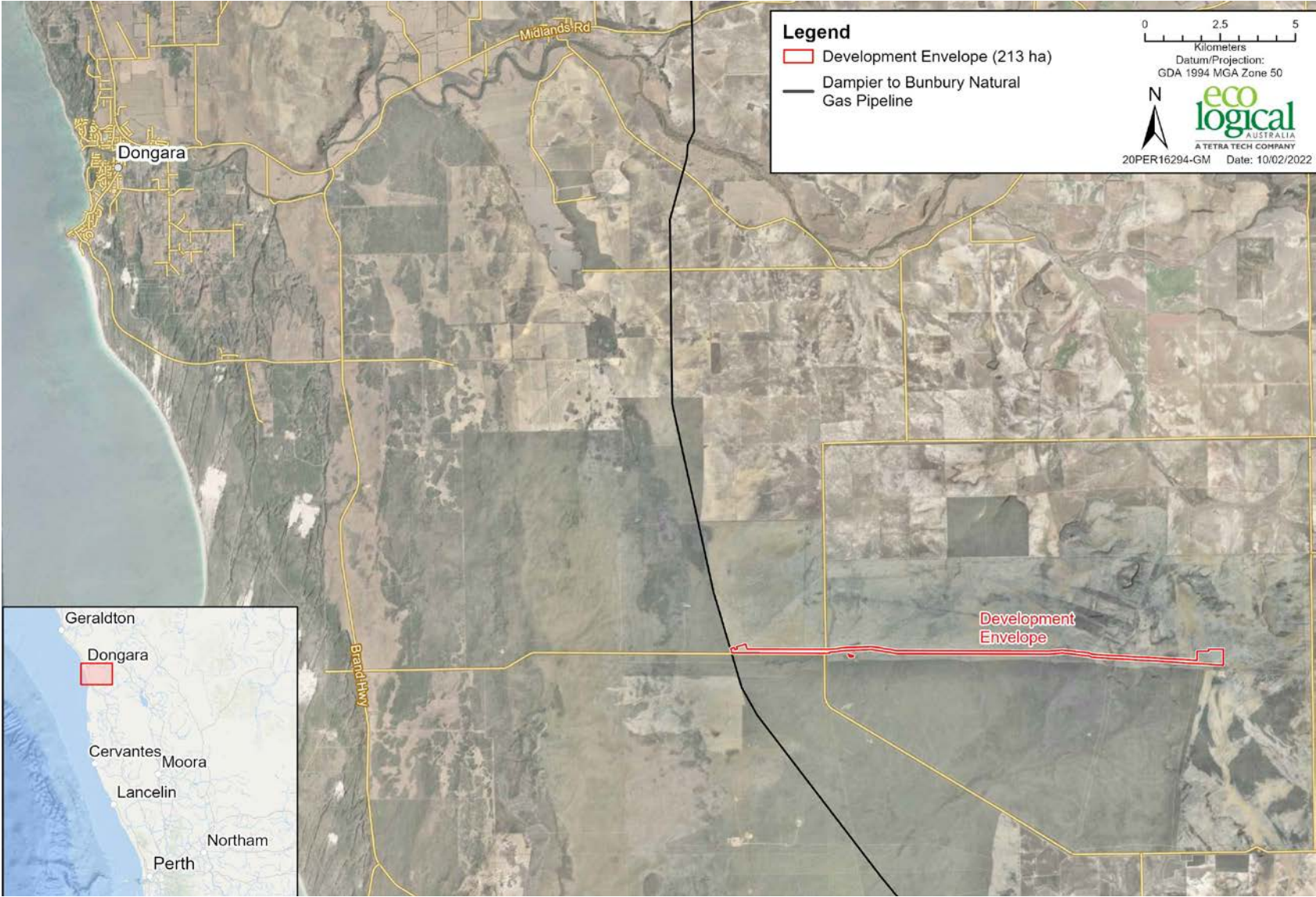


Figure 1: Regional Context and Development Envelope Location



## 2. Supporting Information and Attachments

Supporting information is provided in the following section of this document as per the attachment titles listed in the *DWER Application form: works approval, licence, renewal, amendment, or registration (v13, April 2020)*. Attachments required for this Works Approval Application and provided in this document are listed below:

**Attachment 1A: Proof of Occupier Status**

**Attachment 1B: ASIC Company Extract**

**Attachment 2A: Premises Maps**

**Attachment 3A: Environmental Commissioning Plan**

**Attachment 3B: Proposed Activities**

**Attachment 5: Other approvals and consultation documentation**

**Attachment 6A: Emissions and discharges**

**Attachment 7: Siting and location**

**Attachment 8: Additional information submitted**

**Attachment 10: Works Approval Fee Calculations**

## Attachment 1A: Proof of Occupier Status

## DWER Works Approval – West Erregulla

### Attachment 1A

#### Lease arrangements:

AGI Operations Pty Ltd (**AGIO**) has submitted an application dated 11 June 2020 to the Department of Planning, Lands and Heritage (**DPLH**) for the grant of a lease under section 79 of the Land Administration Act 1997 over proposed Lot 503 on Deposited Plan 421086 for the gas processing plant site. A development application under the Planning and Development Act 2005 for the gas processing plant has already been submitted to the WA Planning Commission and the DPLH has already completed the referral process to relevant agencies and stakeholders (including DMIRS, relevant landowners, the Shire of Three Springs and Valuer Generals Office). AGIO does not expect any impediments to the grant of the lease and expects to execute the lease shortly once the terms of the lease have been finalised with DPLH.

## Attachment 1B: ASIC Company Extract



**ASIC**

Australian Securities & Investments Commission

# Current Company Extract

**Name:** AGI OPERATIONS PTY LIMITED

**ACN:** 166 900 170

Date/Time: 13 January 2022 AEST 05:02:47 PM

This extract contains information derived from the Australian Securities and Investments Commission's (ASIC) database under section 1274A of the Corporations Act 2001.

Please advise ASIC of any error or omission which you may identify.

EXTRACT

Organisation Details	Document Number
<b>Current Organisation Details</b>	
Name: AGI OPERATIONS PTY LIMITED	031072321
ACN: 166 900 170	
ABN: 76166900170	
Registered in: Western Australia	
Registration date: 22/11/2013	
Next review date: 22/11/2022	
Name start date: 18/06/2020	
Status: Registered	
Company type: Australian Proprietary Company	
Class: Limited By Shares	
Subclass: Proprietary Company	

Address Details	Document Number
<b>Current</b>	
Registered address: Level 22, 140 St Georges Terrace, PERTH WA 6000	1ENI69169
Start date: 24/07/2020	
Principal Place Of Business address: Level 6, 12-14 The Esplanade, PERTH WA 6000	2E0001052
Start date: 22/11/2013	

Contact Address
Section 146A of the Corporations Act 2001 states 'A contact address is the address to which communications and notices are sent from ASIC to the company'.
<b>Current</b>
Address: PO BOX Z5267, PERTH ST GEORGES TCE WA 6831
Start date: 09/02/2017

Officeholders and Other Roles	Document Number
<b>Director</b>	
Name: HING LAM KAM	3E4165726
Address: Flat C, 38/f., Block 2, Estoril Court, 55 Garden Road Hong Kong, Hong Kong	
Born: 19/10/1946, HONG KONG, HONG KONG	
Appointment date: 15/05/2017	
Name: LOI SHUN CHAN	3E4165726
Address: Flat A, 16/f, Tower 1 Island Crest 8, First Street Hong Kong, Hong Kong	
Born: 03/08/1962, HONG KONG, HONG KONG	
Appointment date: 15/05/2017	
Name: ANDREW JOHN HUNTER	3E4165726
Address: No. 2, G/f., 83 Stewart Terrace 81-95, Peak Road The Peak, Hong Kong	
Born: 22/10/1958, BISHOPBRIGGS, UNITED KINGDOM	
Appointment date: 15/05/2017	

Name:	PETER LOWE	7EBO46502
Address:	Unit 2, 32 Cedric Street, IVANHOE EAST VIC 3079	
Born:	19/03/1953, GEELONG, VIC	
Appointment date:	03/12/2021	
Name:	CRAIG DE LAINE	7EBO46516
Address:	28 Ramsgate Street, GLENELG SOUTH SA 5045	
Born:	31/10/1974, GLENELG, SA	
Appointment date:	03/12/2021	
<b>Alternate Director</b>		
Name:	MICHELLE SARAH SI DE LI	6E2263457
Address:	79 Deep Water Bay Road Hong Kong, Hong Kong	
Born:	13/01/1996, HONG KONG, HONG KONG	
Appointment date:	03/01/2018	
Name:	DUNCAN MACRAE	7EBF95123
Address:	6a Cliffview Mansions, 17-19 Conduit Road, Midlevels, Hong Kong, Hong Kong	
Born:	11/09/1970, BIRMINGHAM, UNITED KINGDOM	
Appointment date:	15/05/2017	
<b>Secretary</b>		
Name:	GEOFFREY WALTER BARTON	3E4165726
Address:	9 Bath Street, GLENELG SOUTH SA 5045	
Born:	11/10/1962, MALVERN, SA	
Appointment date:	15/05/2017	
Name:	ROXANNE KYLIE SMITH	0EXE48927
Address:	10 Kanbara Road W, SCOTT CREEK SA 5153	
Born:	21/05/1976, ADELAIDE, SA	
Appointment date:	31/10/2019	
<b>Ultimate Holding Company</b>		
Name:	AUSTRALIAN GAS INFRASTRUCTURE HOLDINGS PTY LIMITED	2E0001052
ACN:	120 456 573	
ABN:	22120456573	

**Share Information****Share Structure**

Class	Description	Number issued	Total amount paid	Total amount unpaid	Document number
ORD	ORDINARY	2	4.00	0.00	2E0001052

**Members**

Note: For each class of shares issued by a proprietary company, ASIC records the details of the top twenty members of the class (based on shareholdings). The details of any other members holding the same number of shares as the twentieth ranked member will also be recorded by ASIC on the database. Where available, historical records show that a member has ceased to be ranked amongst the top twenty members. This may, but does not necessarily mean, that they have ceased to be a member of the company.

Name: AUSTRALIAN GAS INFRASTRUCTURE HOLDINGS PTY LIMITED  
ACN: 120 456 573



Address: Level 14, 20 Martin Place, SYDNEY NSW 2000

Class	Number held	Beneficially held	Paid	Document number
ORD	2	yes	FULLY	9E0014488

**Documents**

Note: Where no Date Processed is shown, the document in question has not been processed. In these instances care should be taken in using information that may be updated by the document when it is processed. Where the Date Processed is shown but there is a zero under No Pages, the document has been processed but a copy is not yet available.

Date received	Form type	Date processed	Number of pages	Effective date	Document number
06/11/2019	484E Change To Company Details Appointment Or Cessation Of A Company Officeholder	06/11/2019	2	06/11/2019	0EXE48927
24/03/2020	484 Change To Company Details 484E Appointment Or Cessation Of A Company Officeholder 484A1 Change Officeholder Name Or Address	24/03/2020	2	02/03/2020	1EFT02721
18/06/2020	205A Notification Of Resolution Changing Company Name	18/06/2020	2	11/06/2020	1ELK37348
17/07/2020	484 Change To Company Details 484B Change Of Registered Address 484A1 Change Officeholder Name Or Address	17/07/2020	2	09/07/2020	1ENI69169
24/03/2021	484A1 Change To Company Details Change Officeholder Name Or Address	24/03/2021	2	24/03/2021	7EBF92175
25/03/2021	484A1 Change To Company Details Change Officeholder Name Or Address	25/03/2021	2	25/03/2021	7EBF95123
08/09/2021	484A1 Change To Company Details Change Officeholder Name Or Address	08/09/2021	2	08/09/2021	7EBL18124
08/12/2021	484E Change To Company Details Appointment Or Cessation Of A Company Officeholder	08/12/2021	2	08/12/2021	7EBO02420

21/12/2021	484 Change To Company Details 484E Appointment Or Cessation Of A Company Officeholder 484E1 Cessation Of Company Director Later Than 28 Days	21/12/2021	2	21/12/2021	7EBO46464
21/12/2021	484E Change To Company Details Appointment Or Cessation Of A Company Officeholder	21/12/2021	2	21/12/2021	7EBO46502
21/12/2021	484E Change To Company Details Appointment Or Cessation Of A Company Officeholder	21/12/2021	2	21/12/2021	7EBO46516

