HAMERSLEY IRON PTY LIMITED
CAPE LAMBERT PETROLEUM (GAS) PIPELINE & STATION
CONTRACT NO. PS330B/M/CC/1008

ENVIRONMENT PLAN SUMMARY

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Level 15, 44 St Georges Terrace, Perth WA 6000
T: +61 8 9320 0400 F: +61 8 9225 5551

Changes in the content of the document excluding formatting, grammar and typographic are summarised in the table below.

Previous Rev	Section	Amendments
2	1	Amended to detail the full document title names, document control numbers and revision numbers of the relevant approved Environment Plan and Bridging Document that it is in relation to.
1	1	Information regarding Addendum included
1	1	Heading amended to reflect Licensee and sentence re-worded to reflect licensee and operator
1	1.1/Table 1	Pipeline Licences change to PL106 and PL8
1	1.1/Table 1	PL8 specifications included
1	1.1/Table 1	Location changed to Karratha to Cape Lambert
1	1.1/Table 1	Construction period adjusted to schedule end date
1	1.2/Table 2	Coordinates adjusted to reflect PL8 inclusion
1	1.2	Adjusted to include PL8 locality
1	1.2	New Location map Figure 2
1	3	Amendment to Heading to reflect PL106 and subsections re-organised for consistency
1	4	Inclusion of PL8 Description of Environment
1	5	New heading 5.1 "Construction of new pipeline section" and additional of text
1	5.1 Table 6	Removal of Commissioning and Takeover
1	5.2	New section 5.2 "Commissioning of the Pipeline"
1	6 Table 8	Additional information regarding to impacts to fauna and controls
1	7	Change from construction to construction and commissioning
1	8	Wording amended to Project completion
1	8	Addition of landholders for PL8

CONTENTS

1 INTRODUCTION

This document summarises the PL 106 Construction Environment Plan (1155-MT-PLA-003 Revision 3) and Commissioning Phase Environment Plan Addendum (1155-MT-PLA-004 Revision 2) for the Cape Lambert Petroleum (Gas) Pipeline and Station (CLPPL) Project. The PL 106 Construction Environment Plan was accepted by the Department of Mines and Petroleum on 28 April 2015 (Ref: ENVASSAPP001, EARS-EP-54114) and the Commissioning Phase Environment Plan Addendum accepted 9 November 2015 (Ref. RIO TINTO LIMITED, EARS-EPBD-56030).

Rio Tinto Iron Ore (RTIO) proposes the development of new power generation and transmission infrastructure throughout the Pilbara Region of Western Australia to support the company's iron ore production expansion. CLPPL will be constructed to deliver gas approximately 2 km from a connection point on the existing Cape Lambert Gas Pipeline (Pipeline Licence 8) to the delivery station within the proposed Cape Lambert Power Station.

Design and construction of CLPPL has been contracted to a joint venture of Monadelphous KT Pty Ltd and OSD Projects Pty Ltd (the KT-OSD JV). Monadelphous KT is predominantly responsible for construction; OSD for engineering, procurement and commissioning.

1.1 PIPELINE LICENSEE

The Pipeline Licensee for the project is Hamersley Iron Pty Ltd (trading as RTIO) on behalf of Robe River Iron Associates Joint Venture. KT-OSD JV is the operator for the Licensee.

Table 1: Project Summary

Cape Lambert Petroleum (Gas) Pipeline and Station	
Pipeline Licences	PL106 and PL8
Licensee	Robe River Mining Co Pty Ltd, Mitsui Iron Ore Development Pty Ltd, Nippon Steel & Sumitomo Metal Australia Pty Ltd, Nippon Steel and Sumikin Resources Australia Pty Ltd and North Mining Ltd commonly referred to as the Robe River Iron Ore Associates Joint Venture.
PL106 Pipeline Specifications	1.94 km buried steel DN 250mm Class 600 pipeline
PL8 Pipeline Specifications	49.02 km buried steel DN 250mm Class 600 pipeline
Location	Karratha to Cape Lambert, Pilbara
Construction Period	6 July 2015 to 16 December 2015

