FORTESCUE RIVER GAS PIPELINE GEOTECHNICAL INVESTIGATION

ENVIRONMENT PLAN

Revision 3

SUMMARY DOCUMENT

DOCUMENT CONTROL

Rev	Date	Description
1	26 February 2014	Document created

	Title	Name	Date
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Reviewed	Senior Advisor Environment and Heritage	Louise Watson	26/02/2014
Approved	Land Manager	Neil Parry	26/02/2014

Contents

1. Introduction

1.1 Background

The Fortescue River Gas Pipeline (FRGP) is an approximately 266 km buried natural gas pipeline proposed to transport natural gas from the Dampier to Bunbury Natural Gas Pipeline (DBNGP) to the Solomon Power Station (Figure 1). The FRGP shall initially enable a shift from diesel to natural gas fired power generation at the Solomon Hub, with the potential to deliver similar benefits to a number of large resource projects in the area. The FRGP will connect to the DBNGP at Compressor Station 1 (CS1) via an Inlet Station and deliver gas to the Solomon Power Station through a Delivery Station.

As part of route selection and design of the pipeline and assessment of construction methodology, geotechnical investigations (incorporating pipeline centreline) is to be undertaken, to determine the nature of sub surface ground conditions, extent of rock and equipment type that could be utilised during construction along the pipeline route. Works are proposed to be undertaken in late February to March.

The FRGP Geotechnical Investigations Environment Plan (EP) has been prepared for this activity, to meet requirements set out under the *Petroleum Pipeline (Environment) Regulations 2012* (the Regulations). The EP is to be prepared and implemented to the satisfaction of the Department of Mines and Petroleum (DMP).

1.2 Proponent

The Fortescue River Gas Pipeline Joint Venture, an unincorporated joint venture between DDG Fortescue River Pty Ltd (DDG) (57%) and TEC Pilbara Pty Ltd (TECP) (43%) shall own the FRGP. DDG shall be the operator of the asset and is the Proponent for the proposed geotechnical investigations. DDG is solely owned by DUET, an ASX listed infrastructure fund.

The Fortescue River Gas Pipeline Joint Venture is in the process of contracting DDG Operations Pty Ltd (DDGO) to operate and maintain the FRGP. As part of this arrangement, both DDG and DDGO rely on the services of DBNGP (WA) Nominees Pty Ltd (DBP), the owner of the DBNGP, for the provision of labour and equipment to undertake their business including the geotechnical investigations that is the subject of this EP.

Public enquiries regarding the FRGP Geotechnical Investigations may be directed to DBP via:

Attn: Land Manager

PO Box Z5267
Perth, St Georges Terrace WA 6831
Telephone: +61 8 9223 4300
landmanagement@dbp.net.au

2. Location

The FRGP is an approximately 266 km piece of linear infrastructure located in the Pilbara, extending from CS1 on the DBNGP (approximately 120 km south west of Karratha) to the Solomon Hub (approximately 60 km north of Tom Price) (refer Figure 1).

3. Existing Environment

3.1 Physical environment

The FRGP corridor lies within the Pilbara bioregion, predominantly within the Hamersley subregion, which is characterised by proterozoic sedimentary ranges dominated by spinifex grasses dissected by

gorges with low mulga woodlands on the valley floor. The deeply incised gorges of the Hamersley Ranges contain extensive permanent spring-fed streams and pools.

The climate is described as semi-desert tropical, with an annual average rainfall of 300 mm, which usually occurs in summer cyclonic or thunderstorm events. Winter rain is not uncommon with drainage into either the Fortescue to the north, the Ashburton to the south, or the Robe to the west of the FRGP corridor (DoW 2009).

The main characteristic of the soils in the Pilbara region is the predominant red colour with the most extensive soils being shallow, stony soils on hills and ranges and sands on sandplains. Other soil types present in the region include red earths overlying hardpan, cracking and non-cracking clay soils and duplex soils.

