

# Wheatstone to DBNGP Natural Gas Pipeline

EP Act Referral Supporting Document

Prepared for  
DBP Development Group Nominees Pty Ltd  
by Strategen

October 2013



**STRATEGEN**  
environmental consultants



# **Wheatstone to DBNGP Natural Gas Pipeline**

EP Act Referral Supporting Document

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October 2013

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## **Client: DBP Development Group Nominees Pty Ltd**

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# 1. Introduction

## 1.1 Proposal overview and location

DBP Development Group Nominees Pty Ltd (DDG), as the Proponent, proposes to construct a natural gas pipeline connecting the Dampier Bunbury Natural Gas Pipeline (DBNGP) to the Chevron Australia Pty Ltd (Chevron) Wheatstone project located approximately 10 km west-southwest of Onslow (the Proposal).

The proposed pipeline alignment (the Proposal Corridor) commences at the site of Chevron's Wheatstone project and travels in a southerly direction for approximately 7 km inside the government owned Multi User Infrastructure Corridor (**MUIC**). At approximately Kilometre Point (KP) 7, the Proposal Corridor departs the MUIC and follows an existing liquid petroleum gas pipeline, travelling west approximately 15 km toward the Ashburton West Facility (AWF). The AWF is a largely decommission facility where the Ashburton West Lateral tied into offshore flowlines. This section of the Proposal Corridor is referred to as the Wheatstone Lateral.

The Proposal Corridor then follows the Ashburton West Lateral, travelling in a south-southeasterly direction for 87 km and concluding as it intersects the DBNGP, immediately south of Compressor Station 2 (CS2) (Figure 1-1). This section of the Proposal Corridor is referred to as the Ashburton West Loop.

## 1.2 Proponent

Ownership of DDG and corporate structure of this group are illustrated in Figure 1-2. DDG relies on the services of DBNGP (WA) Nominees Pty Ltd (DBP), the owner of the DBNGP, for the provision of labour and equipment to enable DDG to undertake its business. The services are provided under a support services agreement between the DBNGP group of companies.

## 1.3 Purpose of document

This document has been prepared to provide supporting information to the referral of the Proposal to the Environmental Protection Authority (EPA) under section 38 (Part IV) of the *Environmental Protection Act 1986* (EP Act). The document is based on project and study information available at the time of writing.

The completed s 38 referral form is presented in Appendix 1.

## 1.4 Proponent details

### *Proponent*

DBP Development Group Nominees Pty Ltd

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### *Proponent contact*

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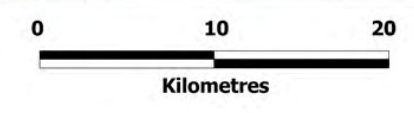




dbp  
Level 6,  
12-14 The Esplanade,  
Perth WA 6000

- Proposed pipeline alignment
- DBNGP
- Alignment of approved Chevron pipeline

- Onslow Gas Pipeline
- Macdon Gas Pipeline



**Figure 1-1**  
Location of the Proposal

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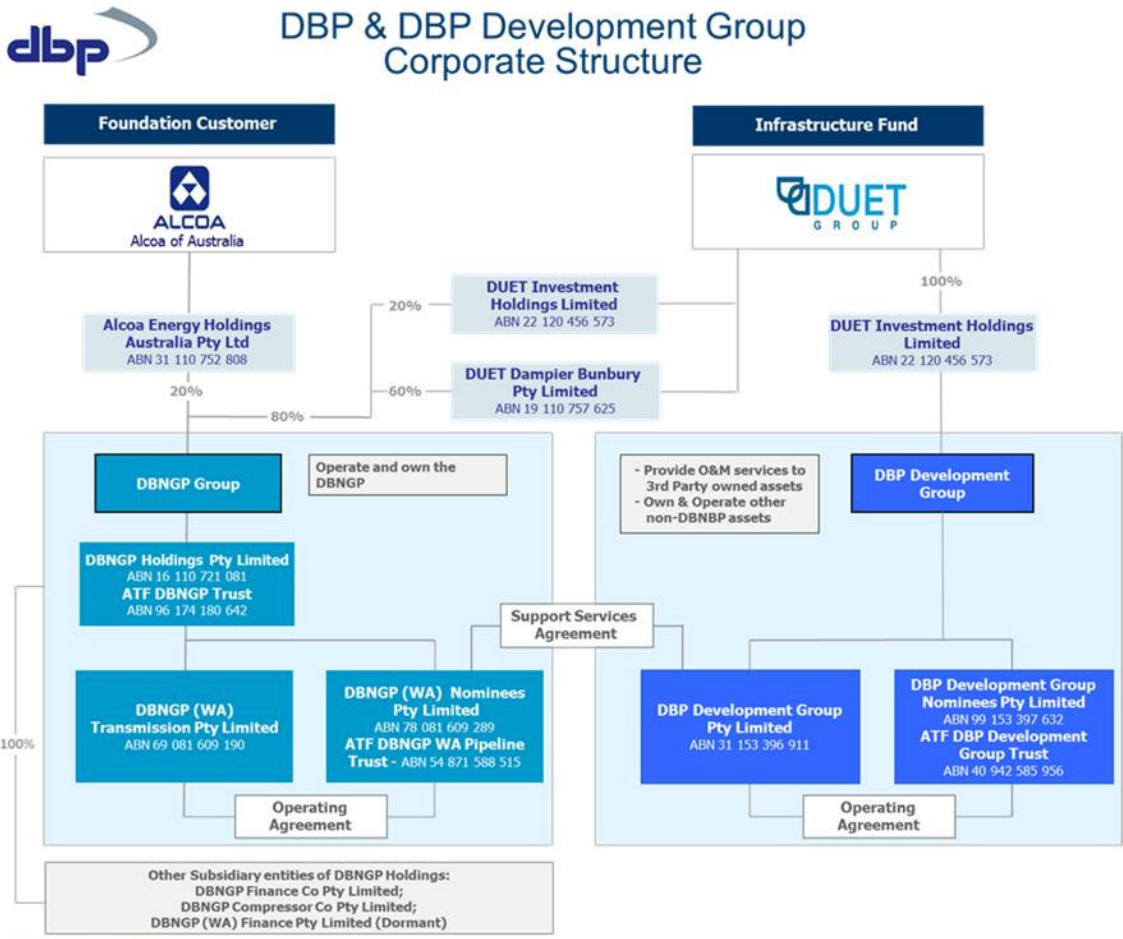


Figure 1-2 DBP and DDG corporate structure

## 2. Regulatory framework and environmental approvals

The key environmental legislation applying to the Proposal includes, but is not limited to:

- *Environmental Protection Act 1986* (EP Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Rights in Water and Irrigation Act 1914* (RWI Act)
- *Wildlife Conservation Act 1950* (WC Act)
- *Petroleum Pipelines Act 1969* (PP Act)
- *Aboriginal Heritage Act 1972* (WA).

An environmental approvals strategy has been developed by the Proponent in order to ensure all of the relevant legislation is addressed appropriately for the Proposal. The status of the relevant environmental approvals is outlined in Table 2–1, with specific relevance of legislation addressed in Sections 2.1 and 2.2.

Table 2–1 Proposal environmental approval strategy and status

Agency/Authority	Approval required	Application lodged Yes / No
Department of Environmental Regulation (DER)	Native Vegetation Clearing Permit (NVCP) under Part V of the EP Act.	No – pending the outcome of the EP Act Referral.
Department of the Environment (DotE)	Referral under the EPBC Act. Anticipated to be "not-assessed, particular manner".	Yes. Being lodged concurrently with the EP Act Referral.
Department of Water (DoW)	Licence(s) to take groundwater.	No – will be lodged if and as required.
	Bed and Banks Permit under the RWI Act.	No. To be lodged when specifics of watercourse crossing confirmed.
Department of Mines and Petroleum (DMP)	Submission of environmental management plans to meet licence requirements under PP Act.	Yes. Being lodged concurrently with the EP Act Referral.
Department of Aboriginal Affairs (DAA)	Application under s 18 of the AH Act for disturbance to Aboriginal heritage sites.	No – will be lodged if and as required.

### 2.1 State environmental approvals

#### 2.1.1 Environmental Protection Act 1986

The EP Act is the primary legislation that governs environmental impact assessment and protection in Western Australia. This Proposal is being referred to the EPA under s 38(1) of the EP Act. A Native Vegetation Clearing Permit as required under Part V of the EP Act will be applied for if the Proposal is determined to be not assessed by the EPA.

### 2.1.2 Rights in Water and Irrigation Act 1914

The *Rights in Water and Irrigation Act 1914* (RWI Act) provides the legislation for Department of Water (DoW) to manage and allocate water resources in Western Australia. The Proposal Corridor lies within the Pilbara Groundwater area proclaimed under the RWI Act, which requires licensing of any wells<sup>1</sup> to be drilled and/or used for the purpose of accessing groundwater, unless they are to be used for stock and domestic purposes<sup>2</sup>, and depending on which aquifer system they access. Licensing is administered by the Department of Water (DoW).

Water supply demands for the project will be relatively limited, being primarily to support construction activities through dust suppression and drinking water on site; domestic uses within the accommodation camp and usage in hydrotesting of the pipeline. The water requirement for the Proposal is discussed in Section 4.2.4.

DDG has not confirmed the water supply strategy for the project at the time of writing. Should water resourcing require groundwater abstraction RWI Act licence(s) will be required.

There are two watercourse crossings associated with the Ashburton River, and as the locations are within the Pilbara Surface Water Area, s 11 permits to interfere with bed and banks will be required. The Ashburton River watercourse crossings are discussed in further detail in Section 5.3. The bed and banks permits will be applied for following the outcome of this EP Act referral.

### 2.1.3 Petroleum Pipelines Act 1969

A licence will be issued to the Proponent under the PP Act for the Proposal. A condition of this licence will require the preparation of a Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP) to be approved by the Department of Mines and Petroleum (DMP), prior to commencement of construction. In approving the CEMP, DMP consults with Department of Parks and Wildlife on aspects as relevant to the interests of that agency.

In order to satisfy the requirements of the PP Act, a CEMP has been prepared (Strategen 2013a), which is considered sufficient to ensure that management of all relevant environmental factors would meet the EPA objectives for those factors as if regulated under a Statement issued under Part IV of the EP Act (Appendix 4). This is demonstrated in more detail in Sections 5 and 6. The CEMP is based on plans progressively developed, approved and implemented on similar projects across the State since 2006, and has proven successful in achieving the prescribed environmental objectives, and can be considered best practice management. This CEMP is yet to be assessed and approved by the DMP.

### 2.1.4 Aboriginal Heritage Act 1972

The *Aboriginal Heritage Act 1972* (AH Act) makes provision for the preservation of places and objects customarily used by or traditional to the original inhabitants of Australia or their descendants.

