




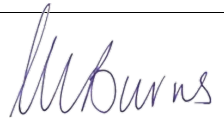

KARLAWINDA GAS PIPELINE PLAN

Construction Environment Plan Summary Document

Pipeline Licence: PL 121

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1. Introduction

This Environment Plan (EP) Summary provides an overview of the environmental management requirements for the construction of the Karlawinda Gas Pipeline and associated facilities (KGP), located in the north of the Midwest Region of Western Australia (WA). The KGP is Pipeline Licence PL 121 and will connect to the Goldfields Gas Pipeline (GGP) to supply a gas fired power station at the Karlawinda Gold Project on M52/1070 and will include other associated infrastructure such as borrow pits, extra work space areas and a pipeline service road. KGP will be wholly within Miscellaneous Licences L52/189, L52/192 & L52/197 and mine tenement M52/1070, held by Greenmount Resources Pty Ltd (Greenmount). APA Operations Pty Ltd (APA) and Greenmount have entered into an Access Agreement for the construction, operation and maintenance for the pipeline, with APT Pipelines (WA) Pty Ltd being the operator. Additionally, a permanent dual-purpose site access road has been constructed by Greenmount within the pipeline licenced area (PL 121) from the Great Northern Highway to the mine site to support ongoing operations. The Construction Right of Way (CROW) for KGP will be to the north of the Karlawinda access road.

1.1 Purpose and Scope

The purpose of this EP Summary is to provide information to the general public regarding KGP environmental considerations and management requirements. This EP Summary outlines the construction works and management defined in the Construction Environmental Management Plan (CEP).

1.2 Objectives

The overall environmental objectives of the CEP are to:

- Outline proposed measures to manage potential environmental impacts associated with construction of the KGP.
- Facilitate approvals under the *Petroleum Pipelines Act 1969* (Pipelines Act) and *Mining Act 1978* (Mining Act).
- Provide direction to project personnel in meeting APA's environmental obligations and commitments.
- Ensure compliance with project approval, pipeline licence, tenement and other conditions.

2. Site Description

The KGP will begin at the Limestone Springs Offtake Station (LSPR) at approximate Kilometre Point (KP) 529.6 of the GGP and run below ground for approximately 56 km, ending at the outlet flange of the Savory Creek Delivery Station (SAVO) supplying gas to the Karlawinda Gold Project mine site gas fired power station (**Figure 1**).

Selected pipeline coordinates and kilometre points (KPs) are summarised in **Table 1**. All Pipeline coordinates are provided in the spatial data accompanying this submission.

Table 1: Approximate Pipeline Coordinates for KGP

Feature / Kilometre Point (KP)	GPS Coordinates (GDA94, Zone 50 & 51)	
	Easting (mE)	Northing (mN)
Start Point – LSPR Hot tap on GGP KP529.6	762576	7366315.4
KGP KP0	762583	7366315.3
End Point – SAVO	205816	7368496

The pipeline will be designed for a minimum operating life of 40 years. APA has selected a route for the KGP to, as far as practicable, avoid:

- Topographic features, including hills, ridges, sand dunes, and watercourses that present difficult, risky, or costly challenges for construction or reinstatement.
- Disruption to third party infrastructure and services, such as roads, other pipelines, or cables.
- Disturbance to places of environmental or social significance, such as Aboriginal heritage sites, or priority flora.

The pipeline will lie within Pipeline Licence PL 121 licenced area, which occupies a corridor within existing Miscellaneous Licences and Mining Leases all held by Greenmount. APA will be the sole holder of Pipeline Licence PL 121, granted under the *Petroleum Pipelines Act 1969* once the application for transfer is complete.

The boundary of Pipeline Licence PL 121 licenced area forms the disturbance envelope the limits of the native vegetation clearing permit (NVCP) application area. All new disturbance associated with construction will be confined to this envelope. The Project will also make use of existing cleared areas and infrastructure such as third party access roads and laydown yards where possible.

In this document the “construction right-of-way” (ROW) refers to a subsection of the pipeline envelope (the pipeline licence area) where vegetation clearing will be required for pipeline construction. APA expects the construction ROW to be approximately 25 m wide, with the width reduced in some sections to avoid or minimise disturbance to areas of particular environmental (e.g. Priority flora) or heritage value.

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The disturbance footprint required within the licence area to accommodate a 25 m ROW for construction activities including earthworks, trenching, pipelay, topsoil storage, trench stockpiles, access roads and site-office/ablutions, will be approximately 160 ha. The location of temporary storage, laydown and office areas will be within the construction ROW.

Disturbance will be temporary, once completed, approximately 135 ha of the total cleared area will be rehabilitated.

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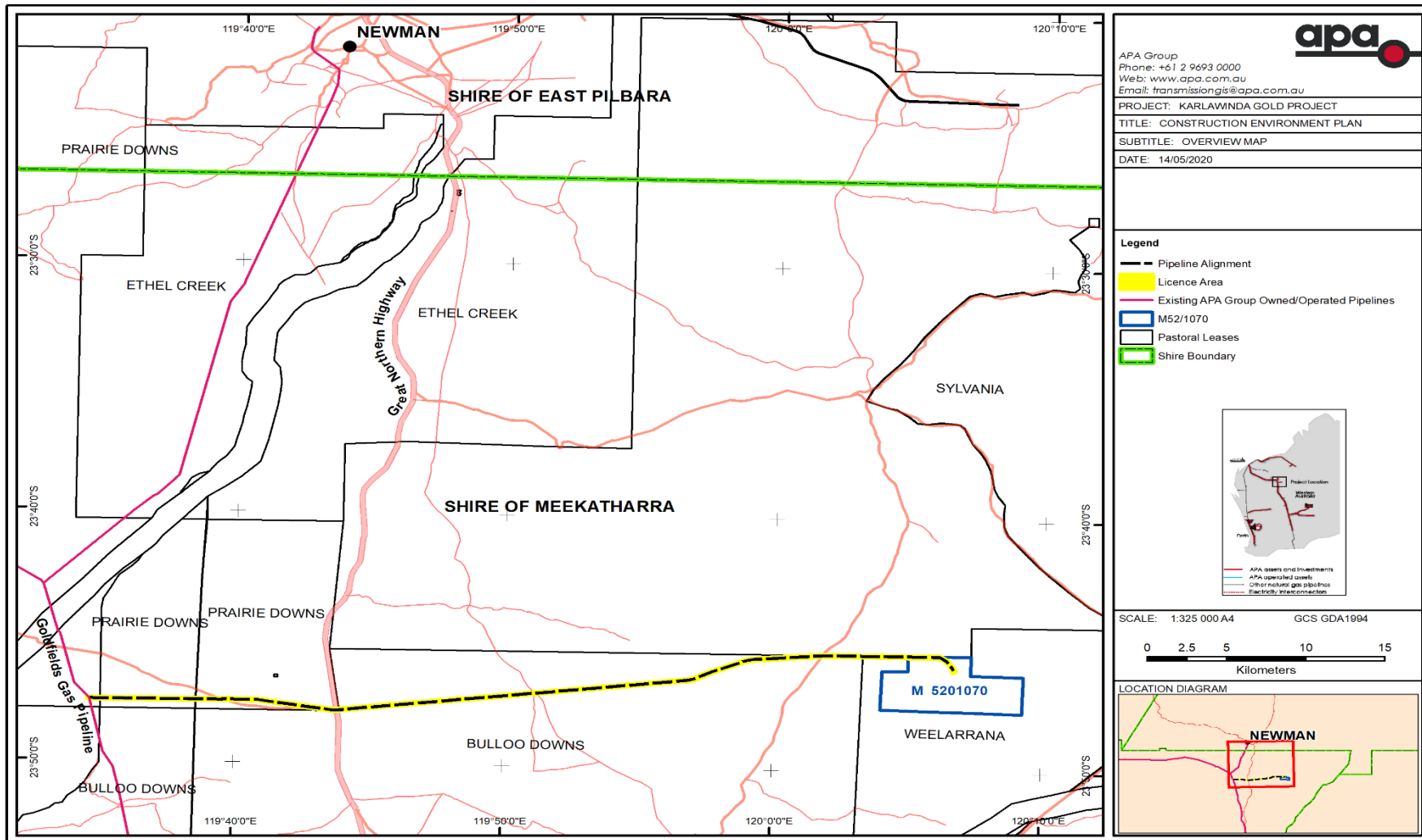