1.2 LOCATION

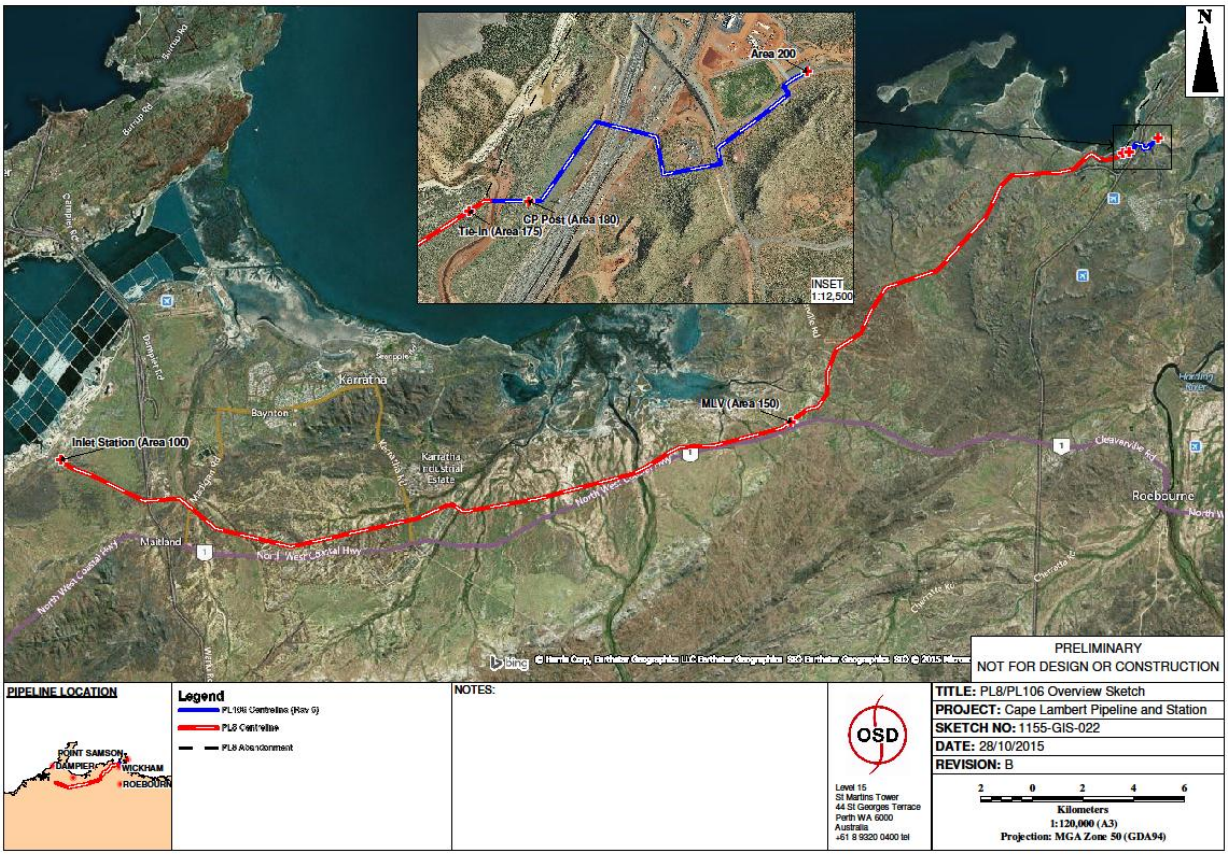
Table 2: CLPPL Coordinates

Pipeline Location	**Easting**	**Northing**
Commencement from PL8 Inlet Station	471,895	7,703,836
Cessation at PL106 Delivery Station	515,074	7,716,557

CLPPL will be located within the Local Government boundaries of the City of Karratha in the Pilbara Region of Western Australia (WA). The City of Karratha contains the major towns of Karratha, Dampier and Wickham and the smaller towns of Roebourne and Point Samson.