The Proponent has an active Native Title Agreement and an Aboriginal Heritage Agreement in place for the Thalanyji group. As part of these agreements, the Proponent has commissioned heritage surveys to identify any areas of ethnographic significance within the Proposal Corridor (scheduled for completion in October 2013).

As part of the CEMP, Heritage Monitors are engaged to inspect grounds prior to any disturbance. The Proponent will submit applications under section 18 of the AH Act for disturbance to Aboriginal heritage sites as required.

<sup>1</sup> A "well" is defined under the *Rights in Water and Irrigation Act 1914* as meaning an opening in the ground made or used to obtain access to underground water.

<sup>2</sup> Stock and domestic wells in the Pilbara Groundwater Area are exempt from licensing under the provisions of an exemption order.

## 2.2 Australian Government environmental impact assessment process

While the states and territories have responsibility for environmental matters at a state and local level, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) aims to focus the Australian Government interests on protecting Matters of National Environmental Significance (MNES).

The EPBC Act requires an assessment as to whether a proposed action is likely to have a significant effect on any MNES.

The most relevant MNES is that which aims to protect threatened species and ecological communities. The EPBC Act lists flora and fauna species that are either extinct, extinct in the wild, critically endangered, endangered, vulnerable, or conservation dependent. Ecological communities are listed that are critically endangered, endangered or vulnerable. An assessment requires determining the presence (either confirmed or likely) of listed threatened species and communities in the proposed disturbance envelope and surrounds and the likelihood of significant impacts that may be posed by the Proposal.

The Proposal will be referred to DotE in October 2013 for assessment under the EPBC Act; concurrently with this EP Act referral. Based on the outcomes of the assessment against the DotE 'Test of Significance' criteria, the Proposal is not expected to require formal assessment under the EPBC Act.

### 3. Stakeholder consultation

The Proponent has held discussions with the following key regulatory agencies and government organisations regarding the Proposal:

- Office of Environment and Protection (OEPA)
- Department of Environmental Regulations (DER)
- Department of Mines and Petroleum (DMP)
- Shire of Ashburton.

The following consultation has been undertaken by the Proponent with non-government organisations or stakeholders:

- Leaseholders for the pastoral stations traversed by the Proposal Corridor
- Native Title Claimant Groups.

The consultation conducted to date with key stakeholders is outlined in Table 3–1.

Table 3–1 Stakeholder consultation for the Proposal

Stakeholder	Date of Consultation	Items Discussed/proposed to be discussed	Outcomes
<b>Commonwealth, State and Local Government</b>			
Department of Sustainability, Environment, Water, Population and Communities (now DotE)	April 2013 ongoing	High level overview of proposed action provided	Recognition of pending EPBC Act referral.
Office of the Environmental Protection Authority (OEPA)	April 2013 ongoing	High level overview of proposed action provided	Recognition of pending EP Act referral. Indication that Not Assessed outcome is most likely.
Department of Environmental Regulation (DER)	-	-	Unclear on requirement for NVCP. Further consultation proposed pending outcome of EP Act referral.
Department of Parks and Wildlife (DPaW)	-	-	No Conservation Estate is intersected.
Department of Mines and Petroleum (DMP)	August 2013 ongoing	High level overview of proposed action provided	Recognition of pending CEMP and OEMP.
Shire of Ashburton		High level overview of proposed action provided	Shire has a full awareness. Approvals relating to construction matters will be required.
Department of State Development	July 2013 ongoing	Project deliverables and timeframes	Government Major Project Status conferred on the Pipeline project.
<b>Native Title Claimant group</b>			
Thalanyji	July 2013	Agreement reached on NT and Heritage processes and protocols	Consultation, involvement and engagement continues.

Stakeholder	Date of Consultation	Items Discussed/proposed to be discussed	Outcomes
<b>Local Landowners and Other Stakeholders</b>			
Leaseholders for:			
Nanutarra Station – Crown Lease 155/1975	April 2013	Agreement and consent reached	Compensation agreed.
Yanrey Station – Crown Lease 54/1967	April 2013	Agreement and consent pending	Compensation discussion continuing.
Minderoo Station – Crown Lease 56/1967	April 2013	Agreement and consent reached	Compensation agreed.
Urala Station – Crown Lease 330/1967.	April 2013	Agreement and consent pending	Compensation discussion continuing.



## 4. Proposal description

### 4.1 History and justification

Chevron Australia Pty Ltd (Chevron) has approval under the EP Act to implement the Wheatstone Development - Gas Processing, Export Facilities and Infrastructure project (the Wheatstone project), within the provisions of Statement 873 issued on 30 August 2011.

Included in Statement 873 is provision for installation of up to two pipelines in a 60 m wide corridor approximately 75 km long, connecting the Wheatstone project to the DBNGP to enable Chevron to supply gas into the domestic gas market serviced by the DBNGP. In 2013, an alternative route for a pipeline (as presented in the Proposal) was agreed between Chevron and DDG, providing a better use of existing infrastructure. The Proposal involves the addition of one new pipeline adjacent to two existing pipelines to support an existing 10-inch pipeline. The Proposal alignment traverses significantly less Acid Sulfate Soils (ASS) risk areas than the alignment provided for under Statement 873.

The Proposal will link the Wheatstone project to the DBNGP and will enable Chevron to contribute to the domestic supply market for natural gas, transporting gas over 1500 km from Onslow in the Pilbara as far south as Bunbury in West Australia's South West region.

### 4.2 Proposal overview

The Proponent proposes to construct a natural gas pipeline connecting the Dampier to Bunbury Natural Gas Pipeline (DBNGP) to the Wheatstone Project near Onslow. The Proposal Corridor is wholly located within the Shire of Ashburton, Western Australia and traverses four pastoral stations:

- Nanutarra Station – Crown Lease 155/1975
- Yanrey Station – Crown Lease 54/1967
- Minderoo Station – Crown Lease 56/1967
- Urala Station – Crown Lease 330/1967.

The Proposal involves the installation of a 110 km long buried gas pipeline, immediately adjacent to existing pipelines over the majority of the length of the alignment, with a section to be installed within the MUIC (Figure 1-1). The Proposal comprises the following key elements:

1. Construction of a new 22 km long 16 inch pipeline, connecting Wheatstone Project domestic gas plant to the AWF. The initial 7 km of this pipeline will be constructed within the MUIC, while the remaining 15 km will be constructed within a 30 m wide easement adjacent to an existing 2 inch LPG pipeline easement.
2. Construction of a new 88 km long 16 inch pipeline in a new 30 m wide easement adjacent to the an existing pipeline easement containing two existing pipelines from the AWF to CS2.
3. Clearing a 30 m wide corridor for the length of the pipeline route, except at the two watercourse crossings.
4. Clearing a 50 m wide corridor for 400 m at each of the watercourse crossings.
5. Clearing of 5.5 ha for truck turnaround points adjacent to the easement at approximate spacings of 5 km.
6. Construction of a 200 person capacity construction camp, laydown area and vehicle compound with an approximate footprint of 19.5 ha. The preferred location for the camp is at KP 40 where the Proposal Corridor intersects Twitchen Road in Minderoo Station.
7. Clearing of 1 ha for construction of four turkey nest dams for storage of water for hydrotesting of the pipeline.

The initial 7 km of the Proposal Corridor lies within the MUIC, the current uses of which include water, waste water and fibre optic for Chevron's Wheatstone project. The remainder of the Proposal Corridor then follows the existing easement of the Ashburton West Lateral, a 10-inch liquefied petroleum gas pipeline between Wheatstone and the AWF and a 6-inch pipeline between the AWF and the DBNGP. The pipeline will be constructed adjacent to the existing Ashburton West Lateral easement in order to minimise disruption to the natural environment.

At the time of this application, DDG is seeking approval from DoL for a new easement to accommodate construction of the proposed pipeline. Land access approval is anticipated to be provided by the DoL in April 2014. Construction shall not commence until such access has been granted.

The layout of the Proposal Corridor is presented in Figure 1-1, with a summary of the estimated disturbance footprint provided in Table 4-1.

There is no requirement for clearing of construction access roads as the Proposal Corridor intersects an existing road that will be used for construction access.

The Proposal Corridor will be progressively rehabilitated as the construction activity moves along the alignment, with the exception of a 5 m wide access track. There is an existing access track for the existing pipelines, which will be either retained or replaced (either partially or totally) by a new access track that will service all pipelines. This will effectively result in no net additional cleared areas after completion of rehabilitation. Ongoing line-of-sight clearing or pruning along the pipeline alignment will be periodically undertaken in the event that rehabilitation species grow to the height of pipeline safety markers.

Table 4-1 Disturbance footprint

Component	Disturbance (ha)
Proposal Corridor	330
Additional clearing width required for two watercourse crossings (20 m for 400 m at two locations)	1.6
Construction camp (inc. laydown area and vehicle compound)	19.5
Turnaround points (every 5 km)	5.5
Turkey nest dams (four)	1
<b>TOTAL TEMPORARY DISTURBANCE</b>	<b>358</b>
<i>Rehabilitation post-construction</i>	<i>303</i>
<b>TOTAL PERMANENT DISTURBANCE</b>	<b>55</b>

The Proposal is planned for commencement in April or May 2014, with construction to be completed in Q4 2014. Construction will be progressive, starting at the southern end of the Proposal Corridor (DBNGP) and moving north to connect to the Wheatstone facilities.

#### 4.2.1 Pipeline construction

Construction of the pipeline will be undertaken as follows:

- clearing and grading of the pipeline alignment to remove vegetation and topsoil, which would be stockpiled for return to the source area during rehabilitation
- excavation of an approximately 900 mm wide and 1200 mm deep trench for the installation of the pipeline along 103 km of the pipeline route, with the exception of watercourse crossings where the trench will be excavated to sufficient depth to enable 2 m of cover below the stable river bed
- excavation of an approximately 900 mm wide and up to 1600 mm deep trench for the installation of 7 km of the pipeline within the MUIC
- welding of pipe sections and laying into the trenches, which will be backfilled to the natural surface level, with some shaping to manage drainage and erosion
- horizontal directional drilling (HDD) at three bitumen road crossings within the MUIC
- rehabilitation of cleared areas through return of topsoil and spreading of stockpiled vegetation.

Specialised construction crews will operate simultaneously, fabricating and installing the pipeline; then backfilling and rehabilitating the Proposal Corridor. The pipeline will be constructed in accordance with the requirements of AS2885 Pipelines — Gas and Liquid Petroleum and the Australian Pipeline Industry Association (APIA) Code of Environmental Practice (1998). The construction activities are described in detail in the CEMP (Appendix 4).

An indicative schematic of the construction of the Proposal is presented in Figure 4-1.