Figure 1: KGP Project Locality Map



3. Construction Activities

The KGP construction project has an estimated construction duration of 3 months (Q4 2020 to Q1 2021), with commissioning to follow shortly after.

Works associated with the KGP construction are summarised in [Table 2](#).

Table 2: KGP Activity Summary

Activity	Description
Mobilisation	<p>Transport of construction machinery, plant and equipment to site, establishment of laydown and site support workspaces including temporary site office/crib room and ablution block.</p> <p>The construction workforce will be accommodated within the existing workers camp located at the nearby Karlawinda Gold Project.</p>
Survey	<p>The pipeline centreline, limits of the construction ROW and any ancillary workspaces will be surveyed and marked out ahead of ground-disturbing works.</p>
Clear grade and	<p>Removal of vegetation in accordance with the NVCP. Topsoil stripped to a minimum depth of 100 mm and push into windrows. Vegetation will be stockpiled separately.</p>
Excavation and trenching	<p>Excavation of trenches including those for the pipeline, the hot tap to the GGP, the Limestone Springs offtake station, and metering and Savory Creek delivery station.</p> <p>Trench spoil will be placed on the trench side of the construction ROW, separate to the topsoil and vegetation stockpiles from clear and grade</p>
Blasting	<p>Blasting is not an expected activity for the KGP project. However, where material cannot be removed with conventional rock breaking plan and equipment, targeted blasting may be required. Any blasting will be carefully controlled, and carried out by a specialist team</p>
Horizontal Directional Drilling	<p>If open cut trench methods are not suitable for specific crossings, horizontal directional drilling (HDD) methods will be the preferred means of trenchless construction. Due to the intersection of the KGP with the Great Northern Highway HDD may be required at this location.</p>
Hot Tapping	<p>Safely drilling and welding a new fitting to allow connection of the off-take into the operating GGP.</p>



Activity	Description
Pipe Assembly	<p>Pipe will be delivered to the construction ROW and laid out end-to-end alongside the trench. Individual pipe segments will be placed on raised timber skids or sandbags to protect them from damage, and facilitate welding into continuous lengths (pipe strings).</p> <p>The pipeline will be bent in places to follow the pipeline route, and/or conform to the terrain.</p> <p>Pipe segments are welded into continuous lengths before being laid in the trench. Welded joints will be x-ray tested and garnet-blasted to remove surface scale and rust, and then coated with suitable joint coating to provide continuous external coating and prevent corrosion.</p> <p>Installation of the Cathodic Protection cables to the pipeline will be completed in advance of pipe lower-in by welding the cables to the pipeline, applying the necessary coating and then the pipe can be lowered into the trench.</p>
Pipe Lowering	<p>Once welded, the pipe strings will be placed into the trench by side-boom pipe-layers (or equivalent). Fine bedding and padding sand will be placed around the pipe to prevent any sharp objects (such as rocks in the trench spoil) from damaging the pipe coating. Bedding and padding material will be sourced from the trench spoil itself by screening, wherever possible.</p>
Backfilling	<p>Suitable stockpiled trench spoil will be returned to the trench and compacted after the pipe is lowered in. If required, clean, approved locally-sourced fill will be imported to make up any shortfall where trench spoil is deemed unsuitable for backfill.</p> <p>Topsoil removed during clear and grade will then be re-spread and contours reinstated.</p>
Testing	<p>Non-destructive testing, functional testing of all manual valves, hydro-testing of pipework; hazardous area checks, earthing compliance checks and continuity point to point testing of circuits.</p>
Commissioning	<p>Pre-testing all mechanical and electrical equipment and instrumentation.</p> <p>Commissioning communications and control systems prior to introduction of gas.</p> <p>Progressive introduction of gas and commissioning each item of equipment sequentially until the whole system is capable of operating as a unit.</p>
Demobilisation	<p>Disassembly and removal from site of any temporary infrastructure, machinery and equipment.</p>



Activity	Description
Site reinstatement and Clean- up	Removal of waste and stockpiled materials, scarification of disturbed areas, replacement of topsoils over disturbed areas, redistribution of stockpiled vegetative material removed for construction.

Supporting services required for the activity include water supply, power generation and chemical storage and waste management. These aspects of the Project are summarised in the sections below.

3.1 Water Supply

Water will be mainly required for dust suppression, hydrotesting and pad construction for temporary project facilities.

It is anticipated that water for the KGP will be sourced from project bores, located along the project area. Any groundwater abstraction will occur in accordance with relevant licence/s to take water, issued under the *Rights in Water and Irrigation Act 1914*.

3.2 Power Generation, Fuels and Chemical Storage

Electricity for construction activities at the KGP site will be supplied by diesel generators. Diesel storage for power generation and running of machinery, vehicles and equipment will incorporate:

- A double-walled (or self-bunded) transportable fuel tank, of up to 110,000 L, to be stored offsite at a suitable location;
- A diesel supply truck of maximum 20,000 L, travelling the construction ROW daily, to refuel vehicles and mobile and fixed plant
- Mobile onsite fuel trailer maximum 5,000 L, and;
- Miscellaneous jerry cans, each up to 20 L.