\*\*\*End of Extract of 4 Pages\*\*\*

Attachment 2A: Premises maps

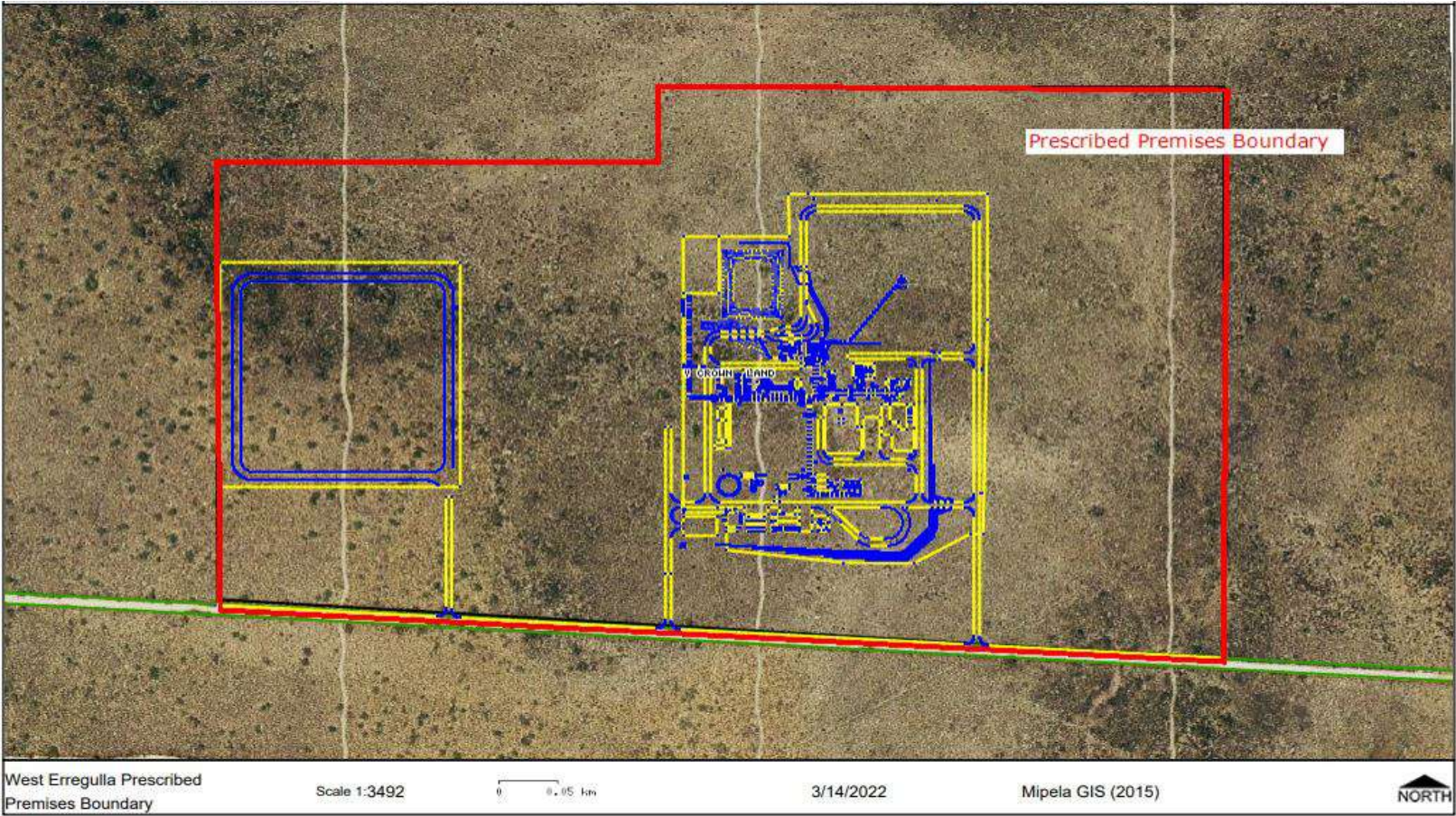


Figure 2 Prescribed Premises Boundary





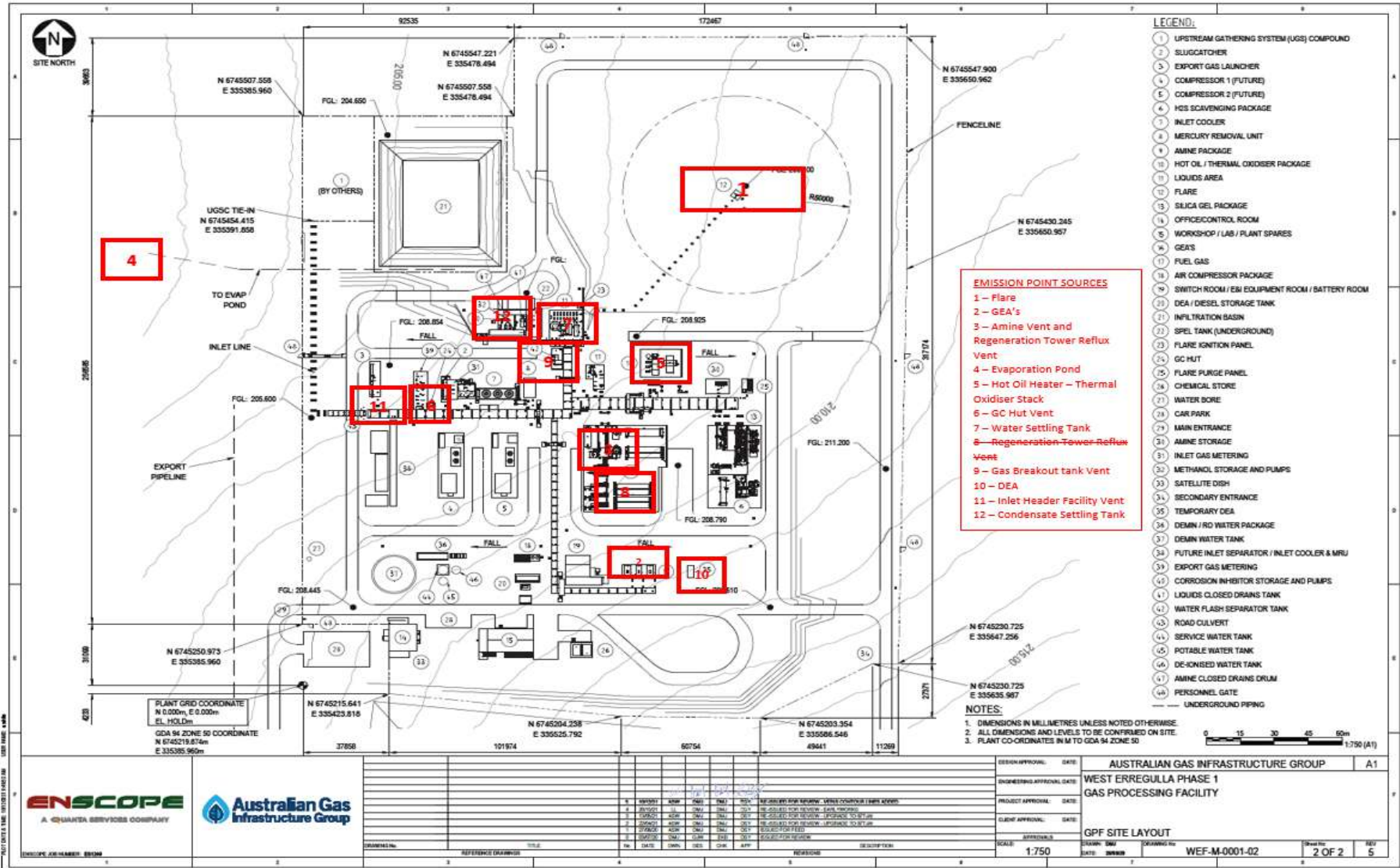


Figure 4: Emissions Point Sources

## Attachment 3A: Environmental Commissioning Plan



## **ATTACHMENT 3A**

# **WEST ERREGULLA ENVIRONMENTAL COMMISSIONING PLAN**

**30 March 2022**

**Rev A**



## Document History

Rev #	Date	Prepared By	Reviewed By	Approved By	Description
0	10/03/22	MRB	TA, JM		Issued for Internal Review
A	30/3/2022	MRB	TA	TR	Initial Submission

## Document Approval

	Title	Name	Date
<b>Prepared</b>	Senior HSE Advisor	Mark Brown	10/3/2022
<b>Reviewed</b>	Environmental Consultants	ELA	17/3/2022
<b>Reviewed</b>	Head of Asset Performance	Tim Aujard	17/3/2022
<b>Approved</b>	Executive General Manager – Transmission Asset Management	Tawake Rakai	30/3/2022

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**1. COMMISSIONING PLAN OVERVIEW**

This Environmental Commissioning Plan identifies tasks to be completed during the Pre-Commissioning and Commissioning phase of the Wet Erregulla Project. Full plant commissioning will be managed to meet all requirements including Major Hazard Facility, applicable standards and environmental requirements.

Summary of Commissioning requirements:

As part of the completion of construction activities, several commissioning steps will be undertaken over a period of 3-6 months.

The following table defines these steps:

Term	Definition
<b>Pre-commissioning</b>	<p>The Pre-Commissioning Stage involves the checking, energising, testing, proving, calibrating and initial tuning of equipment with air, water, inert gases or fluids to confirm correct installation and operation. The intention is to test equipment under simulated conditions as far as practicable to prove the readiness for the introduction of, and operation with, hydrocarbon gases.</p> <p>Inspection Test Records (ITRs) provide a sign-off sheet for Technicians and Engineers to confirm the function and Safety of all equipment.</p> <p>The completion of Electrical and Instrumentation (E&amp;I) ITRs include hot loop testing, electrical equipment tests, and battery and UPS tests.</p> <p>Environmental containment such as bunds and tanks shall be inspected to confirm volume capacity and containment suitability.</p> <p>Upon completion of the Commissioning Work Instruction (CWI), the sign-off sheet at the back of the CWI shall be completed confirming that all tests required by the CWI have been successfully completed and that all outstanding items have been added to the master Punch list.</p>
<b>Commissioning</b>	<p>The introduction of hydrocarbon gas to the pipework, gas commissioning and performance testing shall be completed in the subsequent Integrated Commissioning Stage of the project.</p> <p>Critical Containment Infrastructure (CCI) (the evaporation pond) shall be inspected and signed off by a suitably qualified engineer prior to introduction of any fluids (except leak testing process using potable water)</p> <p>This includes a handover to Operations and potential review and training</p>
<b>Punchlisting</b>	<p>Can occur throughout the commissioning and handover process to ensure operations can be effective and to help close out construction and equipment performance requirements. This may take over 6 months depending on when initial pre-commissioning commences.</p>

Prior to any Commissioning activities taking place on site, a phase of planning and document development takes place. In this phase, all the documents to be completed or followed on site during the Commissioning will be generated. The types of documents to be prepared or activities to be performed include the following:

## WEST ERREGULLA ENVIRONMENTAL COMMISSIONING PLAN

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- High-level documents such as the Commissioning Schedule and Commissioning Plan (this document);
- Determine internal Plant Boundaries to break up the Facility into Commissioning Systems;
- Pre-Commissioning and Commissioning Work Instructions (CWIs);
- Pre-Commissioning ITRs;
- A Commissioning Hazard Identification workshop (HAZID) and report summarising all identified risks and any mitigating measures to reduce the risks to 'as low as reasonably practicable' (ALARP);
- Registers for various Commissioning functions, such as isolations, out-of-service locks etc.;
- Templates for various Health, Safety and Environmental (HSE) functions including Job Hazard Analysis (JHAs) and Inductions

An individual system may not progress to the Pre-Commissioning Stage until the following criteria have been satisfied:

- The Project Construction Completion documents have been signed off;
- The necessary Boundary Isolations have been reviewed and agreed;
- The master punch list has been updated and accepted by the commissioning team; and
- All relevant Hazard Operability Workshop (HAZOP) actions have been confirmed as closed out

### Pre commissioning activities

- Confirm Master punch list has been updated and supplied to the commissioning team
- Confirm electrical and instrumentation hand over certificate is received and electrical and instrumentation walk through has been completed
- Confirm mechanical hand over certificate is received and mechanical walk through has been completed
- Confirm as constructed (as built) drawings have been supplied by the construction team
- Manufacturing Data Report (MDR) interim validation report approved for the purposes of commissioning
- Inspect, energise and test all power generation and power distribution equipment in a circuit by circuit approach.
- Inspect and check seals on lining at evaporation pond including ITR (*Critical Containment Infrastructure*)
- Evaporation pond engineer sign off / certification is received (*Critical Containment Infrastructure*)
- Functional testing of valves through full extent of travel
- Functional testing actuated valves
- Calibration / verification of instruments
- Electrical function testing including Gas Engine Alternator (GEA), Diesel Engine Alternator (DEA) and batteries

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- Low pressure leak testing – tubing, internal pipework and pressure vessels and tanks
- Leak testing – bunds and associated valves
- Hydrotesting / Nitrogen testing of pipework
- Notice of Energisation process implemented for all works
- Bund leak testing including valves
- Infiltration pond and stormwater design and construction ITR completed ensuring separation from potential contaminants sources
- Water treatment plant ITR completed
- Confirm Plant visibility from DCS
- Confirm communications with SCADA master station via Primary and Backup Networks
- Using the Work Instruction – inspect, energise and test all control equipment.

### Commissioning

- Testing and inspection (ITR) of emergency shutdown systems (package and plant)
- Cathodic protection ITR
- Hazardous area checks completed and drawings updated as required
- Accuracy verification testing (AVT)
- Final calibration of instruments including any punchlisted from pre-commissioning
- Testing of all communication links, equipment and channels
- Cold and end to end Hot loop checks completed (ITR) with circuits
- Fire safety systems ITR completed
- Energising of full circuit
- Completion of all critical (Category A) punchlist items and sign off prior to introduction of hydrocarbons
- Staged pressurisation of hydrocarbons into plant
- Blow down of nitrogen filled vessels or pipework (as part of hydrocarbon introduction) including vents
- Flare testing; using hydrocarbons once introduced at low pressure
- Gas leak testing
- Verify function of Control Systems Network
- Motor bump checks including alarms and shut off and level switches
- Water treatment plant final testing and sampling (deionised, potable and brine discharge)
- Stable operations testing including testing of filters, settling tanks, gas breakout tank and closed drain system

**WEST ERREGULLA  
ENVIRONMENTAL COMMISSIONING PLAN**

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- Testing of leak monitoring of the evaporation pond on introduction of water (*Critical Containment Infrastructure*)
- Final punchlist item development
- Handover to operations

Nitrogen and Leak Testing additional information:

- Confirm all DCS / SCADA tags are alarmed as required and all analog signals are on collect
- Confirm all boundary isolations, SWMS/JHA's, Permits and NOE's (Notice of Energisation) are in place prior to proceeding with any activities
- Install blinds, vent spools etc. and complete valve line out as per work instruction
- Complete mechanical commissioning as per work instruction including snoop and leak detection inspection
- Complete nitrogen leak testing and purging.