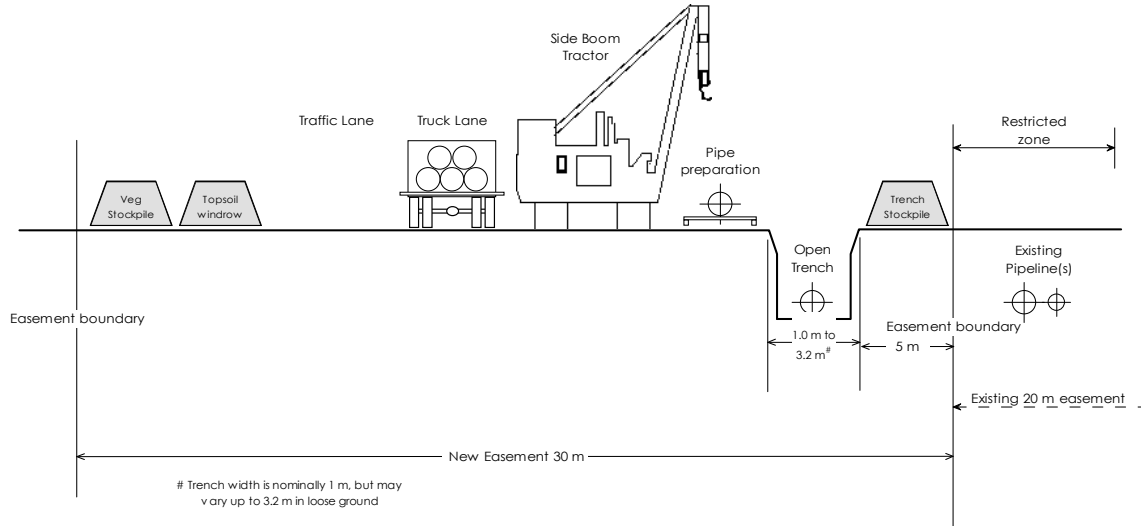


Figure 4-1 Schematic of the Proposal

Source: Wheatstone Ashburton West Pipeline CEMP (Appendix 4)

#### 4.2.2 Watercourse crossings

There are two watercourse crossings associated with the Ashburton River (refer to Section 5.3). Crossings of the Ashburton River will be completed by open-cut excavation. This method requires the excavation of the banks and riverbed to enable the pipeline to be laid at 2 m depth below the stable riverbed. This will ensure flow events do not expose the pipeline, ensuring pipeline integrity. There will also be the need to extend this excavation through the riverbank profile for some distance away from the river channel to provide a graded access. This will result in an increased working width (50 m) across each bank of the river crossing for 400 m to enable safe excavation of the trench and installation of the pipeline.

#### 4.2.3 Construction camp

A 200 person capacity construction camp will be erected, proximal to the pipeline. The preferred location for the camp is at KP 40 where the pipeline intersects Twitchen Road in Minderoo Station (Figure 1-1).

The camp will be constructed of demountable buildings with individual sleeping quarters, toilet/showers, laundry, kitchen, dining hall, wet mess (bar) and recreation rooms. The construction camp will, where possible, be located to minimise noise impacts on surrounding residences, and shall maintain a minimum distance of 8 km from the nearest resident.

Typical waste products generated from the camp include:

- food scraps and general domestic waste
- wastewater – black and grey streams are generally combined.

The potential for waste emissions resulting from the Proposal is discussed in Section 5.4.2.

#### 4.2.4 Water supply and dewatering

Water supply demands for the project will be relatively limited, being primarily to support construction activities through dust suppression and drinking water on site; domestic uses within the accommodation camp and usage in hydrotesting of the pipeline.

The approximate water requirement for the Proposal is 108 ML and comprises the following usage:

- potable allocation of 60 000 L/day for the camp – anticipate camp to be active for 150 days (9 000 kL)
- road application for dust suppression – 5 trucks using 15 000 L/day for 120 days (90 000 kL)
- usage in hydrotesting – requiring approximately 8 700 kL.

DDG is yet to finalise the water supply strategy for the project. Should water resourcing require groundwater abstraction, RWI Act licence(s) will be required.

DDG is in the process of acquiring a Surface Water Licence (SWL 166 334-02) with a 3000 KL entitlement through a transfer from BHP, the previous operator of the AWF.

Dewatering may be required to facilitate trenching at the watercourse crossings or where areas of shallow watertable are encountered. The potential impacts of the Proposal in relation to watercourse crossings and water abstraction is discussed in Section 5.3.

## 5. Potential environmental impacts

### 5.1 Vegetation and flora

A Level 1 flora and vegetation survey was undertaken in April 2013 by Mattiske Consulting Pty Ltd (Mattiske) within a 200 m corridor (the Survey Corridor) along the length of the existing pipeline corridor. The survey included a preliminary desktop search for Declared Threatened and Priority flora and Threatened and Priority Ecological Communities, with a follow up aerial and targeted ground study along the Survey Corridor. The report and mapping for the flora and vegetation survey is provided in Appendix 2.

In addition to the survey conducted by Mattiske, two botanical surveys have been conducted adjacent to sections of the Survey Corridor:

1. Astron (2009) described and mapped vegetation for the Macedon Gas Development. A small section of the Macedon Gas Pipeline survey area lies adjacent to the Survey Corridor, running for approximately 4 km east of the Ashburton River Causeway (adjacent to KP 12 to KP 16 of the Wheatstone Lateral).
2. Biota (2010) described and mapped vegetation for the Wheatstone project. Twenty-five floristic quadrats (50 m x 50 m) were assessed adjacent to the Survey Corridor, from the Ashburton River causeway to Wheatstone (KP 0 to KP 10 of the Wheatstone Lateral).

Due to extensive earthworks in the Wheatstone area and tidal inflows, sections of the Survey Corridor to the north of Wheatstone Road were inaccessible during the April 2013 study. Vegetation mapped and described for this area has been inferred from data presented in both Astron (2009) and Biota (2010). Comparable sample, statistical and descriptive methodologies to the current survey were used, maintaining mapping reliability and continuity (Mattiske 2013).

#### 5.1.1 Regional vegetation context

The Interim Biogeographic Regionalisation for Australia (IBRA) currently recognises 89 bioregions and 419 subregions (Environment Australia, 2013). The survey area is located within the Carnarvon Bioregion, specifically within the Cape Range subregion, which is described as follows:

*Rugged tertiary limestone ranges and extensive red Aeolian dunefields, quaternary coastal beach dunes and mud flats. Acacia shrublands (e.g. Acacia bivenosa) over Triodia spp. occur on limestone and red dunefields, Triodia hummock grasslands with sparse Eucalyptus trees and shrubs on the Cape Range. Tidal mudflats of the Exmouth Gulf support extensive mangroves while the eastern hinterlands comprise a mosaic of saline alluvial plains with samphire and saltbush low shrublands (Kendrick and Mau, 2002).*

The Survey Corridor lies within the Cape Yinnarie Coastal Plain Unit of the Carnarvon Botanical District, as defined by Beard (1975, 1990). The vegetation within the Cape Yinnarie Coastal Plain is described as being bordered by mangrove vegetation (primarily *Avicennia marina*) on the coastline and intertidal zones with hinterlands of predominately bare hypersaline mudflats. Occasional samphire communities (*Tecticornia* spp.) are known to occur as well as shrub steppe on sandhills dominated by *Triodia* spp. and *Acacia* spp. interspersed with small claypans (Beard 1975). Five mapped Beard Vegetation Associations occur within the Survey Corridor, none of which are below 30% of their pre-European extent (Table 5–1).

Table 5–1 Beard Vegetation Association extents and impact

Beard Vegetation Association, Vegetation Description and Priority (Kendrick and Mau 2002)	Pre-European Extent (ha)	Current Extent (ha)	Extent within Survey Corridor (ha)	Estimated maximum area cleared (ha)	Maximum % of total extent cleared
127 – Bare areas; mudflats.	100 898.9	99 719.9	100	10.16	0.001%
589 – Mosaic: Short bunch grassland – savannah/grass plain (Pilbara)/hummock grasslands, grass steppe; soft spinifex.	78 100.8	77 834.9	909.9	133.14	0.17%
608 – Mosaic: Shrublands; A. victoriae and snakewood scrub patches/short bunch grassland – savannah/grass plain (Pilbara).	312 836.4	312 836.4	1211.7	189.93	0.06%
676 – Succulent Steppe; samphire.	29 189.9	28 441.5	25.4	3.62	0.01%
1271 – Bare areas; claypans.	18 353.6	18 353.6	68.8	10.34	0.06%

### 5.1.2 Vegetation communities

A total of 30 vegetation communities were mapped within the Survey Corridor. Of these communities, eight were inferred from previous mapping of the area and two claypan communities (C1 and C3) were inferred from relevé data (Mattiske 2013). A summary of the vegetation communities within the Survey Corridor is provided in Table 5–2.

Table 5–2 Vegetation units within the Survey Corridor (Mattiske 2013)

Vegetation Community	Vegetation Description	Area mapped within Survey Corridor (ha)
Tidal Mudflats and Tidal Creeks		
T1	<i>Tecticornia</i> spp. low scattered shrubs (B).	56.64
T2	<i>Avicennia marina</i> mid open scrubland (B).	2.04
Claypans and Clayey Plains		
C1	Bare Claypan.	70.39
C2	<i>Tecticornia</i> spp. low sparse chenopod shrubland with <i>Sporobolus mitchellii</i> , <i>Eriachne helmsii</i> low isolated tussock grasses.	20.03
C3	<i>Acacia tetragonophylla</i> , <i>Acacia synchronicia</i> , * <i>Vachellia farnesiana</i> mid isolated shrubs over <i>Urochloa occidentalis</i> var. <i>occidentalis</i> , <i>Chrysopogon fallax</i> , <i>Sporobolus mitchellii</i> , * <i>Cenchrus ciliaris</i> low open tussock grasses.	172.07
C4	<i>Tecticornia</i> spp. low shrubland (B).	43.26
Coastal Sand Dunes		
CD1	<i>Acacia coriacea</i> subsp. <i>coriacea</i> tall shrubland over <i>Crotalaria cunninghamii</i> , <i>Trichodesma zeylanicum</i> var. <i>grandiflorum</i> mid open shrubland over <i>Triodia epactia</i> mid open hummock grassland with * <i>Cenchrus ciliaris</i> low open tussock grassland (B).	0.64
Coastal Sand and Clayey Plains		
CP1	<i>Eucalyptus victrix</i> low open woodland over <i>Acacia tetragonophylla</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Scaevola spinescens</i> tall sparse shrubland over <i>Triodia epactia</i> mid open hummock grassland with <i>Sporobolus mitchellii</i> , <i>Chrysopogon fallax</i> , * <i>Cenchrus ciliaris</i> low sparse tussock grassland.	25.88
CP2	<i>Eucalyptus victrix</i> low open woodland over <i>Abutilon oxycarpum</i> , <i>Ipomoea muelleri</i> , <i>Panicum decompositum</i> mid sparse forbland over <i>Enteropogon ramosus</i> , <i>Eriachne helmsii</i> , <i>Sporobolus mitchellii</i> low open tussock grassland.	67.35
CP3	<i>Acacia tetragonophylla</i> low scattered shrubs over <i>Triodia epactia</i> low hummock grassland with * <i>Cenchrus ciliaris</i> low open tussock grassland (B).	36.92