The eastern section of the corridor passes through mainly valley systems associated with the Fortescue River but does not traverse the Fortescue River itself, but does traverse several creeks associated with the river, namely Caliwinga Creek (a major tributary), Weelamurra Creek and Asbestos Creek. The western section runs north of Robe River and traverses Peter Creek and a number of other minor drainage lines associated with the Robe River but does not traverse the Robe River itself.

There are several Public Drinking Water Source Areas (PDWSAs) in the Pilbara, mainly located in the west of the region. The FRGP corridor partially passes through the Millstream Water Reserve incorporating a Priority One PDWSA (DoW 2009) but does not intersect the Wellhead Protection Zones nor the production bores of the Millstream Water Reserve (DoW 2010). It should be noted that geotechnical works shall not be undertaken within the PDWSA.

3.2 Biological environment

Eleven broad vegetation associations occur within the corridor based on Beard (1975). The vegetation is dominated by different hummock grasslands, tussock grasslands, bunch grasslands, sedgelands and woodlands which support dominant genera such as *Triodia, Acacia, Eucalyptus* and *Corymbia* (Mattiske 2013). These vegetation associations currently have between 99% and 100% of their pre-European extents remaining (Shepherd et al. 2002).

A total of 353 vascular plant taxa representative of 135 plant genera and 43 plant families were recorded in the FRGP corridor during the 2013 survey (Mattiske 2013). The majority of the taxa recorded were representative of the Fabaceae (77 taxa), Poaceae (63 taxa) and Malvaceae (40 taxa) families. Of the 353 taxa recorded 69.4% were perennial, 17.8% were annual and 12.7% were both annual and perennial depending on local conditions.

Seven taxa recorded during the survey represented range extensions from current known locations. Of particular note were *Aristida anthoxanthoides*, **Jatropha gossypiifolia*, *Notoleptopus decaisnei* var. *decaisnei* and *Sclerolaena limbata*.

Eleven introduced (exotic) taxa were recorded within the Proposal area. Of these, one taxon **Jatropha gossypiifolia* is a Declared Pest pursuant to section 22 (s22) of the *Biosecurity and Agriculture Management Act 2007* (BAM Act) with a Control Category of C3 for the whole of WA. In addition two species with high environmental weed ratings, **Cenchrus ciliaris* and to a lesser extent **Vachellia farnesiana*, were recorded in high densities in a small number of creeklines and flood-out zones.

The vegetation condition in the area of the FRGP corridor ranges from cleared to pristine, with the majority being in Very Good to Pristine condition. Large cleared areas are evident around Compressor Station 1 (CS1) and the Pannawonica Town site, and around the Pannawonica-Millstream Road at KP120 to KP140.

The corridor intercepts the buffer of the Wona Land System PEC. The 2013 field survey indicated floristic aspects possibly consistent with this PEC (J. Cargill, Mattiske, pers. comm. 2013).

Approximately 3.75 km of the FRGP corridor traverses the north-eastern corner of the proposed West Hamersley Range Conservation Park (Mattiske 2013a). This portion of the FRGP corridor follows Pannawonica Rd which also intersects the proposed Conservation Park.

The data and literature review identified 358 vertebrate fauna that have previously been recorded or potentially occur within, or in close proximity to, the Proposal area including 27 species of conservation significance (i.e. listed under the WC Act and/or listed as Priority species by the DPaW and/or listed under the EPBC Act). Three fauna habitats of potential significance (due to likelihood of supporting conservation significant species) were identified in a 2013 level 1 fauna survey within the FRGP corridor (Ninox 2013a, b). These are:

- Cracking clay grasslands
- Rocky habitats (including Yandagee Gorge)
- Riparian habitat.

The cracking clay grasslands support a number of species that are unlikely to be found elsewhere within the Proposal area including Priority (P) species such as *Leggadina lakedownensis* (Lakeland Downs Mouse; P4) and/or *Sminthopsis longicaudata* (Long-tailed Dunnart; P4). These cracking clay communities are similar to the grasslands located south of the Solomon Hub area on the Hamersley Station which comprises largely of small mammals (Ninox 2013).