Other hydrocarbon and chemical storage for the construction will incorporate:

- Engine, gearbox, hydraulic and other oil and greases, in a variety of containers, including 3,000 L tanks, 1,000 L intermediate bulk containers (IBCs), 200 L drums, and 20 L containers.
- Various other chemicals for construction use, including brake and radiator fluids paints, concrete retarders, formwork release agents, paints, solvents, thinners, acetone, anti-seize, cleaning agents, and others, in containers of less than 50 L.

3.3 Waste

Project wastes are expected to principally comprise:

- General waste: packaging, wooden pallets, steel (e.g. pipe off-cuts), builders rubble, formwork, welding rods etc. To be contained in designated bins and disposed by contractor at the KGP mine site;

- Chemicals: small quantities of left over chemicals (both cleaning and construction chemicals) and used chemical/aerosol containers containing residual product and disposed by third-party certified waste management contractor;
- Oils: various, stored in 1,000 L containers, drip trays, lube oil/coolant disposed by third-party certified waste management contractor;
- Putrescible waste: food etc. to be contained in designated bins and disposed by contractor at the KGP mine site;
- Waste garnet: Inert – as per Landfill Waste Classification and Waste Definitions 1996 (as amended 2019) – disposed of at a licenced landfill facility; and
- Sewage and associated greywater.

Sewage from ablutions and associated grey water will be stored in self-contained holding tanks. Contractors will be engaged for servicing and removal of raw sewage and grey water from site at intervals commensurate with storage capacity and waste generation rates. The Contractor will transport and dispose of waste at a licensed facility offsite. It is not anticipated that a sewage system will be required to be installed for the project

4. Existing environment

4.1 Biographic Region and Land Use

The KGP is located within the Gascoyne Bioregion and the Gascoyne – Augustus (GAS3) sub-region as defined by the *Biogeographic Regionalisation for Australia* version 7 (IBRA; DoE 2012). This sub-region is characterised by rugged low Proterozoic sedimentary and granite ranges divided by broad flat valleys (Desmond et al 2001). Dominant vegetation is Mulga Woodlands and shrublands with perennial grasses such as *Triodia* (spinifex). The dominant landuse within the subregion is native pasture grazing.

4.2 Topography and Soils

Topography along the KGP is relatively flat, consisting mostly of extensive flat and gently sloping plains. The route intersects three soil systems as described by Tille 2006 (Table 3).



Table 3: Soil Systems Intersected by the KGP (Tille 2006)

Soil System	Description
Cadgie System (290Ca)	Hardpan plains with thin sand cover and sandy banks supporting scattered mulga shrublands.
Edgerton System (290Eg)	Mostly dissected slopes, with some hardpan plain and drainage floor supporting Hummock grasslands, Acacia shrubs on slopes and scattered mulga on hardpan.
Nooingnin System (290No)	Hardpan plains with very large, dense mulga groves and sandy banks and plains that support Acacia shrublands with perennial grasses.

Soils and geology along the KGP route have been reviewed in context with potential for acid sulphate soils (ASS), and the likelihood of proposed works intersecting ASS is considered to be low. Similarly, there are no known or suspected contaminated sites in the vicinity of the route.

4.3 Surface Water and Groundwater

Drainage of the wider area is provided primarily by the Gascoyne river catchment, assisted by the headwaters of the Ashburton and Fortescue rivers (Desmond et al. 2001). The KGP is aligned along the Upper Fortescue/Ashburton and Upper Fortescue/Lake Disappointment catchment divides over much of its length. The KGP is not crossed by any significant, perennial drainage lines. However, minor ephemeral drainage lines intersect the project area.

Immediately to the west of the project area there are three slightly larger drainages that report in a southerly direction towards Savory Creek, a registered Priority 1 Wild River. The drainage within proximity to the project area are typical of rivers in the arid zone in that they are ephemeral, highly variable and only convey flow following cyclonic and other depression related rainfall events

Groundwater levels measured in bores near the KGP route are typically 10 - 13 metres below ground level (mBGL). It is expected that groundwater level will be well below the base of excavation (excavation to about 1 m).

4.4 Conservation Reserves and Environmentally Sensitive Areas

There are no conservation areas or Department of Biodiversity, Conservation and Attractions (DBCA) Managed Lands within or adjacent to the Project. The nearest DBCA Managed Land is the Collier Range National Park, which is approximately 70 km south of the project area. There are no known Environmentally Sensitive Area (ESA) protected under the *Environmental Protection Act 1986 (EP Act)* located within 40 km of the KGP.

4.5 Vegetation and Flora

Vegetation of the project area consists predominantly of Mulga woodlands on the plains and shrublands on hills, which are common throughout the region. Perennial grasses such as *Triodia* species (*spinifex*) are usually confined to patches of sandy soil, where the sands tend to occur in low, raised banks (Beard, 1990).

No Threatened Ecological Communities (TEC) listed under the *EPBC Act* or *WC Act*, or Priority Ecological Communities (PEC) mapped by the Department of Biodiversity Conservation and Attractions (DBCA), occur within the project area.

Vegetation condition within the project area ranges from 'completely degraded' to 'very good', with the majority of the pipeline corridor in 'very good' condition. Within the project area, either side of the Great Northern Hwy had been variously impacted by past clearing, scraping and other earthworks and parts were considered to be in 'Poor' condition. Approximately 300 m west from the highway, one area was considered to be in 'Good' condition due to some similar disturbances. Approximately 1 km west of the highway an old 'borrow pit' area that likely provided material for the local Turee Creek Rd, was 'Completely Degraded' (Morgan, 2018).

No Threatened flora species listed under the *EPBC Act* or *WC Act* have been identified within the KGP project area. Four Priority Flora species listed by DBCA were recorded in the project area: *Aristida jerichoensis* var. *subspinulifera* (Priority 3), *Eremophila rigida* (Priority 3), *Rhagodia* sp. *Hamersley* (M. Trudgen 17794) (Priority 3) and *Goodenia nuda* (Priority 4). These species are well represented at a regional scale with numerous populations recorded, outside the narrow band of the project area, within the Gascoyne and Pilbara Bioregions (Morgan, 2018; Western Australian Herbarium, 2020).

Four introduced flora species were identified within the project area:

- **Bidens bipinnata* (Bipinnate Beggartick).
- **Malvastrum americanum* (Spiked Malvastrum).
- **Cynodon dactylon* (Couch).
- **Citrullus colocynthis*.

The introduced taxa observed were each recorded at single locations within the survey area but are likely to be scattered in parts of the KGP project area and have been recorded in the wider Gascoyne region (Morgan, 2018). None of these introduced species are listed as Declared Plants under the *Biosecurity and Agriculture Management Act 2007*, or Weeds of National Significance listed by the Federal Department of the Environment and Energy.