Vegetation Community	Vegetation Description	Area mapped within Survey Corridor (ha)
CP4	<i>*Prosopis pallida</i> , <i>Acacia tetragonophylla</i> , <i>Acacia synchronicia</i> tall scattered shrubs over <i>Triodia epactia</i> mid sparse hummock grassland with <i>*Cenchrus ciliaris</i> low open tussock grassland (B).	33.28
CP5	<i>Sporobolus mitchellii</i> , <i>Eriachne</i> aff. <i>benthamii</i> , <i>Eriachne benthamii</i> , <i>Eulalia aurea</i> mid tussock grassland (B).	2.32
Inland Sand Dunes		
ID1	<i>Grevillea stenobotrya</i> low sparse shrubland over <i>Acacia stellaticeps</i> mid open shrubland over <i>Triodia epactia</i> hummock grassland.	83.17
ID2	<i>Acacia stellaticeps</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> mid sparse shrubland with <i>Bonamia erecta</i> , <i>Hibiscus brachychlaenus</i> , <i>Scaevola sericophylla</i> low sparse shrubland over <i>Triodia epactia</i> mid hummock grassland with <i>*Cenchrus ciliaris</i> , <i>Eragrostis eriopoda</i> low sparse tussock grassland.	118.07
ID3	<i>Grevillea stenobotrya</i> tall open shrubland over <i>Crotalaria cunninghamii</i> , <i>Trichodesma zeylanicum</i> var. <i>grandiflorum</i> mid open shrubland over <i>Triodia epactia</i> mid open hummock grassland (B).	13.47
Inland Sand and Clayey Plains		
IP1	<i>Eucalyptus victrix</i> low scattered trees over <i>Acacia synchronicia</i> , <i>Acacia xiphophylla</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> tall open shrubland over <i>Triodia lanigera</i> mid hummock grassland with <i>*Cenchrus ciliaris</i> low sparse tussock grassland.	74.33
IP2	<i>Eucalyptus victrix</i> low isolated trees over <i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> , <i>Acacia xiphophylla</i> tall sparse shrubland with <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Scaevola spinescens</i> low sparse shrubland over <i>Triodia epactia</i> mid hummock grassland with <i>Eriachne helmsii</i> , <i>*Cenchrus ciliaris</i> low open tussock grassland.	158.49
IP3	<i>Eucalyptus victrix</i> , <i>Grevillea striata</i> low isolated trees over <i>Hakea chordophylla</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia trachycarpa</i> tall open shrubland with <i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> low sparse shrubland over <i>Triodia epactia</i> mid isolated hummock grasses with <i>*Cenchrus ciliaris</i> low sparse tussock grassland.	22.47
IP4	<i>Acacia xiphophylla</i> , <i>Acacia synchronicia</i> low open shrubland over <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Solanum lasiophyllum</i> low sparse shrubland over <i>Eragrostis xerophila</i> , <i>*Cenchrus ciliaris</i> low sparse tussock grassland.	55.09
IP5	<i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> low sparse shrubland over <i>Chrysopogon fallax</i> , <i>Eriachne helmsii</i> , <i>Urochloa occidentalis</i> var. <i>occidentalis</i> low open tussock grassland.	43.81
IP6	<i>Acacia synchronicia</i> , <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> , <i>Acacia xiphophylla</i> low sparse shrubland over <i>Eragrostis eriopoda</i> , <i>Eriachne aristidea</i> , <i>*Cenchrus ciliaris</i> low open tussock grassland.	62.66
IP7	<i>Eucalyptus victrix</i> low open woodland over <i>Acacia tetragonophylla</i> , <i>Acacia synchronicia</i> , <i>Cullen leucanthum</i> mid sparse shrubland over <i>Eriachne helmsii</i> , <i>Eulalia aurea</i> , <i>*Cenchrus ciliaris</i> low sparse tussock grassland.	80.43
IP8	<i>Eucalyptus victrix</i> low isolated trees over <i>Acacia tetragonophylla</i> , <i>Acacia synchronicia</i> tall isolated shrubs with <i>Acacia stellaticeps</i> , <i>Acacia coriacea</i> subsp. <i>coriacea</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> low sparse shrubland over <i>Triodia epactia</i> mid hummock grassland with <i>Eulalia aurea</i> , <i>Eragrostis eriopoda</i> , <i>*Cenchrus ciliaris</i> low sparse tussock grassland.	282.2

Vegetation Community	Vegetation Description	Area mapped within Survey Corridor (ha)
Inland Floodplains and Depressions		
IF1	<i>Eucalyptus victrix</i> low open woodland over <i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> , <i>Scaevola spinescens</i> tall sparse shrubland with <i>Rhynchosia minima</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> , <i>Eremophila longifolia</i> mid sparse shrubland over <i>Triodia epactia</i> low isolated hummock grasses with <i>Eriachne helmsii</i> , <i>Chrysopogon fallax</i> , <i>Urochloa occidentalis</i> var. <i>occidentalis</i> low sparse tussock grassland.	364.42
IF2	<i>Acacia xiphophylla</i> , <i>Acacia synchronicia</i> mid open shrubland over <i>Salsola australis</i> , <i>Rhagodia eremaea</i> , <i>Maireana</i> spp. mid sparse chenopod shrubland over <i>Eriachne benthamii</i> , <i>Sporobolus australasicus</i> , * <i>Cenchrus ciliaris</i> low open tussock grassland.	50.13
IF3	<i>Acacia synchronicia</i> , <i>Acacia xiphophylla</i> , <i>Acacia trachycarpa</i> low sparse shrubland over <i>Salsola australis</i> , <i>Threlkeldia diffusa</i> , <i>Rhagodia eremaea</i> mid sparse chenopod shrubland with <i>Chrysopogon fallax</i> , <i>Enteropogon ramosus</i> , * <i>Cenchrus ciliaris</i> low open tussock grassland.	199.66
IF4	<i>Eucalyptus victrix</i> low open woodland over <i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> , <i>Scaevola spinescens</i> tall sparse shrubland over <i>Sporobolus mitchellii</i> , <i>Eriachne helmsii</i> , <i>Eulalia aurea</i> low open tussock grassland.	78.16
IF5	<i>Eucalyptus victrix</i> low open woodland over <i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> , <i>Senna artemisioides</i> subsp. <i>oligophylla</i> mid sparse shrubland over <i>Panicum decompositum</i> , <i>Rhynchosia minima</i> , <i>Neptunia dimorphantha</i> mid sparse forbland with <i>Eriachne helmsii</i> , <i>Eragrostis xerophila</i> , <i>Iseilema membranaceum</i> low open tussock grassland.	65.51
River Zones and Drainage Channels		
R1	<i>Eucalyptus victrix</i> , * <i>Parkinsonia aculeata</i> low woodland over <i>Acacia tetragonophylla</i> , <i>Acacia coriacea</i> subsp. <i>coriacea</i> tall open shrubland over <i>Eulalia aurea</i> , <i>Leptochloa digitata</i> low tussock grassland.	2.49
R2	<i>Eucalyptus victrix</i> , <i>Eucalyptus camaldulensis</i> low woodland over <i>Scaevola spinescens</i> , <i>Acacia coriacea</i> subsp. <i>coriacea</i> , <i>Melaleuca glomerata</i> mid sparse shrubland over <i>Ipomoea muelleri</i> , <i>Euphorbia boophthona</i> , * <i>Portulaca oleracea</i> low sparse forbland with * <i>Cenchrus ciliaris</i> low sparse tussock grassland.	19.47
Cleared		8.54
Totals (excluding cleared)		2304.85

(B) denotes vegetation communities defined and described by Biota (2010)

(\*) denotes introduced (exotic) species

### 5.1.3 Conservation significant flora and vegetation

No Declared Threatened Flora species as listed by DPaW under the *Wildlife Conservation Act 1950 [WA]* were recorded within the Survey Corridor. No Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) as defined by DPaW or listed under the EPBC Act were recorded within the Survey Corridor.

Two Priority Flora species listed by DPaW were recorded within the Survey Corridor:

- *Eremophila forrestii* subsp. *viridis* (Priority 3)
- *Grevillea ?subterlineata* (Priority 3).



The Priority 3 *Eremophila forrestii* subsp. *viridis* is known to occur on dunes with red sands. A single record was made of the *Eremophila forrestii* subsp. *viridis* species at 318415E, 7514260N (near KP 86 of the Ashburton West Loop). There are three records of this species in the Western Australian Herbarium database, two of which occur in the Onslow locality (Mattiske 2013).

*Grevillea ?subterlineata* is known to occur amongst medium or low trees in sand, loam, or clay and often occupies islands in salt lakes (Mattiske 2013). A total of 11 records of this species are listed in the Western Australian Herbarium database; all of which are from two known populations located in the Upper Gascoyne and Kalgoorlie. The record of three *Grevillea ?subterlineata* plants within the Survey Corridor is located over 230 km and 1000 km north of these known populations respectively, represents an extension to the known species range.

In addition to *Grevillea ?subterlineata*, seven other species recorded within the Survey Corridor also represent extensions to the species known range:

- *Streptoglossa tenuiflora*
- *Maireana ?lanosa*
- *Rhagodia baccata*
- *Cassytha capillaris*
- *Marsilea hirsuta*
- *Melaleuca glomerata*
- *Grevillea striata*.

Although not recorded in the Survey Corridor, *Eleocharis papillosa* (dwarf desert spike-rush)—listed as Priority 3 by DPAW and Vulnerable under the EPBC Act—was previously recorded approximately 12.5 km to the southeast of the Survey Corridor by Biota (2010). This record represented a considerable range extension, with the nearest other known population being over 450 km away within the Fortescue Marsh. There are only four records of this species in Western Australia, from the Goldfields, Wheatbelt, and Pilbara regions (Mattiske 2013).

The vegetation community within which *Eleocharis papillosa* was previously recorded was a claypan community within a tidally influenced creek along Onslow Road; identified as “C3:TEC spp: *Tecticornia* species in low shrubland” by Biota (2010). Although this creek is not known to flow through the Survey Corridor, a corresponding vegetation community (C4) has been mapped in the northern tidal section, as inferred from Biota (2010) mapping (Mattiske 2013).

