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WAITSIA GAS PLANT GEOTECHNICAL SURVEYS ENVIRONMENT PLAN SUMMARY

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1.0 TERMS DEFINITIONS AND ABBREVIATIONS

Acronym	Definition
ALARP	As Low As Reasonably Practicable
DBYD	Dial Before You Dig
DMIRS	Department of Mines, Industry Regulation and Safety (previously Department of Mines and Petroleum (DMP))
DPF	Dongara Production Facility
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESA	Environmentally Sensitive Area
GDE	Groundwater Dependent Ecosystem
HSEQ	Health, Safety, Environment and Quality
LAA	Land Access Agreement
MyOSH	HSEQ Database
OSCP	Oil Spill Contingency Plan

2.0 CONTACT DETAILS

MEPAU External Affairs Manager

PO BOX 574
PERTH 6872

T: (08) 6364 4747
E: externalaffairs@mepau.com.au

3.0 INTRODUCTION

AWE Perth Pty Ltd is a wholly owned subsidiary of AWE Limited. Mitsui E&P Australia Pty Ltd and AWE Ltd are wholly owned subsidiaries of Mitsui & Co. Ltd. Combined they form the unified brand MEPAU.

MEPAU has a Perth based operations office and one active gas production facility in the Mid-West region, the Xyris Production Facility (XPF), with the Dongara Production Facility (DPF) and Hovea Production Facility (HPF) active in part and with Central Control at DPF. The Woodada Gas Production Facility is in care and maintenance. MEPAU also has an operator presence in New Zealand.

In addition to these operations, MEPAU is a non-operating joint venture partner with petroleum activities in Australia's onshore (Queensland) and offshore regions (Western Australia and Victoria) and Indonesia.

MEPAU has plans to further develop the existing Waitsia Gas Field located 18 km east-southeast of Dongara by expanding the existing facilities and building new facilities to provide increased quantities of natural gas into the market. The Proposed Waitsia Gas Project Stage 2A development includes the construction of a new natural gas processing facility (Waitsia Gas Plant) to provide conditioning of raw gas to sales gas quality. An investigation of the proposed Waitsia Gas Plant locations is required to provide geotechnical information to allow the design of the facility infrastructure.

3.1 Purpose

The Waitsia Gas Plant Geotechnical Surveys (the activity) will be conducted in the Shire of Irwin within Production Licence L1. The permit is a joint venture between:

- AWE Perth Pty Ltd
- Lattice Energy Resources (Perth Basin) Pty Limited
- APT Parmelia Pty Ltd

MEPAU is the nominated operator for the activities under this Waitsia Gas Plant Geotechnical Surveys Environment Plan [WAT-PB-001]. A Notification of Operator Form was provided to the Department of Mines, Industry Regulation and Safety (DMIRS) Resource and Environmental Compliance Division (REC) (Appendix 1) on the 13th February 2019.

3.2 Environment Plan Implementation

MEPAU is the custodian of this EP and has overall responsibility for its implementation, compliance and revision.

4.0 DESCRIPTION OF THE ACTIVITY

4.1 Site Location

The Waitsia Gas Field is within Production Licence L1, located in the Northern Perth Basin on private agricultural land approximately 340 km north of Perth and 16 km southeast of Dongara, Western Australia. The proposed location for the Waitsia Gas Plant is one of three sites within this region, as outlined in Figure 1. The coordinates of these three sites (the Project Area) are presented in Table 1.

Geotechnical surveys will be conducted across one, or up to all three, of the proposed sites in accordance with this EP. A description of the environment surrounding these sites is provided in Section 4.0.

Table 1 Proposed Waitsia Gas Plant Site Location Coordinates

Proposed Site Location	Easting	Northing
Proposed Site 1	~ 316,400mE	~ 6,757,880mN
Proposed Site 2	~ 314,895mE	~ 6,757,985mN
Proposed Site 3	~ 314,125mE	~ 6,755,835mN

4.2 Geotechnical Survey Description

The geotechnical surveys associated with the Waitsia Gas Plant development will be undertaken by a third-party contractor. As the Project Area is located on cleared agricultural land, there are very few preparations required at each site prior to activity mobilisation. Roads and tracks required to access the proposed sites are pre-existing farm tracks and do not pass through areas of vegetation. An initial site walkover and reconnaissance will be necessary to identify best site access routes and establish the location of buried services (using information provided by Dial Before You Dig (DBYD)).

4.2.1 Machinery and Equipment

A geotechnical survey will include the following machinery and equipment:

- Drilling Rig (similar in size to a water bore drilling rig)
- Up to 3 utility vehicles / trucks
- Excavation equipment (including a small excavator and a generator)
- Penetrometers
- Marker tape and survey pegs

Refuelling of equipment may be required on site.

4.2.2 Mobilisation to Site

Mobilisation of machinery and equipment to the site will typically be completed within 24 to 48 hours of commencement. Access to the Project Area will be via Pye Road and private access roads on private farm land. Personnel involved in the survey will be accommodated at existing facilities within the town of Dongara or drive in from surrounding areas (e.g. Geraldton), therefore no temporary accommodation facilities are required.

