Tubridgi Gas Storage Project
Operational Environmental Plan

E-PLN-023

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Document Revision History

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0	17-03-2017	Initial submission
1	21-04-2017	Incorporation of DMP feedback
1.1	08-10-2018	Update to nominal capacity figure only
2	17-05-2021	Update to Activity Description (Section 4.18), current status and include minor construction risks
3	07-07-2022	Updates to activity list, implementation strategy and chemical disclosure lists
4	26-02-2023	5-yearly review and address DEMIRS OTM
5	18-10-2024	Revised in response to DEMIRS OTM

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Table of Contents

List of Tables

List of Figures

Abbreviations

Term	Meaning/ Description
ACV	Authorisation to Clear Vegetation
AER	Annual Environmental Report
AGIG	Australian Gas Infrastructure Group
AGIT	AGI Tubridgi
ARI	Average Rainfall Interval
ASW	Ashburton West
ALARP	As Low As Reasonably Practicable
AMP	Asset Management Plan
AS	Australian Standard
ASS	Acid Sulphate Soils
ASSMP	ASS Management Plan
BTEX	Benzene, toluene, ethylbenzene, xylenes
CBA	Cost Benefit Analysis
CMP	Crisis Management Plan
CMT	Crisis Management Team
Cth	Commonwealth
DBCA	Department of Biodiversity, Conservation and Attractions
DBNGP	Dampier to Bunbury Natural Gas Pipeline
DBP	Dampier Bunbury Pipeline
DEC	Department of Environment and Conservation
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety
DFES	Department of Fire and Emergency Services
DPaW	Department of Parks and Wildlife
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
EGM TAM	Executive General Manager Transmission Asset Management
EGM TO	Executive General Manager Transmission Operations
EMS	Environmental Management System
EP	Environment Plan
EPBC	Environment Protection and Biodiversity Conservation
EPO	Environment Performance Objective
EPS	Environment Performance Standard
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESD	Ecologically Sustainable Development
FMP	Field Management Plan
GEF	Griffin Export Facility
GIS	Geographic Information System
GWL	Groundwater Licence
HAZID	Hazard Identification study
HSE	Health, Safety and Environment
IBRA	Interim Biogeographic Regionalisation for Australia
IMT	Incident Management Team

Term	Meaning/ Description
JHA	Job Hazard Analysis
km	Kilometre
KP	Kilometre Point
MAE	Major Accident Event
mm	Millimetre
MNES	Matters of National Environmental Significance
MS	Ministerial Statement
NGERS	National Greenhouse and Energy Reporting Scheme
NORMs	Naturally Occurring Radioactive Materials
NPI	National Pollutant Inventory
OSCP	Oil Spill Contingency Plan
PIC	Person in Charge
PL	Pipeline Licence
PPE	Personal Protective Equipment
RiWI Act	Rights in Water and Irrigation Act 1914
SFARP	So Far As Is Reasonably Practicable
SWL	Surface Water Licence
TDS	Total Dissolved Solid
TGS	Tubridgi Gas Storage
TGSP	Tubridgi Gas Storage Project
WA	Western Australia
WAWP	Wheatstone Ashburton West Pipeline
WONS	Weeds of National Significance

Definitions

Term	Meaning/ Description
Aspect	Elements of the operator's activities, products, or services that may interact with the environment. Includes planned and unplanned activities.
Clearing	The killing or destruction of; removal of; severing of trunks or stems; or the doing of any other substantial damage to native vegetation in an area.
Consequence	The outcome of an event expressed qualitatively or quantitatively, being a loss, impact, injury, an expressed concern, disadvantage or gain.
Inherent Risk	The risk rating for an event before control measures (EPSs) are applied, reflects the worst-case scenario.
Landholder	Those who hold any underlying tenure or interest in the land in which the pipeline is held. This includes freehold landowners, lessees, pastoralists, Native Title bodies and Claimants, local government authorities, government departments and other utilities.
Likelihood	The probability or frequency of an event occurring.
Native vegetation	Any indigenous vegetation; be it aquatic or terrestrial; living or dead (excluding plantations).
Petroleum activity	Any operations or works carried out in the State under a petroleum, geothermal, or pipeline instrument; or any other operations or works carried out in the State relating to petroleum or geothermal exploration or development, or to a pipeline which may have an environmental impact.
Residual risk	The risk rating for an event after control measures (EPSs) are applied.

1. INTRODUCTION

1.1 Background

AGI Tubridgi Pty Limited (AGIT) operates and maintains the Tubrigdi Gas Storage Project (TGSP), a subsurface gas injection and extraction facility with a nominal supply capacity of up to 120 TJ/d of natural gas. The storage facility is connected to the Dampier to Bunbury Natural Gas Pipeline (DBNGP) via the Wheatstone Ashburton West Pipeline (WAWP) allowing gas producers to store or withdraw gas from the TGSP. The TGSP benefits gas producers and customers alike who may require storage capacity to bank unused gas, smooth production profiles or to store gas to cover planned production outages.

The TGSP utilises a five (5) well program with associated flowlines back to the TGSP facility located at the previous Griffin Export Facility (GEF). The Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) under the *Petroleum Geothermal and Energy Resources Act 1967* has issued production licence L9 for activities related to TGSP.

The Petroleum and Geothermal Energy Resources (Environment) Regulations 2012 require the development and implementation of an Environment Plan (EP) to the satisfaction of the DEMIRS. The *Tubridgi Gas Storage Project – Operations Environment Plan* (the EP) has been prepared to satisfy this requirement.

The operation of the TGSP facilities commenced in Q2 2017, with free flow capability available to enable injection intially with compression added in later 2017 and to allow withdrawal when required.

In 2023, AGIT has commenced the TGS Expansion Project which includes the construction of three new wells (TRW2, TRW8 and TRW10) and installation of two new flowlines to connect two of the new wells into the existing flowline network. As part of the installation of the new flowline for TRW2, AGIT identified the opportunity to repurpose the mothballed Griffin Onshore Gas Pipeline (PL20) under Ashburton West System. As a result of the development, a portion of the Griffin Onshore Pipeline was transferred from PL20 to L9 (**Error! Reference source not found.**). The construction is expected for completion by Q4 2024.