The presence of this vegetation community signifies the potential for *Eleocharis papillosa* to occur within the Survey Corridor. This area was unable to be accessed in the 2013 survey; however, the Biota (2010) survey of the location did not record any *Eleocharis papillosa*. Due to the lack of record and the sporadic occurrence of the species, it is highly unlikely that it would occur within the Survey Corridor (Mattiske 2013).

#### 5.1.4 Introduced flora

A total of seven introduced flora species were recorded within the Survey Corridor:

- \**Aerva javanica* (Kapok bush)
- \**Cenchrus ciliaris* (Buffel grass)
- \**Cynodon dactylon* (Couch)
- \**Malvastrum americanum* (Spiked Malvastrum)
- \**Parkinsonia aculeata* (Jerusalem thorn)
- \**Portulaca oleracea* (Pigweed)
- \**Vachellia farnesiana* (Mimosa bush).

Of these species only *Parkinsonia aculeata* is listed as a P1 and P2 Declared Plant species under section 37 of the *Agriculture and Related Resources Protection Act (1976)*. A single record of *Parkinsonia aculeata* was made adjacent to the Ashburton River Causeway (Mattiske 2013).

#### 5.1.5 Vegetation Condition

The vegetation within the Survey Corridor was generally found to be in Very Good to Excellent condition according to the 1994 Keighery vegetation condition scale (Mattiske 2013). Reduced vegetation condition within the Survey Corridor was primarily driven by weed density (particularly density of *Cenchrus ciliaris*), existing clearing and vehicle movement and cattle movement and grazing.

Three vegetation communities were identified as being of Good to Poor condition:

- the coastal sand communities CP3 and CP4 – which were infested with a dominant *Cenchrus ciliaris* understorey to the exclusion of native tussock grasses
- the riverine community R1 that has been impacted by heavy cattle movement and vehicle tracks.

Five communities were identified as being primarily in Good to Very Good condition:

- claypan and clayey plain communities C2 and C3 – which were affected by heavy cattle movements, weed infestation and vehicle tracks
- coastal sand communities CP1 and CP2 – high density of *Cenchrus ciliaris*
- inland sand and clayey plain community IP7 – high density of *Cenchrus ciliaris*.

#### 5.1.6 Assessment of potential impact

The aspects of the Proposal that may affect flora and vegetation include:

- **clearing of vegetation** for the construction of the pipeline trench, access road and other infrastructure will result in the disturbance and/or removal of vegetation and flora
- **ignition sources** such as machinery and generators may increase fire risk
- **vehicle movement and earthworks** may increase the spread of weeds in the area as well as generate dust, which may smother native vegetation.

The Proposal will require the clearing of up to 358 ha of native vegetation within the Proposal Corridor as shown on Figure 1-1. The majority of the 110 km pipeline will require a cleared width of 30 m, with the exception of two watercourse crossings, which will require an additional 20 m for a length of 400 m. Additionally, the Proposal will require clearing for turnaround points and for the temporary construction camp. The total disturbance footprint is summarised in Table 5–3.

The Proposal Corridor will be progressively rehabilitated as the construction activity moves along the alignment, with the exception of a 5 m wide access track. There is an existing access track for the existing pipelines, which will be either retained or replaced (either partially or totally) by a new access track that will service all pipelines. This will effectively result in no net additional cleared areas after completion of rehabilitation. Ongoing line-of-sight clearing or pruning along the pipeline alignment will be periodically undertaken in the event that rehabilitation species grow to the height of pipeline safety markers.

The vegetation and flora identified within the Survey Corridor is generally representative of typical vegetation in the broader area and Pilbara region. None of the vegetation communities present were identified as being restricted or comprising a TEC or PEC. As shown in Table 5–2, the 358 ha proposed clearing represents only 15.5% of the vegetation mapped within the Survey Corridor. At most 7.71 ha of vegetation unit T1 will be cleared and no clearing will occur within the T2 vegetation unit.

The Priority species recorded within the Survey Corridor (*Eremophila forrestii* subsp. *viridis* and *Grevillea ?subterlineata*) or considered to be potentially occurring (*Eleocharis papillosa*) are known from populations outside the Survey Corridor. The relatively narrow stretch of clearing required, although potentially removing a small number of individuals, is not likely to alter the conservation status of these species.

Table 5–3 Disturbance footprint of the Proposal

Component	Disturbance (ha)
Proposal Corridor	330
Additional clearing width required for two watercourse crossings (20 m for 400 m at two locations)	1.6
Construction camp (inc. laydown area and vehicle compound)	19.5
Turnaround points (every 5 km)	5.5
Turkey nest dams (four)	1
<b>TOTAL</b>	<b>358</b>
<b>TOTAL TEMPORARY DISTURBANCE</b>	<b>358</b>
<i>Rehabilitation post-construction</i>	<i>303</i>
<b>TOTAL PERMANENT DISTURBANCE</b>	<b>55</b>

The minimisation of vegetation clearing is addressed in the Flora and Vegetation Management Plan of the CEMP.

Seven introduced flora species were recorded within the Survey Corridor, of which only *Parkinsonia aculeata* is listed as a Declared Plant (refer to Section 5.1.4). The spread and introduction of weeds by the Proposal will be managed through the implementation of the Weed Management Plan in the CEMP, with actions including (but not limited to):

- all vehicles and machinery accessing the Proposal Corridor will be checked to ensure they are free from soil/organic matter prior to arrival on site
- distinctive flagging and signage will be used to identify those areas of high risk for weeds and those that are known to be weed free
- hygiene stations will be established at entry/exit points to high risk areas and clean down of all vehicles, construction machinery and handheld tools will be required at these points
- topsoil and vegetative material within identified weed high risk areas will be stockpiled within the high risk areas and kept separate from weed free topsoil
- bedding material imported to the site shall be certified as weed-free
- stockpiles of weed and weed-free material shall only be re-spread back to their point of origin

The risk of fire to native vegetation as a result of the Proposal will be managed through the implementation of the Fire Management Plan in the CEMP, with measures including (but not limited to):

- prohibiting open fires (including BBQs, brush burning and rubbish burning)
- ensuring fire prevention and response equipment is made available and checked prior to construction in any area
- induction of all construction staff in the location of equipment within their specific work areas and campsites.

The potential impacts on flora and vegetation can be adequately regulated through the NVCP process under Part V of the EP Act and implementation of the CEMP under the PP Act to ensure that the EPA objectives for this factor are met.

## 5.2 Terrestrial fauna

A literature review and Level 1 Reconnaissance survey has been conducted for vertebrate fauna within the Survey Corridor (Ninox 2013). The field survey was conducted in April 2013, with a focus on habitat assessment against the potential fauna identified through the literature review.

### 5.2.1 Fauna habitats

The Survey Corridor traverses a broad range of fauna habitats, the majority of which are widespread throughout the Pilbara region.

The broader area surrounding the northern section of the Survey Corridor contains tidal mudflats and tidal creeks landforms, which are associated with samphire (*Tecticornia* spp.) and Mangrove (*Avicennia marina*) vegetation units (T1 and T2 in Table 5–2, respectively). These areas provide habitat to a number of fauna species, particularly the Migratory bird species (Table 5–4).

As outlined in EPA Guidance Statement No. 1 *Guidance Statement for protection of tropical arid zone mangroves along the Pilbara coastline* (EPA 2001), the mangroves found along the Pilbara coastline are the largest single unit of relatively undisturbed tropical arid zone habitats in the world. Although not specifically listed as threatened communities, the preservation of Mangroves is important due to their importance for the following:

- ecological reasons pertaining to productivity, feeding grounds, and fish nurseries
- scientific reasons of heritage, research and education
- preservation of biodiversity.

A small area (58.68 ha) of mangrove and samphire vegetation has been mapped within the Survey Corridor, at the crossing of the Ashburton River, between Wheatstone and Tubridgi (Mattiske 2013). This area of mangrove habitat is outside the areas identified as containing regionally significant mangroves in Guidance Statement No. 1 and represents a small portion of the broader mangrove habitat in the area.

During the survey, Ninox (2013) observed a single Wedge-tailed Eagle nest in a larger tree within the Survey Corridor at 280090E, 7589190N (near KP 1 of Ashburton West Loop). The Wedge-tailed Eagle is not a specifically protected species under legislation; however, the nest represents a sensitive habitat value, particularly during breeding season (June to September).

### 5.2.2 Conservation significant species

Due to the broad geographic extent intersected by the Survey Corridor, a number of potential conservation significant species have been identified by the literature review and during field investigations. The potential for conservation significant species to be present within the Survey Corridor is summarised in Table 5–4 to Table 5–6.

Table 5–4 Conservation significant birds recorded or potentially occurring within the Proposal corridor

Species	Protection Status	Preferred Habitat (Ninox 2013)	Potential Occurrence (Ninox 2013)
Eastern Great Egret ( <i>Ardea modesta</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed on JAMBA	The Eastern Great Egret has been found to prefer large river pools, estuaries, tidal mudflats and sewage ponds.	<u>Moderate to High:</u> This species was recorded at the Ashburton river crossing during the Level 1 Reconnaissance Survey. There were no additional records identified from the literature and data searches.
Rainbow Bee-eater ( <i>Merops ornatus</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed on JAMBA	The Rainbow Bee-eater prefers lightly wooded country in proximity to water, preferably with sandy soils suitable for breeding burrows, i.e. soils that are easy to excavate but firm enough to support burrows.	<u>Moderate to High:</u> This species was recorded at the Ashburton river crossing during the Level 1 Reconnaissance Survey. The species has also been recorded in the vicinity of the Survey Corridor by Biota in 2009 and is listed in the results of the DPaW NatureMap search.
Australian Bustard ( <i>Ardeotis australis</i> )	<u>State:</u> Priority 4 DPaW protected fauna	The Australian Bustard prefers open or lightly wooded country, in particular grasslands including spinifex.	<u>Moderate:</u> Three sets of tracks were noted during the Level 1 Reconnaissance Survey. The species has also been recorded in the vicinity of the Survey Corridor by Biota in 2009 and is listed in the results of the DPaW NatureMap search.
Fork-tailed Swift ( <i>Apus pacificus</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed as Migratory Listed on JAMBA, CAMBA and ROKAMBA.	The Fork-tailed Swift is a migratory and highly mobile species, spending the summer and autumn months within Australia. Rarely seen to land, these birds are thought to feed, drink, rest and sleep on the wing (Mattiske 2013).	<u>Seasonally High:</u> This species has been recorded by Biota in 2009 and is listed in the results of both the DPaW NatureMap and DotE Protected Matters Report searches. The species may be observed flying over all habitats within the Survey Corridor.
Barn Swallow ( <i>Hirundo rustica</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed as Migratory Listed on JAMBA, CAMBA and ROKAMBA.	The Barn Swallow has been recorded mainly in open country coastal areas in a range of habitats, often near water, towns and cities. Birds are often sighted perched on overhead wires.	<u>Low to Moderate:</u> Suitable habitat such as grasslands and open shrublands occurs within the Survey Corridor. The Barn Swallow has not been recorded in the Onslow region; however, the species could potentially occur along the coastal sections of the Survey Corridor.
Oriental Pratincole ( <i>Glareola maldivarum</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed on JAMBA, CAMBA and ROKAMBA.	The Oriental Pratincole has mainly been observed in open plains and grasslands, including farmland. The species may be observed in the vicinity of wetlands such as billabongs, lakes, creeks and artificial wetlands such as salt works and sewage farms.	<u>Moderate:</u> This species was recorded just north of Onslow in 1966 and is listed in the results of both the DPaW NatureMap and DotE Protected Matters Report searches. Suitable habitat within the Survey Corridor mainly consists of grasslands, river pools and clay pans.
Oriental Plover (Dotterel) ( <i>Charadrius veredus</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed as Migratory Listed on JAMBA, CAMBA and ROKAMBA.	The Oriental Plover prefers open plains including ploughed land, grassy sport fields, lawns, muddy or sandy wastes near inland swamps or tidal mudflats; often far from the waterline.	<u>Moderate:</u> Species observed in the vicinity of Onslow in 1983; however, this record does not appear on the results of the DPaW NatureMap search. Suitable habitat within the Survey Corridor includes tidal mudflats and inland claypans.