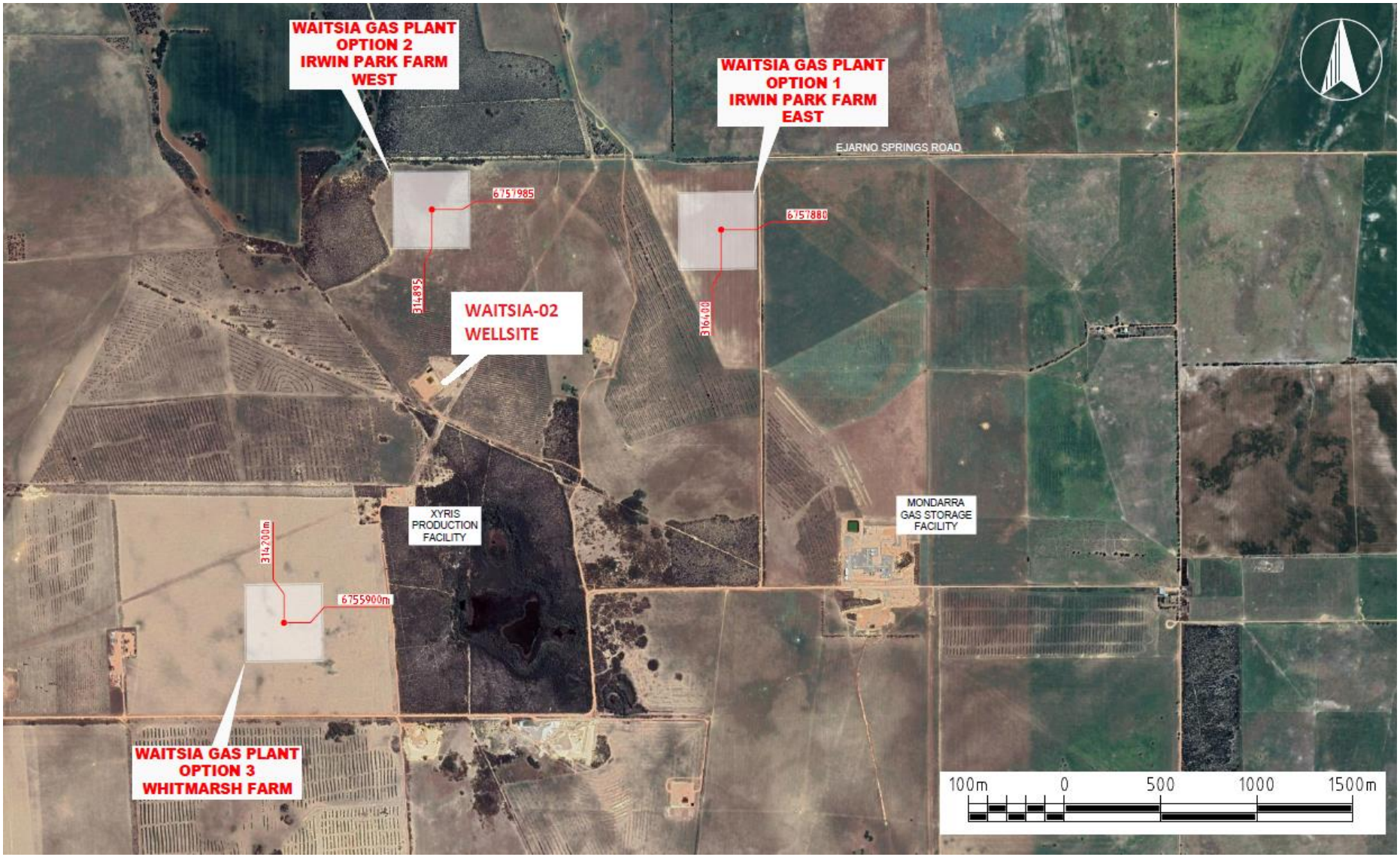


Figure 1 Proposed Waitsia Gas Plant Sites (Option 1-3 depicted is Sites 1-3 respectively)

4.2.3 Geotechnical Survey and Remediation

All or a combination of the following activities will be undertaken as part of the field investigation at any one, or up to all of, the three sites:

- Up to ten test pits will be excavated per site, with dimensions of approximately 4m x 4m, up to 4m deep, with appropriate shoring. Each test pit will be backfilled with the segregated substrate and topsoil layers accordingly. Test pits are expected to be remediated within 24 hours of excavation. Immediately prior to backfilling, test pits will be inspected for any potential fauna entrapment.
- Up to twelve boreholes will be drilled per site, approximately 20m deep up to 200mm in diameter. Each borehole is expected to be backfilled and remediated the same day that it is drilled. Immediately prior to backfilling, boreholes will be inspected for any potential fauna entrapment. Any unfilled boreholes will be covered while not in use to prevent fauna entrapment and are expected to be filled within 24 hours of excavation.
- Upon excavation, topsoil and substrate layers will be segregated.
- Penetrometer tests will be conducted.
- The soil types encountered, the presence of any unsuitable material, rock or the water table at the site will be observed and recorded in accordance with AS1726-1993.
- Photographs of the site will be taken.
- Samples will be taken at selected geological layers encountered to allow Particle Size Distribution (PSD), Consistency Limits (PI), Maximum Modified Dry Density (MMDD), Permeability & Soaked Californian Bearing Ratio (CBR) tests to be completed.
- In the event that operations prevent the completion of activities within a day, any open excavation pits will be barricaded where unfilled overnight, or alternatively, a fauna escape ramp will be provided.
- Daily pre-start inspections will be conducted each morning to ensure vehicles and machinery have not been interfered with, and no fauna is present in any unfilled boreholes or excavation pits.

4.2.4 Timeframe and Schedules

Survey stages including mobilisation, geotechnical surveying, remediation and demobilisation will be conducted during daylight hours only. Geotechnical surveys may be conducted at any of the three sites during the timeframe of this EP. It is expected that a geotechnical survey at each site selected will take less than 1 month (i.e. if all three sites are surveyed, the total duration will be less than 3 months).

Although each site survey may take less than 1 month in duration, these surveys may be conducted any time over a two-year period following EP acceptance by DMIRS.

4.3 Demobilisation

All machinery will be removed from the Project Area within one week of the completion of the Geotechnical surveys. A completion criteria check will be undertaken in accordance with Table 2 to ensure all demobilisation activities have been completed.

Table 2 Geotechnical Surveys Completion Criteria

Aspect	Assessment Method
All machinery and equipment have been removed offsite	Visual inspection of the site
All excavation holes have been refilled	Visual inspection of the site
Ground surface has been reinstated to pre-project state	Visual inspection of the site
No stockpiled excavation soil left behind	Visual inspection of the site
No waste has been left on site	Visual inspection of the site

5.0 DESCRIPTION OF THE ENVIRONMENT

A description of the environment associated with the geotechnical surveys Project Area (Project Area) and the Wider Study Area is provided in Table 3. The Project Area is inclusive of a 200-metre radius surrounding the proposed sites indicated in Figure 1. The wider study area typically comprises a 5km radius from the proposed Project Area, however where considered relevant, wider regional information has been provided. The wider study area assessed is deemed sufficient to consider the potential environmental impacts associated with a worst-case scenario event. Due to the nature of the activity, no specific environmental field surveys have been undertaken for the purposes of this activity. However, where relevant, desktop studies have been referenced.