4.6 Fauna and Habitat

Fauna habitat throughout the project area was typically described as widespread throughout the Gascoyne Bioregion. Of the eight fauna habitats identified within a survey of the KGP project area, three; major drainage lines, rock outcrop and ephemeral wetland were considered range restricted. The lack of diversity in vegetation and substrate types discourages biodiversity, as does a lack of semi-permanent waterbodies, which would increase species richness.

Habitat mapping and database searches identified, 15 species of conservation significant fauna may occur within the vicinity of the KGP project area. Species of most interest include, the Unpatterned Robust Slider (*Lerista macropisthopus remota*) for which the preferred habitat of “leaf litter under Acacia shrubland/woodland” is abundant and Long-tailed Dunnart (*Sminthopsi slongicaudata*), which may utilise rocky outcrops present in some sections of the project area. However, none of these species nor any other conservation significant fauna were recorded in the project area by 360 Environmental (2010, 2016) or BCE (2018) (Table 4).

Table 4: Fauna of Conservation Significance Possibly Occurring in KGP Project Area

Species	Status	Preferred Habitat Type	Expected Use of Project Area
Unpatterned Robust Slider (<i>Lerista macropisthopus remota</i>)	DBCAs ¹ Priority 2	Leaf litter under Acacia shrubland/woodland	Resident, potential habitat throughout the project area
Gane's Blind Snake (<i>Anilius ganei</i>)	DBCAs Priority 1	Sandy soils and loams of Mulga woodlands/shrublands and spinifex grasslands.	Possible resident, may utilise Mulga woodlands and stony habitats within the project area
Australian Bustard (<i>Ardeotis australis</i>)	Locally Significant	Grassland, woodland and open agricultural country	Regular visitor
Fork-tailed Swift (<i>Apus pacificus</i>)	EPBC ² Migratory	Almost exclusively aerial, found above treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes	Possibly migrate through the project area
Bush Stone-curlew (<i>Burhinus grallarius</i>)	Locally Significant	Open grasslands, woodlands and shrublands	Likely resident
Common Greenshank (<i>Tringa nebularia</i>)	EPBC Migratory	A waterbird, it may utilise shallow pools along drainage lines and ephemeral waterbodies	Migrant
Peregrine Falcon (<i>Falco peregrinus</i>)	WCA ³ Schedule 7	Found in a wide variety of habitats. It nests on cliffs or in very large trees.	Likely resident
Night Parrot (<i>Pezoporus occidentalis</i>)	EPBC Endangered	The spinifex/samphire ecotone, that occurs around the margins of semi-permanent waterbodies. It is also known to occupy rocky hills with Spinifex coverage.	Irregular visitor
Striated Grasswren (<i>Amytornis striatus striatus</i>)	DBCAs Priority 4	Sandplains, dunes and stony hills dominated by spinifex (<i>Triodia</i>) grass.	Possible resident, utilising spinifex grassland areas.
Brush-tailed Mulgara (<i>Dasycercus blythi</i>)	DBCAs Priority 4	Mature spinifex grasslands on sandy and sandy-loam soils, often associated with paleo-drainage lines.	Possible resident



Species	Status	Preferred Habitat Type	Expected Use of Project Area
Long-tailed Dunnart (<i>Sminthopsi slongicaudata</i>)	DBCAs Priority 4	Exposed rock and stony soils with hummock grasses and shrubs.	Possible resident, may utilise small rocky outcrops within or adjacent to the project area
Greater Bilby (<i>Macrotis lagotis</i>)	EPBC Vulnerable	Arid climates with spinifex and acacia woodlands/shrublands. Paleo-drainage systems for foraging and burrowing.	Irregular visitor
Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>)	DBCAs Priority 4	Hummock grassland over stony substrates, often on the lower slopes of small rises.	Possible resident
Pilbara Leaf-nosed Bat (<i>Rhinonictis aurantia</i>)	EPBC Vulnerable	Roosts in caves with stable, warm and humid microclimates. Forages in <i>Triodia</i> hummock grasslands.	Irregular visitor
Ghost Bat (<i>Macroderma gigas</i>)	EPBC Vulnerable	Roosts in caves with stable, warm and humid microclimates. Forages in <i>Triodia</i> hummock grasslands.	Irregular visitor

4.7 Heritage

Ethnographic and archaeological field inspections were conducted to ascertain the presence of Aboriginal sites within the survey area. No ethnographic or archaeological sites were identified or reported within the survey area during the site surveys (Terra Rosa, 2018 and Wilypa, 2018).

A small amount of archaeological material was observed during the survey. This consisted of a small number of isolated artefacts made from locally available stone, including but not limited to basalt, granite, silcrete or quartz. No Aboriginal heritage sites will be disturbed during construction works.

No sites of significance for European heritage have been identified within the pipeline licence area.

4.8 Native Title

The KGP project area overlies three native title determination areas. These include the Nyiyaparli native title determination areas Nyiyaparli #3 (WC2013/003) and Nyiyaparli (WC 2005/006) to the west of Great Northern Highway and the Ngarlawangga People's native title determination area (WCD2016/007), east of the highway. Greenmount has access agreements in place with the relevant Native Title representatives, where APA will comply.



5. Environmental Management

Environmental management will be implemented in compliance with the APA ISO14001 Health, Safety and Environmental (HSE) Management System which provides for:

- Communication of policies, objectives and roles and responsibilities.
- Inductions, training and competency of personnel.
- Monitoring, auditing, record keeping and reporting, including dedicated hazard and incident reporting system.
- Management of non-conformances and corrective actions.
- Development, tracking and ongoing maintenance of documentation.
- Emergency preparedness and response.
- Toolbox talks.

A risk based approach has been adopted to manage potential threats to the environment. This process involved initial identification of environmental interactions (aspects) resulting from Project activities followed by an environmental risk assessment (ERA) workshop attended by key personnel. The ERA process involved:

- Assessment of environmental risks in terms of likelihood and consequence.
- Identification of mitigating factors and management measures to reduce environmental risks to ALARP.
- Risk ranking according to severity.

A summary of the key environmental hazards, control measures and mitigating factors identified for the KGP has been provided In [Table 5](#). [Table 5](#) only provides an indication of major hazards and controls and is not a comprehensive summary of all commitments associated with the KGP.