**2. REFERENCES**

<b>Document Number</b>	<b>Title</b>
DBP-WI-PMF-WIS-INS-03	Moisture Analyser Ametek 5100HD Commissioning Work Instruction
DBP-WI-PMG-GEN-21	NGC 8209 Gas Chromatograph Work Instruction
DBP-WI-PMG-GEN-13	Ultrasonic Flow Meter Commissioning Work Instruction
TEB-003-0086-01	Notice of Energisation (NOE) Procedure
WER-Z-REP-TBC	HAZOP Report
WER-Z-REP-TBC	Commissioning HAZID report and Closeout

**3. POLICIES AND PROCEDURES**

All commissioning activities are to be completed whilst maintaining compliance to the following policies and procedures:

S-POL-000	Zero Harm Principles
S-PRO-001	PTW System Procedure
S-PRO-003	Isolations, Testing and Tagging
S-PRO-004	Job Hazard Analysis and Take 5
S-PRO-022	Manual Handling Procedure
S-PRO-025	Mechanical Lift Procedure
S-PRO-032	Hot Work Procedure
S-PRO-073	Personal Protective Equipment
TEB-003-0086-01	Notice of Energisation Procedure

#### **4. COMMISSIONING MANAGEMENT**

##### **4.1 Commissioning Documentation**

###### **4.1.1 Master Punch List**

Prior to the commencement of commissioning, each Punch list must be loaded to the master punch list. The master Punch list will be updated with any outstanding installation, testing or rectification works which are yet to be completed. Punch list items are categorised into three categories, detailed as follows:

Category A	Item that must be remedied before moving to the next phase of commissioning
Category B	Item that must be completed by the project
Category C	Item that is out of scope of the project

###### **4.1.2 ITR's**

Inspection Test Records (ITRs) provide standardised checklists/forms which aid the testing, calibration and recording of equipment and instruments.

For each site, an analog ITR, Digital ITR and individual ITR's for safety critical items will be developed.

An ITR will be developed for each SCADA data link and any third party data links

###### **4.1.3 Commissioning Dossier**

The Commissioning sequence and associated CWIs, ITRs and procedures produce a logical documented process demonstrating the testing of components and Systems. The documentation is the record that this process was performed and that the results were deemed acceptable. This documentation will be compiled into a Commissioning Dossier.

The structure of the Commissioning Dossier will be pre-determined and indexed such that it is clear prior to undertaking Commissioning what must be achieved and compiled. This produces a clearer scope of work and a method to both plan and execute the work.

Refer to Figure 2 for the structure of the Commissioning Documentation for the project.

##### **4.2 Commissioning Safety**

###### **4.2.1 System Boundaries and Boundary Isolation**

Handover to Commissioning and the completion of Commissioning occurs in stages and is based on Systems. Boundary Isolations shall be put in place to separate Systems which are not ready for the same stage of works. Boundary Isolations shall be locked.

All Electrical Boundary Isolations shall be Positive Isolations (involving a physical break or disconnect). Mechanical Boundaries will be handled by a Positive Isolation or effective isolation in line with the Isolation, Testing and Tagging Procedure (S-PRO-003).

###### **4.2.2 Permit to work**

For all Commissioning activities, a Permit to Work System will be used. During Pre-Commissioning, all work within areas handed over to the Commissioning team, including construction punch list works, will be controlled by the Permit to Work Procedure (S-PRO-001).

During commissioning, Isolations shall be performed with a Lock and Tag System in accordance with the Isolation, Testing and Tagging Procedure (S-PRO-003).



#### 4.2.3 *Hazard identification*

For every activity undertaken, a Job Hazard Analysis (JHA) or Safe Work Method Statement (SWMS) is to be developed. All personnel participating in the activity are to be involved in that Hazard Identification and the associated risk reduction process.

During the works, if any change occurs in the conditions, job scope or any other aspect which might affect the risks associated with the tasks, the JHA must be reviewed to ensure the changed conditions are captured and controlled.

#### 4.2.4 *Safety equipment*

Any safety equipment, identified in a JHA/SWMS as required to undertake specific tasks, shall be used correctly by someone trained or qualified to use the equipment. Specialist contractors may be required to complete various tasks as identified in the HAZID.

#### 4.2.5 *NOE – Notice of Energisation*

A Notice of Energisation (NOE) provides site-wide advanced notice that Electrical, Piping or Rotating equipment in a System will soon be energised. Commissioning notices shall be placed on all energised equipment.

Refer to the Notice of Energisation Procedure (TEB-003-0086-01) for further details.

#### 4.2.6 *Commissioning Inductions*

The commissioning team shall prepare a commissioning induction which details the hazards associated with the commissioning area and commissioning specific activities.

Site personnel may not work in the delineated commissioning area until they have completed the commissioning induction.

## Attachment 3B: Proposed Activities

The following section details the proposed construction and operation of the WER, including the associated equipment, infrastructure, and processes. Detailed site layout plans are provided in **Attachment 2A**.

### 3.1. Overview of the proposed premises

The WER includes:

- A gas processing facility (WEF), consisting of a single gas production train with a nominal design flow capacity of 87 terajoules per day (TJ/d).
- A 16.5 km interconnecting buried gas pipeline between the gas processing facility and the DBNGP tie-in point. The pipeline will be installed at a shallow depth and above the water table.
- A West Erregulla Custody transfer metering facility (WEM) located at the Main Line Valve Compound MLV93 on the DBNGP approximately 400 km north of Perth.
- Supporting infrastructure including but not limited to power generation, flare system, water treatment package, water evaporation pond, back-up diesel system, and communications within the WEF.
- An onsite office facility and small 12 bed self-contained accommodation unit to support the plant operation needs.

A general outline of the process is provided below and outlined in Figure 2:

1. Raw gas and liquids from the Phase 1 development will be transported to the tie-in Point A on Figure 1, where the WEF begins.
2. The pipeline begins where the pipeline inspection gauge (pig) launching facilities are located, (see 'launcher in 5).
3. Processed gas is exported from the WEF via the pipeline which will be designed to operate as a Class 600 pipeline with an MAOP of 10.2MPag.
4. The pipeline will then connect to the custody transfer metering station (WEM) which will contain pig receiver facilities and is located at the existing MLV93 location, the tie-in point to the DBNGP.

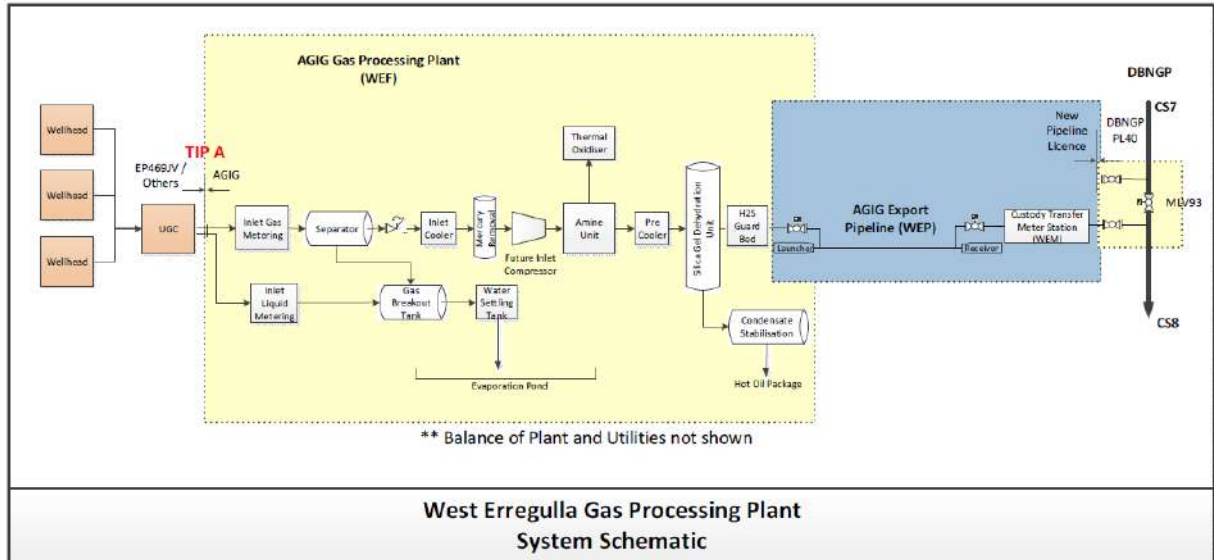


Figure 5: Project schematic

Construction of the WER will comprise a total Disturbance Footprint of 90 ha within a Development Envelope of 213 ha, as detailed in Table 3. It is noted that approximately 41.5 ha of the Disturbance Footprint is intended to be rehabilitated upon completion of construction.

Table 3: Indicative disturbance and rehabilitation

Item	Disturbance Footprint	Proposed Rehabilitation
<b>Gas processing plant:</b>	42 ha	5 ha
<ul style="list-style-type: none"> <li>Gas plant</li> <li>Evaporation pond</li> <li>Evaporation pond piping</li> <li>Potential construction camp</li> <li>Connecting track to wellheads</li> </ul>		
<b>Gas pipeline:</b>	43 ha*	35 ha
30 m wide right of way (6 m permanent + 24 m temporary disturbance for construction only)		
<b>Support infrastructure:</b>		
<ul style="list-style-type: none"> <li>DBNGP tie in facility</li> <li>Access tracks (construction only)</li> <li>Ancillary works (bore access, permanent access tracks)</li> </ul>	1 ha 1 ha 3 ha	0.5 ha 1 ha 0 ha
<b>TOTAL</b>	<b>90 ha</b>	<b>2.5 ha</b>

### 3.2. Proposed infrastructure and equipment

Table 4 details key infrastructure and equipment required for the construction and operation of the WER relevant to this works approval application.

**Table 4: Key infrastructure and equipment to be included in the works approval application**

Infrastructure	Site plan reference	Critical containment infrastructure? (Y/N)	Environmental commissioning required? (Y/N)
Evaporation pond		Y	
Upstream gathering system (UGS) compound	1	N	
Slugcatcher	2	N	
Export gas launcher	3	N	
Compressor 1 (future)	4	N	
Compressor 2 (future)	5	N	
H2S scavenging package	6	N	
Inlet cooler	7	N	
Mercury removal unit	8	N	
Amine package	9	N	
Hot oil/thermal oxidiser package	10	N	
Liquids area	11	N	
Flare	12	N	
Silica gel package	13	N	
Office/control room	14	N	
Workshop/lab/plant spares	15	N	
Gas Engine Alternators (GEAs)	16	N	
Fuel gas	17	N	
Air compressor package	18	N	
Switch room/E&I equipment room/battery room	19	N	
Diesel Engine Alternator/Diesel storage tank	20	N	
Infiltration basin	21	N	
SPEL tank (underground)	22	N	
Flare ignition panel	23	N	
Gas Chromatograph (GC) hut	24	N	
Flare purge panel	25	N	
Chemical storage	26	N	
Water bore	27	N	
Car park	28	N	

Infrastructure	Site plan reference	Critical containment infrastructure? (Y/N)	Environmental commissioning required? (Y/N)
Main entrance	29	N	
Amine storage	30	N	
Inlet gas metering	31	N	
Methanol storage and pumps	32	N	
Satellite dish	33	Y	
Secondary entrance	34		
Temporary Diesel Engine Alternator (DEA)	35		
Demineralisation (Demin)/Reverse Osmosis (RO) water package	36		
Demin water tank	37		
Future inlet separator/inlet cooler and Mercury Removal Unit (MRU)	38		
Export gas metering	39		
Corrosion inhibitor storage and pumps	40		
Liquids closed drains tank	41		
Water flash separator tank	42		
Road culvert	43		
Service water tank	44		
Potable water tank	45		
De-ionised water tank	46		
Amine closed drains drum	47		
Personnel gate	48		

### 3.2.1. Gas Plant

The gas plant is an industrial facility that will process gas produced from deep underground conventional free flowing reservoirs. The gas plant will be a self-contained and stand-alone facility with a fence around the perimeter. It will be operated from site, with remote monitoring capability. The plant will be operated 24 hours/day throughout the year, except for planned and unplanned maintenance activities (shutdowns).

More specifically, the gas plant comprises the following elements:

- Slug catcher - provides the initial separation of free liquids from the gas stream and a buffer volume to prevent “slugs” of liquid entering the Plant.
- Future Inlet Compression - for when the reservoir pressure declines, and additional compression is needed for the cases where lower pressure will cause a loss of efficiency in the Plant.
- Inlet cooling - cooling is included to manage cases where the raw gas arrival temperature may cause a loss of efficiency in the Plant and/or loss of dewpoint control in the export pipelines.
- Inlet separation - removes the condensed liquid from the gas stream after inlet cooling.

- Mercury removal - a mercury removal unit is included to remove mercury from the product to meet environmental and pipeline specification limits.
- Gas sweetening – a CO<sub>2</sub> removal plant to lower CO<sub>2</sub> levels to domestic gas specification limits set for WA consumer gas use.
- Water content and hydrocarbon dew-point control - reduction to levels that will satisfy the domestic gas specification limits set for WA consumer gas use.
- Condensate treatment and storage - recovered condensate is stabilised and stored prior to transport off site by road.
- Support utilities (further described below).

### 3.2.2. Supporting utilities

The following support utilities will be provided at the gas plant:

- A fuel gas system, with gas primarily sourced from the export compression system suction manifold
- Power generation (power will be supplied by 3 x 75% Gas Engine Alternators) comprising duty and standby units, and an emergency generator.
- An instrument air system for control and emergency shutdown valves, operation of various pumps, atomisation of condensate in the incinerator, pressurisation of electrical instruments, and the purging or cooling of essential instruments.
- A flare system with an elevated high-pressure flare that allows the safe management of large volumes of hydrocarbon gas in a process upset / emergency situation whereby hydrocarbon inventory can be safely depressurised in a controlled manner.
- An incinerator for disposal of the waste stream from the gas sweetening system.
- A fire water system, using treated bore water as the firefighting medium.
- A utility water system, also utilising bore water obtained from local water bores, supplying utility stations around the site.

## 3.3. Outline of the proposed activities

The WER will be developed in stages, with the initial Phase 1 development involving the collection of gas from four wells and directed to the WEF which will receive, treat, and transport the gas to the gas network for sale. The sales quality gas will be delivered to the nearby DBNGP via the pipeline.

