Tubridgi Gas Storage
Operations Environment Plan Summary

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
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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

Term	Meaning/ Description
IBRA	Interim Biogeographic Regionalisation for Australia
IMT	Incident Management Team
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 (TGS), a subsurface gas injection and extraction facility with a nominal supply capacity of up to 120 TJ/d of natural gas. The storage facility (TGS 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 TGS. The TGS 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 TGS utilises a seven (7) well program with associated flowlines back to the TGSP facility. The Department of Mines, Petroleum and Exploration (DMPE) formerly (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 TGS.

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

1.2 Operator

AGIT is the instrument holder and nominated operator, and exercises all rights and retains all obligations associated with L9.

AGIT is part of the Australian Gas Infrastructure Group (AGIG), which also includes the Dampier Bunbury Pipeline group of companies (DBP). AGIT relies on the services of DBP, the owner of the DBNGP, for the provision of labour and equipment to undertake its business. In this regard AGIT adopts all AGIG and DBP policies and procedures across the operation of its business.

Table 1-1: Contact details of the Operator

Operator	AGI Tubridgi Pty Limited (AGIT)
ABN	46611027948
Contact Name	Melanie Kenny
Position	Environmental Manager
Address	PO Box Z5267, Perth, St Georges Terrace WA 6831
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1.3 Location

The TGS is situated at the previous Griffin Export 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

The TGS (above ground) infrastructure is located within the Urala Station at Lot 226 on Deposited Plan 219154, Record 3107/117 (Figure 1 1). The TGS Facility has a boundary fence that separates it from the rest of Urala Station and other AGIG facilities within the pastoral lease.