Table 5: Key environmental hazards and control measures

Environmental Hazard	Control Measures and Mitigation Factors
Disturbance of Heritage Site or Exclusion Zones	<ul style="list-style-type: none"> • Heritage stakeholders consulted. Consultation with relevant stakeholders to continue during construction. • DAA registered heritage sites database searched to confirm no registered sites present within proposed project area. • Construction boundaries clearly delineated to prevent encroachment of works on heritage sites or associated exclusion zones, including flagging and/or fencing, on advice from heritage stakeholders; exclusion measures checked and maintained for duration of works in each area. • Works to cease and DPLH notified immediately if suspected heritage artefacts identified. • AGP Traffic Management Plan (TMP) to address CEP requirements, including access along specific approved routes only. • Inductions, toolbox talks, training, and site procedures address heritage, including protection of sites and exclusion zones, requirement to stop work if suspected artefacts found. • Implementation of APA Cultural Heritage Procedure.



Environmental Hazard	Control Measures and Mitigation Factors
<p>Loss of vegetation, habitat, biodiversity or land use from disturbance to vegetation</p>	<ul style="list-style-type: none"> • Pipeline alignment, construction ROW, access roads, extra workspace and other Project infrastructure laid out via internal clearing procedures to minimise clearing and use existing disturbance as far as practicable. • Pipeline alignment, construction ROW, access roads, extra workspace and other Project infrastructure laid out via internal clearing procedures to avoid Priority flora and heritage sites, and maintain exclusion zones. • Construction boundary clearly marked out to prevent over-clearing. • Vegetation and topsoil cleared for construction and stockpiled separately in adjacent areas for use in rehabilitation. At completion of works, all disturbed areas (with exception a 4 m wide access track for operations) to be scarified, stockpiled topsoils re-spread, then stockpiled vegetation respread to encourage regrowth. • Inductions, toolbox talks, pre-starts and site procedures address vegetation, including remaining within construction boundaries, and locations of Priority flora. • Hazard and incident reporting to include disturbance beyond marked or approved boundaries or damage to vegetation/ habitat marked for retention; substantial incidents reported to DMIRS.
<p>Injury or disturbance to native fauna or stock from vehicle and mobile plant movements</p>	<ul style="list-style-type: none"> • Traffic Management Plan (TMP) to control vehicle movements to reduce likelihood / severity of injury / disturbance to fauna, including access along approved routes only; speed limits; restrictions on night driving; IVMS in vehicles to track speed and location. • Established roads used for access where practicable. • Night works limited, and subject to additional risk assessment including hazards to nocturnal fauna. • Inductions, toolbox talks, training, and procedures address vehicle/ plant hazards to fauna, including TMP requirements; drivers to be properly licensed and trained.
<p>Death of native fauna or stock from entrapment in pipeline trench, other excavations, turkey nests or pipe strings</p>	<ul style="list-style-type: none"> • Gaps left in trench every 1 km or less with ramps at ~45 degrees providing fauna egress points. • Fauna shelters (e.g. hessian bags) placed every 50 m or less in open trench. • Trench inspected in the morning, within three hours of sunrise, between the hours of 3-6 pm, immediately before pipe laying and backfilling and during extreme temperatures (35°C or above) fauna inspections will also occur at midday; any entrapped fauna retrieved and released. • Trench inspections, and fauna retrieval and release, by licensed handlers meeting training requirements of DBCA. The number of fauna handlers conducting inspections shall allow for 5km of open trench to be inspected per fauna handler per hour. • Trench backfilled (to at least cover pipe) as soon as practicable after pipe laying. • Open trench to be kept to length that can be inspected within three hours by trained and licensed fauna handlers available on site at that time, including during construction breaks. • HDD entry and exit pits will be bunded, ramped and fenced, and inspected (inclusive of the bunded area) for fauna at the start of each work day. • Retrieved fauna released into suitable habitat near point of rescue, at appropriate (as determined by trained fauna handlers) distance from trench/HDD entry and exit pits and bunded area, as soon as practicable, except where they need to be held for treatment (dehydration, hypothermia, etc.), or are a nocturnal species best released in the evening. • Fauna unfit for release referred to qualified carers; carer contact details maintained on site; severely ill/ injured fauna to be euthanised on advice from carers or other qualified persons. • Pipe sections inspected for fauna before welding; end caps kept on pipe strings (sections of 2 or more welds) to prevent fauna entering before pipe laying. • Landholders with stock consulted; gates to be left open/closed and cattle grids installed as required.



Environmental Hazard	Control Measures and Mitigation Factors
	<ul style="list-style-type: none"> • Turkey nests (if required) will be fenced to limit fauna access and potential death of larger animals. • Turkey nests will have fauna egress ramps to allow smaller fauna to escape.
Disturbance to native fauna from light spill	<ul style="list-style-type: none"> • Night works generally limited to hydrotesting and occasional movement of equipment along ROW; lighting generally only required at camp. • Lighting directed to minimise spill. • Inductions, toolbox talks, training, and procedures address fauna including hazards to fauna, incident reporting, and procedures for injured fauna.
Loss or degradation of topsoil resources from earthworks, vehicle movements, wind or water erosion	<ul style="list-style-type: none"> • Topsoils stripped from construction areas and stockpiled adjacent, for use in rehabilitation. • Topsoils stockpiled away from vehicle access points, watercourses, and areas prone to flooding; stockpile heights limited to 2 m to minimise erosion; breaks left in stockpiles to allow surface water flows. • At completion of works, topsoils to be re-spread over disturbed areas (with exception to plant sites and a 4 m wide access track for operations), then cleared vegetation re-spread over topsoil to promote revegetation and prevent erosion. • No driving / parking permitted over soil stockpiles / windrows; signs placed to protect stockpiles/windrows. • Inductions and toolbox talks address topsoil management and preservation. • Hazard and incident reporting to include loss of or damage to topsoil resources. • Other measures to prevent water erosion as set out under "water".
Soil erosion from inadequate drainage control on disturbed surfaces or uncontrolled release of water from hydrotesting	<ul style="list-style-type: none"> • Watercourse crossing procedure and dewatering procedure developed and implemented as required to manage erosion hazards, including drainage / sediment controls, and controlled release of water, to be supervised by contractor environmental personnel. • Hazard and incident reporting to include substantial observations of erosion, poorly controlled discharge, or poorly controlled drainage on construction areas. • Flush/ hydrotest water captured for re-use off-site (Karlawinda Gold Project). • If disposal of flush/ hydrotest water is necessary, discharge managed by: releasing via turkey's nest to control rate of release; use of flow diffusers to prevent erosion; release within construction boundary only; monitoring of erosion and remediation where necessary.
Impacts to soils from spills or leaks from drilling fluids/ grouting used in boring (if HDD necessary)	<ul style="list-style-type: none"> • Specific HDD environmental management plan to be developed, and project-specific HDD procedures to be followed. • Drilling materials to be contained within entry /exit pits or other containment; additional containment equipment kept on hand. • Earthen bunds to be established around HDD entry and exit pits. • Only bentonite mud-mix used; any additional chemicals used only with approval from DMIRS. • Experienced specialist HDD contractor to be engaged. • Bore and drilling fluids to be continuously monitored during procedure; watch kept for spills, frack-outs and leaks, works stopped immediately if they occur. • Incident reporting to include substantial spills of HDD grouting / drilling fluids.
Impacts on land use / third parties from road / land degradation due to site access	<ul style="list-style-type: none"> • TMP to manage vehicle movements to reduce likelihood / severity of road / land damage, including access along approved routes only; speed limits (reduced in wet conditions); IVMS in vehicles to track speed and location. • Site assessments to determine additional controls for specific access routes (upgrade / maintenance/ repairs, specific speed limits, vehicle restrictions, etc.) • Consultation with landholders and other relevant stakeholders to determine requirements / restrictions for use of access routes including maintenance; consultation to continue for duration of works. • Access route maintenance / repairs carried out as required.