The proposed project site commences at the inlet station approximately 12kms south east of the Karratha to a delivery station (Area 200) within the Cape Lambert Power Station approximately 2.5kms south west of the Town of Wickham. Wickham is the main support town for the port operations at Cape Lambert.

Figure 1: Project Map



2 TERMS AND DEFINITIONS

Table 3: Terms and Definitions

Term	Definition
AR Permit	Approvals Request Permit: A RTIO administrated polygon identifying land that is subject to works proposal
CLPPL	Cape Lambert Petroleum (Gas) Pipeline and Station
Company	Hamersley Iron Pty Ltd
CROW	Construction Right-of-Way
DER	Department of Environment Regulation, WA

Term	Definition
EP	Environment Plan
EPBC Act	*The Environment Protection and Biodiversity Conservation Act 1999*
Hazard	Any unsafe act or condition that has the potential to injure people, result in harm to the environment, damage property, equipment or materials or lead to loss of process
Hazardous Substance	A substance entered in the List of Designated Hazardous Substances. If the substance is not entered in the List of Hazardous Substances determined in accordance with the Approved Criteria for Classifying Hazardous Substances whether the substance is a hazardous substance
Incident	An undesired event or set of circumstances that results in an undesired outcome through injury to people, harm to the environment, damage to property, equipment or materials or loss of process
km	kilometre(s)
KP	kilometre point
KT	Monadelphous KT Pty Ltd
KT-OSD JV	Joint Venture of Monadelphous KT Pty Ltd and OSD Projects Pty Ltd
m	metre(s)
NVCP	Native Vegetation Clearing Permit
OSD	OSD Projects Pty Ltd
Project	Cape Lambert Petroleum (Gas) Pipeline and Station
Project Team	CLPPL Project Management Team
PL	Petroleum Pipeline Licence
Risk	The exposure to the chance of loss, danger and/or harm
Risk Assessment	The process used to determine risk priorities by evaluating and comparing the level of risk against program standards, pre-determined risk levels or other criteria
RTIO	Rio Tinto Iron Ore
Topsoil	The top layer of soil that contains nutrients and seed material necessary for successful vegetation growth
TEC	Threatened Ecological Communities
WA	Western Australia
WC Act	*Wildlife Conservation Act 1950* (WA)

3 DESCRIPTION OF THE ENVIRONMENT – PL106

3.1 PHYSICAL ENVIRONMENT

The climate at Cape Lambert is arid, with very hot summers and mild winters. Rainfall is low and highly variable, with the majority of rainfall occurring between December and March due to monsoonal moisture and cyclonic lows.

CLPPL lies within the Chichester subregion of the Pilbara Bioregion. The Chichester subregion is described as undulating Archean granite and basalt plains, including significant areas of basaltic ranges.

Local topography is predominantly alluvial plains, low stony hills and granite outcrops, which comprise of largely granitic soils with alluvial sands on the coastal portion.

There are five (unnamed) main drainage catchments that occur across Cape Lambert. There is one watercourse crossing on the proposed CLPPL alignment that requires a permit to interfere with the bed or banks of the watercourse. Flows in these drainage catchments are ephemeral and there are no permanent surface water resources or springs. Episodic heavy rainfall events can cause watercourses and drainage lines to fill and rapidly rise.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Conservation Reserves

The main conservation reserve in the locality is the Millstream Chichester National Park, which is approximately 60 km south of the Project area.

There are no swamps, local wetlands or major watercourses, "Wetlands of Regional Significance" or "Wetlands of National Significance" occurring within the study area, nor would any be expected to be impacted by the small scale of clearing proposed.

The Project area does contain several dry ephemeral creeks on the stony plains, marginal mangrove habitat and seasonally inundated mud flat habitats. In accordance with the definition within the Environmental Protection Act 1986, these habitats are likely to qualify as wetland habitats.