The FRGP corridor is likely to cross a number of rocky gullies and small gorges where some of the more specialised vertebrate fauna species may potentially occur including species of conservations significance such as the *Dasyurus hallucatus* (Northern Quoll) and/or *Liasis olivaceus barroni* (Pilbara Olive Python), particularly in proximity to water (Ninox 2013). An example, is Yandagee Gorge, traversed by the corridor, which may represent important habitat for Northern Quoll and/or Pilbara Olive Python.

Riparian habitats, being minor creeks supporting riparian vegetation (i.e. dense vegetation and/or eucalypts), within the western section of the Proposal area provide refuge for a wide range of species, particularly birds, and small terrestrial species. These linear habitats of dense vegetation and leaf litter act as corridors through the more arid and sparsely vegetated country and can provide for safe access from rocky hills and slopes for species such as the Northern Quoll Pilbara Olive Python (Ninox 2013). Larger eucalypts such as *Eucalyptus camaldulensis* and *Eucalyptus victrix* within some of these creek systems usually contain hollows suitable for nesting and/or roosting by a range of species.

3.3 Social environment

The FRGP corridor traverses a number of pastoral leases with numerous exploration and mining leases overlapping.

The corridor passes in close proximity to Pannawonica Townsite: approximately 200 m at the closest point. The town has a population of 686, but also accommodates over 1000 people: Rio Tinto Iron Ore employee families, staff on fly-in fly-out ('FIFO') roster from Perth, and those involved in support services (49%residential,51% FIFO). It is accessible by road, rail and light aircraft.

The FRGP corridor crosses two Native Title areas: the Kuruma Marthudunera and the Yindjibarndi. DDG has undertaken inspections for sites of Aboriginal Heritage significance in conjunction with the Kuruma Marthudunera and the Yindjibarndi groups. Surveys involve walking and assessing the land for places of importance and significance as defined under section 5 of the Aboriginal Heritage Act. All identified potential sites have been recorded spatially and shall be demarcated in the field using handheld GPS devices. Additionally, representatives of the Kuruma Marthadunera and Yindjibarndi groups shall be present during works to ensure that there is no disturbance within any site of aboriginal significance.

4. Activity Description

The activity subject to this EP involves test pit excavation and driving of vehicles and mechanised equipment through vegetation.

The geotechnical sampling program involves the following key activities:

- Excavation of an approximately 1 m x 3 m test pit to a depth of approximately 1.2 m.
- A backhoe shall be preferentially used; where required (due to rock hardness), a 30 - 45 tonne excavator shall be used.
- Test pitting shall be conducted at a frequency of not more than one test pit per 250 m within Kilometre Point (KP) 0 – KP 115 where initial studies indicate that hard rock is most likely.
- No test pitting shall be conducted within KP 115 – 140 where existing intrusive data is available from an alternative source.
- Test pitting shall be conducted at a frequency of approximately one test pit per 1 km within KP 140 – KP 266 where access is restricted and initial studies indicate that hard rock is unlikely.
- Although sampling density may be increased/decreased in the field based upon observed conditions, the likely total disturbance footprint for these investigations is 0.15 ha and will not exceed 0.3 ha of vegetation clearing.
- As access in the area is limited, it will not be possible to restrict vehicles and machinery to established tracks and as such off road driving through vegetation will be required.