Environmental Hazard	Control Measures and Mitigation Factors
	<ul style="list-style-type: none"> • Inductions, toolbox talks and site procedures address access including approved routes, speed limits, restrictions, and driving to conditions; drivers trained and competent; pre-starts to address road conditions. • Hazard and incident reporting to include damage to roads / lands from access.
Impacts on surface water quality from release of sediment due to earthworks	<ul style="list-style-type: none"> • Cleared vegetation stockpiled away from drainage lines. • Construction corridor rehabilitated as soon as practicable to stabilise disturbed surfaces and restore resistance to erosion. • Incident reporting to include substantial observations of sediment transport, or poorly controlled drainage on construction areas.
Land disturbance and impacts to groundwater resources from bore installation and operation	<ul style="list-style-type: none"> • Groundwater supply for construction works of the project will be in accordance with license (GWL201659), held by Greenmount Resources Pty Ltd.
Contamination of soils by hydrocarbons or chemicals	<ul style="list-style-type: none"> • Diesel fuel storage $\leq 110,000L$ within a bunded compound or self-bunded (double-hulled) tank; mobile fuel trailer double-skinned; generators self-bunded. • Hydrocarbons, chemicals, and other hazardous material kept in dedicated, ventilated area, away from busy construction areas and sensitive environments; all hydrocarbons; containment bunds have capacity $>110\%$ of largest container and $>25\%$ of total storage (whichever greater). • Portable bunded containers (spill pallets) used when handling hydrocarbons and chemicals outside of bunded areas; hydrocarbons, chemicals, and other hazardous materials returned to designated central storage area when not in use. • Bulk fuel storage incorporates lined and bunded refuelling pad; automatic cut-off valves at bulk refuelling points; drip trays used for transfers/ refuelling on ROW (except tracked vehicles); transfers/refuelling to be attended; refuelling on ROW only. • Spill response equipment kept on site, including containment and recovery equipment; spill kits strategically located and clearly identified for easy access; light spill kits kept with light vehicles and all mobile plant; substantial spill kits and drip trays kept with fuel and service trucks, driver /operator trained in use. • SDS and register kept for all hydrocarbons, chemicals and hazardous substances on site. • Inductions, toolbox talks, training, and procedures address hydrocarbon and chemical transport, storage, handling, transfers, inspections, maintenance, spill response, and waste disposal; additional training for higher-risk roles (e.g., fuel and service truck operators). • Hydrocarbon and chemical spills addressed in ERP and OSCP, including spills from transport. • JHAs to consider any tasks involving hydrocarbon or chemical transport, storage, handling, or transfers, and address associated hazards, including management of any wastes / contaminated materials. • Tanks inspected as part of daily pre-starts; suppliers check tanks before refilling; large tanks have lockable valves (pin code or other) to limit access. • Vehicles and fixed and mobile plant inspected before mobilisation, checked daily as part of pre-starts, and maintained according to manufacturer's specifications. • Traffic Management Plan (TMP) to control vehicle movements to reduce likelihood / severity of collision resulting in spill, including access along approved routes only; speed limits observed (10kph around equipment and working areas, or as set in TMP); IVMS in vehicles to track speed and location; fatigue and journey management plans to reduce risk of incident; access roads maintained to remain safe; inductions and training to address safe driving; all driving to conditions.



Environmental Hazard	Control Measures and Mitigation Factors
	<ul style="list-style-type: none"> • Contracts require compliance with CEP/MP and TMP, including requirements for hydrocarbon and chemical transport, storage, and handling; hydrocarbon and chemical suppliers / transporters properly licensed, drivers and operators properly licensed and trained. • Weld coating applied with reasonable care to minimise overspray/ drips; plastic sheeting placed to capture overspray/ drips; substantial loss to ground recovered with shovels and material disposed of at facility licensed for class of waste; delivery hoses to be correctly rated for use; spill kits to hand in case of hose failure. • Pre-cast slabs to be used for civil works / pipeline protection; procedures / training for use of minor quantities of quickset concrete for post installation. • Hazard and incident reporting to include leaks and spills, including location, size, and nature of spill, and details of cleanup/ remediation; substantial spills reported to DMIRS. • Other measures for management of contaminated and hazardous wastes, as set out under "wastes".
Contamination of surface waters	<ul style="list-style-type: none"> • Bulk and intermediate hydrocarbon and chemical storage / containment areas sited well away from drainage lines. • Refuelling carried out as far as practicable from drainage lines, and not permitted within 100 m. • Vehicles and mobile plant to be parked up away from drainage lines when not in use. • JHAs to consider any specific hazards to surface water in tasks involving hydrocarbon or chemical transport, storage, handling, or transfers. • Hydrocarbon and chemical waste storage / containment areas sited well away from drainage lines.
Impacts on surrounding land use, vegetation, habitats, and fauna from improper disposal of inert wastes	<ul style="list-style-type: none"> • Bins, skips and other appropriate containment with lids used for holding wastes till collection. • Wastes removed from ROW frequently (daily) and returned to collection points at main laydown. • Wastes segregated as required by waste collection contractor; industrial wastes stockpiled in designated areas. • Wastes collected progressively from site collection points by licensed contractor for disposal off-site. • All remaining wastes removed from site at completion of works; confirmed by practical completion checklist. • Wastes segregated and collected for recycling where practicable. • No disposal of wastes (e.g. sawdust bags) to trench. • Incident reporting to include substantial observations of uncontained / poorly contained wastes or poorly segregated waste.
Attraction / encouragement of feral pests from improper disposal of food wastes	<ul style="list-style-type: none"> • Rubbish bins with lids for putrescible waste. • All putrescible wastes (including fruit scraps/ decomposable material) brought back from ROW daily for disposal in bins at laydown. • Putrescible wastes frequently removed from site by contractor for disposal at a licensed landfill. • Site office/crib operator to have food management systems; food wastes minimised as far as practicable. • Site office/crib operator to have pest management systems; pest management implemented if need indicated by monitoring. • Inductions and toolbox talks address management of food wastes, including no feeding of animals. • Incident reporting to include substantial observations of pests / improperly contained food wastes.