### 3.3.1. Processing plant construction

Detailed plant layout plans are provided in **Attachment 2A**. The processing plant construction will include the following key processes:

- Survey and mark out
- Clear, level, cut and fill as required (bulk earthworks)
- Civil and foundation works
- Evaporation pond and infiltration pond layout and construction
- Mechanical package assembly
- Structural and piping assembly
- Electrical installations
- Final civil and structural construction works

- Pre-commissioning
- Commissioning.

#### 3.3.1.1. Station Flare and vents

A station flare unit will be installed to burn off any hydrocarbons remaining in the gas after removal from the amine package and other captured releases. Volumes of gas being flared shall be monitored as required under the Greenhouse Gas Management Plan (GHGMP) (**Attachment 8**). The location of the flare is shown in **Attachment 2A**.

- All blowdowns within the WEF will be directed to the flare.
- Blowdown times to be designed to comply with API RP 521 requirements.
- The flare has been designed with a 50m exclusion zone, and the height minimised as far as practicable to minimise light pollution
- Process PSVs will be directed to the flare.
- Fire case PSVs will discharge to atmosphere, but not expected to be utilised within the life of the facility.

Pressure relief vents exist through the Custody Transfer Meter Station to meet safety requirements. Vent systems at the meter station have been designed to the following requirements:

- Noise attenuators have been installed on the vents to ensure compliance with *Environmental Protection (Noise) Regulations 1997*.
- Vent height designed to safely disperse vented gas with safe gas concentration at ground level.
- Station vents located such that there are no high sources of ignition within 10m of the vent.
- Vents separated from the nearest working area based on safe heat radiation level under full flow conditions, should the vented gas be ignited.

#### 3.3.1.2. Power generation

Three gas engine alternators (required duty being approximately 1800 kVa) will be installed and a backup diesel engine alternator of 1600 kVa to ensure power supply to the plant. The gas engine alternators will be fed from a fuel gas skid using natural gas with a minor amount of diesel stored on site for the diesel engine alternator and for vehicle refuelling.

An uninterrupted power supply system shall provide both 24 VDC and 230 VAC 50 Hz essential power for a full rating of 30 minutes or 48 hours (critical services only) through a battery bank set up.

#### 3.3.1.3. Gas processing

The Gas Processing system will include the following:

- Inlet gas metering
- Separator (to Gas breakout tank)
- Inlet Cooler
- Mercury Removal Unit
- Amine Package (AGRU)
- Silica Gel Package (Dehydration)
- Thermal Oxidiser Gas Heater
- H<sub>2</sub>S Guard Bed package



- Aftercoolers
- Condensate stabilization
- Hot Oil Package

The main sources of continuous emissions within the Facility are the combustion products from:

- Flare Package (normal flow case only)
- Hot Oil/Thermal Oxidiser package (to dispose of gas from Amine Reflux Drum/Amine Flash Drum and from burning fuel gas)
- Gas Engine Alternators (GEA).

Other minor emissions from the liquid handling system (e.g. Gas Breakout tank) and Gas Chromatograph vents will also exist. Additionally, there is a Diesel Engine Alternator (DEA) on-standby as required.

#### *3.3.1.4. Communication system*

The communications network provides Supervisory, Control and Data Acquisition (SCADA) for the plant and links to the DBNGP communication network. It provides all telephony, Mobile Voice Radio, Corporate Ethernet, and Control Local Area Network (LAN) connections between the site facilities and to the DBNGP Gas Control centre.

#### *3.3.1.5. Maintenance facilities, storage, and logistics*

Facilities on site shall include suitable sheds, storage, and tanks to ensure containment of materials, equipment, and waste. Where required, this will include the storage of dangerous goods in compliance with the Australian Dangerous Goods Code.

A vehicle washdown facility, workshop, lighting, firefighting and detection capability and other plant requirements will be installed to assist in operations of the plant. All facilities shall be air-conditioned and include adequate parking facilities.

#### *3.3.1.6. Oily water system*

The oily water system is designed to capture any potential leaks, spills or washdown liquids that may contain contaminants (focused in on hydrocarbons) to ensure these do not interact with soil and are held within containment. This includes bunds, drainage, and oily water separator units. Hydrocarbon wastes will be treated and then disposed of as oil and water will be discharged to the site evaporation pond.

#### *3.3.1.7. Accommodation/office*

A site office will be constructed onsite as part of the overall site management and control room.

There will be construction accommodation onsite which will be temporary during the construction, commissioning, and initial operations period.

Permanent accommodation is motel style, air-conditioned, capable of accommodating 12 people, and equipped with cooking, washing, sleeping and recreational facilities.

#### *3.3.1.8. Water management*

The key infrastructure of the water management for the site is presented below:

**Bores:** Raw water is supplied to the site from a local bore using electrical submersible pumps and is subsequently stored in the raw water storage tank where it will act as a feed source for the reverse osmosis water package. It is noted that during construction, raw and potable water may also be transported in from local commercial standpipes located within the Shire of Irwin and the Shire of Mingenew.

**Reverse Osmosis (RO) Unit:** Stored raw water is pumped into a RO unit which will treat it to make it potable, from which it is stored in a portable water tank until it is required. The RO unit is sized to process an average of 16 m<sup>3</sup> per day of potable water, 9 m<sup>3</sup> per day of demineralised water and 2 m<sup>3</sup> per day of deionized water. The quality of the water in the tank is maintained through the use of UV Sterilisation Units and activated carbon filter units. A by-product of the RO unit is a brine rich wastewater discharge. This discharge is therefore pumped directly into the lined evaporation pond to remove excess water and ensure that the contaminants are isolated from the environment.

**Demineralised Water tank:** Aspects of the gas processing procedure requires the utilisation of demineralised water. This is provided by pumping the portable water through an additional RO unit removing any unwanted substances. This water is then stored in a fibreglass tank from where it is pumped to the GEA Radiator Water Treatment Tank and GEA Head Tanks.

**Wastewater management from temporary accommodation and ablution facilities:** The proposed effluent system will include two male and one female cubical, an ambulant toilet, a septic tank and tanker connection, all of these items will be installed to the Shire of Three Springs requirements, while also meeting AS1546 [1]. The waste will be removed via trucking provided by a licensed contractor, ensuring that no effluent is discharged into the environment.

**Wastewater management from permanent facilities:** The proposed accommodation utilises a small septic and leach drain system to manage personal water use wastes (showers, kitchen, laundry and ablutions) and is built to accommodate ~15 people (over and above the 12 personnel expected). This system allows for biological passive treatment and release of water to the leach drain. Based on 300L per person per day (at 15 person design factor) the septic is sized to manage approximately 1,643 kL per annum.

**Stormwater Infiltration Basin:** Stormwater within the plant will be captured and channelled to an infiltration basin. The basin will allow for the controlled infiltration of this water back into the local system. It is designed to have the capacity to accommodate water levels associated with a 1 in 100-year rainfall event for the region.

It is noted that all areas within the plant that contain liquids which could contaminate the environment will be bunded and water collected in these areas directed to the oily water separator and in turn the evaporation pond. Only stormwater will be directed to the infiltration basin therefore there is minimal potential for any groundwater contamination in this system. The stormwater infiltration based will be approximately 63 x 53 x 3 m in size and feature stone pitching on the drain inlets to prevent erosion, with a sandy base to ensure efficient and safe water removal.

**Evaporation Pond:** A 170 m x 170 m evaporation pond (2.9 ha surface area, 28,900 m<sup>2</sup>) will be constructed to remove any water processed in the oily water separator, the RO rejection brine line, and the produced water from the process. The size of the evaporation pond will allow it to evaporate

approximately 33,390 m<sup>3</sup> of water per year and is sufficiently sized to ensure that it will not overflow during adverse weather events. The pond will be double lined with intermembrane leak detection employed to prevent any potential contamination from entering the local soil or groundwater. Design factors have been included to ensure pond provides a high level of containment of all process water.

The Evaporation Pond has been designed with the following controls:

- Will be constructed at least 100 m away from surface water courses
- 2 mm HDPE Primary Liner
- HDPE Drainage mat
- 2 mm HDPE Secondary Liner
- 500 mm freeboard design above maximum predicted water level
- Worst case scenario using 3 year maximum year precipitation (surge storage)
- RO, waste production water (plus 20% design factor) and demineralised water consumption in aftercoolers accounted for, plus rainwater collection
- Pond depth has the capacity to manage a 1 in 100 year event plus unseasonal weather; and
- Leak monitoring – HDPE monitoring pipe with capped end and 6 mm drain holes over a 1 m length.

### 3.3.2. Pipeline construction (outside of prescribed premises boundary) for information only

The pipeline to be constructed is a high pressure 16” (DN400) Class 600, 10.2 MPa pipeline, approximately 16.5 km in length. The pipeline will include a pig launcher and received facilities to enable future internal (in-line) inspections to occur.

Activities completed as part of construction of the pipeline are detailed below in Table 5.

**Table 5: Pipeline construction activities**

Construction activity	Description
Detailed Survey	Engineering, environmental, and cultural heritage surveys are used both in route selection and to determine if any special construction techniques or mitigation measures are required. Once the preferred pipeline route has been determined, the centreline is surveyed, and engineering aspects are finalised. Markers (pegs) are placed to identify the pipeline route and corridor.
Fencing	Where required and in consultation with landholders, construction gates shall be installed to allow access for both property boundary and internal fences
Clear and grade	Graders and bulldozers will be used to clear the Disturbance Footprint for construction activities. This clearing will include the 30 m wide right of way pipeline, consisting of a 6 m wide corridor for the permanent location of the pipeline and an additional 24 m wide temporary disturbance corridor for construction of the pipeline. Topsoil will typically be graded to a depth of 100 to 150 mm for a blade-width over the trench line, or the entire working side or the full construction corridor, depending on factors such as the soil type, terrain, construction requirements and weather conditions. Topsoil will be stockpiled separately. Overburden related to dune crossings will be stockpiled adjacent to the excavation within the Disturbance Envelope
Trenching	After the route is cleared, a trench (1.5-2 m deep) will be dug for the pipeline by either a trenching machine or an excavator in accordance with pre-defined depths of burial. The required depths are determined by the AS2885.1 risk assessment process and recorded on construction alignment sheets. Trench spoil will be stockpiled within the Disturbance Footprint, usually on the non-working side of the pipeline right of way. Trench spoil is stockpiled separately to topsoil. The trench will be monitored daily for fauna entrapment and refuges (hessian bags or similar) placed in the trench to provide protection for fauna that temporarily occupy the trench. The trenches will be ramped at regular intervals to allow larger fauna to escape. The period that any part of a trench will be left open will be minimised. Trenches will be stopped and started at regular intervals with “plugs” between these sections to allow for unimpeded movement of livestock and fauna. Where possible, trenching will be delayed until completion of the welding and joint coating as part of ensuring that the trench will be open for the minimum amount of time.
Stringing	Steel pipes will be trucked to the construction site in loads that are permitted for transportation. Each pipe length is approximately 18 m long and will be unloaded and laid end-to-end next to the trench. The pipes are placed on sandbags and raised on blocks of wood (timber skids) to protect the pipe from damage.
Bending	Where required, pipe sections are bent to match changes in either elevation or direction of the route.
Welding	Pipe sections are joined together using welding process.
Non-destructive weld testing	All pipe welds are inspected using x-ray or ultrasonic equipment
Joint coating	The area around the weld is grit blasted and then coated with a protective coating to match up with the factory applied coating.

Construction activity	Description
Padding	Where required, padding machines may be used to sift the excavated subsoil to remove coarse materials to prevent damage to the pipe coating. The remaining fine material is used to pad the pipe complexly around before the rest of the trench is backfilled.
Lowering-in	Side booms (bulldozers with cranes) or excavators with approved lifting devices will be used to lower the welded pipe into the trench.
Backfilling	The backfilling operation is to ensure that all materials extracted from the trench is returned into the trench with padding material first, then the bulk of backfill compacted before the topsoil cover is spread on the top. The operation is to ensure the pipe coating is protected from damage, the trench is properly compacted and topsoil that was protected before excavation is re spread over the excavated area to encourage regrowth under Restoration and Rehabilitation section.
Watercourse Crossings	The pipeline alignment may cross watercourses of varying size, some of which are short term streams. These streams are expected to be dry during construction and crossings will be constructed using standard open cut (trenching) construction. Erosion and sediment control measures will be implemented to ensure there are no significant impacts at these crossings. Perennial or continuing river crossings may require construction by horizontal directional drilling, to be used under the riverbed to minimise disturbance. Permits will be obtained from the DoW where crossings involve any interference to bed or banks.
Install temporary infrastructure	Temporary infrastructures may include, but is not limited to, rubbish bins, ablutions, site office and lay down area.
Set up small mechanical workshop/work area	A small area away from the facility pad is cleared to allow for use as a workshop for welding, non-destructive testing, hydrostatic testing, and sandblasting. The workshop may be also be used to service plant and vehicles used on the project and are located next to the site sea containers with tarpaulins extended to offer shade.
Install facility foundations, cables, and conduits (electrical and fibre optic) and electrical earthing	<p>Foundations for meter station and cable trenches are excavated and prepared for equipment to be installed. The foundations are compacted and tested for compaction. Smaller pre-cast foundations are installed, however larger foundations may be site poured. In this case formwork, reinforcing and a concrete truck is used.</p> <p>Electrical cables are typically installed in conduits to avoid the requirement for termite treatment and are backfilled. However, if direct cable burial cannot be avoided termite treatment is used before backfilling.</p>
Install facility, filtration and pressure reduction valves if required	The facility metering skid, filter and pressure reduction valves are installed onto the foundations. Pipe supports are levelled and grouted.
Install remote terminal unit (RTU), communications mast, instrumentation, and control equipment	RTU, communications mast, instruments and control equipment are installed are installed in cubicles or within pre constructed buildings.
Complete electrical installation	All electrical and control systems wiring are installed and terminated in equipment boxes or in the metering shelter/hut.
Pressure testing	<p>Pipeline integrity is verified using hydrostatic testing in accordance with relevant Australian Standards. During hydrostatic testing the pipeline is capped with test manifolds, filled with water, and pressurised up to a minimum of 125% of design maximum operating pressure for a minimum of two hours. A minimum 24-hour duration leak test then follows.</p> <p>Providing it meets DWER water quality guidelines and has landholder approval, hydrotest water is discharged to the surrounding environment. Hydro-test water will be</p>