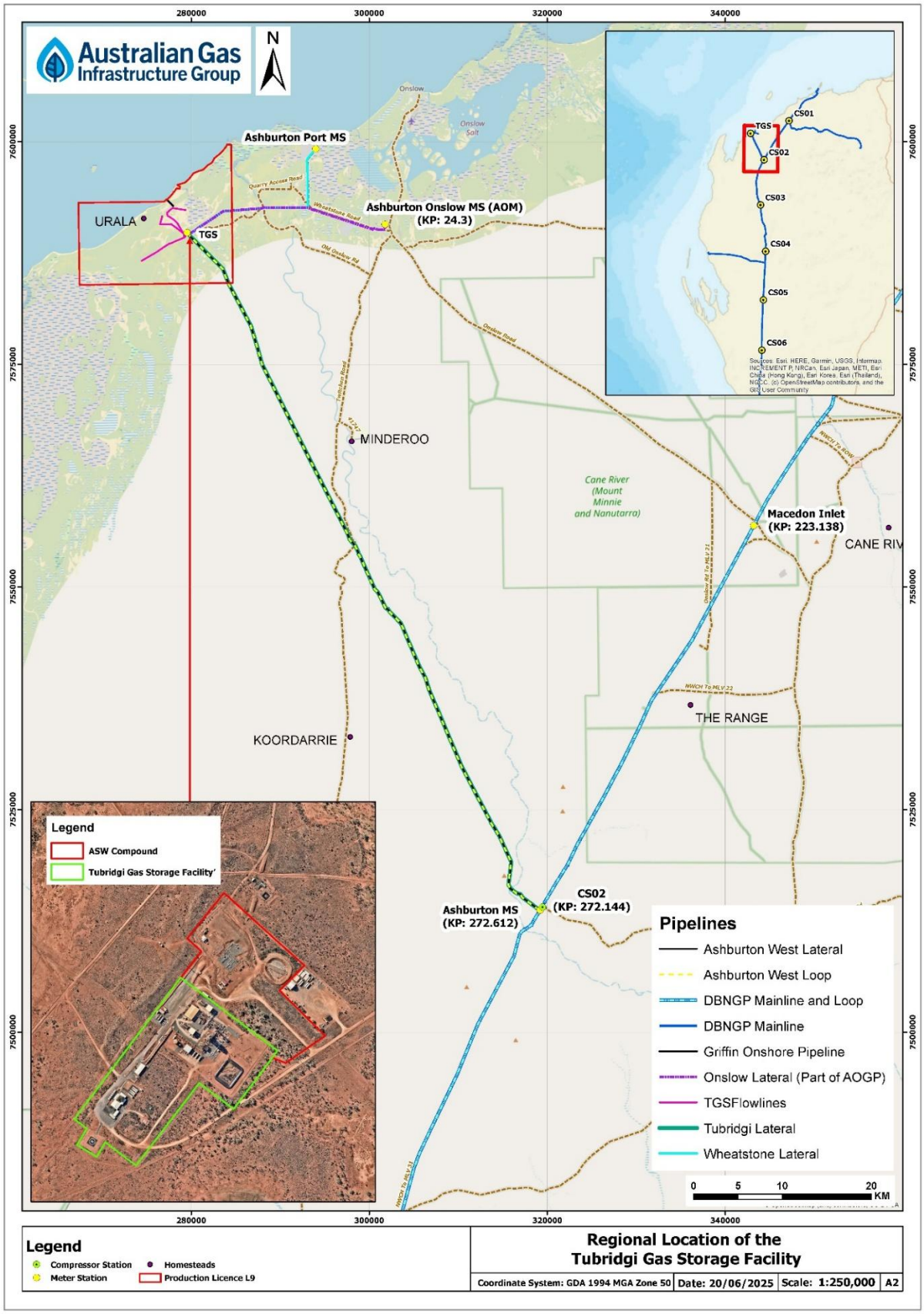

Figure 1-1: Regional Location of Tubridgi Gas Storage Facility

2. EXISTING ENVIRONMENT

The objective of this section is to provide a description of the existing natural, social and cultural environment that may be affected by the operation of the TGS.

2.1 Climate

TGS 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, Soils and Topography

TGS 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.

Quarternary alluvium, colluvium and aeolian sands dominate the province, with small outcroppings of lower Cretaceous sedimentary rocks, Proterozoic granite and metamorphic rocks occurring further to the east (Payne et al. 1988).

The Coastal Plains Geomorphic Province is dominated by the Coastal Plains Soil Region. This soil region consists of eight broad units namely skeletal soils, stony plains, sandy plains, sand dunes, drainage floors, clay-pans, swamps and depressions, and coastal mud flats (Payne et al. 1988).

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).

A review of the Pilbara Coastline ASS data (DWER-053) confirms that all TGS facilities (including wells and flowlines) are not located within moderate or high risk ASS risk areas.

2.3 Land Systems

The TGS is located within the Onslow Land System as described by Payne et al. (1988) and Van Vreeswyk *et al*. (2004), as described below:

- Onslow system - undulating sandplains, dunes and level clay plains supporting soft spinifex grasslands and minor tussock grasslands.
- Dune system - dune fields supporting soft spinifex and minor hard spinifex grasslands.
- Littoral system - bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests.

2.4 Flora

The Interim Biogeographic Regionalisation for Australia (IBRA) currently recognises 89 bioregions and 419 subregions (DCCEEW 2025a). The TGS is located within the Carnarvon (CAR) Bioregion, specifically within the Cape Range subregion (CAR1) of rugged tertiary limestone ranges and extensive red Aeolian dunefields, quaternary coastal beach dunes and mud flats. Acacia shrublands (e.g. Acacia bivenosa) over Triodia spp. occur on limestone and red dunefields, Triodia hummock grasslands with sparse Eucalyptus trees and shrubs on the Cape Range. Tidal mudflats of the Exmouth Gulf support extensive mangroves while the eastern hinterlands comprise a mosaic of saline alluvial plains with samphire and saltbush low shrublands (Kendrick and Mau, 2002).Using information from the initial Mattiske rehabilitation assessment report of the TGS flowlines (including the abandoned TGS-2 well) conducted in November 2018, the following three vegetation communities were identified within the TGS area:

- (C2) *Tecticornia spp.* low sparse chenopod shrubland with *Sporobolus mitchellii*, *Eriachne helmsii*, low isolated tussock grasses on clayey plains; and
- (CP3) *Acacia tetragonophylla* low scattered shrubs over *Triodia epactia* low hummock grassland with *Cenchrus ciliaris* low open tussock grassland on clayey plains; and
- (IP7) *Eucalyptus victrix* low open woodland over *Acacia tetragonophylla*, *Acacia synchronicia, Cullen leucanthum* mid sparse shrubland over *Eriachne helmsii, Eulalia aurea, *Cenchrus ciliaris* low sparse tussock grassland.

Threatened and Priority Flora

No threatened flora species as listed by the Department of Biodiversity, Conservation and Attractions (DBCA) under the BC Act and as listed by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the EPBC Act were recorded within the TGS area (Mattiske, 2016, Mattiske, 2018, to Mattiske, 2024).

One Priority flora species, *Abutilon* sp. *Pritzelianum* (S. van Deeuwen 5095) (Priority 3) was identified within the abandoned TGS-2 well associated with the (CP3) *Acacia tetragonophylla* low shrubland vegetation community (Mattiske 2018 to 2024). Note that TGS-2 well is outside the current TGS area (TGS Facility, wells and flowlines).

Introduced Plant Species

Three introduced (weed) species were identified along the original TGS flowline corridor and the abandoned TGS-2 well in the initial rehabilitation assessment (Mattiske 2018), namely: *Aerva javanica* (Kapok bush); *Chloris virgata* and *Vachellia farnesiana* (Mimosa bush). Introduced plant species changed over time, down to three species in the most recent assessment in 2024, namely: *Aerva javanica* (Kapok bush), *Cenchrus ciliaris* (Buffel grass) and *Vachellia farnesiana* (Mimosa bush) (Mattiske 2018 to 2024).

None of the recorded weed species have been listed as Weeds of National Significance (WoNS) or Declared Pests (Plant) pursuant to the BAM Act (Mattiske 2016, 2018 to 2024).

Threatened and Priority Ecological Communities

No Threatened or Priority Ecological Communities were recorded within the TGS area (Mattiske, 2016, 2018 and 2025, Biota 2020 and DCCEEW 2025).

Vegetation Community and Condition

Vegetation condition was based on the ranking scale developed by Trudgen (1988). Vegetation condition surrounding TGS-1 and TGS-3 area was previously recorded by Mattiske (2016) as excellent.

The 2020 vegetation and flora survey for the proposed Ashburton Salt Project (Biota Environmental Sciences, 2020), whose survey extent included the TGS Flowline 2, noted the vegetation communities and conditions for the TGS.

Flowline 2 extension (from existing TGS-6 well, to the recently added TRW-8 well) as:

- *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.

Conservation Reserves

No conservation estate is intersectied by the TGS facilities and associated infrastructure. The Cane River Conservation Park is the closest gazetted conservation reserve, which is located approximately 70 km (south-east) away; the future Mount Minnie and Nanutarra addition to the Cane River Conservation Park (gazettal in progress) section is approximately 30 km (CAPAD2022_terrestrial dataset) away (DCCEEW 2025, Mattiske 2016 and 2025).

2.5 Fauna

The Protected Matters Search Tool (PMST) query identified the potential occurrence of conservation significant fauna species protected under the EPBC Act (also covers the migratory bird agreements) surrounding the TGS infrastructure within production licence L9. There are 17 avifauna and two terrestrial mammals that potentially occur in the area, with details provided in **Error! Reference source not found.** (DCCEEW 2025).

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 TGS facilties.

2.6 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.