Species	Protection Status	Preferred Habitat (Ninox 2013)	Potential Occurrence (Ninox 2013)
Cattle Egret ( <i>Ardea ibis</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed on JAMBA.	The Cattle Egret has been observed to prefer pastures and paddocks but may be seen within crops.	<u>Unlikely:</u> A single record for this species was made in 1952 in the vicinity of the current Survey Corridor; however, this record does not appear on the results of the DPaW NatureMap search. No suitable habitat occurs within the Survey Area.
White-bellied Sea-eagle ( <i>Haliaeetus leucogaster</i> )	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed on JAMBA, CAMBA and ROKAMBA.	The White-bellied Sea-eagle is not often observed far from the coastline. The species may be observed hunting over water or patrolling beaches for carrion.	<u>Moderate to High:</u> Species was recorded by Biota in 2010 and is listed in the results of both the DPaW NatureMap and DotE Protected Matters Report searches. Suitable habitat occurs along sections of the Ashburton River where large river pools are present.
Peregrine Falcon ( <i>Falco peregrinus</i> )	<u>State:</u> Schedule 4 under WC Act	The Peregrine Falcon has most frequently been observed near cliffs along the coast and ranges of the interior, as well as along wooded watercourses and lakes.	<u>High:</u> A large number of Peregrine Falcon observations have been made in the vicinity of the Survey Corridor and the species is listed in the results of the DPaW NatureMap search. Suitable habitat for this species occurs along river systems where its prey species are most likely to be present.
Bush Stone-curlew ( <i>Burhinus grallarius</i> )	<u>State:</u> Schedule 4 under WC Act	The Bush Stone-curlew appears to prefer lightly wooded country, often with a ground surface of stones or pebbles. The species is known to lay eggs directly onto the ground in a shallow depression.	<u>Moderate:</u> This species is listed in the results of the DPaW NatureMap search. Suitable habitat is present within the Survey Corridor where open shrublands are present.
Flock Bronzewing ( <i>Phaps histrionica</i> )	<u>State:</u> Schedule 4 under WC Act	The Flock Bronzewing prefers open grassy plains, generally treeless and is also known from spinifex and open mulga habitats.	<u>Low to Moderate:</u> This species is listed in the results of the DPaW NatureMap search, with a single record made in 2008 in the vicinity of Onslow. The grasslands within the Survey Corridor may potentially provide suitable habitat.
19 species of migratory wading and shorebirds **	<u>State:</u> Schedule 3 under WC Act <u>Commonwealth:</u> Listed on JAMBA, CAMBA and/or ROKAMBA	These species are mainly found along coastal mudflats and sandy shorelines; however, they are also known from inland lakes, both fresh and saline. Other potential habitats such as estuaries and mangroves may also be utilised by some species.	<u>High:</u> A total of 19 migratory wading and shorebird species were listed in the results of the DPaW NatureMap search. Suitable habitat occurs in the coastal sections of the Survey Corridor, comprising mudflats and seasonally inundated claypans. The Survey Corridor river crossing intersects with mangroves, which may provide suitable habitat for these species.

\*\* Common Sandpiper (*Actitis hypoleucos*); Ruddy Turnstone (*Arenaria interpres*); Sharp-tailed Sandpiper (*Calidris acuminata*); Sanderling (*Calidris alba*); Red-necked Stint (*Calidris ruficollis*); Red Knot (*Calidris tenuirostris*); Greater Sand Plover (*Charadrius leschenaultia*); Lesser Sand Plover (*Charadrius mongolus*); Bar-tailed Godwit (*Limosa lapponica*); Eastern Curlew (*Numenius madagascariensis*); Whimbrel (*Numenius phaeopus*); Grey-tailed Tattler (*Tringa brevipes*); Wood Sandpiper (*Tringa glareola*); Common Greenshank (*Tringa nebularia*); Lesser-crested Tern (*Sterna bengalensis*); Caspian Tern (*Sterna caspia*); Roseate Tern (*Sterna dougallii*); Common Tern (*Sterna hirundo*); White-winged Black Tern (*Sterna leucoptera*).

Table 5–5 Conservation significant mammals recorded or potentially occurring within the Proposal corridor

Species	Protection Status	Preferred Habitat (Ninox 2013)	Potential Occurrence
Northern Quoll ( <i>Dasyurus hallucatus</i> )	<u>State:</u> Schedule 1 under WC Act <u>Commonwealth:</u> Vulnerable	In the Pilbara, the Northern Quoll has most commonly been recorded in habitats comprising rocky hills, mesas, plateaux, major drainage lines and granite tor fields.	<u>Unlikely:</u> No record of this species was made during Biota's survey of the Wheatstone project Area; however, two records from the vicinity of Onslow were listed on the DPaW NatureMap search. The species was also listed on the DotE Protected Matters Report search. However, there does not appear to be any suitable habitat within the Survey Corridor.
Greater Bilby ( <i>Macrotis lagotis</i> )	<u>State:</u> Schedule 1 under WC Act <u>Commonwealth:</u> Vulnerable	Habitat suitable for the Greater Bilby is primarily mulga shrublands on stony plains and along the lower slopes of ranges, in sandplains and in sand dune systems. A determining factor in the suitability of Greater Bilby habitat is the lack of ground cover, allowing for high mobility during foraging.	<u>Unlikely:</u> This species was listed on the results of the DotE Protected Matters Report; however, there are no records of this species in the vicinity of the Survey Corridor and little suitable habitat is present.
Pilbara Leaf-nosed Bat – unnamed Pilbara form ( <i>Rhinonictis aurantia</i> )	<u>State:</u> Schedule 1 under WC Act <u>Commonwealth:</u> Vulnerable	The Pilbara Leaf-nosed Bat is restricted to relatively deep subterranean roosts that are able to provide a warm, humid microclimate that enable them to limit energy and water loss. Such naturally occurring subterranean structures providing suitable conditions are uncommon in the Pilbara; however, abandoned underground mines are known to be utilised by the species.	<u>Unlikely:</u> This species was listed on the results of the DotE Protected Matters Report; however, no suitable roosting sites were apparent within the Survey Corridor and there are no records of this species in the general area.
Little North-western Mastiff Bat ( <i>Mormopterus loriae cobourgiana</i> )	<u>State:</u> Priority 1 DPaW protected fauna.	The Little North-western Mastiff Bat is primarily restricted to mangrove forests and adjacent areas of monsoon forest along larger waterways.	<u>Moderate:</u> This species was not listed in the results of the DPaW NatureMap search; however, it was recorded by Biota in 2010 in mangroves. Aerial foraging may occur within the Survey Corridor in the vicinity of the Ashburton River where large trees may attract their invertebrate prey.
Western Pebble-mound Mouse ( <i>Pseudomys chapmani</i> )	<u>State:</u> Priority 4 DPaW protected fauna	The Western Pebble-mound Mouse is usually recorded by the presence of the large pebble mounds that it constructs. These mounds are only built in areas where suitable sized pebbles for their construction are present; usually on the gentler slopes of rocky ranges. The vegetation in these locations generally consists of spinifex with emergent eucalypts and scattered shrubs.	<u>Unlikely:</u> This species was listed in the results of the DPaW NatureMap search with a single record from 2005 in the coastal area just south of Onslow. There is no suitable habitat within the Survey Corridor.
Lakeland Downs Mouse ( <i>Leggadina lakedownensis</i> )	<u>State:</u> Priority 4 DPaW protected fauna	The Lakeland Downs Mouse is known to occur in habitats comprising sandy soils and cracking clays.	<u>Moderate:</u> This species was listed in the results of the DPaW NatureMap search. Suitable cracking clay habitat is present within the Survey Corridor.

Table 5–6 Conservation significant reptiles recorded or potentially occurring within the Proposal corridor

Species	Protection Status	Preferred Habitat (Ninox 2013)	Potential Occurrence
Olive Python ( <i>Liasis olivaceus barroni</i> Pilbara)	<u>State:</u> Schedule 1 under WC Act <u>Commonwealth:</u> Vulnerable	The Pilbara Olive Python is known to inhabit areas where prey species congregate. The species has been observed primarily in proximity to pools in creeks or rocky ranges.	<u>Unlikely:</u> This species was listed in the results of the DPaW NatureMap search; however, there is no suitable habitat within the Survey Corridor.
Salt-water Crocodile ( <i>Crocodylus porosus</i> )	<u>State:</u> Schedule 1 under WC Act <u>Commonwealth:</u> Listed as Marine	The Salt-water Crocodile ranges between oceanic, tidal and riverine habitats, with a preferred nesting habitat within isolated freshwater swamps that are not influenced by tidal movement of water.	<u>Unlikely:</u> This species was listed in the results of the DPaW NatureMap search with a single record from 2008 just south-west of Onslow. The species may be present where the Survey Corridor crosses the Ashburton river crossing:
Woma ( <i>Aspidites ramsayi</i> )	<u>State:</u> Schedule 4 under WC Act	The Woma has been found in a range of habitats including woodlands, heaths and shrublands. The species is known to shelter during the day in abandoned reptile and/or mammal burrows, hollow logs or thick vegetation.	<u>Low to Moderate:</u> There are no records of this species in the vicinity of the Survey Corridor; however, suitable habitat is present including shrublands and open woodlands.



### 5.2.3 Assessment of potential impact

The aspects of the Proposal that may affect fauna include:

- **clearing of vegetation** will remove fauna habitat
- **open stretches of pipeline trench** can potentially trap terrestrial fauna resulting in individual loss
- **vehicle collisions** can result in loss of individuals.