Figure 5 highlights the relative distances of each site to nearby environmental sensitivities.

Table 3 Description of the Environment Summary

Aspect	Description of the Project Area Environment	Description of the Wider Study Area Environment
Climate	The Bureau of Meteorology (BoM) Geraldton Station (008050) is the closest weather station to the town of Dongara. The proposed Project Area experiences windy conditions with hot dry summers and mild wet winters[1].	The Bureau of Meteorology (BoM) Geraldton Station (008050) is the closest weather station to the town of Dongara. The region has a Mediterranean-type climate characterised by seasonal patterns of hot, dry summers and mild, wet winters. The area is subject to high wind speeds, dust storms, lightning storms, high summer temperatures and low winter night temperatures[1].
Soil	Soils within the Project Area are light and sandy and well drained. The soils consist of calcareous and siliceous sand underlain by aeolianite[2]. There is no exposed aeolianite at the proposed activity locations.	Soils within the North Perth Basin are light and sandy and well drained. The soils consist of calcareous and siliceous sand underlain by aeolianite, which is often exposed. The North Perth Basin is situated entirely within the Geraldton Sandplains Biogeographical Region[2].
Topography	The Project Area consists of gentle slopes. The height above sea level of each site is provided below[3]: Site 1: 78m Site 2: 49m	The wider study area consists of gentle slopes associated with the coastal sand plain and dune systems within the area[4].

[1] Bureau of Meteorology, 2019
[2] Beard, 1976
[3] Google Earth, 2019
[4] Beard, 1976

Aspect	Description of the Project Area Environment	Description of the Wider Study Area Environment
	Site 3: 40m	
Surface Water	There is no surface water present within the proposed Project Area, or adjacent to pre-existing roads or access tracks[5]. There are no surface waters that may be affected by the activity.	The Irwin River valley is the only major coordinated drainage indentation in the wider study area. A number of swamps surrounded by dense scrub also feature in the area, including Ejarno Spring and Zeus Wetlands[5]. (Refer to Table 4 for the approximate distance to the nearest surface water sites from each of the proposed Project locations). There are no surface waters in the wider study area that may be affected by the activity in the event of a worst-case spill scenario.
Groundwater	The sub-surface geology of the Project Area consists of the Late Jurassic Yarragadee Formation, which is overlain by Tertiary Sediments[6]. Based on water bore monitoring conducted in 2015 at the Waitsia-02 Wellsite[5] (Figure 1), it can be estimated that the Static Water Level (SWL) at the Project Area is approximately 9 metres below ground level. Refer to Table 4 for the relative distance of Waitsia-02 Wellsite from each of the proposed Project locations. Given the proposed depths of drill and excavation, there are no groundwater systems that may be affected by the activity.	The sub-surface geology of the Perth Basin consists of the Late Jurassic Yarragadee Formation, which is overlain by Tertiary Sediments[6]. The nearest Groundwater Dependent Ecosystem to the Project Area is Ejarno Spring (Refer to Table 4). There are no ground water systems in the wider study area that may be affected by the activity in the event of a worst-case spill scenario.
Acid Sulphate Soils	The proposed Project Area is located within an area where acid sulphate soils are not known to occur[7].	The Wider Study Area surrounding the proposed Project Area is located within an area where acid sulphate soils are not known to occur[7].
Matters of National Environmental Significance	A search proved there are no Matters of National Environmental Significance protected by the Environmental Protection and Biodiversity Conservation Act 1999 within the proposed Project Area[8]. There are no Matters of National Environmental Significance that can be affected by the proposed activity.	An EPBC search showed there are 24 listed threatened species and 9 listed migratory species within the wider study area protected by the Environmental Protection and Biodiversity Conservation Act 1999[8]. There are no Matters of Environmental Significance in the wider study area that may be affected by the activity in the event of a worst-case spill scenario.

[5] GEMEC Environmental Consultants, 2017
[6] Department of Water Hydrogeologic Bulletin (HB1) Northern Perth Basin: Geology, hydrology and groundwater resources (January 2017).
[7] Department of Agriculture, Fisheries and Forestry, 2014
[8] Department of the Environment and Energy, EPBC Act Protected Matters Search Tool, 2019

Aspect	Description of the Project Area Environment	Description of the Wider Study Area Environment
Conservation Areas	The proposed Project Area, including pre-existing roads and access tracks, is not located within any Red Book areas, nature reserves or riparian vegetation[9]. There are no conservation areas that may be affected by the activity.	Significant conservation areas within the Perth Basin region include recommended Red Book reserves, DBCA reserves, nature reserves and riparian vegetation. The nearest Conservation Area within the wider study area is Yardanogo Nature Reserve located approximately 4 km south of the proposed project area[9] (Refer to Table 4). There are no significant conservation areas in the wider study area that may be affected by the activity in the event of a worst-case spill scenario.
Environmentally Sensitive Areas (ESA)	The proposed Project Area, including pre-existing roads and access tracks, is not located within an Environmentally Sensitive Area (ESA) as declared under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004[10]. There are no ESAs that may be affected by the activity.	The nearest Environmentally Sensitive Area as declared under the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 is Beekeepers Nature Reserve, located > 23km from the proposed Project Area[10]. There are no ESAs in the wider study area that may be affected by the activity in the event of a worst-case spill scenario.
Groundwater Dependent Ecosystems (GDE)	Based on a Groundwater Dependent Ecosystem (GDE) study that was undertaken by Rutherford et al (2005) for the Northern Perth Basin, there are no Groundwater Dependent Ecosystems (GDEs) identified within the Project Area. Therefore, there are no GDEs that may be affected by the activity.	Based on a Groundwater Dependent Ecosystem (GDE) study that was undertaken by Rutherford et al (2005) for the Northern Perth Basin, one vulnerable site was identified in the vicinity of the Waitsia Field. Refer to Table 4 for the approximate distance to the nearest GDE from each of the proposed Project locations, along the margins of the Ejarno Spring. Based on the nature of the proposed activity, and the worst-case spill scenario, it is not likely that GDEs will be disturbed in the wider study area.
Vegetation Communities & Flora	The proposed Project Area is located on existing agricultural land and requires no clearing of vegetation to conduct the proposed activity. Any roads or tracks used to access the Project Areas are pre-existing. There are no vegetation communities present within the proposed Project Area that could be affected by the activity[11].	The wider study area is primarily private property with patchy remnant vegetation. A recent desktop search identified six priority flora species as potentially present within the wider study area[11]. This desktop study identified there are no Threatened Ecological Communities or Declared Rare Flora in the wider study area. A similar desktop study was conducted for the remnant vegetation