1.2 Proponent

AGIT is the licence holder and nominated operator of the TGSP facilities, responsible for all rights and obligations associated with L9.

1.3 Location

The TGSP facilities are situated at the previous Griffin Export (GEF) Facility, adjacent to the Ashburton West (ASW) Facility, and located approximately 31 km southwest of Onslow at the below approximate coordinates:

- Long/Lat WGS 84: Longitude 114.866924 Latitude -21.783898
- GDA 94 Zone 50: Easting 279,452.90 Northing 7,589,568.15

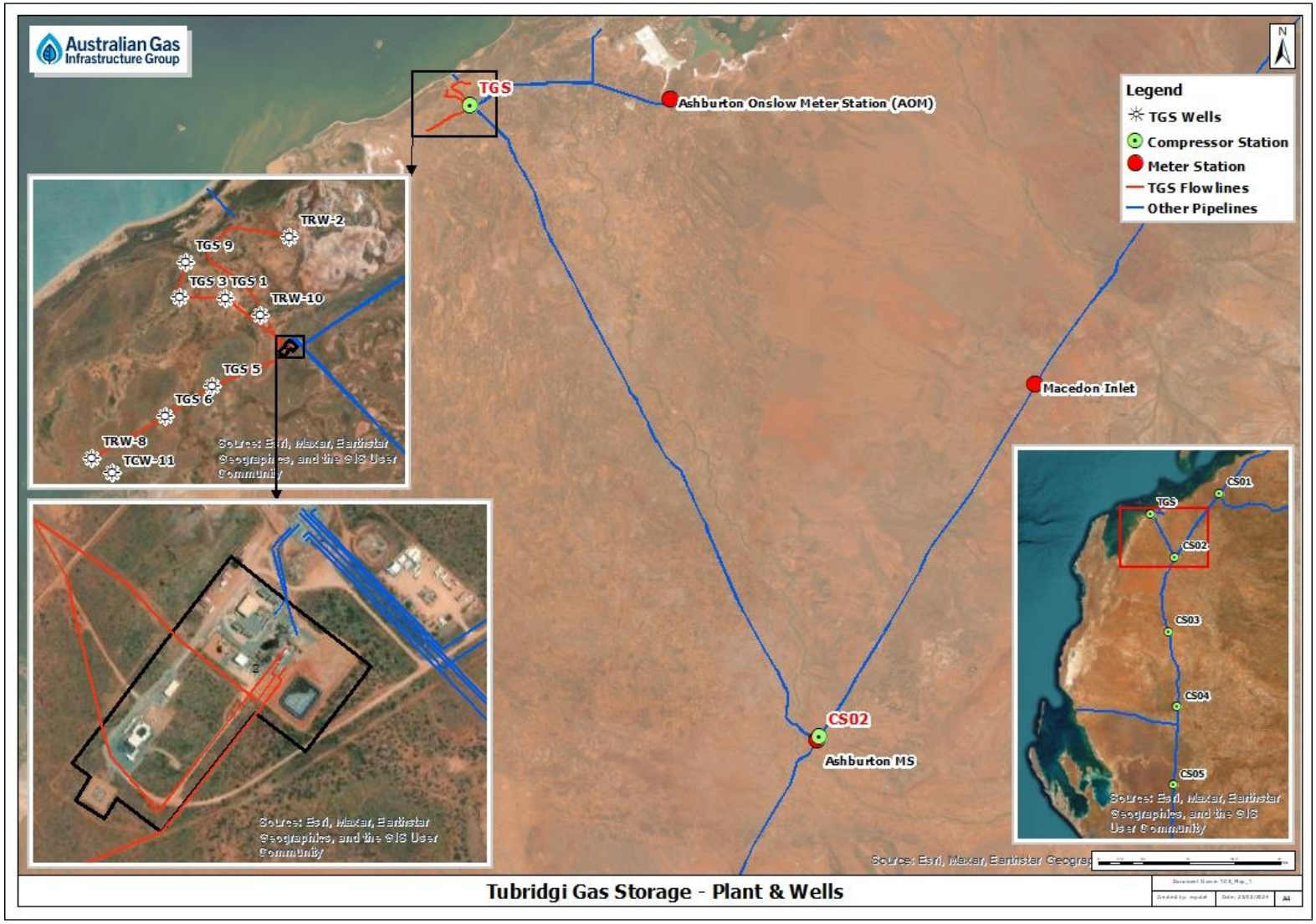

Figure 1-1: Map of Tubridgi Gas Storage Plants & Wells – Regional Location

2. EXISTING ENVIRONMENT

The objective of this section is to provide a description of the existing environment that may be affected by the operation of the TGSP.

2.1 Climate

TGSP is located in a sub-tropical arid zone with temperatures varying slightly throughout the region, mainly due to distance from the coast and elevation. Typical temperatures for the site(s) can be taken from the nearest town of Onslow, which has a mean monthly maximum of 36.5°C in January and 25.6°C in July. Corresponding mean monthly minimums are 25.1°C in February and 13.1°C in July (BOM, 2024).

Mean evaporation figures are very high, often exceeding 300 mm/month in summer and varying between 150 and 200 mm/month during winter. Humidity is relatively high with maximum mean monthly relative humidity (9am) being approximately 42% in October and 63% in June (BOM, 2024). Rainfall is generally low and erratic, with mean monthly rainfalls ranging from 0.7 mm in October to 58 mm in February. The average annual total rainfall for Onslow is 303.4 mm (BOM, 2024).

The summer season is characterised by prolonged dry periods created by anti-cyclonic activities to the south. Thunderstorms may develop as a result of convectional activity, with tropical cyclones occurring regularly in the area. Tropical cyclones often produce large amounts of rainfall, which can cause widespread flooding and the temporary isolation of regional population centres.

During winter, moderate to strong south easterlies and easterlies prevail, while in summer, moderate southerly and westerly winds dominate. Spring and autumn tend to be transitional periods during which both summer and winter winds can occur. Periods of light winds (less than 11 km/hr) prevail for approximately 43% of the year.