Groundwater at the monitoring bores of the three recently added wells (TRW-2, TRW-8 and TRW-10) was shallow, with depth to groundwater measurements ranging between approximately 1.6 metres below ground level (mBGL) at well BH3 (TRW-8) and 4.1 mBGL at well BH1 (TRW-2) (based on an estimated well stickup of 0.5 m above ground level). Wells BH2 (TRW-10) and BH3 (TRW-8) measured minimal difference in groundwater depths (<0.1 m difference). Well BH1 measured a greater difference in groundwater depth, with a drop of 0.47 m in groundwater between the October and November 2023 (Senversa 2024).

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 TGS facilities operational footprint does not encroach within 500 m of any surface water bodies, nor does it intersect any conservation significant wetlands (including RAMSAR) or drainage lines.

The closest Public Drinking Water Source Area (PDWSA) is the Priority 1 Cane River Water Reserve, which is at least 45 km east of the TGS area 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 production licence L9 area**.**

2.7 Contamination

The TGS facility and ASW Facilities, being located at the former GEF were subjected to remediation works from previous contamination prior to AGIT handover. The TGS Facility falls outside the boundary of this contaminated site, categorised under the *Contaminated Site Act 2003* as 'remediated for restricted use', which is being managed under a seperate (ASW) EP.

Previous due diligence studies by GHD on Urala Station in 2015 found no contamination along existing flowlines (across the Tubridgi Gas Field), old wellheads or any other signs of contamination across areas impacted by the TGS activities. No additional contaminated areas have been identified across the recently constructed flowlines and wellheads.

2.8 Socio-Economic

The TGS is located within the pastoral region of WA, which extends from Dampier in the City of Karratha to the Shire of Northampton. Specifically, the TGS falls within the Shire of Ashburton's Local Government Area (LGA), which spans approximately 105,647 km^2 and has a population of approximately 7,952 (ABS, 2021). Onslow is the closest major town located 31 km north of the TGS. Major industries and land use include mining, pastoralism, fishing, fish processing, oil, salt and tourism.

The TGS facilities are located within Lot 226, zoned industrial by the Shire of Ashburton. The Crown Lease was transferred to AGI Development Group Nominees Pty Limited (formerly DBP Severices Co Nominees Pty Limited) on 28 September 2012 from BHP Billiton.

The entire TGS infrastructure is located on Urala Station, which was established in 1912 and covers approximately 55,988 ha. The pastoral station is used predominantly for grazing cattle, sheep and other livestock. AGI Operations Pty Limited is the current holder of Urala Station Pastoral Lease (2016), subleasing to Harvest Road.

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

This allows for uninterrupted access to the site from a landholder perspective.

The Urala homestead is the closest sensitive receptor, located approximately 6.5 km from the TGS facilities. The homestead may be inhabited depending on the needs of the station, and has permanent managers in residence.

Access to site utilising Old Onslow Road and Urala Road includes crossing Minderoo Station and traffic management measures are in place for simultaneous operations during the TGS related activities, maintaining access roads to the current or better standard.

2.9 Cultural Heritage

No World, Commonwealth and National heritage places are known to occur in the TGS area. The closest recognised heritage site is in the vicinity of the beach dunes located some 3.5 kms from Lot 226, where the TGS facilities are located (DCCEEW 2025).

A desktop assessment using the Aboriginal Cultural Heritage datasets (DLPH-099 and DPLH-100) as well as Aboriginal Cultural Heritage Inquiry System (ACHIS) by the Department of Planning (DPLH), Land and Heritage identified numerous (49) registered and (eight) lodged sites within the L9 area.

AGIT is aware of its obligations under the AH Act and has worked with the Thalanyji group to ensure these obligations are met. Risk assessments have been completed over the recently

added wells and flowline sections. During on-ground archaeological and ethnological surveys conducted in November 2020 with the BTAC/representatives of the Thalanyji group, sites of cultural heritage significance were identified. Any known or identified risk of heritage area has been recorded and avoided in accordance with MS1209 (Appendix A).

In addition, AGIT has a heritage agreement in place as of 20 November 2020 for future developments of the TGS (i.e. well drilling program and flowlines).