[9] Department of Biodiversity, Conservation and Attractions, 2019
[10] Department of Water and Environmental Regulation, 2019
[11] Department of Biodiversity, Conservation and Attractions, NatureMap, 2019

Aspect	Description of the Project Area Environment	Description of the Wider Study Area Environment
		surrounding Ejarno Spring which identified two priority flora species as potentially present[10]. There are no vegetation communities or flora in the wider study area that may be affected by the activity in the event of a worst-case scenario.
Weeds	The following searches have been conducted with regard to weeds within the Project Area: • Biosecurity and Agricultural Management Act 2007 • DPRIRD WA Organism List (WAOL) • Environment Protection Biodiversity Conservation Act 1999 search too for Weds of National Significance (WoNS). • Field studies • FloraBase • NatureMap database search There are no declared Weeds of National Significance within the immediate project area[12]	Weeds are widespread across the Perth Basin, particularly within disturbed areas. A total of 17 weeds were recorded in the wider study area, including the declared weed *Echium plantagineum* (Patterson's Curse)[13]. The nearest known record of Echium plantagineum is located approximately 10km northwest of the proposed site[11] (Figure 2).
Dieback	Areas vulnerable to Phytophthora dieback include areas of susceptible native vegetation located in areas of suitable soil composition, receiving an annual average rainfall of greater than 400mm[14]. Phytophthora dieback is not considered to be an issue in the proposed Project Area as the proposed sites are not situated within native vegetation and exist on calcareous soils[15].	Phytophthora Dieback is not known to occur within the area and unlikely to occur due to calcareous soils within the wider study area[14]. The nearest reported dieback infestation identified within the wider study area is located approximately 60km south of the Project Area[16].
Fauna	Fauna is closely aligned with landform-vegetation characteristics. A recent desktop search identified two fauna species of conservation significance as potentially present within the proposed Project Area[17]. However, given the proposed Project Area is comprised of	The area surrounding the proposed Project Area is existing cleared pasture land. Fauna within this area predominantly includes introduced mammals (sheep, cattle, rabbits and foxes) and native animals (reptiles and kangaroos). A recent desktop search of the

[12] Department of Biodiversity, Conservation and Attractions NatureMap, 2019
[13] EPBC Act 1999 Weeds of National Significance Search tool, 2019
[14] Department of Parks and Wildlife, 2015
[15] Beard, 1976
[16] Glevan Consulting, 2012
[17] Department of Biodiversity, Conservation and Attractions NatureMap, 2019

Aspect	Description of the Project Area Environment	Description of the Wider Study Area Environment
	cleared agricultural land, it is highly unlikely that conservation significant fauna would be impacted by the proposed activity.	wider study area identified two fauna species of conservation significance as potentially present[17]. There are no known environmentally significant fauna species or fauna habitat within the wider study area that may be affected by the activity in the event of a worst-case spill scenario.
Aboriginal Heritage	Based on the previous field and desktop surveys, there are no known areas of aboriginal heritage or historical importance within the project area that could be disturbed by the proposed activity[18].	Based on previous field and desktop surveys, three listed Aboriginal Sites relevant to the Wider Study Area have been identified – Registered Aboriginal Site Numbers 5482 ("Jenkins Hut Valley"), 5917 ("Irwin Park Station"), and 18907 ("Irwin River")[18] (Figure 3). Refer to Table 4 for distances from proposed Project sites. There are no known areas of aboriginal heritage or historical importance within the wider study area that may be affected by the activity in the event of a worst-case spill scenario.
European Heritage	There are no known culturally significant sites located within the proposed Project Area based on a search conducted of the State Heritage Register (accessed 09/05/2019)[19], therefore no European Heritage sites could be affected by the proposed geotechnical surveys.	Based on a search conducted of the State Heritage Register (09/05/2019), the nearest heritage site is located > 9km from the proposed project area[19] (Figure 4). There are no known culturally significant sites located within the wider study area that may be affected by the activity in the event of a worst-case spill scenario.
Socio-economic Environment	Whilst there are no farmhouses or livestock present at the proposed Project Area, there are three landowners and / or tenants who reside on the properties associated with the proposed Project Area (Figure 5). The potential socio-economic risks associated with the proposed activity are outlined in Section 5.1.7 of the EP	There are several individual farmhouses located within approximately 5km of the activity area both to the west and east[20]. Other stakeholders within the area include the Mondarra Gas Storage Facility and the Asco Camp and Asco Laydown Yard, both on Pye Road. There are no socio-economic factors within the wider study area that can be affected by the activity in the event of a worst-case spill scenario.

[18] Department of Planning, Lands and Heritage, Aboriginal Heritage Inquiry System, 2019
[19] Heritage Council, 2019
[20] Google Earth, 2019