The region experiences on average two cyclones per year, with the 'cyclone season' extending from December to April. Cyclones typically approach from the north east and either remain offshore or turn southwards to cross the mainland coast between Dampier and the North West Cape.

2.2 Geology

TGSP is situated within within the Coastal Plains Geomorphic Province which is characterised by extensive sandy plains with north-west or north trending longitudinal dunes, broad clay-pans and circular grassy depressions. Natural relief across the province rarely exceeds 40 m above the surrounding plains and occurs in the form of dune crests and isolated hills.

The Coastal Plains Geomorphic Province is dominated by the Coastal Plains Soil Region. This soil region consists of eight broad units including skeletal soils, stony plains, sandy plains, sand dunes, drainage floors, clay-pans, swamps and depressions, and coastal mud flats.

Soils are generally red-brown with poorly developed profiles. Soils are commonly alkaline as a result of accumulation of sodium and calcium ions at shallow depths. Rangeland surveys carried out indicate soils on the Onslow Coastal Plain tend to be low in nitrogen and phosphorus (Payne et al., 1988, in DDG, 2013).

No areas of acid sulphate soils (ASS) with moderate or higher risk were encountered when the TGSP was intially constructed. A review of Pilbara ASS maps via the DataWA website

(DWER-053) confirms that the two new flowlines would not be located within elevated ASS risk areas (ie. moderate or high risk).

2.3 Flora

Regional Context

The Interim Biogeographic Regionalisation for Australia (IBRA) currently recognises 89 bioregions and 419 subregions (DoE, 2013). The proposed works are located within the Carnarvon Bioregion, specifically within the Cape Range Subregion. The vegetation units within proximity of the proposed works include:

- Coastal Dunes:
  - Beach (very open grass <5%);
  - Dunes (open low scrub over open grass);
  - Berm with freshwater ponds (Mid dense Acacia health over mixed hummock and tussock grass); and
  - Backslopes (with Buffel Grass and Acacia scrub).
- Saline Flats;
- Sand Plains and Calcrete Ridges;
- Drainage Zones; and
- Grassed Floodplains (BHP, 2006b).

Vegetation that occurs in area of the proposed works is associated with the Carnarvon Botanical District (Beard, 1975). Vegetation is eremaean in character, reflecting the semi-arid environment and consists of sparse to moderate mixed *Acacia* scrub over dense hummock *Triodia pungens* grassland. *Acacia* species include *A. tetragonophylla, A. synchronicia, A. sclerosperma* and *A. farnesiana.* A sparse dwarf scrub *Senna* species, *Stylobasium spathulatum* and *Psoralea* species occurs. Calcrete ridges outcropping from the surrounding sand plains support *Hakea subarea, A. coriacea* and *A. sclerosperma* with the dwarf shrub *Adriana tomentosa* (Beard, 1975).

Detailed Site Assessments

Using information from the latest Mattiske rehabilitation assessment report of TGS flowlines and TGS2 Well conducted in December 2023, the following two vegetation communities were identified within the TGSP area:

- *Tecticornia spp.* low sparse chenopod shrubland with *Sporobolus mitchellii*, *Eriachne helmsii*, low isolated tussock grasses on clayey plains;
- *Acacia tetragonophylla* low scattered shrubs over *Triodia epactia* low hummock grassland with *Cenchrus ciliaris* low open tussock grassland on clayey plains; and

Four introduced weed species have previously been identified in the area as part of the 2020 rehabilitation assessment (Mattiske, 2020), namely:

- *Aerva javanica* (Kapok bush);
- *Cenchrus ciliaris* (Buffel grass);
- *Cenchrus setiger* (Birdwood grass); and
- *Vachellia farnesiana* (Mimosa bush).

A total of 61 vascular plant taxa which were representative of 43 genera and 16 families were recorded across all control and rehabilitation monitoring sites (Mattiske, 2023). Given the proximity of this survey area and the same representative vegetation communities, plant species are considered representative of the proposed new flowlines. The majority of the taxa recorded were from *Fabaceae* (15 taxa), *Poaceae* (12 taxa), *Chenopodiaceae* (8 taxa), and *Asteraceae* (6 taxa). These families accounted for 67% of all taxa recorded.

Threatened and Priority Flora

No threatened flora species as listed by the Department of Biodiversity, Conservation and Attractions (DBCA) have previously been recorded within the TGSP area during surveys in 2016, 2020, and 2023 (Mattiske, 2016, Mattiske, 2020, Mattiske, 2023).

Mattiske (2016) assessed one Priority flora species as being likely to occur in the TGSP area (as part of a Level 1 vegetation survey for new drill pads and access tracks) and another as possibly occurring, namely:

- *Eremophila forresti* subsp. *viridis* (Priority 3): Likely to occur; and
- *Triumfetta echinata* (Priority 3): Possible occurrence.

During vegetation rehabilitation monitoring of old TGSP trunklines in 2020, only one Priority flora species, *Abutilon* sp. *Pritzelianum* (S. van Deeuwen 5095) (Priority 3) was identified (Mattiske 2020). The species was associated with the *Acacia tetragonophylla* low shrubland vegetation community.

On rehabilitation survey conducted in 2023, one Priority 3 taxon, as listed by the DBCA (WAH 1998–) was also recorded; *Abutilon sp. Pritzelianum* (S. van Leeuwen 5095). Twenty individuals of the Priority species were recorded in the TGS2 rehabilitation site, within vegetation community CP3.

Threatened and Priority Ecological Communities

No Threatened or Priority Ecological Communities were recorded or inferred to occur within the TGSP area (Mattiske, 2016).

Vegetation Community and Condition

Vegetation condition was based on the ranking scale developed by Trudgen (1988). Vegetation condition throughout the TGSP area was previously recorded by Mattiske (2016) as excellent. A more recent 2020 vegetation and flora survey for the proposed Ashburton Salt Project (Biota Environmental Sciences, 2020), whose survey extent partially included the new flowline locations, noted the following vegetation communities and conditions:

- Flowline 1 (from existing TGS6 well, to new TRW8 well) – *Acacia tetragonophylla, A. synchronicia, A. sclerosperma subsp. sclerosperma*, (*A. coriacea subsp. coriacea*) scattered tall shrubs to tall open shrubland over *A. stellaticeps* scattered low shrubs to low shrubland over *Triodia epactia* hummock grassland with **Cenchrus ciliaris* very open tussock grassland. Also crosses a small area of *Acacia tetragonophylla*, (*A. synchronicia*) tall shrubland over *Eriachne benthamii/flaccida* open to very open tussock grassland with *Triodia epactia* scattered hummock grasses to very open hummock grassland. Very Good and Good condition; and
- Flowline 2 (from existing Tubridgi 5 well to TRW2) – outside of survey extent.