Of the fauna habitats present within the Survey Corridor, only the samphire and mangrove communities have elevated conservation significance due to their habitat value for Migratory bird species. A total of 58.7 ha of this habitat have been mapped within the Survey Corridor—representing a relatively small proportion of that available in the broader area. As outlined in Section 5.1.6, at most only 7.71 ha of vegetation unit T1 will be cleared and no clearing will occur within the T2 vegetation unit.

The minimisation of disturbance to fauna habitat is considered to be adequately addressed by the Fauna Interaction Plan in the CEMP (Appendix 4), with key management actions including (but not limited to):

- undertaking pre-construction fauna surveys in areas where significant species are considered likely to occur
- prohibition of clearing outside authorised clearing areas
- mitigation of disturbance to habitat trees through:
  - \* demarcation of habitat trees within or immediately adjacent to any construction areas
  - \* avoidance of direct clearing of marked trees except where they materially interfere with construction of the pipeline, or are a safety concern
  - \* ensuring inspection of habitat trees for fauna by Fauna Handlers immediately prior to felling
  - \* ensuring fauna handlers are present during felling to translocate fauna as required
  - \* where possible, ensuring any habitat trees with nesting hollows that are felled are to have the hollow removed and attached to a suitable nearby tree
  - \* prioritising the pruning of habitat trees that overhang construction areas, rather than removing them.

As outlined in Section 5.2.2, 30 conservation significant species have a Moderate or greater potential to occur within the Survey Corridor. Due to the narrow width of the Proposal Corridor the actual fauna occurrence is expected to be a small subset on a transitory basis. Trench and pipeline entrapment is the major risk of impact to fauna, as well as the potential for collision with vehicles.

It is estimated that trench digging, welding and backfilling should typically be completed within 7 – 10 days. The construction schedule targets approximately 10 km of open trench at any one time, however a maximum of 20 km may be required if construction constraints require.

The risk to fauna will be managed through the procedures detailed in the CEMP, including (but not limited to):

- ensuring pipes are inspected prior to welding and observed fauna removed by fauna handlers
- ensuring welded pipeline sections are capped at end of shifts to prevent fauna entry
- installing fauna shelters/refuges (e.g.: cardboard boxes, hessian bags, commercial egg cartons) in open trenches at intervals not exceeding 50 m
- trenches will be stopped and started at regular intervals with “plugs” to allow for unimpeded fauna and livestock movement and fauna exit ramps to facilitate egress of trapped fauna
- ensuring open trenches are inspected and cleared by fauna handling teams daily
- ensuring open trench lengths do not exceed lengths capable of being practically inspected and cleared in accordance with the Fauna Interaction Management Plan by the available fauna teams at any time
- limiting vehicle speeds to 40 km/h or less within the cleared Proposal Corridor.

It is considered that the potential impacts on fauna can be adequately regulated through the NVCP process under Part V of the EP Act and the implementation of the CEMP under the PP Act to ensure that the EPA objectives for this factor are met.

### 5.3 Inland waters and hydrology

#### 5.3.1 Watercourse crossing

The Proposal Corridor intersects the Ashburton River at two locations over its length, approximately 8 km upstream from the river mouth at KP 12 of the Wheatstone Lateral (287978E, 7592619N) and then again just south of Nanyingee Hill at KP 83 of the Ashburton West Loop (315793E, 7516084N). The Ashburton River is an intermittent stream that travels in a northwest direction and meanders through extensive flood plains between Nanutarra and Onslow (the location of the Proposal Corridor) (Payne et al. 1988). The Proposal Corridor also traverses seasonally inundated wetlands and tidal mudflats and creeks.

Potential impacts of the Proposal on watercourses and water resources include:

- physical disturbance to watercourses / wetlands, banks and riparian vegetation
- changes to the hydrological regimes of wetlands
- alteration to surface water flow regimes
- deterioration in surface water and groundwater quality
- groundwater drawdown.

Crossings of the Ashburton River will be completed by open-cut excavation. The environmental impacts associated with this method are largely temporary (less than six months), although trenching will disrupt the bed and banks of the watercourse and rehabilitation will be required to avoid longer-term impacts.

A draft Watercourse Crossing Procedure (Strategen 2013b) has been prepared for the Proposal to ensure the protection and environmentally sound management of watercourses (Appendix 5). The Watercourse Crossing Procedure outlines information for management of watercourse crossings in relation to the following pipeline activities:

- clearing of watercourse vegetation
- earthworks and trenching across watercourses
- wet crossing requirements
- stabilisation of banks
- rehabilitation of watercourse form, function and stability.

The overall requirement to minimise the degree of vegetation cover removed and to minimise soil disturbance is addressed within in the CEMP. The Watercourse Crossing Procedure will be implemented in compliance with relevant environmental commitments, permits and procedures including those contained in the CEMP and DDG approved construction contractor Environmental Management Plans.

As outlined in Section 2.1.2, RWI Act s 11 permits to interfere with bed and banks will be required. The bed and banks permits will be applied for following the outcome of this EP Act referral.

#### 5.3.2 Water abstraction and dewatering

The Proposal may require groundwater abstraction to supply water for construction, as well as minor dewatering to facilitate trenching at the watercourse crossings or where areas of shallow watertable are encountered.

As outlined in 4.2.4, the water supply for the Proposal is 108 ML. DDG is yet to finalise the water supply strategy for the project. Should water resourcing require groundwater abstraction, the necessary RWI Act licence(s) will be obtained.

DDG is also in the process of acquiring a Surface Water Licence (SWL 166 334-02) with a 3000 KL entitlement through a transfer from BHP, the previous operator of the AWF.

In the event that dewatering is required for the Proposal, surplus water will be preferentially used for dust suppression or directed to a turkey nest dam where the water can infiltrate. Dewatering activities will be short term with minimal impact to the groundwater system, and will be managed in accordance with the CEMP (Appendix 4). The key actions to be implemented to manage dewatering are:

- dewatering will be undertaken during summer and autumn months when water table levels are annually low
- dewatering rates will be limited such that the drawdown cone will not affect surrounding water bodies, and groundwater dependent ecosystems (i.e. no drawdown at surface water bodies)
- in acid sulphate soil risk areas, dewatering product will be treated in accordance with specific requirements set out in the CEMP Acid Sulphate Soil Management Plan
- disposal of dewater product shall be undertaken through use for dust suppression in the first instance, and by transport to a turkey nest for re-infiltration in the second instance
- where disposal to a turkey nest is not practicable, dewater product will be disposed of to ground in a manner that ensures that standing water does not remain present for a period of more than three days.
- disposal will comply with Department of Water requirements as set out in *Water Quality Protection Note 13: Dewatering of soils at construction sites*.

## 5.4 Terrestrial environmental quality

### 5.4.1 Acid sulfate soils

The Wheatstone Public Environmental Review indicates the potential for occurrence of acid sulfate soils (ASS) over about 3–4 km of the northern portion of the pipeline alignment. There is also some possibility of such soils occurring in the bed of the Ashburton River and at other low-lying locations along the pipeline alignment.

If ASS is excavated from below the natural watertable, the excavated material needs to be treated with a neutralising agent to prevent acid formation on exposure to the atmosphere. It is a requirement by DER that soils are tested in areas with medium and high potential for acid sulfate to determine actual potential for acid generation, and if present, to apply the required treatment to the excavated soils.

Prior to any trench excavations works, DDG will undertake an ASS investigation and management program to establish the presence, or otherwise of ASS, and to define and implement an appropriate treatment regime. This program would essentially comprise the following steps:

1. Undertake a desktop ASS risk assessment of the entire alignment based on a consideration of soil types, geology, wetlands, depth to groundwater, and vegetation.
2. Classify the risk level of portions of the alignment in terms of HIGH (almost certain), MEDIUM (likely), MEDIUM TO LOW (possible in isolated circumstances), and LOW (unlikely).
3. Undertake field investigations of the soil profiles in the MEDIUM and HIGH risk areas in accordance with the DER guideline: *Identification and investigation of acid sulfate soils and acidic landscapes*, or as agreed with Department of Environmental Regulation.
4. From the investigation results, develop a neutralisation treatment program for the relevant portions of the alignment shown to contain acid forming minerals.
5. Implement the treatment in accordance with the methodology as set out in the CEMP, which has previously been approved by DEC (now DER), and demonstrated as being successful on other similar projects.
6. Monitor and treat excavated soils from the MEDIUM TO LOW risk areas with the generic treatment methodology set out in the CEMP, as previously approved by DEC, and demonstrated as being successful on other similar projects.

The CEMP includes an Acid Sulphate Soil Management Plan, which details the process to test and treat ASS in areas of potential occurrence (Appendix 4). The treatment methodology is consistent with the requirements of the DER guideline: *Treatment and management of soils and water in acid sulfate soil landscapes*. Implementation of this plan would be a condition of the PP Act licence to construct the pipeline.

#### 5.4.2 Site contamination

A search of the Contaminated Sites Database (DER 2013) found no known contaminated sites within the Proposal Corridor. However, in 2011, DBP engaged GHD to undertake an assessment to determine potential contamination at the AWF based on previous detection of hydrocarbons in two groundwater wells at the AWF. The desktop investigation and follow-up site investigations (GHD 2011) confirmed the potential groundwater contamination from hydrocarbons.

The GHD (2011) desktop and site investigation and historical sampling information was used to request an assessment, by DEC (now DER), under the *Contaminated Sites Act 2003* (CS Act). DEC subsequently classified part of Lot 163 on Plan 220110 (Certificate of Title LR3135/584), which is associated with the AWF under section 11 of the CS Act. DEC classified the site on the 7 November 2011 as *'Possibly contaminated - investigation required'*, with the nature and extent of contamination being attributed to hydrocarbons (such as from diesel and oil), which were identified in groundwater at the site.

BHP has assumed liability for the site contamination that has occurred at the AWF has agreed that at its own cost, it will (or will procure a third party to) perform all of the work (including remediation and rehabilitation) that a reasonable and prudent operator would deem necessary to clean-up the environmental damage, contamination and/or pollution identified in the Environmental Report (GHD 2011) in accordance with the standard of a reasonable and prudent operator. Any future contamination at the site will become the responsibility of DBP.

#### 5.4.3 Waste

During construction, solid waste such as pipe off-cuts will be produced, as well as domestic waste products generated from the camp including:

- food scraps and general domestic waste
- wastewater – black and grey streams are generally combined.

Waste will be managed in accordance with the CEMP (Appendix 4). Waste from ablution facilities located at the campsite will be treated prior to disposal, which will be in areas remote from any watercourses, and subject to local government regulation, and registration under Part V of the EP Act.

No significant quantities of hazardous waste are expected to be generated during construction. Where these occur, they will be collected in appropriately labelled containers and disposed off site through licensed contractors.