Similar "wetland" habitat occurs over much of the Pilbara coastal plain, and is frequently inundated following heavy rain or though large tidal movements, characteristic of the region.

The clearing of native vegetation proposed for PL106 construction is highly unlikely to significantly increase runoff or sediment transport, and there is no significant riparian vegetation likely to be impacted by the project.

The Project was referred to the Office of the Environmental Protection Authority and Department of Environment and Conservation (now Department of Environment Regulation) in accordance with the Environment Protection Act 1986 and no matters of concern were raised.

3.2.2 Flora and Vegetation

Flora

No Declared Rare Flora species pursuant to the *Wildlife Conservation Act 1950* (WC Act) or Threatened Flora pursuant to the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) were recorded in the project area.

One Priority Flora species, *Tephrosia rosea var. Port Hedland* (Priority 1 flora as listed under the WC Act was recorded within the CLPPL licence area Permission to clear this flora was granted through the NVCP permit 5121/2 process.

Nicotiana heterantha (Priority 1) was recorded approximately 40 km south of Cape Lambert on heavy clays on seasonally wet flats. This habitat is not represented within the Project area.

Vegetation

The vegetation of this region is typically shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* (formerly *Triodia pungens*) hummock grasslands on plains, while *Eucalyptus leucophloia* tree steppes occur on ranges.

No vegetation communities listed as Threatened Ecological Communities (TECs) under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act), and no TEC's or Priority Ecological Communities (PECs) listed at State level occur or would be expected to occur in the study area.

Lerista nevinae, a fossorial skink, occurs in secondary dune habitat which is present on the Project site. *Lerista nevinae* has previously been identified in the Cape Lambert area and is protected under the WC Act as a Schedule 1 Threatened Fauna species. Impacts to *Lerista nevinae* habitat will be minimised by implementing the following controls:

- ❑ Clearing shall not exceed one hectare of *Lerista nevinae* habitat within the identified area shown in Appendix B.
- ❑ The pipeline distance within the *Lerista nevinae* area is 230.25m. The intended clearing width is 30m giving a total area of 0.694ha.
- ❑ No clearing of *Lerista nevinae* habitat for non-essential purposes is permitted.
- ❑ No equipment or construction materials to be stored within *Lerista nevinae* habitat.
- ❑ No clearing of identified priority flora occurs unless first approved by the CEO of the DER Native Vegetation Conservation Branch.
- ❑ No clearing within 10 m of the *Lerista nevinae* boundary unless first approved by the CEO of the DER Native Vegetation Conservation Branch.

3.2.3 Weeds

There are no "Declared Plants" under the Agriculture and Related Resources Protection Act 1976 or Weeds of National Significance recorded in the Project area.

There are significant historically cleared areas in the Cape Lambert area and in the vicinity of CLPPL where weed species are present. Weed species recorded in the CLPPL alignment were:

- ❑ Kapok (*Aerva javanica*)
- ❑ Buffel grass (*Cenchrus ciliaris*)

3.2.4 Fauna

The fauna species of conservation significance recorded or potentially occurring in the project area are outlined in Table 4.

Table 4: Fauna Species

Species	State Level	Federal Level	Impact on Conservation Significance
Dasyurus hallucatus Northern Quoll	Schedule 1	Endangered	❑ No suitable core habitat exists, although a minor portion of foraging habitat may be lost.