Conservation Reserves

No conservation estate is intersectied by the TGSP facilities. The Cane River Conservation Park is the closest gazetted conservation reserve, which is located approximately 70 km (south-east) away.

2.4 Fauna

The TGSP area traverses a broad range of fauna habitats, the majority of which are widespread throughout the Pilbara region. This ranges from shrublands on red sand dunes and swales, to bare claypans. These areas provide habitat to a number of fauna species, particularly migratory bird species. A total of 244 fauna species have the potential to occur in the TGSP area including 20 mammal, 7 amphibian, 77 reptile, 133 bird and 7 introduced species.

A number of conservation significant species have been identified as potentially occurring within the TSGP area. Conservation significant species identified on the databases (SLIP WA database) as having a moderate to high likelihood of occurring within the vicinity of the TGSP include:

- Northern Quoll (*Dasyurus hallacatus*)
- Greater Bilby (*Macrotis lagotis*)
- Oriental Plover (*Charadrius veredus*)
- Eastern Great Egret (*Ardea modesta*)
- Rainbow Bee-eater (*Merops ornatus*)
- Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*)
- Barn Swallow (*Hirundo rustica*)
- Fork-tailed Swift (*Apus pacificus*)
- Woma (*Aspidites ramsayi*)
- Western Pebblemound (*Pseudomys chapmani*)
- Common Greenshank (*Tringa nebularia*)
- Australian Bustard (*Ardeotis australis*)
- Pilbara Olive Python (*Liasis olivaceus*)
- Common Sandpiper (*Actitis hypoleucos*)
- Oriental Pratincole (*Glareola maldivarum*)
- Little North-westerna Mastiff Bat (*Mormopterus loriae cobourgiana*)
- Osprey (*Pandion haliaetus*)
- White-bellied Sea-eagle (*Haliaeetus leucogaster*)
- Peregrine Falcon (*Falco peregrinus*)

It is considered highly unlikey that vegetation clearing required for constructing the new flowlines as well as maintenance of existing TGSP assets will impact conservation signifcant fauna given the small areal extent (approximately 7.45 ha) and proximity to existing disturbance footprints of existing wells, the plant and pastoral operations. Any clearing activities would be undertaken via an internal approval system to ensure clearing is minimised and in line with MS112 requirements.

Emergency lighting and compressor lighting has been added to the plant to ensure safe operations. Current lighting is below (lower) than any previously approved lighting fixtures and focussed inwards towards the plant. There is no credible risk from lighting on nearby beaches (potential turtle activity) assessed from the project.

2.5 Hydrology and Hydrogeology

The Ashburton River is an intermittent watercourse that travels in a northwest direction and meanders through extensive flood plains between Nanutarra and Onslow. The river is characterised by long dry periods and with irregular significant flow events resulting from high intensity rainfall events. The magnitude of stream flow is predominantly determined by the Average Rainfall Interval (ARI) of the rainfall events. On average, flows occur in the Ashburton River every one to three years. River flows predominantly occur during the wet season

(October to March) and are typically short-lived (AECOM 2010). The region usually experiences a dry season during the months March to September.

The flood plain is underlain by shallow, saline to hyper-saline groundwater that displays levels of dissolved metals above marine guideline criteria values (ANZECC 2000), commensurate with accumulation of salt in the local groundwater environment and the high groundwater salinity.

Shallow, unconfined aquifers associated with major river channels occur within the hinterland of the north of the Tubridgi precinct (Ashburton North), within 10m of the surface inland, and within a few metres of the surface at the coast. Shallow hydrological investigations beneath the local area indicate the localised subsurface groundwater flow also occurs in a south easterly direction, generally following surface contours (Astron Environmental, 1996). Monitoring data indicates that the groundwater at the site is relatively saline, which is likely to be the natural state of the groundwater, due to high salinities expected in coastal low-lying areas (GHD, 2011). Salinities of up to 35,000 mg/L (as Total Dissolved Solids (TDS)) have been recorded with most bores generally having a salinity of between 5,000 and 25,000 mg/L (GHD, 2011). Any runoff from Tubridgi is likely to drain southeast along the topographic contours of the calcrete rise.

The most recent groundwater monitoring event (URS, 2013) identified groundwater elevations at ASW between 4.035 and 6.003 metres below ground level.

Studies by Woodward Clyde Pty Ltd (1993) and Astron Environmental (unpublished data 1995 (a), (b) and (c)) suggest that there is fresh water located within the coastal dune areas, which is restricted to small reserves, that is, "lenses above more saline water". These lenses are replenished during recharge periods, with the salinity of these lenses fluctuating seasonally, which is primarily due to rainfall and evaporation.

The TGSP facilities operational footprint does not encroach within 500 m of any surface water bodies, nor does it intersect any conservation significant wetlands or drainage lines.

The closest PDWSA is the Priority 1 Cane River Water Reserve, which is at least 45 km east of the TGSP and the closest water bore / tank (ID 844; WCORP-073 dataset) is located just south of Onslow, which is approximately 23 km northeast of the L9 area.

2.6 Contamination

The TGSP facility and Ashburton West location were previously the subject of remediation works from contamination caused by a previous proponent. One site was located at the old GEF and this is being managed under the ASW EP. The current status of the location under the *Contaminated Site Act 2003* is 'remediated for restricted use'.

AGIT does not expect any additional contaminated areas to be identified across the new flowline locations. Previous due diligence studies by GHD on Urala Station in 2015 found no contamination along previous flowlines (across the Tubridgi Gas Field), old wellheads or any other signs of contamination across areas that may have been impacted by the TGSP.