Key control measures to ensure impacts of clearing is minimised, particularly of vegetation/habitats of potentially higher significance, are as follows:

- Dig sites shall be selected to avoid vegetation. Note: the program is highly flexible and in nature is targeted to rocky areas not supporting vegetation.
- No disturbance shall occur within any ESA.
- There shall be no test pitting or excavation undertaken within 50 m of any major watercourse or 10 m of riparian vegetation (whichever is greater).
- During test pitting, surficial material and topsoil shall be stockpiled separately. The test pit shall be restored in the reverse order such that topsoil and surficial material are returned to the top of the soil profile.
- All test pits shall be excavated, reinstated and rehabilitated in the same day (i.e. no test pit shall remain open overnight).
- Vehicles and machinery shall use established tracks wherever available

There shall be no camp associated with the program and all personnel will be accommodated at existing facilities including but not limited to Fortescue River Roadhouse and FMG Solomon mine camp.

5. Environmental Risk Identification and Assessment

In order to identify, understand and manage all environmental sources of risk and consequent impacts associated with the FRGP Geotechnical Investigations, a comprehensive Environmental Risk Assessment (ERA) was completed. The ERA was conducted by a multidisciplinary team of in house personnel and followed a structured process which sought to:

- outline key activities undertaken on the DBNGP;
- identify, analyse and evaluate associated hazards and corresponding environmental impacts;
- where necessary, establish suitable controls; and
- systematically assess the residual associated environmental risk.

An Environmental Aspects and Impacts Risk Register was developed to document the ERA outcomes (Appendix A). Each hazard and associated impact identified during the ERA has been addressed with an objective to:

- Define the environmental performance objectives that will be required to be achieved in order to ensure environmental protection
- Define the environmental performance standards that relate to the quality of the performance
- Define the measurement criteria for determining whether the objectives and standards have been met for the activity

An implementation strategy has been developed such that the established performance objectives and standards may be met. Specific control measures have been developed to direct, review and manage activities so that environmental impacts and risks are continually being reduced to ALARP. Sections 6.1 to 6.15 provide a summary of the key control measures established for identified potential environmental impacts.

6. Implementation Strategy

6.1 Soils and Sediment

Activities, which may require soil and ground stability management include test pit excavation. Refer to FRGP Environmental Aspects & Impacts Risk Register items: 8, 9, 19, 20 and 22 (Appendix A).

The likely approximate dimensions of test pits is approximately 1 m wide by 3 m long by 1.2 m deep. Given that the geotechnical investigations shall not require excavation to a depth greater than 3 m; excavation in any one location to a volume greater than 100 m^3; or dewatering, Acid Sulphate Soils are unlikely to be an issue.

- For test pits, topsoil shall be dug from a depth of 100 to 150 mm and placed separately to subsoil adjacent to the pit.
- Following the completion of sampling, test pit spoil subsoil and topsoil shall be returned in that order such that the soil profile is reinstated.
- All test pits shall be reinstated to match the pre-existing and surrounding landform.
- All test pits shall be excavated, reinstated and rehabilitated in the same day (i.e. no test pit shall remain open overnight).
- Vehicle movements at watercourses shall be avoided where possible by utilising Pannawonica Road or other existing tracks. Where required, vehicle crossing points shall be selected with a preference for areas of high ground stability and an absence of vegetation.

6.2 Flora

Activities that require flora management include test pit excavation and off road vehicle and machinary movements. Refer to FRGP Environmental Aspects & Impacts Risk Register items: 6, 7, 10 and 12 (Appendix A).

- A handheld GPS device and Environmental Line List shall be maintained to present available information regarding the location of conservation significant flora and environmentally sensitive areas such as riparian (creekline) vegetation.
- There shall be no test pitting or excavation undertaken within 50 m of any major watercourse or 10 m of riparian vegetation (whichever is greater).
- No activity shall occur within 50 m of:
    - Priority Flora
    - PECs
    - TECs
- No vegetation clearing shall be conducted within any ESA, the proposed West Hamersley Range Conservation Park or the Millstream Water Reserve PDWSA (to the extent that these areas satisfy the definition of a non permitted area within Schedule 1 to the Clearing of Native Vegetation Regulations).