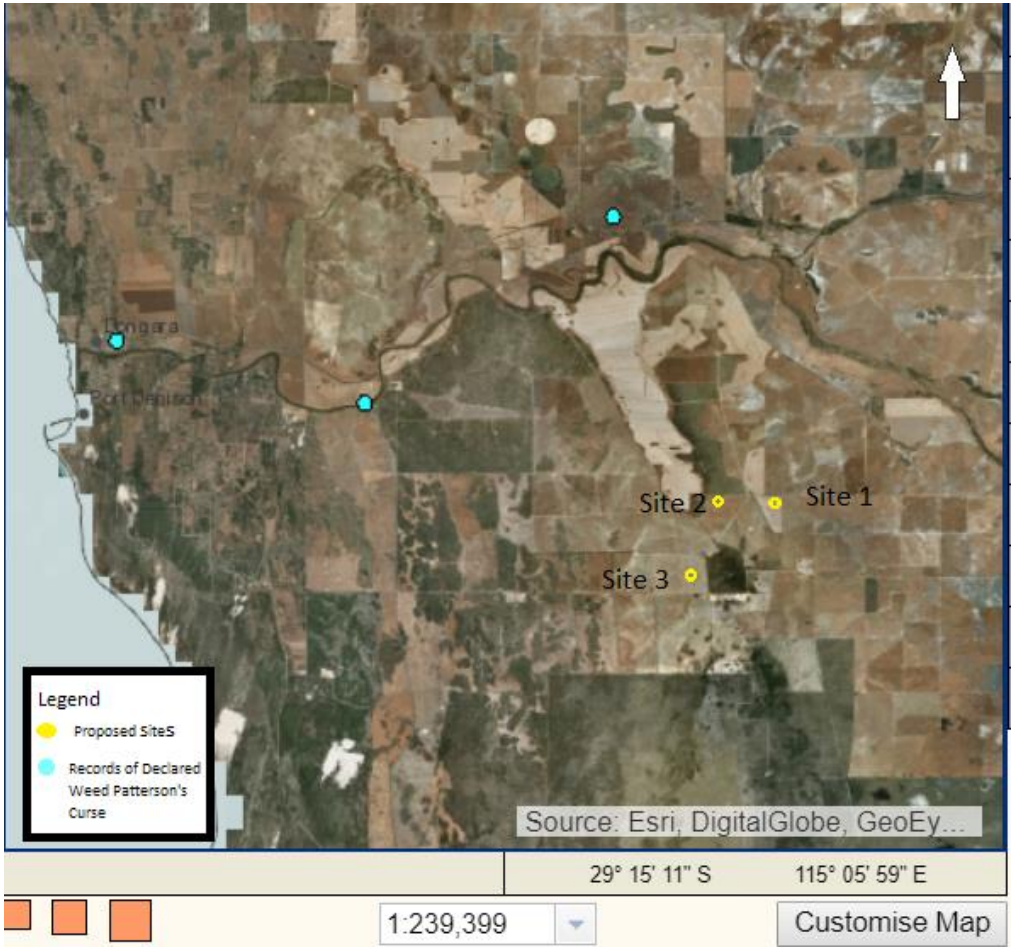


Figure 2 Location of the Declared Weed *Echium plantagineum* (Patterson's Curse) relative to the Proposed Waitsia Gas Plant Sites[21]

[21] Department of Biodiversity, Conservation and Attractions NatureMap, 2019

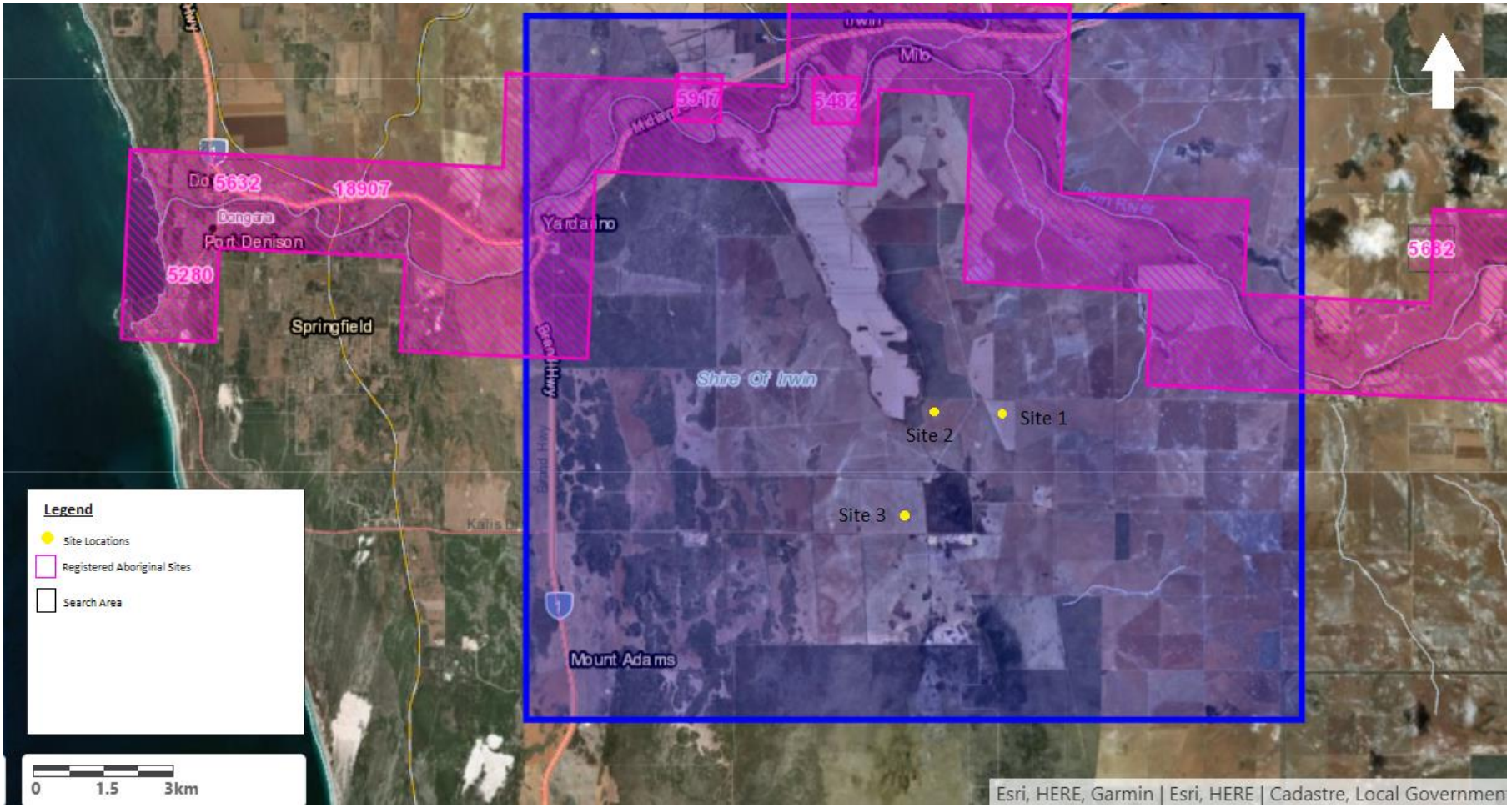


Figure 3 Location of Registered Aboriginal Sites Relative to the Proposed Waitsia Gas Plant Sites[22]