AGIT also commissioned GHD to undertake a gas leak survey in 2016. This included flow lines, known fault areas, plugged and abandoned wells and areas near the Ashburton River. This survey found no evidence of any gas leak from the gas reservoir at any of these locations. A follow up survey was completed in 2020 with no evidence of any gas leak from the reservoir identified.

Groundwater monitoring bores are in place around the TGSP and Ashburton West Facilities to assist with monitoring of previous contamination from a previous proponent.

2.6.1 Previous Disturbance

The Tubridgi Gas Field was originally constructed and operated through 1990-2005 when production was ceased. Previous disturbance included the installation of the Griffin Pipeline, Tubridgi well installation, flow line installation and access tracks. While the previous wells have been plugged and abandoned, the previous flow lines remain in place.

Where possible and to avoid additional disturbance, these flowlines and associated infrastructure may be targeted for reuse in future projects or abandoned. This will require a specific review of capability and to ensure they are fit for purpose. Any new drilling projects will require a Construction Environment Plan or associated approval from DEMIRS.

2.7 Socio-Economic

From a socio-economic perspective, the TGS project is located within the pastoral region (Section 2.7.1) based on the predominant land use. Specifically, the TGSP falls within the Shire of Ashburton Local Government Area (LGA), which spans approximately 105,647 km^2 and has a population of approximately 13,026 (ABS, 2016). Onslow is the closest major town located 31 km north of the project. Major industries include mining, pastoralism and fishing.

The TGSP facilities are located within Lot 226 on Deposited Plan 219154 being the whole Land Record 3107/117. The Crown Lease was transferred to DDG Operations Pty Ltd on 28 September 2012 from BHP Billiton. Lot 226 houses the bulk of above ground facilities for the TGSP. Lot 226 is zoned industrial by the Shire of Ashburton. In 2020, DDG Operations Ptd Ltdr changed names to AGI Operations.

As related entities, AGIT has land access arrangements in place with AGI Operations Pty Ltd to enable operational access to any area within production licence L9 that are required for the TGSP and utilises Lot 226 and parts of Urala Station under the same in house arrangement.

The existing TGSP is located within the Pastoral Region of Western Australia, located on Urala Station, which was established in 1912 and covers approximately 55,988 ha. The station is used predominantly for grazing cattle, sheep and other livestock.

AGI Operations Pty Ltd is the current holder of Urala Station Pastoral Lease (2016). This allows for uninterrupted access to the site from a landholder perspective. Urala homestead is the closest sensitive receptor, located approximately 6.5 km from TGSP facilities. The homestead may be inhabited depending on the needs of the station. Urala Homestead has permanent managers in residence.

Access to site utilising Old Onslow Road and Urala Road does include crossing Minderoo Station and stakeholder engagement with Minderoo and the Shire of Ashburton has been undertaken regarding traffic management and potential impacts or simultaneous operations during the proposed project timeline. The outcome of this was that AGIO committed to ensuring that access roads used by the project are maintained to the current or better standard.

2.7.1 The Pastoral Region

The pastoral region extends from Dampier in the City of Karratha to the Shire of Northampton. The LGAs traversed by the proposed flowlines and existing facilities in the pastoral region are described in the Table 2-1.

Table 2-1: Local Governments in the Pastoral Region

LGA	Area (km²)	Popn[1]	Major Towns	Major Industries/ Land Use
Karratha	15,235	22,199	Major Towns: Karratha and Dampier; Ports: Cape Lambert and Dampier.	Iron ore, salt, natural gas, pastoral, fishing, tourism
Ashburton	105,647	7,391	Onslow	Mining, pastoral, fishing, fish processing, oil, tourism, salt

2.8 Cultural Heritage

During on ground surveys conducted in conjunction with the Thalanyji group, no sites of cultural significance were identified. AGIT has an interim heritage agreement for the well drilling program and flowlines and is continuing consultation with the Thalanyji group to progress to a full agreement. Note that the Buurabalayji Thalanyji Aboriginal Corporation (BTAC) is the Registered Native Title Body Corporate (RNTBC) for the Thalanyji People.

The facilities work is being undertaken wholly on Lot 226 which is the site of the former Griffin Export Facility. This lot is zoned as 'Industrial' under the Shire of Ashburton Town Planning Scheme No 7. The entire site has been fully developed and disturbed in the past and as such no heritage values remain within Lot 226. This has been confirmed through recent heritage surveys undertaken onsite. The closest recognised heritage site is in the vicinity of the beach dunes located some 3.5kms from Lot 226.

AGIT has conducted a review of the 1998 Thalanyji Consent Determination (reference number WAD6113), as it covers the easement and lease areas subject to the TGSP and GEF facilities. This assessment concluded that these facilities and associated easements are listed as exclusions and therefore not subject to Native Title. The determined area map is included below.

In addition, the Thalanyji and Minderoo Indigenous Land Use Agreement (ILUA) (Reference number W12009/024) dated 2011 outlines that the easements and leases on Minderoo are specifically excluded (as per the consent determination) from the agreement.

Previous cultural heritage surveys have been undertaken in the area, however in consultation with the local Traditional Owners (Thalanyji - BTAC) a further survey may be conducted in regards to ethnographical and archaeological aspects of the project area.

AGIT has been investigating potential growth opportunities on site and undertook at cultural (archaeological) and ethnographic survey of potential sites of disturbance. This survey (2021) was conducted with BTAC and their requested archaeologists. The results of the survey will assist in planning of any new works.

3. ACTIVITY DESCRIPTION

The TGSP is a subsurface gas injection and extraction facility with a nominal capacity of up to 120 TJ/d of natural gas. The project is driven to use existing facilities that were acquired from BHP and integrated with new equipment. The main source of equipment reuse utilises existing equipment at the decommissioned Griffin Export Facility (GEF), which now forms part of the Tubridgi Gas Storage Facility. Whilst the TGSP operates 24 hours a day for 7 days a week, works are undertaken during daylight hours except for planned outages (such as shutdowns), emergency works or in relation to the investigation and management of alarms, alerts or other asset integrity events.