Species	State Level	Federal Level	Impact on Conservation Significance
			❑ It is unlikely that CLPPL will impact the conservation status of this species.
Chelonia mydas Green Turtle	Schedule 1	Vulnerable	❑ Has a worldwide distribution in tropical and subtropical seas with temperatures above 20°C. Green turtles nest on beaches from the Ningaloo coast northwards. ❑ It is unlikely that CLPPL will impact the conservation status of this species
Eretmochelys imbricate Hawksbill Turtle	Schedule 1	Vulnerable	❑ Forage near coral reefs in warm tropical waters of central Atlantic and Indo-Pacific Regions. ❑ It is unlikely that CLPPL will impact the conservation status of this species.
Natator depressus Flatback Turtle	Schedule 1	Vulnerable	❑ Found in the tropical waters of northern Australia and Papua New Guinea and is one of only two species of marine turtles without a global distribution. ❑ It is unlikely that CLPPL will impact the conservation status of this species
Lerista nevinae Nevin's Lerista	Schedule 1	Not Listed*	❑ Native vegetation clearing is limited to one hectare in identified *Lerista nevinae* habitat, therefore it is unlikely that CLPPL will result in any impact at either an individual or species level.
Liasis olivaceus barroni Pilbara Olive Python	Schedule 1	Vulnerable	❑ No suitable habitat exists within or near the study area, therefore the small amount of clearing required means that it is unlikely that CLPPL will impact the conservation status of this species.
Falco peregrines Peregrine Falcon	Schedule 4	Not Listed*	❑ The small amount of clearing required means it is unlikely that CLPPL will impact the conservation status of this species due to its cosmopolitan distribution.
Mormopterus loriae cobougiana Little Northern Freetail Bat	Priority 1	Not Listed*	❑ Mangrove vegetation is unlikely to be impacted by the proposal, therefore it is unlikely that CLPPL will impact the conservation status of this species.
Pseudomys chapmani Western Pebble-mound mouse	Priority 4	Not Listed*	❑ No suitable habitat exists for this species to construct pebble mounds (hillcrests and slopes supporting stony hummock grasslands), therefore it is unlikely that CLPPL will impact the

Species	State Level	Federal Level	Impact on Conservation Significance
			conservation status of this species.
Leggadina lakedownensis Short-tailed Mouse	Priority 4	Not Listed*	❑ No suitable habitat exists for this species within the study area, therefore it is unlikely that CLPPL will impact the conservation status of this species.
Macroderma gigas Ghost Bat	Priority 4	Not Listed*	❑ This species favours caves, mine shafts and deep rock fissures, therefore it is unlikely that CLPPL will impact the conservation status of this species.
Ardeotis australis Australian Bustard	Priority 4	Not Listed*	❑ Although a small amount of suitable foraging habitat may be cleared under this proposal, it is unlikely that CLPPL will impact the conservation status of this species.
Burhunis grallarius Bush Stone-curlew	Priority 4	Not Listed*	❑ While a small amount of foraging habitat may be lost, it is unlikely that CLPPL will impact the conservation status of this species.
Notoscinus butleri Line Soil-crevice Skink	Priority 4	Not Listed*	❑ No moderate creeks or rivers lie within or adjacent to the study area, therefore it is unlikely the small amount of clearing required for CLPPL will impact the conservation status of this species.
Phaps histrionica Flock bronzewing	Priority 4	Not Listed*	❑ No sightings have since been recorded and the species is considered unlikely to occur in the study area, therefore it is unlikely CLPPL will have any impact on the conservation status of this species.
Numenius madagascariensis Eastern curlew	Priority 4	Migratory	❑ Given the highly mobile nature of this species, and the widespread representation of this habitat within the locality, it is unlikely that CLPPL will impact the conservation status of this species.
Neochamia ruficauda subclarescens Star finch	Priority 4	Not Listed*	❑ Due to a lack of suitable habitat, it is unlikely that CLPPL will impact the conservation status of this species.
Merops ornatus Rainbow Bee-eater	Not Listed*	Migratory	❑ This species was recorded in the Cape Lambert locality, however it is unlikely that CLPPL will impact the conservation status of this species.

* Under the WA *Wildlife Conservation Act 1950* or Commonwealth EPBC Act

3.3 SOCIAL ENVIRONMENT

3.3.1 Socioeconomics

The Project area is located within the City of Karratha approximately 80 km east north-east of Karratha in the Pilbara Region of Western Australia (WA). The City of Karratha contains the major towns of Karratha, Dampier and Wickham and the smaller towns of Roebourne and Point Samson.

The proposed project site lies approximately 2.5 km to the north of the town of Wickham and approximately 2 km southwest of the construction camp for the expansion of the Cape Lambert port.