Construction activity	Description
	<p>sourced from a variety of sources, including public water supply system standpipes, dams, local groundwater, or stream flows, subject to licensing from the DWER.</p> <p>In general, it is expected that no chemicals will be added as the pipeline is internally coated. However, in some locations chemicals may need to be added if there is danger of aggressive water affecting the integrity of the internal coating. In these cases, and where necessary, the water will be treated to neutralise alkaline elements to an appropriate standard before discharge to the environment.</p> <p>This discharge is a once-off discharge during commissioning of the pipeline and will be undertaken to the requirements of DWER.</p> <p>Should chemicals be required, details of these chemicals will be included in documents submitted to DMIRS for approval.</p>
Restoration and rehabilitation	The corridor is re-contoured to match surrounding landform, and erosion controls constructed where necessary. Separately stockpiled topsoil is then respread evenly across the corridor and any stockpiled vegetation placed across the easement, to assist in soil retention, provision of seed stock and fauna shelter. Reseeding or revegetation of the corridor, using appropriate species (i.e. crops/pasture or indigenous native species of the right provenance), will be undertaken to restore vegetation cover.
Signage	Information signs on the presence of the buried pipeline are erected in line of sight along the corridor in accordance with Australian Standards.
Fencing	Fencing associated with any landholder's operations are reinstated. All above ground facilities are secured with fencing.
Commissioning	<p>Commissioning of the facilities covers all engineering disciplines and organised using approved commissioning procedures.</p> <p>Regarding the pipework, the following is undertaken as part of commissioning:</p> <p><b>Facilities pipe:</b> The pipework is hydrotested, drained, dried, and compressed air blow through undertaken to confirm cleanliness. It is then bolted to the Pipeline.</p> <p><b>Pipeline:</b> The pipeline is deemed to be clean and dried after hydrostatic testing to the accepted level of cleanliness and dryness using dew point measurements and the status of cleaning pigs.</p> <p>Once the Facilities pipework and the pipeline are confirmed to be connected as one complete system, the commissioning operation involve the gradual introduction of gas in stages initially to test for leaks and once leaks are repaired, the pressures are gradually increased to the operating pressures ready to commence operation. No venting of gas is required.</p>
Site clean-up and rehabilitation	Site office, ablutions, accommodation, and surplus materials are removed from site and permanent rehabilitation commenced. Areas which may remain in use include the access tracks. The rehabilitation works include ground re-contouring and topsoil re-spread.

### 3.3.3. Meter station construction (outside of prescribed premises) for information only

The construction methodology for the meter station is outlined in Table 6.

**Table 6: Meter station construction methodology**

Activity	Description
Survey and peg out site	Engineering, environmental, and cultural heritage surveys are used to select the site and to determine if any special construction techniques or mitigation measures are required.

Activity	Description
	The preferred site for the meter station is to co locate it with MLV93 the preferred site as it contained existing in infrastructures that will add value to this facility.
Clear and grade	<p>Graders and/or bulldozers are used to clear an access track, site facilities area, and lay down area. The clearing is mostly within the DBNGP corridor; however, some area may also be cleared outside the corridor.</p> <p>Topsoil is stripped for the width and length of the meter station pad. The pad is then in-filled with imported, free draining soil and compacted and filled to the design level.</p>
Temporary infrastructure	Temporary infrastructures may include, but is not limited to, rubbish bins, ablutions, site office and lay down area.
Small mechanical workshop/work area	A small area away from the facility pad is cleared to allow for use as a workshop for welding, non-destructive testing, hydrostatic testing, and sandblasting. The workshop may be also be used to service plant and vehicles used on the project and are located next to the site sea containers with tarpaulins extended to offer shade.
Facility foundations, cables, and conduits (electrical and fibre optic) and electrical earthing	<p>Foundations for meter station and cable trenches are excavated and prepared for equipment to be installed. The foundations are compacted and tested for compaction. Smaller pre-cast foundations are installed, however larger foundations may be site poured. In this case formwork, reinforcing and a concrete truck is used.</p> <p>Electrical cables are typically installed in conduits to avoid the requirement for termite treatment and are backfilled. However, if direct cable burial cannot be avoided termite treatment is used before backfilling.</p>
Facility, filters and pressure reduction valves	The facility metering skid, filter and pressure reduction valves are installed onto the foundations. Pipe supports are levelled and grouted.
Remote terminal unit (RTU), communications mast, instrumentation, and control equipment	RTU, communications mast, instruments and control equipment are installed are installed in cubicles or within pre constructed buildings.
Electrical and control systems	All electrical and control systems wiring are installed and terminated in equipment boxes or in the metering shelter/hut.
Excavation for tie-in line	A trench (minimum 1.5 m deep) is dug to tie in the above ground meter station with the below ground pipeline. This will be carried out in accordance with DBP Excavation Procedure and Permit to Work System. Trench spoil is stockpiled within the corridor usually on the non-working side.
Tie in welding	The tie-in and site field welds are completed and treated as golden welds with additional testing as described below as it cannot be hydrotested. Due to the nature and the quality demanded with this weld, the environment is controlled to ensure welding is completed under ideal conditions for the weld to be 100% successful at NDT.
Non-destructive weld testing	The welds are inspected using Magnetic Particle Inspection (MPI), X-ray, gamma, or ultrasonic equipment.
Hydrostatic testing	Pipework integrity is verified using hydrostatic testing in accordance with relevant codes for Process Piping. During hydrostatic testing the pipework is capped or blind flanged, filled with water and pressurised up to 150% of design maximum operating pressure for a minimum of two hours. A minimum 24-hour duration leak test. Once the test is cleared, standard dewatering is undertaken and the pipework dried.
Touch up paint	Minor paint chips etc are touched up with a paintbrush. Larger areas to be painted are spray painted with careful consideration to the wind direction and intensity, proper masking of nearby pipe and equipment and storage of paint.
Backfill	Imported clean sand is used around and 200 mm below any below ground piping. Common fill is used for the remaining fill. Common fill will be certified weed and disease free as well as non-acid sulphate soil.

Activity	Description
Fencing	Fencing is installed around meter station and blue metal is placed on ground in meter station compound.
Commission meter station	Once pipework is hydrotested, drained, dried, Compressed Air blow through undertaken to confirm cleanliness. It is then bolted to the Pipeline ready for gassing up.
Site clean-up and rehabilitation	Site office, ablutions, accommodation, and surplus materials are removed from site and permanent rehabilitation commenced. Areas which may remain in use include the access tracks. The rehabilitation works include ground re-contouring and topsoil re-spread.

### 3.4. Commissioning

The DWER uses a risk-based approach to determine whether a premises can undertake environmental commissioning and operate under a works approval, while the DWER assesses the licence application.

Where environmental commissioning is authorised under the works approval this phase commences after the construction phase. Works approval conditions will allow and control limited operation for the purpose of optimising plant and equipment to meet predicted emissions.

Following completion of construction activities, commissioning activities will commence and take place over a period of approximately 2 months in accordance with the Proponent's Environmental Commissioning Plan (**Attachment 3A**).

Commissioning of the pipeline and associated processing plant will involve the progressive introduction of gas, commissioning each item of equipment sequentially until the whole system is capable of operating as a unit. The station piping is vented with natural gas to ensure cleanliness. A vent pipe with an outlet 2.2 m above ground level is used. Volumes of natural gas to be vented will be minimised and calculated as part of the emissions reporting requirements.

The station pipe work is pressurised to line pressure, pressure reduction valves set (if installed) and electrical equipment energised and tested. Following successful commissioning first gas to the client can be delivered.

### 3.5. Operation

#### 3.5.1. Pipeline operation

The pipeline is designed to operate unmanned, 24 hours per day with frequent (minimum monthly) surveillance and for routine inspections and maintenance. Gas will be transported via the pipeline to the DBNGP.

The Pipeline will be operated in accordance with the EP which will be submitted under the Petroleum Pipeline Act 1969 (and other required approvals) for assessment and approval by DMIRS.

#### 3.5.2. Gas plant operation

The gas processing plant and pipeline will operate under DMIRS regulatory requirements as a Major Hazard Facility and Petroleum Pipeline. This includes requirements for environmental and safety



requirements to be met throughout operations. The plant will be operated 24 hours a day for 365 days a year, except for maintenance shutdowns.

Activities during operations are set out in an Asset Management Plan (AMP) which details the inspection, maintenance and activities required to ensure the safe, efficient, and environmentally sound operations. The AMP includes set frequency and timings to minimise risk of failure as well ensuring efficient operating status. Communications maintenance, remote operability, leak detection and testing of emergency processes are all included in the AMP.

The AMP includes all requirements as set out in the relevant Safety Report (MHF) or Safety Case (Pipeline) and the linked Environment Plan. An Operations Environment Plan will be developed for DMIRS approval for the ongoing management of the pipeline.

#### *3.5.2.1. Vegetation Maintenance*

The WER pipeline will undergo frequent vegetation management to ensure Line of Sight (LOS) between pipeline signs and access to pipeline corridors is maintained as required under AS2885.3. This process is undertaken in accordance with statutory clearing approvals and managed internally under an internal permit process, referred to as an Authorisation to Clear Vegetation (ACV). The ACV process conducts a pre-clearing review of the specific area to be cleared, reviews environmental aspects in the area (i.e. DRF, ESAs, TEC's) and a review of the clearing process to be used. The ACV establishes any specific controls (i.e. hand clearing only) in areas of particular value and provides information on these aspects to the field team. The ACV also enables the tracking of clearing volumes (area), dates completed and location to assist in the reporting process.

## Attachment 5: Other approvals and consultation documentation

An overview of the relevant legislative framework applicable to the WER has been undertaken and a summary is detailed below.

### 5.1. Environment Protection and Biodiversity Conservation Act 1999

The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the primary piece of Commonwealth environmental legislation, which enables the protection of the Matters of National Environmental Significance (MNES) and is administered by the Department of Agriculture, Water, and the Environment (DAWE).

Two MNES species have potential to be significantly impacted by the WER, the Sandplain Duck Orchid (*Paracaleana dixonii*) and Carnaby's Cockatoo (*Calyptorhynchus latirostris*). The potential impacts on these MNES species is further discussed in Section 3.5 and Section 3.8 respectively.

The Proposal was referred to the DAWE in March 2021 (ref. EPBC 2021/8907) and was deemed a 'controlled action' pursuant to the EPBC Act.

### 5.2. Environment Protection Act 1986

The *Environmental Protection Act 1986* (EP Act) is Western Australia's primary environmental legislation governing environmental protection and impact assessment, which aims to prevent and control pollution and environmental harm.

#### 5.2.1. Part IV of the EP Act – Environmental Impact Assessment

Part IV of the EP Act provides for the consideration and assessment of proposals that may, or will, have a significant impact on the environment. The impact assessment process is administered by the Environmental Protection Authority Services (EPA Services) unit within the Department of Water and Environmental Regulation (DWER).

The Proposal was referred to the EPA on the 8<sup>th</sup> April 2021. In August 2021, the EPA determine the Proposal required assessment at the level of "Referral Information with additional information required" with a two-week public review period.

#### 5.2.2. Part V of the EP Act – Environmental Management

Part V of the EP Act, administered by DWER, provides a basis for environmental compliance and regulation which specifically encourages the promotion of best practice and waste minimisation and goals to ensure the operation of industrial facilities and activities protect environmental values through the application of works approvals, registrations, licences and clearing permits.

The EP Act requires a works approval to be obtained prior to construction of a prescribed premise and makes it an offence to cause an emission or discharge unless a registration or licence is held for the premise.

##### 5.2.2.1. Division 1 Pollution and environmental harm offences

Under Part V Division 1 of the EP Act, the DWER grants works approvals (for construction), and a licence or registration (for operation) for facilities prescribed in Schedule 1 of the *Environmental Protection*

*Regulations 1987* (EP Regulations). Prescribed premises are described as industrial premises that have the potential to cause emissions and discharges to air, land, or water.

The relevant prescribed premise category for the proposed pipeline and gas processing plant has been outlined further below in **Section 2.3**.

#### 5.2.2.2. Division 2 Clearing of native vegetation

Under Part V Division 2 of the EP Act, the clearing of native vegetation is an offence unless a clearing permit has been obtained or a valid exemption applies. The WER has been referred under s. 38 of the EP Act and, if assessed by the EPA, will therefore be exempt from requiring a native vegetation clearing permit.

### 5.3. Environmental Protection Regulations 1987

The EP Regulations outline relevant details regarding the regulations and requirements associated with different land uses and potential sources of pollution pursuant to the EP Act. Schedule 1 of the EP Regulations lists all the categories of prescribed premises and the relevant production or design capacity, where applicable.

The WER is considered to be a category 10 prescribed premises as outlined in Table 7.

**Table 7: Summary of prescribed premises category for proposed facility (EP Regulations)**

Category number	Description of category	Production or design capacity
10	Oil or gas production from wells: premises, whether on land or offshore, on which crude oil, natural gas or condensate is extracted from below the surface of the land or the seabed, as the case requires, and is treated or separated to produce stabilised crude oil, purified natural gas or liquefied hydrocarbon gases.	5,000 tonnes or more per year

### 5.4. Environmental Protection (Noise) Regulations 1997

The *Environmental Protection (Noise) Regulations 1997* (Noise Regulations) outline acceptable limits on noise emission levels for various activities and land uses. The Noise Regulations cover a wide range of human activities and are used by the DWER and local government to maintain acoustic amenity and health standards. They cover noise emitted on premises or public places that are received at another premise.

The proposed construction and operation of the gas processing plant and pipeline is expected to not exceed the maximum noise level permitted by the regulations at any of the surrounding noise sensitive receivers. Further detail is provided in **Section 6**.

### 5.5. Dangerous Goods and Safety Act 2004

The *Dangerous Goods and Safety Act 2004* (DG Act) regulates the safe storage, handling and transport of dangerous goods and is administered by the Department of Mines, Industry Regulation and Safety (DMIRS).