- No clearing is to be undertaken outside the section 7 authority area.
- All vehicles and machinery shall be checked to ensure they are free from soil/organic matter prior to arrival on site.
- Excavated soil shal be stockpiled adjacent to the excavation for subsequent backfill to prevent the transport of soil material.
- Clean down shall occur prior to entry to the WONA Land System. Clean down shall occur on a hard surface (ideally plastic or a sealed road) and material shall be collected for offsite disposal at a licenced waste facility.
- All test pits shall be located within the footprint of DDG's proposed FRGP corridor which is proposed for further disturbance prior to subsequent rehabilitation in the latter part of 2014.
- Should planned construction activity not take place at the location of test pits, follow up monitoring shall be conducted to ensure that rehabilitation has achieved conditions similar to that of the surrounding landscape.

* Note that the exclusion of PECs does not extend to their buffers, namely the buffer of the WONA land system which is intersected by the proposal corridor.

6.3 Bushfire

Activities that may increase the risk of fire include test pit excavation. Refer to FRGP Geotechnical Investigations Environmental Aspects & Impacts Risk Register item 13 (Appendix A).

- All activities shall be conducted in accordance with the requirements of regulatory and local fire authorities. In particular, the investigation shall comply with relevant fire restrictions, notification requirements and permitting procedures.
- Fire weather warnings shall be monitored daily through local government sources and other relevant authorities and communicated to construction crews daily during toolbox meetings.
- All equipment shall be maintained and operated to comply with relevant fire safety standards (e.g. use of exhaust spark inhibitors).
- Defective machinery shall be shut down until the defect is rectified and the machine made safe for operations.
- Machinery and vehicles not in use shall be parked in areas of low fire risk (e.g. not parked over shrubs, tall grass or cleared vegetation residue).
- Vehicles shall be regularly checked to ensure that combustible material such as grass and debris does not build up in critical areas where ignition could occur.
- All vehicles shall be fitted with dry chemical extinguishers. All extinguishers shall be tagged by an approved inspector prior to mobilisation.

6.4 Fauna

Vehicle movement and clearing for test pits have the potential to impact upon fauna. Refer to the FRGP Geotechnical Investigations Environmental Aspects & Impacts Risk Register items: 3 and 11 (Appendix A).

- Excavations shall be attended at all times whilst open
- Excavations shall not remain open for longer than 3 hours and shall be remediated immediately following backfilling.
- A handheld GPS device and Environmental Line List shall be maintained to present available information regarding the location of potentially valuable habitat.
- Excavations within areas supporting rocky habitat shall be undertaken approximately 10 m from Pannawonica road in order to minimise the potential for disturbance to fauna that may be utilising this area. Excavation shall not proceed within 50 m of any area where fauna are observed utilising this area.
- Activity shall be minimised to the extent practicable within cracking clay grasslands potential habitat.
- Speed limits shall be restricted to 20 kmph when off road, 40 kmph on established access tracks and the legal speed limit on sealed roads.
- Machinery shall be checked for native fauna taking shelter under machinery prior to starting up motors.
- All fauna injuries and fatalities shall be reported and responded to as an incident.

- Injured and orphaned animals shall be transferred to a wildlife carer where possible or euthanized where care is not available. Injured animals shall not be left to suffer.

6.5 Cultural Heritage

Test pit digging may unearth and/or destroy Aboriginal artifacts or skeletal remains and may also have the potential to disturb known Aboriginal sites. Refer to FRGP Geotechnical Investigations Environmental Aspects & Impacts Risk Register item: 15 (Appendix A).

- All identified potential sites have been recorded spatially and shall be demarcated in the field using handheld GPS devices.
- All personnel working on or near an Aboriginal site shall be made aware of their responsibilities under the Aboriginal Heritage Act 1972.
- If a previously unidentified material of potential Aboriginal heritage value is identified, the following must be undertaken:
    - Stop all work within 30 m of potential Heritage site
    - Report the location and nature of the site to the Senior Advisor – Environment and Heritage
    - If skeletal material has been found, contact the Police
    - Establish a 30 m buffer around the site, inside which work must not take place.
- The Department of Indigenous Affairs and the relevant Traditional Owner group shall be notified regarding any previously unidentified potential sites encountered during works, as soon as practicable.