Native Title Determination

The TGS facilities lie in the determination area of the Thalanyji Native Title (WCD2008/03) registered on 18 September 2008. The Buurabalayji Thalanyji Aboriginal Corporation (BTAC) is the Registered Native Title Body Corporate (RNTBC) for the Thalanyji People. In this determination, it was found that Native Title had been extinguished within the boundaries of Lot 226, and within the larger boundary of the production licence L9 to the extent that the rights exercised by AGIT are deemed to take precedence over any Native Title rights that may exist.

These TGS facilities and associated easements are listed as exclusions and therefore not subject to the Thalanyji Native Title determination.

Indigenous Land Use Agreement

The Thalanyji and Minderoo Pastoral Indigenous Land Use Agreement (ILUA) (W12009/024), registered on 7 January 2010, applies to the TGS facilities which outlines that the easements and leases on Minderoo are specifically excluded (as per the consent determination) from this ILUA.

3. ACTIVITY DESCRIPTION

The TGS is a subsurface gas injection and extraction facility with a nominal capacity of up to 120 TJ/d of natural gas. This storage facility utilised 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 TGS Facility. Whilst the TGS operates 24 hours a day for 7 days a week, works are undertaken during daylight hours only 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 TGS Facility 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 (10kL)
- Site earthing system
- Flow lines connection including cathodic protection
- Communications equipment including guyed microwave tower
- 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

3.1 Wellheads and Flowlines

Flowlines connect the storage facilities to each of the seven wellheads. Each wellhead contains the same equipment. The equipment 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)
- Sign-posted flowlines 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
- Fenced compound area

3.2 Timeline and Schedule

The operations of TGS commenced in Q2 2017, with steady free flow capability available to enable injection initially with compression added in later 2017 and to allow withdrawal when required. The TGS was in injection only mode until approximately 2020, when withdrawal was requested by customers. Note that withdrawal is managed through daily notifications as the plant operates to meet both injection and withdrawal requirements for the day.

The design life for the facility is approximately 25 years, with the TGS expected to be operational until 2045.

AGIT commenced the TGS Expansion Project in 2023 for the construction of seven new wells and installation of two new flowlines to connect two recently constructed wells (TRW-2 and TRW-8) into the existing flowline network. As part of Flowline 3 installation to connect TRW-2, AGIT repurposed the mothballed Griffin Onshore Gas Pipeline under PL20 within the Ashburton West System. As a result of this development, a portion of the Griffin Onshore Pipeline was transferred from PL20 to L9 The construction of three wells (TRW-2, TRW-8 and

TRW-10) and two flowlines (TGS Flowlines 2 and 3) was completed in May 2024. Four more wells and extensions from Flowlines 2 and 3 to connection additional wells are planned for construction in the near future and will eventually be added under this EP. Table 3-1 outlines the timing of new well construction and commissioning of flowlines connection.

Table 3-1: Schedule for the planned additional TSG wellheads and flowlines

Planned Infrastructure	Indicative Date
Flowline to TRW-10 (suspended) commissioning	2026
TCW-11	2026 (until new CCS legislation is in effect)
TRW-12	Q4 2025
Flowline to TRW-12 commissioning	Q1 2026
TRW-14	Q4 2025
Flowline to TRW-14 commissioning	Q4 2025
TRW-16	2027
Flowline to TRW-16 commissioning	2027

4. ENVIRONMENTAL 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 TGS Facility and associated infrastructure, a comprehensive Environmental Risk Assessment (ERA) was completed on 28 December 2016. The approach is in alignment with the following: 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.