22 Department of Planning, Lands and Heritage, Aboriginal Heritage Inquiry System 2019

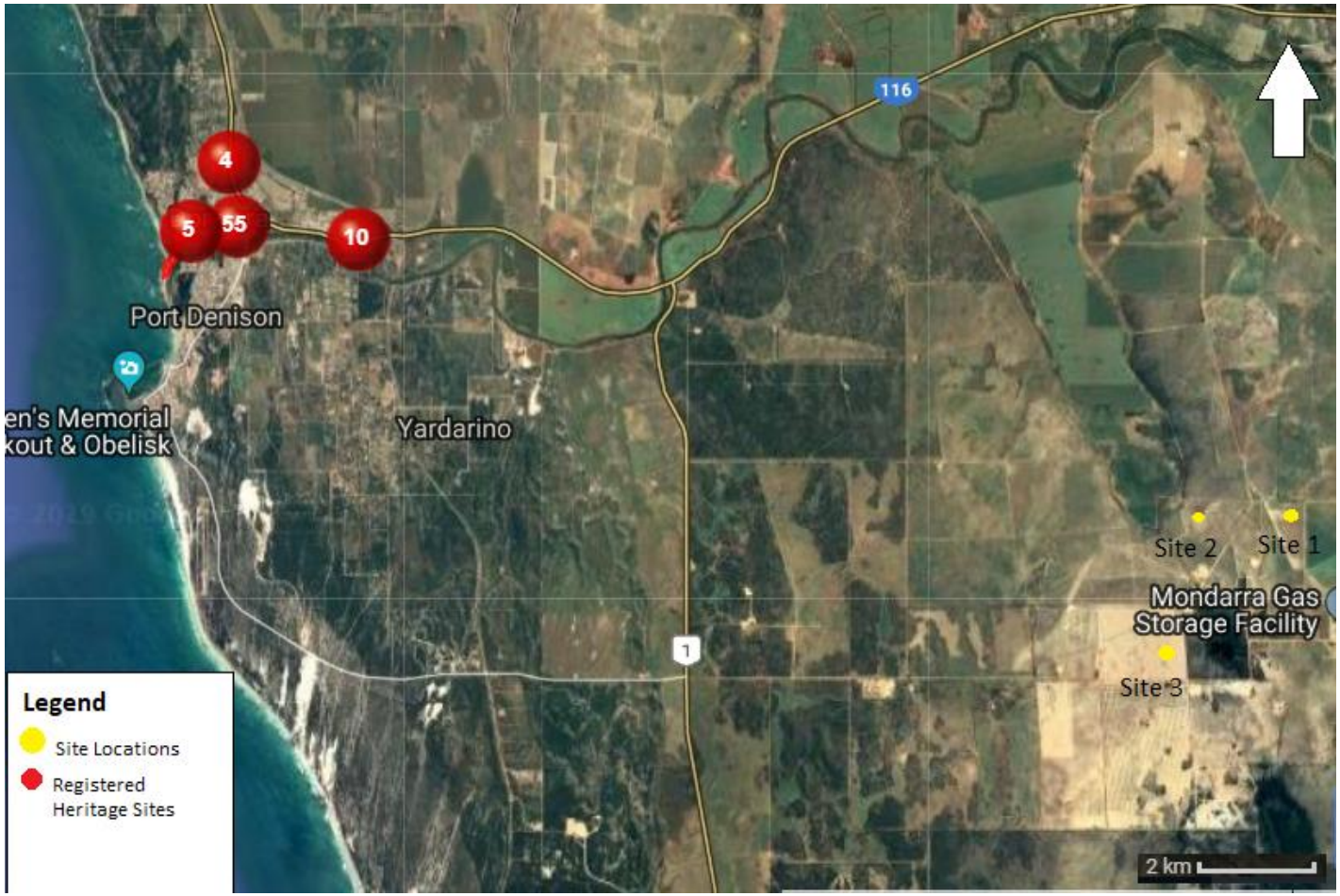


Figure 4 Location of Registered European Heritage Relative to the Proposed Waitsia Gas Plant Sites[23]