The WER will operate under DMIRS regulatory requirements as a Major Hazard Facility and Petroleum Pipeline due to the storage, handling, and transport of hazardous materials on site. The Proponent has prepared an Asset Management Plan (AMP) which details the inspection, maintenance and activities required to ensure safe, efficient, and environmentally sound operation and to minimise the risk of failure

## 5.6. Petroleum Pipelines (Environment) Regulations 2012 and Petroleum Pipelines Act 1969

The *Petroleum Pipelines (Environment) Regulations 2012* require the development and implementation of an Environment Plan to the satisfaction of the DMIRS for oil and gas operators. An Environment Plan (referred to as the Construction Environment Management Plan, E-PLN-034) has been prepared and demonstrates that all environmental risks and impacts associated with a petroleum activity are reduced to 'As Low As Reasonably Practicable' (ALARP), and at all times carried out in a manner consistent with the principles of ecologically sustainable development.

Under the *Petroleum Pipelines Act 1969* (PP Act), the Proponent will also require a pipeline licence to allow the pipeline to operate.

## 5.7. Dampier to Bunbury Pipeline Act 1997

The *Dampier to Bunbury Pipeline Act 1997* sets out the controls and responsibilities for access to the Dampier to Bunbury pipeline corridor (easement) including access authority and granting of access for third parties.

The West Erregulla meter station shall meet these requirements as part of connection to the DBNGP.

## 5.8. Stakeholder and Community Consultation

AGI Operations has undertaken stakeholder consultation with the following key stakeholders:

- Yamatji Marlpa Aboriginal Corporation (YMAC)
- Bundi Yamatji Aboriginal Corporation (BYAC)
- Tronox Holdings
- Shire of Irwin
- Shire of Three Springs
- Department of Biodiversity, Conservation and Attractions (DBCA)
- Department of Water and Environmental Regulation (DWER)
- Environmental Protection Authority Services
- Department of Agriculture, Water and Environment (DAWE)
- Department of Planning, Lands and Heritage (DPLH)
- Department of Premier and Cabinet (DPC)
- Department of Jobs, Tourism, Science, and Innovation (JTSI)
- Department of Mines, Industry Regulation and Safety (DMIRS).

A summary of specific consultation undertaken with key stakeholders to date is provided in Table 8.

Table 8: Stakeholder consultation register

Stakeholder	Date	Purpose of contact	Proponent response/outcome
Department of Premier and Cabinet	25 September 2020	Discussion	Discussion relating to Indigenous Land Use Agreements (ILUA) and project
	3 November 2020	Joint meeting with representatives from JTSI, DPC and DPLH	Project update
Department of Planning, Lands and Heritage (DPLH)	2 November 2020	Project briefing	Initial project briefing
	28 May 2020	Meeting update	Project update
	11 June 2020	Formal request for grant of land tenure for pipeline easement, processing plant lease and access right	Submitted Crown Land Enquiry Form
	16 July 2020	Project briefing update	Project update
	28 July 2020	Project briefing	Project update
	21 September 2020	Project briefing – email / phone	Project update
	3 November 2020	Joint meeting with representatives from JTSI, DPC and DPLH	Meeting to discuss operation of ILUA and tenure position for project
	2 February 2021	Teleconference	Confirmed State's position on grant of tenure
	5 February 2021	Email	Confirmed State's position on grant of tenure
Department of Jobs, Tourism, Science, and Innovation (JTSI)	15 July 2020	Meeting	Initial presentation of project and JTSI's facilitation role. JTSI made enquiries with DPLH and likely processes for grant of land tenure under ILUA.
	15 October 2020	Meeting	Discussed status of negotiations with BYAC
	3 November 2020	Joint meeting with representatives from JTSI, DPC and DPLH	Meeting to discuss operation of ILUA and tenure position for project
	21 January 2021	Meeting with EPA and JTSI	Project update meeting on referrals and timeframes
Department of Mines, Industry Regulation and Safety (DMIRS)	TBC	Project briefing – virtual meeting	Initial project briefing
Shire of Irwin	6 July 2020	Telephone call	Initial project discussions and access to Reserve 40805
Stakeholders – Tronox Holdings	15 September 2020	Principal Geologist	AGI Operations will design a suitable crossing for heavy equipment on Tronox tenement.

Stakeholder	Date	Purpose of contact	Proponent response/outcome
Department of Water and Environmental Regulation (DWER)	21 December 2020	Project briefing – virtual meeting with EPA services – pre-referral meeting	Project update meeting on referrals and timelines.
	8 April 2021	Project referred (submitted under EPBC)	Project approval commenced
Environmental Protection Authority (EPA)	21 December 2020	Project briefing with pre-referral document	Initial project meeting
	21 January 2021	Project update meeting with EPA and JTSI	Project update meeting
	8 April 2021	Project referred (submitted to EPA)	EPA approval process commences
Ministerial Briefings	25 August 2020	Minister and Staff	
	2 September 2020	Minister and Staff	
	26 August 2020	Office of the Premier	
Yamatji Marlpa Aboriginal Corporation (YMAC)	27 August 2020	Project briefing – in person briefing	Commence development of Heritage Agreement
	2 September 2020	Consultation on Heritage Agreement draft	Progress Heritage Agreement
		Further consultation on Heritage Agreement draft	Progress Heritage Agreement
	18 September 2020	Issued Heritage Notice for proposed survey	Formal request for heritage survey
	22 September 2020	Finalised Heritage Agreement	Signing of Heritage Agreement
	1 October 2020	Various discussions relating to heritage survey	Arranging heritage survey for week commencing 2 November 2020
	8 December 2020	Cultural survey undertaken by YMAC, Extent Heritage Advisors and 6 Southern Yamatji representatives	Cultural survey completed. Confirmed no ethnographic or archaeological sites were identified during survey.
Bundi Yamatji Aboriginal Corporation (BYAC)	28 July 2020	Initial briefing with BYAC representative in Adelaide (Teams Meeting)	PC to brief interim BYAC board
	26 August 2020	Letter to BYAC	Update on project matters and ongoing engagement
	-	Follow up meeting (via Teams)	Update on project matters and ongoing engagement
	6 October 2020	Letter to BYAC	Update on project matters and ongoing engagement

Stakeholder	Date	Purpose of contact	Proponent response/outcome
	16 October 2020	Presentation to BYAC board sub-committee (in person)	Discussions on project and ongoing engagement
	15 December 2020	Meeting with BYAC Board Sub Committee	Meeting with BYAC via Teams on project matters
	28 January 2021	Meeting with BYAC Negotiation Team	Meeting with BYAC via Teams on project matters
	28 January 2021	Forwarding heritage survey reports to BYAC	
	2 February 2021	Email	Confirmed discussions at DPLH
	August 2021	BYAC Board Meeting	Approval of Land Tenure
	13 December 2021	Letter	Letter of Consent to DPLH on land tenure

## Attachment 6A: Emissions and discharges

This section is intended to outline how the WER will manage potential emissions to air, land and water as part of the construction and operation of the gas plant and pipeline. Within this section, the following has been addressed:

- Discharges to air, including consideration of gas/particulate, dust, odour, and noise emissions
- Discharges to water
- Discharges to land
- Waste storage and disposal

Table 9 provides a summary of the environmental management considerations and as part of addressing the above, each has been considered in the context of impacts during construction and operation



Table 9: Outline of environmental management considerations during construction and operation of the WER

Ref.	Factor/type of discharge	Relevance	Nearby receptors	Management of environmental considerations	
				Construction	Operation
<b>Discharges to air</b>					
A1	Air quality	Emissions to the air have the potential to cause harm to humans when they consist of contaminants at harmful concentrations. The <i>National Environment Protection (Ambient Air Quality) Measure (NEPM)</i> (2016) is used as the national standard to monitor ambient air quality.	Site personnel	Air emissions associated with the construction of the WER will be limited to general construction machinery and vehicles.	Operational air emissions will be associated with venting purging and maintenance, general compressor operation and failure of the relief valve. All of which have the potential to decrease the local air quality.  The project is predicted to contribute peak annual emissions of up to 96,319 t CO <sub>2</sub> -e. All other airborne Pollutants of Significance granted by the operation of the plant are below acceptable environmental and workplace exposure levels as shown in the Emissions Impact Assessment – Air Dispersion Modelling (Attachment 8). A Greenhouse Gas Management Plan ( <b>Attachment 8</b> ) has been prepared to ensure the emissions are appropriately managed to keep within acceptable levels.
A2	Dust	Dust is an aerosol formed by mechanical portioning of bulk material into airborne fines. Dust emissions can affect the health and amenity of the surrounding sensitive receptors and the environment. Potential dust generating activities associated with the project include the construction of the gas plant and associated infrastructure and vehicle	Site personnel	The prescribed premises boundary is appropriately separated from sensitive receptors, with no populated dwelling within a 5 km radius. Nonetheless, dust will be managed during construction through the implementation of standard operational dust management measures outlined in the Proponent's CEMP ( <b>Attachment 8</b> ).	No significant dust emissions will be produced by the proposed gas plant and pipeline during operation. The facility will be visited regularly by operators and dust generation is likely to be limited to the use of vehicles in the Development Envelope during inspections.

Ref.	Factor/type of discharge	Relevance	Nearby receptors	Management of environmental considerations	
		movements on unsealed roads within the prescribed premises boundary.			
A3	Odour	The emission of odours, particularly during windy conditions, has the potential to cause nuisance to nearby sensitive receptors. No significant odour emissions are expected from the proposed facility during construction or operation.	Site personnel	No odour emissions are expected to be produced during the proposed construction works.	<p>Odour emissions produced during operation are anticipated to be minimal and would predominately be associated with inadequate management of domestic waste generated on the site, transport of odorant or sporadic flaring of odorised gas.</p> <p>The following management actions will be followed as outlined in the CEMP (<b>Attachment 8</b>):</p> <ul style="list-style-type: none"> <li>• Compliance to all dangerous goods requirements specifically relating to odorant handling</li> <li>• Implementation of spill contingency plans</li> <li>• Implementation of Emergency Response for Odorant Spill procedure</li> <li>• Trained and competent personnel on Development Envelope</li> <li>• Waste incineration located away from sensitive receptors including monitoring and register of use.</li> </ul>
A4	Noise	The EP Act defines “noise” as including “vibration of any frequency, whether transmitted through air or any other physical medium”. However, noise most commonly refers to the human perception of unwanted or unpleasant	Site personnel Farm residence approximately 5 km east of the facility	Construction activities will be managed in accordance with the <i>Environmental Protection (Noise) Regulations 1997</i> , and in particular Regulation 13 for construction sites. As a result, the following measures will be conducted during construction:	<p>The operation of the WER will have limited impacts to environmentally sensitive receptors due to its remote location.</p> <p>The implementation of mufflers on the equipment will ensure that the noise</p>

Ref.	Factor/type of discharge	Relevance	Nearby receptors	Management of environmental considerations	
		sound. Noise and vibration have the potential to adversely affect environmental values and the acoustic amenity and health standards of people and need to be managed appropriately to minimise impacts (EPA 2014). Noise generated within the WER will be associated with vehicle movements on unsealed roads, construction of gas plant and infrastructure and plant and machinery operations.		<ul style="list-style-type: none"> <li>No night works unless authorised through project risk assessment</li> <li>Reduce pressure to as low as possible prior to venting</li> <li>Noise controls including notification to landholders/stakeholders prior to commencement of potentially noisy activities</li> <li>Weekly inspections during construction activities to review noise controls.</li> </ul> <p>Through the implementation of these the noise received at the farm residence is unlikely to exceed 18 dB (L<sub>A10</sub>). While the noise levels at the facility boundary is unlikely to exceed 60 dB (L<sub>A10</sub>). Both of which comply with the standards outlined Environmental <i>Protection (Noise) Regulations 1997</i>. Further information is presented in Talis Consultants Noise Impact Assessment (<b>Attachment 8</b>)</p>	emitted by the facility does not exceed the requirements presented in the <i>Environmental Protection (Noise) Regulations 1997</i> .

**Discharges to water**

W1	Surface water contamination (stormwater/spills and leakage/run-off from plant)	Surface water runoff has the potential for increased sediment load during periods of intense rainfall, which can lead to the contamination of surface water if the storage and handling of hazardous materials and waste is inappropriate.	<p>Sand Plain Creek is located approximately 6 km north of the project Development Envelope.</p> <p>Several small ephemeral watercourses draining either to the Swan Coastal</p>	<p>No discharges and subsequent contamination of water bodies are likely to occur during the proposed construction works due to the separation distance to Sand Plain Creek. As there are no permanent surface water features within the Development Envelope, there will be no interaction with surface waterbodies that would disturb/impact flow channels in the area.</p> <p>Construction activities will also be performed outside of the wet season to reduce the risk of flooding in the area.</p>	<p>Discharges to surface water are unlikely to occur during operation of the facility. The potential activities resulting in surface water contamination are:</p> <ul style="list-style-type: none"> <li>Spills or leakage at site</li> <li>Runoff water from the plant.</li> </ul> <p>The stormwater drainage system will be designed in accordance with Australian Rainfall and Runoff (ARR), which will ensure stormwater runoff discharge and subsequent localised ponding is reduced. Implementation of the Stormwater</p>
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Ref.	Factor/type of discharge	Relevance	Nearby receptors	Management of environmental considerations	
			Plain, Arrowsmith River or Irwin River.	During construction works, best practice methods will be employed, such as erosion and sediment controls and the possible use of flow diversion and bunding structures in severe weather conditions. This will minimise the potential of surface water contamination throughout the plant's lifecycle.	Management Plan ( <b>Attachment 8</b> ), in line with the DWER guidelines, will assist in managing local impacts at the time of the activity and will minimise duration of works to reduce the potential for impact.