This initial ERA, including the review was undertaken by 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:

- Step 1: Definition of the TGS areas
- Step 2: Identification of activities and unplanned events including accidents, incidents and emergencies involved in operation and maintenance of the assets.
- Step 3: Brainstorming of the hazards and their causes.
- Step 4: Assessment of the risk associated with the identified hazards including:
  - Definition of the environmental impacts and risks for the routine activities identified in Step 2 and unplanned events identified in Step 3;
  - 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. Control measures that are classified into key categories of preventive, detection, and corrective/mitigating, are identified for each environmental aspect to ensure the risks associated are ALARP. They are also assigned to defined Environmental Performance Objectives that aim to eliminate, prevent, reduce and/or mitigate consequences associated with each identified environmental impact and risk.

- Step 6: Evaluation of the residual risk as per the methodology outlined in Step 4.
- Step 7: Documentation of all findings and a summary provided in the EP.

In September 2024, a re-evaluation of the environmental risks and impacts identified for the TGS 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 TGS 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 TGS 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 during 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 TGS activities.
- Ensure timely response to landholder issues.
- Maintain dialogue with regulatory authorities, including the local council.

7.1 Stakeholder Engagement Approach

AGIT has continually engaged with stakeholders since the TGS planning phase to facilitate a collaborative approach and to ensure that local knowledge is considered in the design and management. AGIT has identified a list of relevant stakeholders to be engaged throughout the TGS operation (Table 7-1).

Table 7-1: List of Relevant Stakeholders

Stakeholder Group	List of Stakeholders
State Government	• Department of Water and Environmental Regulation (DWER) • Department of Mines, Petroleum and Exploration (DMPE) • Department of Biodiversity, Conservation and Attractions (DBCA)
Local Government	• Shire of Ashburton
Corporate	• KS Salt • Harvest Road (owner of Minderoo Station; sub-leaseholder of Urala Station)
Community	• Thalanyji Group (Buurabalayji Thalanyji Aboriginal Corporation (BTAC))

Stakeholder engagement is conducted on a regular or need basis:

- When potential or actual change occurs associated with the TGS 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 Ongoing Engagement

AGIT keeps records of all TGS stakeholder consultation and landowner communication (e.g. date, stakeholder consulted and outcomes). Any signifcatnt stakeholder concerns or issues are reported to DMPE through the Annual Environmental Report.

As part of the five-yearly review of this EP, an email invitation to stakeholders was sent out on 11 September 2024 inviting to comment on the TGS Operations EP (Revision 4 as the most current at the time). A webpage was also created and made available for the interested recipients to download a copy of the public summary. The comment period was between 11 and 25 September 2024.

8. DECOMMISSIONING AND REHABILITATION

Currently, there is no plan to decommission the TGS infrastructure as its operation is expected to continue into the foreseeable future. The design life for the overall facility is 25 years; with its commissioning in 2017, the TGS is operating under 10 years into that design life.

A Decommissioning and Final Rehabilitation Plan will be developed after a risk assessment, including and in consultation with stakeholders based around the following minimum criteria.

AGIT commits towards full removal of all property, equipment, and infrastructure as a base case. Where the removal of parts of the TGS is not practicable, including but not limited to the potential to result in greater harm to the surrounding environment or safety of people, AGIT will undertake a comparative risk assessment to determine a suitable alternative decommissioning methodology that will result in acceptable risks to the environment and safety of people. AGIT will submit a decommissioning plan (including the risk assessment) to the Minister for approval.

Once decommissioning approval is given and prior to commencement of any decommissioning activities, a final Decommissioning and Final Rehabilitation Plan will be developed after a risk assessment and in consultation with stakeholders based on the following considerations:

- Identification of all potential (or pre-existing) environmental legacies (including abandoned infrastructure from previous operator and restricted 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

Where possible, AGIT conducts rehabilitation at the end of enhancement projects and for areas no longer required for TGS operational use. This progressive rehabilitation allows for revegetation criteria such as perennial species diversity, richness and foliage cover as well as the potential impact from weeds. These objectives and criteria will form the basis for the strategic, end of TGS operational life's decommissioning, reinstatement and rehabilitation works.

A separate EP for the decommissioning and rehabilitation activities will be developed in consultation with DMPE (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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