#### 5.4.4 Dust

Construction activities such as clearing and grading, trenching, backfill, rehabilitation, and general vehicle movement are likely to increase the risk of atmospheric dust emission. The majority of the Proposal Corridor does not occur within proximity to sensitive human receptors to dust, but excessive dust generation may affect vegetation adjacent to the construction areas. Dust emissions will be managed in accordance with the CEMP (Appendix 4). Key dust mitigation measures include the following:

- consulting with landholders within 300 m of any construction works and complying with DER *Guidelines for the Prevention of Dust and Smoke Pollution from Land Development Sites*
- limiting vehicle movements to designated areas
- limiting vehicle speeds on unsealed roads to 80 km/hr and on the construction site to 40 km/hr
- limiting soil stockpile heights to minimise wind erosion
- managing grit blasting to comply with the Environmental Protection (Abrasive Blasting) Regulations 1998.

#### 5.5 Aboriginal Heritage

The Proposal Corridor lies within the Thalanyji Native Title area. The Proponent has an active Native Title Agreement and an Aboriginal Heritage Agreement in place for this group.

In conjunction with the Thalanyji People, Deep Woods and Horizon Heritage, DBP are conducting archaeological and ethnographic heritage surveys within a 50 m Survey Corridor encompassing the length of the Proposal Corridor. This involves walking and assessing the land for places of importance and significance as defined under section 5 of the *Aboriginal Heritage Act (1972)*. Any sites identified are recorded to a standard which will allow the Aboriginal Cultural Materials Committee to assess their significance and offer advice to the Minister of Aboriginal Affairs regarding their ongoing management under Section 18 of the same act. To date, the archaeological survey has identified 12 Aboriginal sites within the Survey Corridor and an impact assessment is currently being undertaken internally by DBP to determine ongoing management strategies. An ethnographic investigation of the Wheatstone Ashburton West Pipeline route is currently scheduled for mid October and the outcomes will be integrated into future documentation.

## 6. Environmental management

### 6.1 Environmental management framework

DDG relies on the services of DBNGP (WA) Nominees Pty Ltd (DBP), the owner of the Dampier to Bunbury Natural Gas Pipeline (DBNGP), for the provision of labour and equipment to enable DDG to undertake its business. All DBP policies and procedures are wholly adopted by DDG for implementation across its business.

DDG operates in accordance with the DBP Environmental Management System (EMS) that includes the DBP Health, Safety and Environment Policy, the Proposal CEMP and OEMP, and other subsidiary environmental documentation including DBP environmental procedures. The purpose of the EMS is to ensure proactive planning, sustainable development and continuous environmental improvement.

The key elements of the EMS include:

- a corporate environmental policy
- assessing environmental risk and identification of legal requirements
- developing objectives and targets for improvement
- training, operational control, communication, emergency response, corrective and preventative actions
- audits and review.

As part of the EMS, the Proponent is committed to responsible environmental management of the Proposal and believes that all potential adverse environmental effects can be effectively managed. All planning, construction and operation activities shall be conducted in accordance with the DBP Environmental Policy, which outlines a commitment to sound management of environmental aspects of the project.

### 6.2 Construction Environmental Management Plan (CEMP)

As required under the PP Act, a CEMP has been prepared for submission to DMP, which will require approval prior to the commencement of the Proposal. The CEMP (draft provided in Appendix 4) addresses management of potential environmental impacts that may be encountered during the construction of the Proposal.

The following key aspects are addressed within the CEMP:

- Environmental Incident Response
- Weed Management
- Dewatering and Water Disposal Management
- Acid Sulphate Soil Management
- Fauna Interaction
- Watercourse Crossing Management
- Fire Management
- Dust Management
- Noise and Vibration Management
- Fuel and Chemical Storage, Spill and Emergency Response
- Waste Management
- Soil Management
- Aboriginal Heritage Site Management
- Rehabilitation.

### 6.2.1 Auditing and reporting

Assessment of the level of compliance with the CEMP will be undertaken through a number of methods and at different timeframes throughout the life of the Proposal. Compliance checking against the CEMP will include:

1. Weekly inspections of construction areas and review of relevant documentation.
2. Monitoring in accordance with each management plan
3. Implementation of an audit program comprising:
  - regular internal audits by the Proponent to assess compliance and performance against objectives detailed within the CEMP to ensure readiness for auditing by DMP
  - annual reporting to DMP to document the findings, issues and proposed actions resulting from regular audits described above
  - auditing of compliance with all aspects of the CEMP by DMP during construction.

Internal CEMP audits will be undertaken by suitably qualified environmental personnel employed by the Proponent to ensure contractors are fulfilling environmental obligations.

The Proponent will maintain an appropriate and auditable record system in accordance with the EMS, and conduct environmental reporting in accordance with the conditions of all approval instruments.

Environmental incidents (including identified instances of non-compliance with the CEMP or any approval condition) will be recorded and managed via the DBP incident management system INX InControl. This includes identification and implementation of necessary corrective actions, all of which is tracked through the implementation of the HSE Hazard / Event Reporting and Investigation Hse-Pro-014-08 protocol.

Revision of the CEMP may be required to ensure that the proposed management actions are current and effective in achieving the management objectives. Any required changes to the CEMP will be conducted in consultation with key regulatory agencies and stakeholders.

## 7. Significance of the Proposal

In reaching a decision as to whether a proposal is likely to have a significant effect on the environment, whether it is likely to meet its objectives for environmental factors and consequently whether a referred proposal should be assessed under Part IV of the EP Act, the EPA may have regard to the following:

- values, sensitivity and quality of the environment which is likely to be affected
- extent (intensity, duration, magnitude and geographic footprint) of the likely impacts
- consequence of the likely impacts (or change)
- resilience of the environment to cope with the impacts or changes
- cumulative impact with other projects
- level of confidence in the prediction of impacts and the success of proposed mitigation
- objectives of the Act, policies, guidelines, procedures and standards against which a proposal can be assessed
- presence of strategic planning framework
- presence of other statutory decision-making processes which regulate the mitigation of the potential effects on the environment to meet the EPA objectives and principles for EIA
- public concern about the likely effect of the proposal, if implemented, on the environment.

A significance test for the Proposal has been undertaken against each of these criteria as detailed in Section 7.

### 7.1 Significance test for the Proposal

#### 7.1.1 Values, sensitivity and quality of the environment

In order to determine the significance of the Proposal, the value of the environment needs to be established.

As identified in Section 5.1 and Section 5.2, the Proposal Corridor transects a wide range of vegetation types and fauna habitats. Although traversing a broad area, the Proposal does not intersect any environmentally significant areas or land features.

Five mapped Beard Vegetation Associations occur within the Survey Corridor, none of which are below (nor at risk of being reduced to by the Proposal) 30% of their pre-European extent (Table 5–1). No TECs, PECs or threatened flora have been identified in the Proposal Corridor.

As outlined in Section 5.2.2, there are 30 conservation significant species identified as having a Moderate or greater potential to occur within the Survey Corridor. Due to the narrow width of the Proposal Corridor fauna occurrence is expected to be a small subset on a transitory basis. Fauna habitats and land systems in the Proposal Corridor are abundant in the adjacent areas.

#### 7.1.2 Extent and consequence of likely impacts

The significance test requires that the likely impacts are assessed in terms of the following:

- extent (intensity, duration, magnitude and geographic footprint) of the likely impacts
- consequence of the likely impacts (or change)
- resilience of the environment to cope with the impacts or changes.



As discussed in Section 5.1, the vegetation of the Proposal Corridor is typical of the broader region with only T1 and T2 representing elevated significance due to their value as fauna habitat. Of the 2304.9 ha of vegetation mapped within the Survey Corridor, only 358 ha is proposed for clearing under the Proposal, with no clearing of the units T1 and T2 anticipated. All of the vegetation that will be impacted by the Proposal is known to extend beyond the Survey Corridor both locally and regionally.

Of the flora species recorded, only two were identified as being Priority Flora under the *Wildlife Conservation Act 1950 [WA]*. Both of these species are known from populations outside of the Proposal Corridor, and it is not considered likely that the Proposal will result in a significant impact to the conservation status or extent of these species.

Following installation of the pipeline, the Proposal Corridor will be progressively rehabilitated with the exception of a 5 m wide access track (which will replace an existing track in those areas where the existing track cannot be used, in accordance with the Rehabilitation Plan in the CEMP (Appendix 4). Based on Proponent experience with rehabilitation of linear infrastructure works, the majority of the Proposal Corridor is expected to return to a natural vegetated state of similar condition.

### 7.1.3 Cumulative impact

The Proposal does not overlie the footprint of any other major projects or proposals in the region. The Proposal Corridor has been planned along the route of an existing pipeline corridor, which minimises the cumulative disturbance of linear infrastructure to the region. No cumulative impacts are anticipated as a result of the Proposal.

### 7.1.4 Level of confidence

The Proponent has a wealth of experience with environmental management of the installation of pipelines similar to the Proposal. As such, the potential environmental impacts and management needs of the Proposal are well understood and will be adequately addressed through the management measures set out in the CEMP (Appendix 4).

### 7.1.5 Objectives of the Act, policies, guidelines, procedures and standards

All of the relevant legislation, policies, guidelines, procedures and standards have been considered in the identification and assessment of potential impacts of the Proposal and in development of the CEMP. The Proponent has also considered relevant legislation and the principles of environmental protection in the design of the Proposal and will continue to do so during subsequent implementation. Relevant guidance statements have been considered in undertaking baseline surveys.

### 7.1.6 Strategic planning framework

This item is not applicable to the Proposal.

### 7.1.7 Other statutory decision-making processes

As outlined in Section 2, a number of key regulatory controls can be applied to the Proposal to ensure appropriate management including (but not limited to):

1. Native Vegetation Clearing Permit (NVCP) under Part V of the EP Act.
2. RWI Act s 5C licence to take groundwater.
3. RWI Act s 11 bed and banks permit.
4. Licence under PP Act requiring development and implementation of a CEMP.
5. Registration of wastewater treatment plant(s) under Part V of the EP Act.
6. Applications under s 18 of the AH Act for disturbance to Aboriginal heritage sites.

### 7.1.8 Public concern

A stakeholder consultation program has been implemented (refer to Section 3) during the planning phase of the Proposal to identify and address concerns. No major issues were raised by key stakeholders and stakeholder consultation will continue to be undertaken during the implementation of the Proposal. The Proposal is not expected to generate any public concern.

## 7.2 Summary of significance

The potential environmental impacts of the Proposal can be adequately managed to meet EPA environmental objectives through the regulatory framework described above. In considering the above significance test, the regulatory controls that can be applied to the Proposal and the implementation of relevant management plans, the Proponent is of the view that the Proposal does not require formal environmental impact assessment under Part IV of the EP Act but will be managed under other legislation including the PP Act and Part V of the EP Act.

## 8. References

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