#### Discharges to land

L1	Groundwater contamination (infrastructure failure)	Surface water runoff has the potential to contaminate groundwater due to inappropriate storage and handling of hazardous materials and waste.	Yarragadee Formation and the Lesueur Sandstone aquifers.	No discharges and subsequent contamination of groundwater are likely to occur during the proposed construction works. All waste and surplus materials associated with the construction of the facility will be removed from the site and disposed of at the appropriate class landfill facility.	Groundwater contamination may occur due to seepage from fuel storage tanks and bulk chemical storages located on site. The Proponent has procedures and processes in place to ensure any minor spill does not possess the potential to enter the environment as outlined in the CEMP ( <b>Attachment 8</b> ).
L2	Soil Contamination (chemical, oil or lubricant spills)	Chemicals, oils, and lubricants will be kept on site for facility maintenance and the unauthorised discharge of these highly toxic or hazardous substances can impact on the quality of the surrounding environment.	Groundwater Native flora and fauna populations	During construction all chemicals and oils will be stored in appropriate facilities with impermeable floors and bunding. Drip trays and other containment mechanisms will be utilised when chemicals and oils have to be used in the construction of the facility.	Soil contamination is unlikely to occur during Operations due to the small amount of these substances being utilised. However, all storage facilities and maintenance vehicles will be equipped with spill response equipment. All high-risk contamination sites, such as the vehicle wash down point and refuelling site will also be bunded and contain oily water separators within the wastewater management pipes. The Proponent's Oil Spill Response Procedure is provided in the CEMP ( <b>Attachment 8</b> ).

Ref.	Factor/type of discharge	Relevance	Nearby receptors	Management of environmental considerations	
<b>Waste storage and disposal</b>					
WSD1	Domestic and Construction waste (solid and liquid)	Solid and liquid waste have the potential to contaminate land, surface water and groundwater within and around the site if they are discharged in an unsuitable and uncontrolled manner. This is managed and regulated by the <i>Environmental Protection Regulations 1987</i> to ensure there are no negative impacts to sensitive receptors. The primary liquid and solid waste associated with the facility is domestic.	Site personnel Native flora and fauna populations and individuals	<p>During construction works, all waste will be captured and stored in temporary bins and storage units until it is disposed of by a licensed contractor to an appropriate waste facility.</p> <p>Construction may also produce other forms of both solid and liquid waste due to inadequate management of domestic waste generated on site through inadequate disposal and storage methods. Inadequate containment of sewage may also contribute to excess waste on site if managed inappropriately.</p> <p>Controls for waste on site are outlined in the CEMP (<b>Attachment 8</b>).</p>	<p>During commissioning and early operation operators will be present on a 24 hour, 2 operators per shift basis, after this time operators will still be required, although only on a 10-hour day shift, as the plant will primarily be run through process automation and remote systems.</p> <p>The proposed effluent system will include two male and one female cubical, an ambulant toilet, a septic tank and tanker connection, all of these items will be installed to the Shire of Three Springs requirements, while also meeting AS1546 [1]. The waste will be removed via trucking provided by a licensed contractor, ensuring that no effluent is discharged into the environment.</p>
WSD2	Evaporation Pond	The contaminates bonded to the water molecules will slowly precipitate out as the water evaporates. This will lead to a build-up of contaminate solids at the bottom of the pond.	Site personnel Native Flora and Fauna populations and individuals.	No contaminated water is likely to be discharged into the evaporation pond during the proposed construction works. All waste materials associated with the construction of the facility will be removed from the site and disposed of at the appropriate facility.	During operations any build-up of solids within the evaporation pond will be removed on a regular basis by a qualified contractor and removed to an appropriate offsite facility.

## 6.1. Risk assessment and controls

The comprehensive design and proposed management, coupled with the Proponent's experience in managing and operating existing facilities, means that the construction and operation of the WER will be unlikely to result in discharges or emissions that could be considered harmful or detrimental to the environment or human health.

A risk assessment table (Table 10) has been prepared to assist with quantifying the risk associated with each of the factors identified and is based on Table 2 of the *Guidance Statement: Risk Assessments* (DER 2016).

**Table 10: Risk matrix used to identify risks (DER 2016)**

Likelihood of risk	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Each of the factors outlined in Section 6 and their associated risks been assessed and are summarised in for Table 11 for construction activities and for Table 12 operations. The colour of the 'anticipated risk' corresponds with the applicable 'likelihood of risk' and 'level of consequence' associated with each factor, as per Table 10.

Table 11: Risk rating associated with Construction and Commissioning management issues

Discharge type	Specific emission (Construction & Commissioning)	Source of emission during construction/commissioning	Sensitive receptor & proximity to WER	Summary of proposed controls	Residual risk
Discharges to air	Diesel combustion	Vehicles and construction equipment. Flaring of gases during the commissioning of facility	Site personnel. No residences or other sensitive receptors in proximity.	Air emissions generated during construction will be associated with typical exhaust emissions from vehicles or construction equipment. Diesel usage will be monitored to ensure vehicles and equipment are running appropriately.	Low
	Dust	Vehicle movements and construction processes (clear & grade, trenching & excavation).		The duration of construction works will be restricted, and incidental dust generation will be managed in accordance with the Proponent's CEMP ( <b>Attachment 8</b> ). Measures include: <ul style="list-style-type: none"> <li>- Speed limits for vehicles (80km/hr unsealed roads) and movements limited to established tracks</li> <li>- Minimising trenching &amp; excavation areas to &lt;20m at a time.</li> <li>- Dust suppression methods implemented as required (water cart/truck)</li> <li>- Ensuring vehicles with dust emitting loads are covered during movements</li> <li>- Complaints management system implemented</li> </ul>	Low
	Odour	None identified		No odorous discharges are anticipated during construction.	Low
	Noise	Vehicles and construction equipment. Flaring of gases during commissioning of facility		Construction will be managed in accordance with the Noise Regulations. Measures include: <ul style="list-style-type: none"> <li>- No night construction works</li> <li>- Complaints management system implemented</li> <li>- Reduced pressure during venting of gases</li> </ul>	Medium
Discharges to water	Surface water contamination	Runoff from construction entering minor drainage lines and infiltration pond spills/overflows Pressurised water from the commissioning of the pipeline	No defined watercourses exist within 3 km of the prescribed premises boundary.	Construction works will be timed to avoid periods of higher rainfall (i.e. outside of the wet season). Best practice construction methods and stormwater management will be implemented in accordance with the Proponent's CEMP ( <b>Attachment 8</b> ) Temporary sumps will also be constructed at the start of the construction phase to capture all runoff from the site generated during construction	Medium

Discharge type	Specific emission (Construction & Commissioning)	Source of emission during construction/commissioning	Sensitive receptor & proximity to WER	Summary of proposed controls	Residual risk
			However, the pipeline will intersect several minor surface water drainage features.	and commissioning. The water within each will evaporate over time. The level of contamination in this water is predicted to be minimal.	
Discharges to land	Groundwater contamination	Chemical, Oil or Lubricant spills	Depth to groundwater is >130 mbgl at the WER	No impacts to groundwater are expected during construction as these are considered to be shallow works that will not intersect the groundwater level.	Low
	Soil Contamination	Chemical, Oil or Lubricant spills	Native flora and fauna	Appropriate spill response kits will be available on site and in all vehicles undertaking work where there is the potential for the spill of hazardous or toxic substances. All spills will be contained as soon as possible and clean up actioned as soon as feasible.	Low
	Acid Sulphate Soils	None identified	Depth to groundwater is >130 mbgl at the WER  Several minor drainage features intersect the pipeline.	Where possible, areas mapped as moderate to high risk of containing acid sulphate soils will be avoided. Ensure the sedimentation pond will be constructed to a depth which will not disturb any acid sulphate soils  Any exposed acid sulphate soils will be treated by the addition of an alkaline material (such as agricultural lime) to neutralise the material or immediately reburied at its original depth.	Low
	Domestic and Construction waste (Solid and Liquid)	Portable Toilets and Construction Site	Native Flora and Fauna  Groundwater  Surface water	All waste generation will be reduced as far as possible.  All construction waste will be stored in appropriate storage facilities, any chemicals will be stored in a facility with bunding and impermeable flooring.	Low



Discharge type	Specific emission (Construction & Commissioning)	Source of emission during construction/commissioning	Sensitive receptor & proximity to WER	Summary of proposed controls	Residual risk
			Site Personnel	<p>All domestic waste will either be stored in covered bins or the portable tank reservoir.</p> <p>All wastes will be regularly removed by qualified contractor to an appropriate offsite facility.</p>	

Table 12: Risk rating associated with Operational management issues

Discharge type	Specific emission (Operational)	Source of emission during operations	Sensitive receptor & proximity to WER	Summary of proposed controls	Anticipated risk
Discharges to air	Fugitive gas emission – station flare unit and vents	Venting and purging, failure of relief valves and commissioning pipeline operation	Site personnel. No residences or other sensitive receptors in proximity.	Vent height designed to safely disperse vented gas with safe gas concentration at ground level. Implement ongoing controls specified in the GHGMP ( <b>Attachment 8</b> ) to minimise plant emissions, including: Ensuring manual valves, instrumentation and control valves, isolation valves, piping and equipment are designed, tested, supplied, and installed as per the appropriate codes, standards and company install procedures. Utilising line of sight gas detection equipment and responding in a timely manner to all gas leaks and uncontrolled emissions.	Low
	Dust – nuisance to works and sensitive receptors	Vehicle usage, pipeline maintenance, access track maintenance	Farming Residence, approximately 5 km east of facility	Reduced speeds on unsealed roads Utilisation of water carts for the suppression of dust generated from stockpiles during maintenance.	Low
	Odour impacts to sensitive receptors	Flaring of odourised gas, domestic waste, and oil spills	Farming Residence, approximately 5 km east of facility	Compliance to all dangerous goods requirements specifically in relation to odorant handling Closed system design for odorant transfer and injection	Low
	Noise – station flare unit and vents  Operational equipment including the mobile plant	Fans, pumps, compressors, exhausts, heaters, and coolers.	Site personnel. No residences or other noise sensitive receptors within 5 km of site	Noise attenuators have been installed on the vents to ensure compliance with <i>Environmental Protection (Noise) Regulations 1997</i> . Reduce pressure to as low as a possible prior to venting to minimise noise Standard design and operating procedures to minimise noise including mobile plant and blasting Notification to landholders/stakeholders prior to commencement of potentially noisy activities.	Low
Discharges to water	Surface water contamination	Runoff waters coming into contact with plant infrastructure,	No defined watercourses exist within 3 km of the prescribed premises	Hydrocarbon wastes will be treated and disposed of as oil and water will be discharged to the site evaporation pond. Surface water (rainfall) is designed to be captured and channelled through the plant to the infiltration pond to allow for controlled infiltration back into	Medium

Discharge type	Specific emission (Operational)	Source of emission during operations	Sensitive receptor & proximity to WER	Summary of proposed controls	Anticipated risk
		including fuel & chemicals.	boundary. However, the pipeline will intersect several minor surface water drainage features.	the local water system. The infiltration pond is designed to a 1 in 100 year rainfall event for the region. Bunds that collect water will have a controlled, locked, manual release (drain valve) to ensure potentially contaminated water is prevented from entering the infiltration pond system.	
Discharges to land	Groundwater contamination	Seepage of produced formation water stored within the evaporation pond in addition to seepage from fuel storage tanks and bulk chemical storages located onsite.	Depth to groundwater is >130 mbgl at the WER	Impacts are considered to be low to negligible due to the depth to groundwater (>130 mbgl) measured in the vicinity to the WER.  Wastewater from the reverse osmosis units is pumped directly into the lined evaporation pond.  Wastewater from the accommodation and control room facilities will be directed to a leach drain where it mixes with septic wastewater from the accommodation and control room facilities.	Low
	Soil Contamination	Chemical, Oil or Lubricant spills	Native flora and fauna	Appropriate spill response kits will be available on site and in all vehicles undertaking work where there is the potential for the spill of hazardous or toxic substances.  All spills will be contained as soon as possible and clean up actioned as soon as feasible.  Alarm systems will be installed on all hazardous substance storage units as well as the fuel storage facility. Both of which will be bunded.	Low
	Domestic Waste	Onsite Ablutions and Accommodation	Native Flora and Fauna Groundwater Surface water Site Personnel	All personnel shall abide by the Waste Management Procedure as outlined in the CEMP ( <b>Attachment 8</b> ). This will include <ul style="list-style-type: none"> <li>All waste will be reduced as much as practicable.</li> <li>Covering over skip bins</li> <li>Operational sewage shall be managed through leach drains and a septic system</li> <li>Road Patrols and other surveillances will identify and remove any waste within the pipeline corridor.</li> </ul>	Low

Discharge type	Specific emission (Operational)	Source of emission during operations	Sensitive receptor & proximity to WER	Summary of proposed controls	Anticipated risk
	Excess Solid Material	Sedimentation Pond	Native Flora and Fauna Groundwater Surface water Site Personnel	<ul style="list-style-type: none"> <li>All waste will be captured and stored in appropriate storage facilities and removed by a licenced contractor to a licenced waste facility on a regular basis.</li> </ul> <p>The evaporation pond will be regularly monitored and if during monitoring an excessive amount of Solid Waste Material has built up it will be removed by a qualified contractor and removed to an appropriate offsite facility.</p>	Low

## Attachment 7: Siting and location

This section provides an outline of the environmental values and attributes associated with the proposed Development Envelope and/or nearby areas and includes consideration of 'specified ecosystems' as defined in *Guidance Statement: Environmental Siting Part V Division 3 Environmental Protection Act 1986 November 2016* (DER 2016). Specified ecosystems generally refer to areas of high conservation value and special significance and have been summarised in Section 7.12.

### 7.1. Climate

The climate of the Development Envelope is characterised by a Mediterranean climate with hot, dry summers and mild, wet winters (Mitchell et al. 2002). Long-term rainfall data was obtained from Dongara weather station (station number: 8044, 1884-2021), located approximately 50 km north-west of the survey area. The average annual rainfall is 454.4mm, with most rainfall occurring during the winter months of June, July, and August. Mean temperature data was obtained from Geraldton Airport (station number: 8315, 2011- 2021), located approximately 70 km south-west, with mean maximum temperatures ranging from 21.9 °C in July to 35.6 °C in February and mean minimum temperatures ranging from 18.9 °C in July to 31.0 °C in January (BoM 2021).