6.6 Land Users

Activities associated with land use and access may include: scheduling and planning and clearing for test pits. Refer to FRGP Geotechnical Investigations Environmental Aspects & Impacts Risk Register items: 1, 5, 16, 17 and 21 (Appendix A).

- Affected stakeholders shall be consulted to ensure that necessary action is taken to address concerns throughout and after geotechnical investigation.
- All landholders or relevant authorities shall be provided notification of timing of activities before arrival on their land.

Gates shall be left as they were found so as not to alter stock movements.

6.7 Dust

Test pitting and use of all access may generate atmospheric dust emissions, which is anticipated to be relatively minor and well away from sensitive premises. Refer to DBNGP Environmental Aspects & Impacts Risk Register items: 1 and 18 (Appendix A).

- To minimise the period of soil exposure, all test pits shall be excavated, reinstated and rehabilitated in the same day.
- Vehicle speed shall be restricted to no more than 80 km/hr on unsealed tracks/roads
- All registered complaints regarding dust nuisance shall be reported as an environmental incident.
- Where excessive airborne dust is generated or a substantiated landholder complaint received, any combination of one or more of the following shall be implemented as required:
    - Application of water or stabilisers via water trucks and sprayers to dampen down soil. No run-off should be generated from application. Applications shall be frequent enough to provide persistent dust suppression.
    - Use of dust stabilisers, tarps or geo-textile materials to suppress dust generated from stockpiles.

6.8 Noise

Noise emissions may result from clearing and grading and test pit digging, which is anticipated to be relatively minor and well away from sensitive premises. Refer to FRGP Geotechnical Investigations Environmental Aspects & Impacts Risk Register items: 1 and 16 (Appendix A).

- Equipment shall be selected in consideration of its noise emissions. Where practicable, equipment should be selected that is likely to result in the lowest noise impact whilst still completing the required task.
- Equipment shall be fitted with appropriate noise abatement devices (e.g. mufflers, silencers and screens).
- All equipment shall be regularly and efficiently maintained to ensure that noise-attenuating measures are operating efficiently.
- Report and respond to all noise complaints as an environmental incident.

6.9 Hazardous Materials Management

Handling of fuel and hazardous materials may be related to the following activities: refueling and servicing. Refer to FRGP Geotechnical Investigations Environmental Aspects & Impacts Risk Register items: 2 and 4 (Appendix A).

- Diesel shall be stored and transported around the project site in a 1200 L self bunded fuel trailer. The double skinned fuel trailer shall be designed to hold 110% of the capacity of the largest tank and be impervious to prevent the release of spilt substances to the environment.
- Vehicle refuelling shall not be undertaken within 100 m of natural or built waterways or water storage areas (e.g. streams, canals, dams, lakes etc.).
- Refuelling tanks, lines, hoses, pumps, couplings, valves and associated equipment are to be provided and maintained in good working order.
- Drip trays will be used at all times when refuelling.
- Major servicing of plant and equipment shall be undertaken off-site in appropriately equipped areas.
- Appropriate spill response equipment, including containment and recovery equipment, shall be available on site and in vehicles undertaking work where there is the potential for fuel spillage.
- All spills must be addressed immediately in accordance with the Spill Prevention and Response Procedure (DBP 2012).
- All spills shall be recorded as an incident requiring reporting on the:
    - date, time, location
    - quantity and material spilled
    - circumstances that caused the spill
    - size and type of affected area
    - damage / harm caused
    - description of clean-up activities
- All contaminated material must be removed and disposed of at a licenced facility.

6.10 Waste Management

Typical waste generated at the site shall be limited to general domestic waste such as food scraps and packaging. Refer to FRGP Geotechnical Investigation Environmental Aspects & Impacts Risk Register item: 5 (Appendix A).