The economy of the Cape Lambert/Wickham area is heavily dominated by mining operations and servicing, with the RTIO Cape Lambert ship loading facility which is one of the longest and tallest jetties in Australia. The majority of the residences and facilities in Wickham are owned by Rio Tinto.

Other regional centres in the Pilbara are Tom Price, Paraburdoo and Pannawonica. These centres provide services to the pastoral, natural gas, salt, iron ore and other mining industries within the area. Nearby towns include Point Samson and Roebourne which provide services to the industries within the area.

Wickham is the main support town for the port operations at Cape Lambert and has a population of approximately 1,800 residents.

3.3.2 Cultural Heritage

A series of archaeological and ethnographic surveys commissioned by RTIO have been conducted in and near the Project area for the Cape Lambert mining operation.

Archaeological surveys have involved extensive participation with representatives from the Ngarluma Aboriginal Corporation and have aimed to identify any physical Aboriginal heritage sites, such as stone tool scatters, that exist within or near the Project area.

No heritage sites are located within the Construction footprint. Any sites within 100 m of the construction footprint will be actively avoided during construction.

4 DESCRIPTION OF THE ENVIRONMENT – PL8

4.1 PHYSICAL ENVIRONMENT

The PL8 easement is located within the Fortescue Soil-Landscape Province of Tille (2006) which comprises an area of approximately 160,050 km^2 in the northern Pilbara Region of WA. The easement traverses the De Grey – Roebourne Lowlands, Karratha Coast and Harding Hills and Plains Soil-Landscape zones (Tille, 2006). The Fortescue Province overlies the Pilbara Craton and is based on the Fortescue botanical district of Beard (1990), also roughly equating with the Pilbara IBRA.

More specifically, the topography of the soil landscape zones traversed by the easement include plains and sand plains (De Grey – Roebourne lowlands zone); coastal mudflats (Karratha Coast) and hills and ranges (Harding Hills and Plains Zone) (Tille, 2006). Geology of the Karratha Coast soil-landscape zone comprises coastal mudflats on marine deposits and some sedimentary and

volcanic rocks of the Pilbara Craton. Soils are tidal with some Calcareous loamy earths, Salt lake soils and Red/brown non-cracking clays.

The bio-climate of the easement is tropical semi-desert with nine to eleven dry months of the year. Average annual rainfall is largely within 250 – 300mm per year with the majority received during the summer months (Tille, 2006). Tropical cyclones develop to the northwest of the coastline and track down the coast mainly in the second half of summer, usually producing extremes of wind for several days, and heavy widespread rain.

The local environment of the easement comprises pastoral, recreational and mineral exploration activities. The easement has numerous road, track and creek crossings including the Nickol River at KP24.1. An operations track for 4 wheel drive pipeline patrols is maintained throughout the length of easement.

Crossings including creeks, roads and tracks are inspected regularly during critical crossing inspections, easement patrols and easement condition assessments.

There have been no incidences of pipeline operations and maintenance activities causing major disturbance to the surrounding environment, nor are these expected during the Commissioning Stage.

4.2 BIOLOGICAL ENVIRONMENT

The easement is located within the Fortescue Botanical District of the Eremaean Botanical Province of Beard 1975.

4.2.1 Conservation Reserves

The pipeline does not traverse any Environmentally Sensitive Areas (ESA) or Conservation Reserves. It is however partly located within a Schedule 1 Area, as defined under the EP Act Native Vegetation Clearing Regulations. This is relevant if clearing in these areas, under the Regulations becomes necessary. Advice will be sought from DMP and DER/ DPAW.

4.2.2 Fauna

Fauna likely to be present in the areas within which the easement lies will vary across the length of the pipeline due to the differences in habitat and other influences.