### 7.2. Topography

The topography of the Development Envelope ranges from 50 to 230 m Australian Height Datum (AHD), sloping downwards towards the western corner of the Development Envelope boundary. The highest elevation occurs within the corridor of the proposed gas pipeline in the eastern portion of the Development Envelope boundary towards the gas processing plant.

### 7.3. Regional geology and soils

The Development Envelope is situated within the Geraldton Sandplain Bioregion of the Interim Biogeographic Regionalisation of Australia (IBRA), which mainly comprises proteaceous shrub-heaths, rich in endemic species, on the sandy earths of an extensive, undulating, lateritic sandplain (Desmond and Chant 2001). More specifically, the Lesueur sandplain subregion comprises coastal Aeolian and limestones, Jurassic siltstones, and sandstones of central Perth Basin (Desmond and Chant 2001). Alluvials are associated with drainage systems and there are extensive yellow sandplains in south-eastern parts. Shrub-heaths rich in endemics occur on a mosaic of lateritic mesas, sandplains, coastal sands, and limestones and heath on lateralised sandplains along the subregions north-eastern margins (Desmond and Chant 2001).

The Department of Primary Industries and Regional Development (DPIRD) has mapped and described the land systems of Western Australian rangelands, providing comprehensive description of biophysical resources, including soil and vegetation condition. Two land systems occur within the Development Envelope (Table 13), with the Mount Adams land system accounting for approximately 88% of the Development Envelope.

**Table 13: Land systems within the Development Envelope**

Land system	Land system description	Total extent within the Geraldton Sandplains bioregion (ha)	Total extent within the Development Envelope (ha)
Mount Adams System (224Ma)	Gently undulating sandplain with low gravel ridges and occasional laterite breakaways.	86,963.2	187.3
Correy System (221Cy)	Broad sandy alluvial fan of the lower Arrowsmith River. Pale deep sands predominate with grey shallow sandy duplexes, moderately deep sandy gravels with yellow deep sands less common. Banksia woodlands and heathlands.	27,252.6	25.0
<b>TOTAL</b>		<b>114,214.8</b>	<b>212.2</b>

## 7.4. Hydrology

### 7.4.1. Surface water

The Development Envelope extends across the catchment divide of the Arrowsmith and Irwin River Catchments. The Arrowsmith Catchment (160,418 ha) contains the Arrowsmith River, which flows approximately 15 km to the south of the Development Envelope. The Irwin River Catchment (607,253 ha) incorporates four main tributaries of the Irwin River that discharge to the coast approximately 30 km northwest of the Development Envelope.

The Development Envelope is devoid of any significant permanent surface water features, however small ephemeral drainage lines do dissect the Development Envelope and surrounding area, draining either westwards from the Arrowsmith Region onto the Swan Coastal Plain, or north or south towards the two river systems (RPS 2011). The nearest watercourse is Sand Plain Creek approximately 6 km north of the Development Envelope, a tributary to the Irwin River (RPS 2011). The Development Envelope is not within any Surface Water Proclamation Areas pursuant to the *Rights in Water and Irrigation Act 1914* (RiWI Act). The nearest proclaimed area is the Greenough River and Tributaries Catchment Area, located approximately 60 km to the north of the Development Envelope.

The Development Envelope is not situated within a mapped 100 Year Floodplain Development Control Area. The nearest 100 Year Floodplain Development Control area is the discharge point of the Irwin River to the coastline.

### 7.4.2. Groundwater

The Development Envelope is located within the Twin Hills Groundwater sub-area where two major regional groundwater resources exist: the Yarragadee Formation (the largest aquifer in the Perth Basin), and the underlying Lesueur Sandstone (ELA 2020). The Cattamarra Coal Measures and the Eneabba Formation host smaller, localised aquifers. Flow patterns for the upper Yarragadee indicate flow in a general westerly direction beneath the Development Envelope. The water table is mostly flat above the 80m contour but dramatically drops off to the west towards the Swan Coastal Plain.

The Development Envelope is also located within the Arrowsmith Groundwater Management Area, as proclaimed under the *Rights in Water and Irrigation Act 1914* (RPS, 2011). Under the Act a licence is required from the DWER before water can be taken from a watercourse or groundwater aquifer. No

impacts to groundwater (quantity and quality) are expected due to the construction of the pipeline and processing plant as these are considered to be shallow works (< 5 mbgl) and will not intersect groundwater level (> 130 mbgl).

There are no Public Drinking Water Source Areas (PDSWA) within proximity to the project (DWER 2019). The nearest PDSWA is the Allanooka-Dongara Water Reserve, which is approximately 21 km north of the Development Envelope.

## 7.5. Flora and vegetation

### 7.5.1. Vegetation

Native vegetation is described and mapped at different scales in order to illustrate patterns in its distribution. The Development Envelope is located within the Geraldton Sandplains bioregion (Lesueur Sandplain subregion, GS3). The Geraldton Sandplains bioregion (GS3) is composed mainly of proteaceous scrub-heaths, rich in endemics, on the sandy earths of an extensive, undulating, lateritic sandplain (Desmond and Chant 2001).

The majority of intact vegetation is considered to be in Excellent condition based on the Keighery (1994) vegetation scale provided in the EPA *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016).

### 7.5.2. Threatened or priority ecological communities

No vegetation communities delineated within the Development Envelope were inferred to represent any potential conservation significant communities listed under the Commonwealth EPBC Act, the BC Act or by the DBCA.

### 7.5.3. Flora

One threatened flora species, *Paracaleana dixonii* (Sandplain Duck Orchid, listed as Endangered under the EPBC Act and Vulnerable under the BC Act) has been previously recorded within the Development Envelope from a database search but was not recorded in either the late 2020 (ELA) or the late 2021 (Mattiske Consulting) targeted flora survey. Nevertheless, the Proponent has referred the proposed action to the DAWE pursuant to the EPBC Act to consider the potential impact of clearing of 79.7 ha of potential habitat for this cryptic species.

Eight priority flora species were recorded by ELA (2021) within the Development Envelope, the impacts on these species are being considered as part of the s.38 assessment by the EPA pursuant to the EP Act.

## 7.6. Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are defined in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005* under section 51B of the State EP Act. ESA's include areas declared as World Heritage, included on the Register of the National Estate, defined wetlands, and vegetation containing rare (Threatened) flora and TECs. ESAs are prescribed under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* and have been identified to protect native vegetation values of areas surrounding significant, threatened, or scheduled flora, vegetation communities or ecosystems.

No ESAs occur within the Development Envelope.

### 7.7. Conservation areas and reserves

No conservation areas or reserves intersect the Development Envelope. The nearest conservation areas are the Yordanogo Nature Reserve and Beekeepers Nature Reserve, located approximately 4 km south and 15 km south-west from the Development Envelope respectively.

### 7.8. Terrestrial Fauna

Database searches have identified 46 conservation significant fauna species as possibly occurring within the Development Envelope. Of these, only four conservation significant fauna species were identified as potentially occurring, based on the species habitat preferences and proximity of records to the survey area. The conservation significant fauna species identified include: Carnaby's Cockatoo (*Calyptorhynchus latirostris*; Endangered under the EPBC Act and BC Act), Fork-tailed Swift (*Apus pacificus*; Migratory under the EPBC Act and BC Act), Grey Falcon (*Falco hypoleucos*; Vulnerable under the BC Act) and the Peregrine Falcon (*Falco peregrinus*; Other specially protected species under the BC Act).

The Grey Falcon, Peregrine Falcon and Fork-tailed Swift have diverse and wide-ranging habits, including those which occur within the Development Envelope. However, these species are not considered likely to use the Development Envelope regularly due to lack of access to appropriate nesting habitat, water and preferred and abundant prey species.

The Proponent has referred the proposed action to the DAWE pursuant to the EPBC Act to consider the potential impact of clearing of 37.7 ha of low-quality foraging habitat for Carnaby's Black Cockatoos.

### 7.9. Historic land uses and potential contamination

The Development Envelope is not classified as a contaminated site pursuant to the *Contaminated Sites Act 2003*. The nearest contaminated site is Lot 15 in Port Denison, located approximately 30 km northwest of the proposal Development Envelope.

The proposal has the potential to contaminate surface water and groundwater due to storage and handling of hazardous materials and waste. A Stormwater Management Plan (Enscope 2021) has been developed as part of the planning approval requirements and addresses the management of stormwater and water flow across the plant location (further discussed in **Section 7**).

### 7.10. Proximity of sensitive receptors

The nearest populated centres include Mingenew and Dongara, located approximately 25 km north-east (approximately 35 km by road) and approximately 30 km north-west (approximately 70 km by road) from the Development Envelope respectively. There are no sensitive light or noise receptors such as populated dwellings within a 5 km radius of the proposed prescribed premises boundary.



## 7.11. Heritage values

### 7.11.1. Aboriginal heritage

There has been ongoing consultation with the Bundi Yamatji Aboriginal Corporation to develop a Heritage Agreement and the completion of a cultural heritage survey with Yamatji Marlpa Aboriginal Corporation (YMAC). The cultural heritage survey was completed by YMAC, Extent Heritage Advisors and 6 Southern Yamatji representatives in December 2020 and confirmed that no ethnographic or archaeological sites were recorded within the Development Footprint.

The Proponent continues to consult with relevant stakeholders throughout the environmental approvals processes.

### 7.11.2. Non-Indigenous heritage

No registered European heritage values were detected within the Development Envelope through a search of the WA Heritage Council Database – *InHerit* (DPLH 2021b). The closest sites of European Heritage: Shady Grove Homestead (place number 12315) and Willow Green (place number 18091), are both located approximately 15 km northeast and north respectively from the Development Envelope.

## 7.12. Summary of specified ecosystems

Based on the available information, a number of values are identified within the Development Envelope (or vicinity of the Development Envelope) that would be considered ‘specified ecosystems’, as defined in *Guidance Statement: Environmental Siting* (DER 2016b). A summary of the ‘specified ecosystems’ has been provided in Table 14.

**Table 14: Summary of specified ecosystems and applicability to the Development Envelope**

Specified Ecosystem	Applicability to the Development Envelope
Ramsar sites in Western Australia	None identified within the Development Envelope or nearby. Not applicable.
Important wetlands – Western Australia	Not applicable.
South Coast Significant Wetlands	Not applicable.
Geomorphic Wetlands	Not applicable.
Bush Forever, regional open space, or proposed regional open space	Not applicable.
Western Swamp Tortoise Habitat	Not applicable.
Rottnest Island Reserves Nature Reserve	Not applicable.
Fish Habitat Protection Zone	Not applicable.
Waterways Conservation Area	Not applicable.
Peel Harvey Environmental Protection Policy	Not applicable.
State Environmental Policy Cockburn Sound	Not applicable.
Threatened and Priority Ecological Communities	No federally listed threatened ecological communities (TECs) or state listed threatened or priority ecological communities identified within the Development Envelope. Not applicable.

Specified Ecosystem	Applicability to the Development Envelope
Threatened and Priority Flora	<p>One EPBC listed threatened flora species, <i>Paracaleana dixonii</i>, has previously been recorded within the Development Envelope. The proposed action has been referred to the DAWE for consideration of the impact of clearing of potential habitat for this species.</p> <p>Eight flora species listed as Priority by DBCA were recorded within the Development Envelope.</p>
Threatened and Priority Fauna	<p>Low-quality foraging habitat for one EPBC listed threatened fauna species, Carnaby's Black Cockatoo, has been identified within the Development Envelope. The proposed action has been referred to the DAWE for consideration of the impact of clearing of potential habitat for this species.</p>
Surface Water Features	<p>The nearest watercourse is Sand Plain Creek located approximately 6 km north of the Development Envelope.</p>
Groundwater contours	<p>Depth to groundwater within the Yarragadee Aquifer is 1,700 mbgl. The water table is mostly flat above the 80m contour but dramatically drops off to the west towards the Swan Coastal Plain.</p>
Waterbodies	<p>Sand Plain Creek is located approximately 6 km north of the Development Envelope.</p>
Acid Sulfate Soils (ASS) risk	<p>Not applicable.</p>
Contaminated sites	<p>The Development Envelope is not classified as a contaminated site under the <i>Contaminated Sites Act 2003</i>.</p>
Public Drinking Water Sources Areas	<p>Not applicable.</p>
RiWi Act Surface Water Areas and Irrigation Districts	<p>Not applicable.</p>
RiWi Act Groundwater Areas	<p>The project is located within the Arrowsmith Groundwater Management Area and will require a licence before water can be taken from a watercourse of groundwater aquifer.</p>

## Attachment 8: Additional information submitted

Attachment 8A: Construction Environmental Management Plan (AGIG 2021)

## Attachment 8B: Stormwater Management Plan (Enscope 2021)

## Attachment 8C: Emissions Impact Assessment – Air Dispersion Modelling (EAQ Consulting 2021)

## Attachment 8D: Noise Impact Assessment (Talis Consultants 2021)

## Attachment 8E: Greenhouse Gas Management Plan (AGIG 2021)

## Attachment 10: Works Approval Fee Calculations



## DWER Works Approval – West Erregulla

### Attachment 10

#### Calculation of weight – Category 10 volume of gas processed

Combustion of Natural Gas	890,570 <sup>1</sup>	kJ/mol
Molecular weight of natural gas	19	g/mol
Natural Gas Volume processed	87	TJ/Day
Moles in 87 TJ	97,690	Mol
KJ/TJ	1,000,000,000	conversion factor
Tonnes of Natural gas	1,856	tonnes per day
Tonnes of Natural gas	677481.8	tonnes per year

Calculations used:

Moles in 87 TJ = (87 x KJ/TJ Factor)/Combustion of natural gas

Tonnes of methane = (Moles in 87 TJ x molecular weight) / 1000

#### **Cost**

Cost of project - > \$100,000,000

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<sup>1</sup> CRC Handbook of Chemistry and Physics

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