- All waste generated at the site shall be removed offsite at the end of each day for disposal at a licensed shire facility.
- Good housekeeping shall be maintained at all times.
- Disposal of any hydrocarbon waste shall be in compliance with approved industry codes of practice, relevant safety guidelines and Australian Standards.
- All equipment/materials will be removed from site once the geotechnical investigations have been completed
- There shall be no ablutions brought to site.
- There shall be no reverse osmosis unit brought to site.

7. Consultation

DDG has consulted broadly with the below key stakeholders regarding the FRGP project:

- Office of Environment and Protection (OEPA)
- Department of Environmental Regulations (DER)

- Department of Mines and Petroleum (DMP)
- Department of Water (DoW)
- WaterCorp
- Department of Parks and Wildlife
- Kuruma Marthadunera Group
- Yindjibarndi Group
- Affected pastoralists
- Tenement holders

In relation to the proposed geotechnical program, DDG has consulted with Native Title claimants, Main Roads and Pastoralists to advise them of the access and activities. No unresolved objections have been raised.

DPaW have been consulted regarding the proximity of the FRGP to the proposed West Hamersley Range Conservation Park and have indicated this is unlikely to be an issue due to the location and proximity to Pannawonica Road. Nevertheless, DDG do not propose to undertake vegetation clearing within this location.

8. References

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Figures

Proposed FRGP location and regional setting

CS1

Pannawonica Townsite

CHICHESTER RANGE

Millstream-Chichester National Park

Portland River

Macklin Creek

Fortescue River

Nallanarinna Creek

Robe River

Yarraloola Rd

Roebourne-Wittenoom Rd

Nanuerra Creek

Sherlock River

Red Hill Rd

Duck Creek

Mt Brockman Rd

Hamersley Rd

Solomon Hub

330 m

390 m

396 m

672 m

669 m

455 m

841 m

755 m

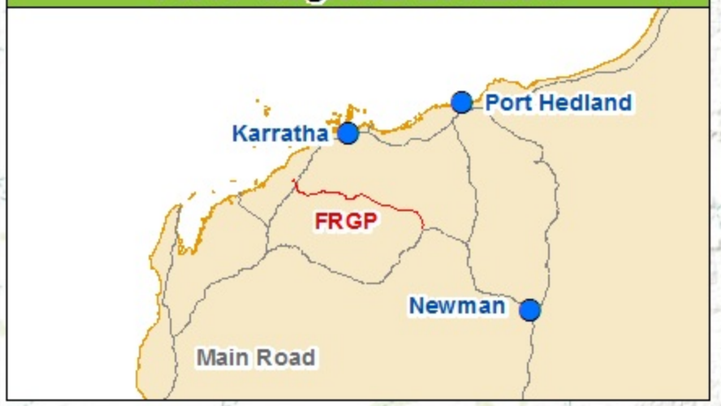
1006 m

1035 m

779 m

117 m

FRGP Regional Location



Legend

- The proposed Fortescue River Gas Pipeline (FRGP) Alignment
- Dampier to Bunbury Natural Gas Pipeline (DBNGP)

0 5 10 20
Kilometres

Datum/Projection:
GDA 1994 MGA Zone 50

N

eco logical AUSTRALIA
www.ecoaus.com.au

Project Code: 13PERPLA-0031
Date: 17/10/2013
Status: Draft
Approved by: NT
Prepared by: LT