[23] Heritage Council, 2019

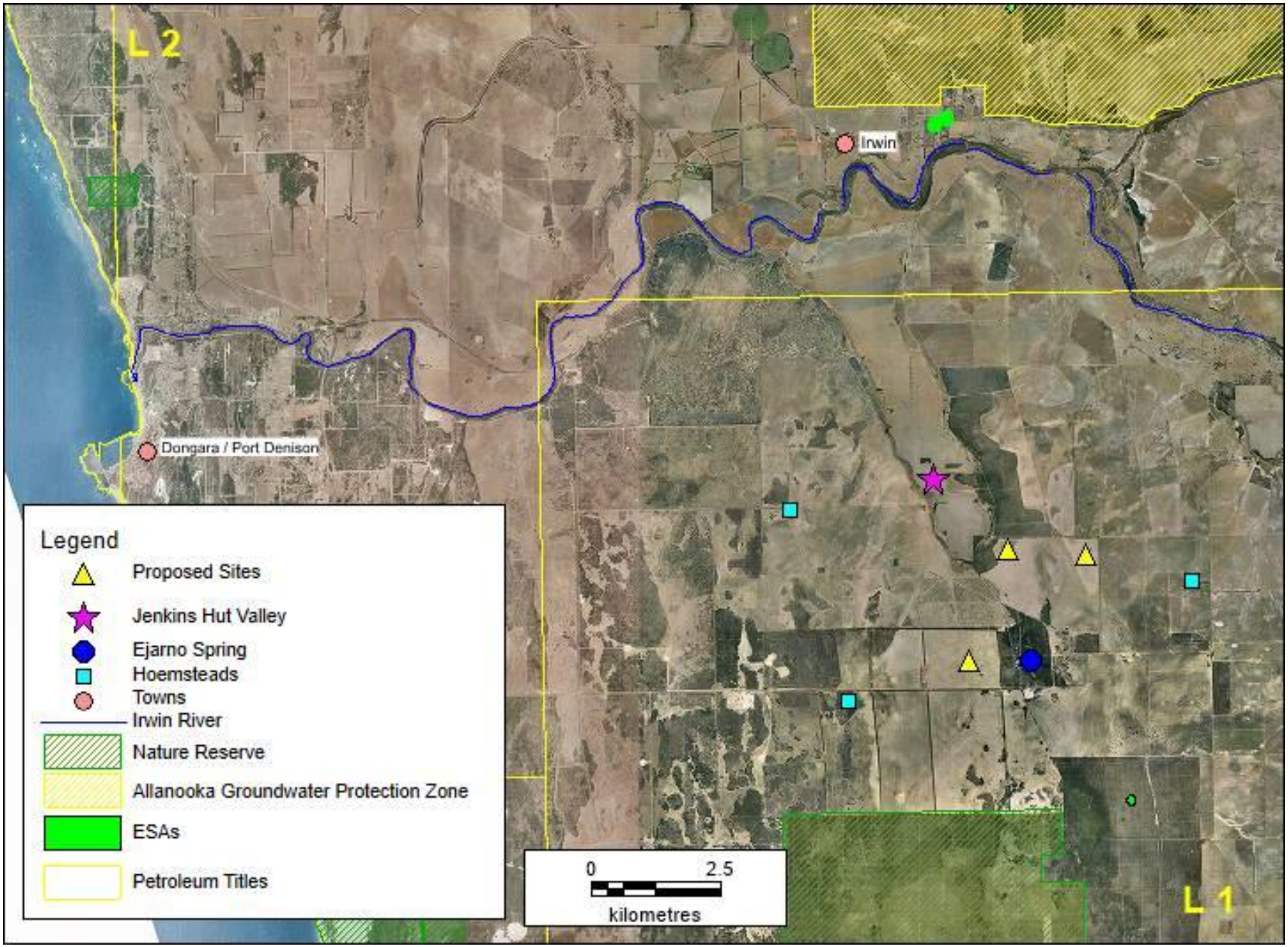


Figure 5 Environmental Sensitivities Relative to the Proposed Waitsia Gas Plant Sites

Table 4 Distance of Environmental Aspects from Proposed Site Locations

Environmental Aspect	Approximate Distance from Proposed Site Location[24]		
	Proposed Site 1	**Proposed Site 2**	**Proposed Site 3**
Surface Water	Irwin River: 5km	Irwin River: 5.5km	Irwin River: 9km
	Ejarno Spring: 2km	Ejarno Spring: 2km	Ejarno Spring: 1km
	Zeus Wetlands: > 3km	Zeus Wetlands: > 4 km	Zeus Wetlands: > 4km
Groundwater	Waitsia-02 Wellsite: ~ 1.5 km	Waitsia-02 Wellsite: ~ 800 m	Waitsia-02 Wellsite: ~ 1.3 km
Environmental Sensitivities	Ejarno Spring: 2km	Ejarno Spring: 2km	Ejarno Spring: 1km
	Nearest Farmhouse: 2.5km	Nearest Farmhouse: 3.5km	Nearest Farmhouse: 4.5km
Conservation Areas	Redbook Area: > 10km	Redbook Area: > 10 km	Redbook Area: > 10 km
	DBCA Reserves (Yardanogo Nature Reserve): ~ 4 km	DBCA Reserves: (Yardanogo Nature Reserve): ~ 4 km	DBCA Reserves: (Yardanogo Nature Reserve): ~ 4 km
	Riparian Vegetation (Ejarno Spring): ~ 2 km	Riparian Vegetation (Ejarno Spring): ~ 2 km	Riparian Vegetation (Ejarno Spring): ~ 1 km
Groundwater Dependent Ecosystems	Ejarno Spring: 2km	Ejarno Spring: 2km	Ejarno Spring: 1km
Aboriginal Heritage	Jenkin's Hut Valley: 5.6km	Jenkin's Hut Valley: 4.8km	Jenkin's Hut Valley: 6.7km
	Irwin River: 5km	Irwin River: 5.5km	Irwin River: 9km
	Irwin Park Station: > 9km	Irwin Park Station: > 8km	Irwin Park Station: > 9 km

6.0 ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT

Table 5 outlines the environmental risks and management measures identified for the Waitsia Gas Plant Geotechnical Surveys. The approach undertaken towards risk management for each aspect involves a review of the residual risk post treatment to determine if the environmental impacts and risks of the activity will be managed to an acceptable level. Where additional measures are necessary to reach a level of acceptability, they have been considered and adopted. There are no environmental risks identified for the geotechnical survey activities ranked medium or above. Under the definition in the *Guideline for the Development of Petroleum and Geothermal Environment Plans in Western Australia, November 2016* in Western Australia the risk consequences of 'Moderate' is equivalent to 'High' on the MEPAU Perth Basin Risk Matrix.

Table 5 Risk Assessment Table

Risk identification			Pre-treatment risk assessment			Risk treatment (Existing Safeguards / Management Methods)	Post treatment risk assessment		
Aspect	Source of Risk	Potential Environmental Impact	Consequence	Likelihood	Risk Ranking		Consequence	Likelihood	Risk Ranking
Soil and Landform	Vehicles Weather Incomplete remediation Ground disturbing activities	• Water Erosion • Dust • Soil compaction	1	3	LOW	• Minimise turnaround time to complete digging and remediation of holes • Drive to the presenting conditions (e.g. let down tyre pressure) • Speed limit: 40km/h on paddock • Where possible, use the same access route to and from the site to restrict compaction • Segregation of topsoil and substrate layers and fill holes accordingly – contractor to follow their procedures • Soil excavation to be conducted under a PTW	1	2	LOW
Fire	Bushfire Ignition of engines	• Public third-party damage • Impact to fauna and flora • Farmer infrastructure	2	2	LOW	• Diesel vehicles only • A fire extinguisher in each vehicle • Adhere to Vehicle bans • Radio communication with operations team • Landowner communications prior to commencement of activity • Vehicle cleanliness as per below	2	1	LOW
Security	Sabotage	• Loss of containment	1	2	LOW	• Vehicles/equipment secured overnight • Property gates are shut	1	1	LOW
Vehicles and Machinery	Vehicle collision Vehicle movements Excavation works Vehicle hygiene Onsite Refuelling Fuel / oil / coolant / hydraulic leaks	• Soil contamination • Weed transfer	1	4	MEDIUM	• Vehicle hygiene inspection between properties and wash down (where required) • Drip tray used for any refuelling • A Spill kit available at the site • Excavation activities are covered under a PTW	1	3	LOW
Light Emissions	Operations lighting	• Disturbance to fauna • Landowner complaints • Visual impact	1	2	LOW	• Activities to be undertaken during daylight hours	1	1	LOW
Fauna	Vehicle collision Livestock present Open boreholes	• Fauna injuries or fatalities	1	3	LOW	• Speed limit of 40km/h to be adhered to on paddock • Sign posted speed limit to be adhered • Activities to be conducted during daylight hours • Leave gates as found • Engagement with landowners prior to commencement of activities • Short term duration of the activity	1	2	LOW