The TGSP facilities include:

- Inlet separation equipment
- Pre-treatment, including slug catcher and Mercury Removal Units
- Gas Dehydration with regeneration unit
- Compression for sales gas injection and withdrawal (compressors)
- Custody Transfer Metering
- Pig launcher/receiver facilities
- Evaporation ponds
- Control Room
- Switching room
- Accommodation (including air conditioning system, sewage system, potable water system)
- Helipad
- Laydown areas and loading ramp
- Turkeys Nest
- Surface storm water capture tanks
- Cold vent
- Closed drain system with oily water separators and tanks
- Processed water drain system with separator unit
- Gas Engine Alternators (GEA)
- Diesel Engine Alternators (DEA)
- Bunded diesel tank (35kL)
- Bunded refuelling hardstand with day tank (3kL)
- Site earthing system
- Flow lines including cathodic protection
- Communications equipment including guyed microwave tower
- Wellhead facilities and wells - TGS1, TGS3, TGS5, TGS6, TGS9, TRW2, TRW8 and TRW10
- Plugged and abandoned wells TGS4, TGS4A, and TGS7
- Suspended well - TGS7A
- Access Roads
- Drilling laydown area
- Drill rig camp, sewage and waste management

Mothballed equipment (may be pressurised) that remains part of the facility includes:

- LPG Export Pipeline (liquid pipeline)
- Flare Knockout Drum, Flare Knockout Vaporiser
- Nitrogen Rejection Unit – Nitrogen Rejection Column, Expander Booster Unit, Nitrogen Compressors, LNG Export Pumps, C2- Condenser 2, C2- Subcooler, N2 Rejection Column Condenser
- Recovery – De-propaniser, Condensate Pumps, De-Propaniser Condenser, De-Propaniser Reboiler, Condensate Sub-Cooler, De-Propaniser Reflux Pumps, De-Propaniser Reflux Drum, Feed Gas Trim Cooler, C2- Condenser, De-Ethaniser Condenser, De-Ethaniser Reboiler
- Minor pipework
- Fire Water – Fire Water Storage Tank, Fire Water Pump Package

Given its location within the Urala Station, the TGS Facility has a boundary fence installed that aligns with appropriate noise level requirements and this includes the Ashburton West (ASW) infrastructure.

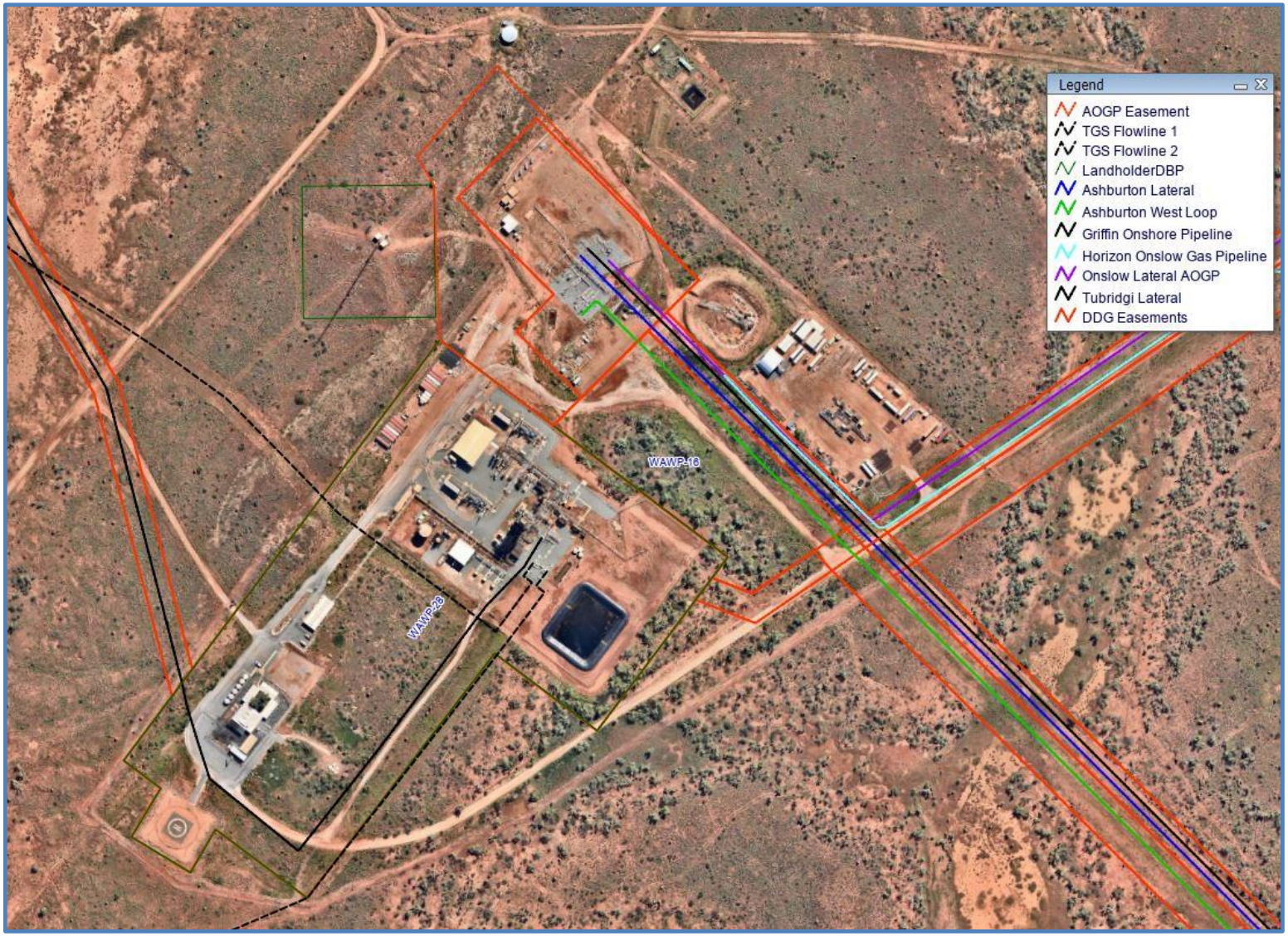

Figure 3-1: TGS Plant Area

Wellheads and Flowlines

DN200 (8") flowlines connect the storage facilities to each of the eight wellheads. Each wellhead contains the same equipment, which includes the following:

- Wellhead Christmas tree
- Safety shutoff valve
- Corrosion inhibitor facility
- Choke Valve
- Gas dewpoint and custody grade flow measurement
- Coalescing filter
- Solar panels and batteries
- Provision for the connection of pig launcher/receiver
- Above ground pipework with isolation valves and vents
- DN200 (8") flow line buried and coated with 3-layer tri laminate coating protected with impressed current cathodic protection system (solar-powered)
- Flow lines are located in signposted alignment within its approved easement
- Controls and communication equipment
- Remotely operable cameras
- Fibre optic cables installed in the same trench as the flowlines
- Access tracks

4. FENCED COMPOUND AREAENVIRONMENTAL RISK IDENTIFICATION AND ASSESSMENT

4.1 Overview

AGIT ensures the effective management of risk across its business through implementation of the AGIG Risk Management Policy. The AGIG Risk Management Policy makes a commitment to ensure that:

- Systems are in place to identify (as far as reasonably practicable) risks faced by the business;
- The impact of identified risks is understood;
- Risk treatment owners are nominated to manage the identified risks; and
- Assurance is provided on the effectiveness of the risk management system and risk controls.

4.2 Methodology

To identify, understand and manage all environmental sources of risk and consequent impacts associated with the operational of the TGSP facilities, a comprehensive Environmental Risk Assessment (ERA) was completed on 28 December 2016. The approach is alignment with ISO 31000:2018 and HB 203:2012 Managing Environment-related Risk guidelines, which provided a framework to demonstrate that the identified impacts and risks are reduced to ALARP and at acceptable levels.

The ERA including the review consisted of a multidisciplinary team of in-house personnel including HSE and followed a structured process which sought to:

- Outline the key operational activities;
- Identify, analyse and evaluate associated hazards and corresponding environmental impacts;
- Where necessary, establish suitable controls; and
- Systematically assess any associated residual environmental risks.

In a workshop held on 16 January 2024., a comprehensive ERA was completed to review and validate risk ratings and associated controls, and address any material gaps in the risk management process, which sought to:

- Outline key activities involved in operation (minor construction and maintenance works) of the TGSP.
- Step 3: Brainstorming of the hazards and their causes.
- Step 4: Assessment of the risk associated with the identified hazards including:
  - Determination of worst case credible consequences;
  - Identification of the existing safeguards (management control and mitigation systems and procedures);
  - Determination of the likelihood of the consequence occurring; and
  - Categorisation of the risk utilising the AGIG Qualitative Risk Analysis Matrix
- Step 5: Development of control measures (where deemed appropriate) to address the risks deemed unacceptable or not ALARP. Consideration of not just the proposed risk control action but also the accountability, resource requirements, timing, performance measures, monitoring and reporting requirements.

- Step 6: Evaluation of the residual risk as per the methodology outlined in Step 4.
- Step 7: Documentation of all findings to inform this EP.

In September 2024, a re-evaluation of the environmental risks and impacts identified for the TGSP was undertaken as part of the opportunity to modify and resubmit the EP, which has taken into account the additional descriptions of the consequence and likelihood categories developed to support the broader AGIG's Operational Risk Matrix.

5. ENVIRONMENTAL MANAGEMENT AND IMPLEMENTATION STRATEGY

The hazards and associated impacts identified during the ERA have been reviewed and attributed to environmental aspects. Within each environmental aspect (interaction subgroup), each group of impacts and risks has been addressed with an objective to:

- Define the environmental performance objectives to minimise the risks and impacts of the activity;
- Define the environmental performance standards to manage the environmental risks and impacts of the activitiy to ALARP and acceptable levels; and
- Define the measurement criteria to determine whether the environmental performance objectives and standards have been met, and the implementation strategy complied with for the activity.

Specific control measures have been developed to direct, review and manage activities so that environmental impacts and risks are continually reduced to ALARP. Each control measure has been assigned a role within the organisation to be responsible for its implementation. A summary of these controls is outlined below.

- Soils and Sediment
  - Erosion and sedimentation management (including areas under rehabilitation)
  - Native Vegetation Clearing Procedure conditions
  - Acid Sulphate Soil (ASS) management (limited interaction with any identified ASS within the TGSP area)
- Native Vegetation
  - Native Vegetation Clearing ProceduresClearing Permit and approval conditions (including areas under rehabilitation
- Weeds
  - Targeted and periodic weed management (inlcuding areas under rehabilitation)
  - Declared weeds management in conjunction with pastoral leases
  - Clean on Entry procedure
  - Stick to existing tracks
- Fire
  - Management of hot works and potential fire risk in line with relevant Permits
  - Management of flammable material build up
  - Firebreaks and management of ignition sources
  - Prohibited items in hazardous areas
  - Hot Works Procedure conditions including compliance with WA fire regulations
- Fauna
  - Trench management
  - Fauna controls including egress and fences
  - Fauna handling training
  - Frequent inspections
  - Waste management (lidded bins, frequent servicing)
- Cultural Heritage and Stakeholder Engagement
  - Consultation with Traditional Owner

  - Surveys for planned disturbance areas
  - Regular review of Registered Sites (GIS)
  - Annual consultation on activities and planned interactions as a minimum frequency
  - Local council communication and consultation (especially in relation to road closures)
- Emissions – Atmospheric (GHG), Dust and Noise / Vibration
  - Minimise GHG, dust and noise generated through activities
  - Stabilise stockpiles including use of dust suppression
  - Minimise emissions through design and efficient operations
  - Monitor ongoing emissions
  - As per approval conditions
- Surface and Ground Water
  - Abstraction under licensed approval conditions only
  - Management of evaporation pond (dual lined with leak detection)
  - Management of chemicals (as per below) to avoid contamination
- Hazardous Materials - Storage and Handling (including Spill Response)
  - Bunded areas for liquid storage
  - Capture and removal of contaminated material (i.e. soil)
  - Minimise chemical storage onsite
- Waste
  - Provision of appropriate bins - labelled (all) and lidded (general and co-mingled)
  - Waste segregation
  - Frequent servicing
- Rehabilitation (short-term - post construction / project completion)
  - Site reinstatement prior to active rehabilitation
  - Aprropriate monitoring program
  - Targeted weed control (where deemed required).