Appendix A

FRGP Environmental Aspects and Impacts Register

ID	EP Ref	Activity	Potential environmental impact	Mitigation Measures	Consequence	Likelihood	Risk Level
1	6.8; 6.9; 6.11	Pre planning	Disturbance to infrastructure, nearby residents and land use activities	Stakeholder engagement; use of noise abatement devices; minimise the elapsed time between clearing, grading and restoration.	Minor	Remote	Negligible
2	6.10	General	Failure of pressurised hoses causing spills to environment	Spill kits; refuelling procedures	Minor	Occasional	Low
3	6.5	Daily commuting	Injury to fauna through road strikes	Speed restrictions	Minor	Unlikely	Low
4	6.10	Refuelling and servicing	Contamination of local environment	Spill kits	Minor	Unlikely	Low
5	6.11	Waste management	Contamination of local environment	Labelled, lidded bins; disposal to a licensed facility	Minor	Remote	Negligible
6	6.2	Clearing for test pits	Impacts on vegetation and flora	Pre clearing approvals; dig sites selected to avoid vegetation; use established tracks if within 100 m; dig sites shall avoid all riparian vegetation by 10 m and major watercourses by a minimum of 50 m	Minor	Remote	Negligible
7	6.2		Clearing outside approved dig sites	Pre clearing approvals;	Minor	Unlikely	Low
8	6.1		Soil erosion	Minimise the elapsed time between clearing, excavation and restoration	Trivial	Unlikely	Negligible
9	6.1		Loss of topsoil through inappropriate storage	Excavate and reinstate in same day	Minor	Remote	Negligible
10	6.2		Disturbance to Threatened or Priority flora	Pre clearing approvals; avoidance of Priority flora locations; demarcation of approved clearing boundaries	Severe (threatened flora) Minor (priority flora)	Hypothetical (none present) Unlikely	Negligible (none present) Low
11	6.5		Impacts on fauna	Minimise clearing (see Item 7 above); Dig sites shall avoid all riparian vegetation by a minimum of 50 m; avoidance of habitat trees	Minor	Remote	Negligible
12	6.3		Spreading of weeds to detriment of native vegetation	Clean down of vehicles and machinery	Minor	Remote	Negligible
13	6.4		Bushfire caused by activities	Monitor fire warnings and restrictions; Fire supressing training and equipment; Vehicle maintenance and movement management	Severe	Unlikely	Intermediate
14	6.2; 6.10		Impacts on watercourses	Dig sites shall avoid all riparian vegetation by a minimum of 50 m; Spill response and hazardous material management	Minor	Remote	Negligible
15	6.6		Cultural heritage disturbance	Pre clearing approvals	Minor	Remote	Negligible
16	6.9		Noise	Noise abatement devices, Noise Regs	Minor	Remote	Negligible
17	6.8		Generation of dust that will impact on flora/fauna and local amenity	Minimise the elapsed time between clearing, excavation and restoration; refer to BOM forecasts; restrict vehicle speeds	Minor	Remote	Negligible
18	6.8		Dust exposure	Minimise the elapsed time between clearing, excavation and restoration; restrict vehicle speeds	Minor	Remote	Negligible
19	6.1	Test pit excavation	Alteration to hydrological regimes (surface drainage) and sedimentation	Pre-planning for dig sites; all test pits shall be excavated, reinstated and rehabilitated in the same day (i.e. no test pit shall remain open overnight)	Trivial	Unlikely	Negligible
20	6.1		Soil erosion	All test pits shall be excavated, reinstated and rehabilitated in the same day (i.e. no test pit shall remain open overnight)	Trivial	Unlikely	Negligible
21	6.7		Damage to other land-uses	Stock crossing points; gates left as they were found; communication of construction schedule to relevant third parties	Trivial	Unlikely	Negligible

ID	EP Ref	Activity	Potential environmental impact	Mitigation Measures	Consequence	Likelihood	Risk Level
22	6.1		Disturbance of Acid Sulphate soils	No dewatering; likely excavation depth of 1.2; no excavation deeper than 3 m or greater than 100 m^3.	Trivial	Unlikely	Negligible
23	6.1, 6.2	Clean-up and rehabilitation	Lack of vegetation can lead to erosion, sedimentation, visual amenity and alterations in hydrological regimes Disturbance to existing vegetation and faunal habitats	Reinstatement and rehabilitation with topsoil and surficial material	Severe	Remote	Low