Risk identification			Pre-treatment risk assessment			Risk treatment (Existing Safeguards / Management Methods)	Post treatment risk assessment		
Aspect	Source of Risk	Potential Environmental Impact	Consequence	Likelihood	Risk Ranking		Consequence	Likelihood	Risk Ranking
		• Fauna entrapment	1	2	LOW	• Unfilled boreholes are covered overnight, and unfilled pits will be barricaded or provided with a fauna escape ramp • Prestart Inspection of any pits left unfilled overnight	1	1	LOW
Weeds	Vehicle Movement Transfer of soil and / or gravel	• Spread of weeds • Landowner complaints	2	3	MEDIUM	• Vehicle hygiene inspection and wash down (where required) premobilisation, between properties, and at demobilisation • Adhere to the same access pathways to and from site	2	2	LOW
Socio-economic	Incidents General operations (noise, light, physical presence)	• Landowner complaints	1	2	LOW	• Communication with landowners prior to commencement of activities	1	1	LOW
Waste Management	Incorrect disposal of site waste Pollution (oily rags) Hydraulic hose failure Disposal of contaminated soil	• Litter • Native animals • Soil contamination	1	3	LOW	• All waste removed from site • Spills managed in accordance with the OSCP within the EP	1	2	LOW
Groundwater	Drilling through to superficial aquifer Spill	• Uncontrolled water release	2	1	LOW	• Not a credible risk as there are no known pressurised aquifers in this area at the depth of drilling	2	1	LOW
		• Groundwater contamination (spill)	2	1	LOW	• Diesel inventory onsite is minimal therefore spill risk to groundwater is negligible. Any spills will be managed in accordance with the OSCP within the EP	2	1	LOW

7.0 IMPLEMENTATION STRATEGY

The objective of the implementation strategy is to describe how all aspects of the activity will be directed, reviewed and managed to ensure that all potential impacts and risks are continuously reduced to ALARP.

The specific objectives are:

1. Ensure that the agreed environmental performance objectives and standards are met
2. Identify specific systems, practices and procedures to be used to ensure that environmental risks and effects are reduced to ALARP
3. Establish a commitment to the protection of the environment
4. Establish a clear chain of command that sets out the roles and responsibilities of personnel in relation to the implementation, management and review of the EP
5. Ensure that each employee or contractor working on or in connection with the geotechnical survey has the appropriate skills and training
6. Monitor, audit and review environmental performance and the Implementation Strategy
7. Maintain quantitative records
8. Develop and implement emergency and spill preparedness planning and response capability
9. Report on environmental performance
10. Provide for appropriate consultation with relevant government authorities and other interested persons or organisations

7.1 Systems, Practices and Procedures

Details of MEPAU systems, practices and procedures relating to the management of all potential impacts and risks of the activity are detailed in Table 6. The objective of these are to continuously reduce the potential impacts and risks of the activity to ALARP.

Table 6 Systems, Practices and Procedures

Item	Objective to achieve ALARP	Location
Code of Practice for MEPAU sites	To outline the main HSE criteria to be observed by MEPAU and its contractors	MEPAU Limited Health Safety & Environment Policy [MEP HSE-POL-001] • Perth office noticeboard • Dongara Production Facility (DPF) noticeboard • Captured in Induction
Environment Plan	To document environmental management of geotechnical survey activities	North Perth Basin Geotechnical Survey Environment Plan [HSE-E-106] • MEPAU Nominated Site Supervisor • Contracted Companies (via electronic distribution) • Summary in Induction
Oil Spill Contingency Plan (OSCP)	To provide guidance on the management of a spill	OSCP outlined in Section 9 of the EP • Summary in Induction
Emergency Response Plan (ERP)	To provide guidance on the management of an emergency situation	• MEPAU Nominated Site Supervisor • Contracted Companies (via electronic distribution) • Summary in Induction
Hazard and Incident Reporting	To outline the processes and requirements for hazard and incident reporting	MEPAU MyOSH System for hazard and incident tracking
Hygiene Management	To document the completion of hygiene inspections for personnel, vehicle and equipment entrance of each site	Perth Basin Weed and Vegetation Management Plan [HSE-E-116] and Perth Basin Hygiene Inspection Form [HSE-FR-018] • MEPAU Nominated Site Supervisor • Contracted Companies (via electronic distribution) • Summary in Induction
Waste Management	To provide guidance on the management of waste in relation to MEPAU Perth Basin activities.	Perth Basin Waste Management Plan [PB-HSE-PLN-004]: • MEPAU nominated site supervisor • Summary in Induction
Permit to Work System	To ensure facilities are in a safe and environmentally acceptable condition before works commence and are maintained in this condition until all personnel involved in the work have signed off in completion	• MEPAU nominated site supervisor on site
Landowner Communications	To guide all personnel working at MEPAU owned assets on interactions with landowners, including tenants and staff	MEPAU Landowner Communication Procedure [HSE-PR-059]: • MEPAU nominated site supervisor on site

8.0 CONSULTATION

MEPAU are committed to consulting affected stakeholders in regard to their activities, as per Perth Basin Stakeholder Engagement Plan [CP-PM-039]. Consultation has been undertaken with the following stakeholders regarding the geotechnical surveys:

- DMIRS
- The landowner of the property associated with Site 3 (G & A Whitmarsh)
- The tenants occupying the property associated with Site 1 and Site 2 (B & P Kupsch)

MEPAU will continue to consult with the following affected parties regarding the activities associated with the proposed geotechnical surveys

- DBYD prior to excavation activities

Landowners and / or tenants will be contacted at least one week prior to the commencement of activities as per the LAA / tenant agreement in place.

9.0 REFERENCES

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