6. MONITORING AND REPORTING

To monitor the effectiveness of control measures in the management of the environmental impacts and risks, targeted monitoring commitments have been specified where relevant. AGIT conducts regular surveillance of the TGS infrastructure to ensure that the integrity of the facilities is maintained. These patrols are conducted by 4WD, helicopter or fixed-wing aircraft and by foot with an objective to detect:

- Third party encroachments
- Impediments to and condition of access roads
- Erosion and changing landforms
- Security violations
- Damaged or missing signage
- Weed infestation
- Vegetation overgrowth and clearing
- Water quality and protection of natural flows
- Damaged or missing gates and fences
- Indications of gas leaks
- Any other issues of significance to the integrity of TGS facility and associated infrastructure

The TGSP is subject to an annual environmental compliance review to ensure that the systems and controls detailed within this EP are both adequate and implemented, and also identify opportunities for improvement. AGIT also undertakes a HSE System Audit (and evaluation) program that assists in assessing compliance to the EP and associated procedural controls.

The routine external reporting requirements for the TGS facilities are summarised as below:

- Prestart and cessation notifications: inform the start and completion dates of activities.
- Recordable Incident Report: details the cause, impacts and corrective actions associated with any incident arising from the activity that breaches a performance objective or standard identified in the EP;
- Emissions and Discharge Report: details all emissions and discharges to any land, air, groundwater, sub-surface or inland water environment that occur in the course of the activity
- Annual Environmental Report (AER): demonstrates environmental performance objectives and standards for the activity are being met
- Annual Compliance Assessment Report (ACAR): Details compliance against approvals issued under Part IV of the EP Act; and
- Annual Works Approval – prescribed premises licence: details any licence and emissions monitoring and annual reporting.

7. STAKEHOLDER ENGAGEMENT

The purpose of consultation is to:

- Obtain appropriate input into the ongoing improvement of this EP.
- Ensure key stakeholders remain up to date with TGSP activities.
- Ensure timely response to landholder issues.
- Maintain dialogue with regulatory authorities, including local councils.

7.1 Approach and Ongoing Engagement

AGIT has continually engaged with stakeholders since the TGS's planning phase to facilitate a collaborative approach and to ensure that local knowledge is considered in the design and management of the project. AGIT has identified relevant stakeholders and have been engaged with throughout the TGS facility operation.

Stakeholder engagement is conducted on a regular or need basis:

- When potential or actual change occurs associated with the TGSP activities and have potential impacts on one or more stakeholders.
- Annually with leaseholders for Minderoo Station.
- When required and outlined in the relevant Access Agreements and statutory approvals.
- On a regular basis to maintain ongoing relationship with stakeholders.

7.2 Consultations Undertaken

AGIT has maintained a record of regular stakeholder (inlcuding local landowners) communications with details of consultation outcomes. Any significant stakeholder concerns or issues are reported to DEMIRS through the Annual Environmental Report.

A 5-yearly revision of the EP was undertaken in August 2022 and resubmitted in March 2024. An opportunity to modify and resubmit this EP was provided by DEMIRS to meet the criteria set outs in the Petroleum and Geothermal Energy Resources (Environment) Regulations. As part of this opportunity, AGIT reached out to the relevant stakeholders for feeback on the EP and confirm that the purpose of the update is to:

- demonstrate environmental impacts and risks associated with facility are up-to-date and always reduced to as far as reasonably practicable; and
- ensure that environmental performance objectives and standards have been met.

Recent consultation with key regulators is described below:

- DEMIRS in relation to the revision of this EP, including the recently constructed wells and flowlines added to the TGSP infrastructure.
- Feedback from the DBCA in relation to the revision of this EP and fauna permit renewal or update.
- This inludes DWER for groundwater monitoring bores around the TGS facility and a surface water licence to take from the Ashburton River.

8. DECOMMISSIONING AND REHABILITATION

Currently, there is no plan to decommission the TGSP infrastructure as its operation is expected to continue into the foreseeable future. An approval decommissioning and rehabilitation plan will be sought from the relevant authority (currently DEMIRS) prior to carrying out any decommissioning and rehabilitation activities. Key considerations will include the following:

- Identification of all potential (or pre-existing) environmental legacies (including contaminated sites) which may restrict post-activity land use.
- Confirmation of future land use; dependent on multiple factors including previous land use, current land use for adjacent areas, stakeholder consultation and ensuring ecological sustainability of the land.
- Removal of above ground facilities and associated equipment.
- Removal of above ground signage and CP points.
- Disturbance areas (compounds, access tracks and airstrips) shall be ripped to mitigate any soil compaction.
- Development of rehabilitation criteria for disturbance areas.
- Best practice (at the time) decommissioning management of the assets either through removal or if left in-situ; to enable a non-polluting, safe and stable condition of the assets.

8.1 Progressive Rehabilitation

AGIT conducts rehabilitation at the end stages of enhancement projects and for areas no longer required for TGSP operational use. Short-term rehabilitation works (mainly revegetation) are covered under Section 6. However, for decommissioning of infrastructure (such as pipelines and old/unused well sites), a more comprehensive rehabilitation program is required.

End of operational life rehabilitation is long-term and have additional requirements to meet the land use at the time of decommissioning. Long-term rehabilitation requires planning and consultation prior to commencement of activities onsite. This includes review of current land use, input from relevant stakeholders (i.e. pastoral leases, Traditional Owner, Shire of Ashburton, etc.) as well as planning for removal of infrastructure. An assessment, including a cost-benefit analysis, for the removal of all above-ground infrastructure as well as below-ground infrastructure (flowlines) as new disturbance will also be undertaken. Preference is for removal of infrastructure, where its potential environmental impacts and risks can be mitigated as well as benefits show to outweigh the cost.

A separate EP for the decommissioning and rehabilitation activities will be developed in consultation with DEMIRS (or an equivalent authority at the time of decommissioning) for acceptance. This will include details such as appropriate land use, access, infrastructure removal, contamination management, short- and long-term monitoring obligations and reinstatement / rehabilitation criteria.

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