Environmental Hazard	Control Measures and Mitigation Factors
<p>Pollution of soil or water, bacterial health risk, and odour from improper disposal of sewage</p>	<ul style="list-style-type: none"> • Portable self-contained toilets used along the ROW; emptied and maintained by supplier weekly or as required. • Inductions and toolbox talks address use of toilets. • All waste trucked from site by a licensed third party contractor. • Ablutions to be located more than 100 m from surface water features along the ROW. • Regular inspections to be completed to ensure appropriate functionality of toilets
<p>Contamination of soils and/or surface water from improper management of contaminated wastes and residues</p>	<ul style="list-style-type: none"> • Contaminated wastes including empty containers with hydrocarbon or chemical residues, or contaminated materials from spills, kept in dedicated, banded containment, segregated from other wastes; empty containers managed as for full containers until removed from site, including storage and labelling. • Hydrocarbon and chemical wastes to be removed from site progressively and at completion of works, confirmed in practical completion checklist; wastes to be removed by contractor licensed for class of waste. • Incident reporting to include substantial observations of improperly segregated contaminated or hazardous wastes.
<p>Impacts on flora, fauna, land use, and third parties from unnatural bushfire due to unguarded / uncontained source of ignition</p>	<ul style="list-style-type: none"> • Fire response equipment maintained on site; 1000L firefighting trailers located close to higher-risk works (clear and grade; welding); fire extinguishers in or on all vehicles or mobile plant; construction equipment (grader, dozer, water truck) to be commandeered for firefighting (clearing firebreaks, pushing up bunds, wetting surfaces, etc.) where practicable and safe to do so. • All vehicles and plant parked up in designated areas when not in use; all stockpiled equipment, materials and waste stored in areas of low fire risk. • Flammable materials to be removed from areas around ignition sources, such as welding or grinding; site housekeeping to keep potentially flammable materials stored away from hot work areas or other fire hazards. • Local fire response addressed in ERP; additional services at Newman and Karlawinda mine site; emergency contact details available to all Project personnel. • Permit system in place for hot works (including welding and grinding), hot tapping, and commissioning works; fire spotter in place for hot / higher fire risk works, • JHAs and pre-starts to consider fire risks; weather monitored for fire risk (hot, dry, and/or windy conditions); DFES alerts and fire bans monitored, notification of hot works during fire restrictions where necessary, • Hydrocarbons and flammable chemicals kept in dedicated, marked containers and storage areas, • Smoking only permitted at designated areas at camp, laydown, and ROW; bins and "butt bags" provided for safe disposal; no open / camp fires permitted. • Construction works confined to ROW and other areas cleared of vegetation. • Inductions, toolbox talks, training, and procedures address fire hazards, fire response, and use of firefighting equipment. • Incident reporting to include any accidental fires started.
<p>Impacts on native flora, vegetation, habitats, and land use from Introduction and/or spread of weeds</p>	<ul style="list-style-type: none"> • Construction footprint kept as small as practicable to minimise disturbed area prone to colonisation by weeds. • Vehicles to be certified clean of soil clumps and vegetative matter before entry to site; requirement included in contracts; vehicles to be cleaned often (included in pre-start checks). • TMP to control vehicle movements, including access along approved routes only; IVMS in vehicles to track speed and location; movements minimised where practicable (e.g. use of crew bus/ shared vehicles). • Landholders and other relevant stakeholders consulted on weed management requirements / expectations; requirements dictated to construction contractor. • Known weed locations marked on ELLs.



Environmental Hazard	Control Measures and Mitigation Factors
	<ul style="list-style-type: none"> • Schedule managed to clear and grade into rather than out of known weed areas (if possible); clear and grade mobile plant and vehicles cleaned down often, and after working through known weed locations, certified by suitably qualified personnel. • Washdown bays to be established and properly maintained. • Brush down of boots alongside wash-down bays. • Fill material to be certified clean and free of weeds, brought from local source, if practicable. • Inductions and toolbox talks address weeds, including vehicle hygiene and information on weeds known to occur in Project area.
Impacts on native flora, vegetation, habitats, and land use from Introduction and/or spread of pest animals / vermin	<ul style="list-style-type: none"> • Buildings, containers, and other structures to be certified clean and free of pests before mobilisation to site. • Buildings, containers, and other structures to be sourced locally as far as practicable. • Incident reporting to include substantial observations of pests; pests to be dealt with promptly. • Other measures for management of pest species as set out in "wastes" and "reinstatement".
Impacts on vegetation and/or third parties from dust	<ul style="list-style-type: none"> • Water truck on site for dust suppression as required; site supervisors to direct additional dust suppression as required by conditions (hot, dry, and/or windy). • Speed limits as set out in TMP, including driving to conditions; access along approved routes and ROW only; IVMS to track vehicle locations and speeds; pre-starts to address road conditions; drivers trained and competent; vehicle and plant movements minimised where practicable. • Gravel placed on access roads to minimise dust in sandy areas as determined site by site. • Ongoing consultation with landholders/ other stakeholders for duration of works. • Inductions, toolbox talks, training, and procedures address dust, including speed restrictions, driving to conditions, and dust suppression. • Incident reporting to include unreasonable/ excessive dust generation.
Contribution to global greenhouse effect from unplanned / accidental gas release	<ul style="list-style-type: none"> • Fuel use and estimated venting volumes recorded; emissions estimated for reporting to DMIRS, NPI, and NGER. • Vehicles and fixed and mobile plant inspected and maintained according to manufacturer's specification to minimise emissions; daily pre-start checks and regular servicing kept up. • Inductions, toolbox talks, training, and procedures address emissions, including vehicle and plant inspections and maintenance. • Incident reporting to include unreasonable/ excessive exhaust / gas emissions.
Local air pollution and contribution to global greenhouse effect, from vehicle and plant operation, and pipeline venting / gas release	<ul style="list-style-type: none"> • Specific excavation and hot-tap procedure developed for connection onto GGP • Commissioning risk assessment (HAZID) completed and Project commissioning plan developed to minimised risk of unplanned release during commissioning; • Valves, pipework, and connected systems tested prior to installation. • Permit system in place for working on / near live line, including JHA, isolation, and tagging. • Venting for commissioning kept to practicable minimum; surrounding landholders and other stakeholders notified before venting (if likely to be affected). • Live above-ground pipework fenced and signed according to AS2885. • Reporting DMIRS, NPI, and NGER to include unplanned / accidental releases. • Incident reporting to include unplanned/ accidental release of gas.
Disturbance to native fauna and third	<ul style="list-style-type: none"> • All vehicles and fixed and mobile plant equipped with noise reduction measures such as mufflers or enclosures, maintained according to manufacturer specifications.



Environmental Hazard	Control Measures and Mitigation Factors
<p>parties from noise and vibration</p>	<ul style="list-style-type: none"> • Works generally limited to daytime hours; night works subject to site-specific risk assessment. • Venting for commissioning kept to practicable minimum; surrounding landholders and other stakeholders notified before venting (if likely to be affected). • Extent and size of blasts limited to the minimum practicable for pipeline corridor excavations. • All blasting (if required) carried out by licensed and experienced specialist contractor. • Incident reporting to include unreasonable/ excessive noise or vibration, and any third-party complaints.
<p>Erosion of soils, weed proliferation, and impacts to land uses due to inadequate reinstatement</p>	<ul style="list-style-type: none"> • At completion of works, rehabilitate disturbed areas not required for operations, except where otherwise agreed with landholders: <ul style="list-style-type: none"> ○ Scarified across contours, to trap seed and water, aiding reestablishment of vegetation. ○ Evenly respread with stockpiled topsoils to a depth representative of that which was stripped. ○ Respread with stockpiled vegetation over topsoils, to encourage vegetation re-establishment (except directly over trench line and inspection track). • Rehabilitation requirements and responsibilities included in contracts and access agreements. • Practical completion checklist to include rehabilitation acceptance; 12 months contractor defects liability period. • Ongoing monitoring / inspection during operations according to OEP – aerial monthly or on ground corridor inspections annually.



6. Stakeholder Consultation

APA is committed to maintaining positive relations with all stakeholders throughout the duration of its activities. A brief summary of engagement to date is provided in [Table 6](#).

Consultation with government has involved meetings with agencies to generally advise them of the Project, and discuss approval requirements (including information requirements), and timeframes. APA notes that no major issues of concern in regard to potential Project environmental impacts have been raised to date.

Liaison with land holders commenced at Project conception and is ongoing. A comprehensive line list will be generated for land holders and occupants to address concerns over land access, potential impacts and reinstatement. Where applicable, property inspection reports will be prepared to record agreements between APA and land holders or occupants, and to ensure conditions of agreements are met.

Stakeholders will be kept aware of scheduled activities and impacts as the Project progresses. Ongoing consultation will occur for this Project via email/letters, meetings and circulation of updates to relevant stakeholders.

Feedback from all interested parties will be encouraged and monitored during the entire Project. A register will be maintained to record actions taken to address any issues/feedback received.

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Table 6: Summary of stakeholder interactions

Stakeholder	Consultation	Key Dates
Non-Government		
Prairie Downs Pastoral Station	<p>Prairie Downs Pastoral Station lease is held by Sunblade Holdings Pty Ltd. Communication has been ongoing with regards to the design of the pipeline. Discussion have been around the location and timing of works and the interactions of the pastoralist around the pipeline to ensure the design of the pipeline is accommodating.</p> <p>No issues raised to date, communication with Prairie Downs Pastoral Station will be ongoing throughout the project and into operation.</p>	<p>07/05/20 29/05/20 24/06/20 14/08/20 03/09/20 16/09/20 ongoing</p>
Bulloo Downs Pastoral Station	<p>Bulloo Downs Pastoral Station lease is held by Chandra Ridley. Communication has been ongoing with regards to the design of the pipeline. Discussion have been around the location and timing of works and the interactions of the pastoralist around the pipeline to ensure the design of the pipeline is accommodating.</p> <p>No issues raised to date, communication with Bullo Downs Pastoral Station will be ongoing throughout the project and into operation.</p>	<p>07/05/20 15/015/20 24/06/20 14/08/20 16/09/20 ongoing</p>
Weelarrana Station	<p>Weelarrana Pastoral Station lease is held by Deborah Anick. Communication has been ongoing with regards to the design of the pipeline. Discussion have been around the location and timing of works and the interactions of the pastoralist around the pipeline to ensure the design of the pipeline is accommodating.</p> <p>No issues raised to date, communication with Weelarrana Pastoral Station will be ongoing throughout the project and into operation.</p>	<p>07/05/20 15/05/20 24/06/20 14/08/20 16/09/20 ongoing</p>
Karlka Nyiyaparli Aboriginal Corporation – Nyiyaparli People	<p>Initial communications to advise of pipeline construction project and general timing.</p> <p>Discussions around the location and timing of works and the interactions of the native title party around the pipeline to ensure the design of the pipeline is accommodating.</p>	<p>25/05/20</p>

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Stakeholder	Consultation	Key Dates
Yamatji Marlpa Aboriginal Corporation – Ngarlawangga People	Initial communications to advise of pipeline construction project and general timing. Discussions around the location and timing of works and the interactions of the native title party around the pipeline to ensure the design of the pipeline is accommodating.	12/6/20 18/6/20 17/09/20
Mining tenement holders Gascoyne Resources Pty Ltd (E52/3531) Crest Investment Group (E52/3742)	Initial communications to advise of pipeline construction project and general timing. Discussions around the location and timing of works and the interactions of the mining tenement holders around the pipeline to ensure the design of the pipeline is accommodating. Ongoing notifications of site visits and surveys. No issues raised to date.	07/05/20 15/05/20 02/06/20 11/06/20 24/06/20 14/08/20 16/09/20 Ongoing
Government		
DMIRS	Ongoing meetings, emails and phone calls have taken place with regards to licencing, safety and environment, with the Resource Tenure, Resource and Environmental Compliance and Critical Risk divisions. Reporting will be ongoing throughout the project and into operations. It is anticipated that audits will also take place throughout the project. Liaison throughout CEP / transfer of licencing review, assessment and acceptance period.	13/02/20 01/04/20 07/05/20 08/05/20 31/07/20 6/08/20 18/08/20 18/09/20 ongoing
Shire of Meekatharra	Contact has been made via email for the initial notification of the project, mainly outlining the location and timing for the works. The Shire to provide their requirements for the pipeline crossing Prairie Downs – Turee Creek Road. The Shire will continue to be consulted and updated throughout the project. No issues raised to date.	07/05/20 25/05/20 12/06/20 24/06/20 7/07/20 ongoing

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Stakeholder	Consultation	Key Dates
Main Roads	<p>Contact has been made via email for the initial notification of the project, mainly outlining the location and timing for the works and the interactions of Main Roads around the pipeline to ensure the design of the pipeline is accommodating.</p> <p>Main Roads to provide their requirements for the design of the pipeline for the HDD.</p> <p>Main Roads will continue to be consulted and updated throughout the construction and operation of the pipeline.</p> <p>No issues raised to date.</p>	07/05/20 11/05/20 27/05/20 7/07/20 ongoing
DFES	To be contacted as a part of the Emergency Response Plan (ERP) development and implementation process.	Prior to construction

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