Prominent fauna known to occur in the wider region include Macropus rufus (Red Kangaroo), Macropus robustus erubescens (Common Wallaroo or Euro), Canis lupus (Dingo) Dromaius novaehollandiae (Emu) and flocks of Cacatua sanguinea (Corella) and Cacatua roseicapilla (Galah). Numerous species of snakes and lizards are also likely to be present. Wetlands of subregional significance in the broader Ashburton district also support a wide diversity of both resident and migratory birds.

The presence or absence of rare fauna either within or near the CLL sites cannot be confirmed without site specific fauna surveys. There is limited habitat in close proximity to the sites due to the surrounding landscape bring predominantly highly disturbed as a result of pastoral activity.

Commissioning activities are also limited, require minimal works and are restricted to fenced, pipeline facilities and established easement access tracks, not requiring easement disturbance. In addition, it is important to note that the majority of fauna are considered transient and

highly mobile. Movement on the easement is therefore not restricted, meaning they are free to move away from any activities which do occur.

Feral animals such as goats, foxes, cats and rabbits are widespread and are responsible for significant declines in native fauna presence in the region as a result of habitat destruction, competitive influences and hunting tendencies (Gascoyne Regional Development Commission, 2012).

Considering past experience and the above, disturbance to fauna as a result of commissioning activities is not anticipated. Notwithstanding the prevention of harm to local fauna was specifically addressed during the risk assessment and will be managed as stated in section 8.3.

Lerista Nevinae has been noted in the area in the vicinity of PL8/PL106 tie in. Any interactions with *Lerista Nevinae* will be managed in accordance with the CLPPL Environment Plan and the CLPPL Lerista Nevinae Management Plan (1155-MT-PLA-009).

4.2.3 Flora and Vegetation

The pipeline is located entirely within the Abydos Plain Vegetation Unit, one of the eight physiographic units identified in the Fortescue Botanical District (DEC, 2006).

The flora of the pipeline easement is largely pre-disturbed by pastoral activity. Karratha and Mt Welcome Pastoral Stations are predominantly flat grazing land with introduced grasses. Towards Cape Lambert the landscape varies between Spinifex acacia flat and undulating areas to rocky/sandy/hilly areas with low acacias and grasses close to the Cape Lambert Power Station at the northern end of the pipeline.

Table 5: Vegetation Communities

IBRA Region	Vegetation Communities Present
Pilbara	❑ Mulga low woodland over bunch grasses on fine textured soils; ❑ Salt marsh, Mulga bunch grass and short grass communities on alluvial plains; ❑ Shrub steppe characterised by Acacia pyrifolia over Triodia pungens hummock grasses over archaean granite and basalt plains; ❑ Snappy gum tree steppes on ranges; ❑ Grass savannah of mixed bunch and hummock grasses over quaternary alluvial plains; ❑ Dwarf shrub steppe of Acacia translucens over Triodia pungens over quaternary alluvial plains; and ❑ Samphire Sprobolus and Mangal on marine alluvial flats.

The Commissioning Phase does not require any clearing of vegetation. The pre-disturbed and maintained easement track is used to access the pipeline and facilities. Above ground facilities are fenced with blue metal ground cover and regularly maintained to prevent re-growth.

4.2.4 Weeds

The biological surveys show a number of vegetation units that were recorded with some presence of weeds, particularly Buffel grass (Cenchrus ciliaris) and Kapok Bush (Aerva javanica) adjacent to historically disturbed areas such as tracks and rail/water infrastructure.

The following declared weed species that have been recorded in the PL8 area include:-

- Saffron Thistle (Carthamus lanatus): and
- Camelthorn (Alhagi maurorum).

The pre-disturbed and maintained easement track is used to access the pipeline and facilities. Above ground facilities are fenced with blue metal ground cover and regularly maintained to prevent re-growth and control of weeds.

However, weed introduction and spread as a result of activities can still cause significant adverse effects on the surrounding environment. To minimise these effects, weed management strategies outlined in PL106 Construction Environment Plan will be utilized to minimize any risks.

4.3 SOCIAL ENVIRONMENT

4.3.1 Socioeconomics

The Project area is located within the City of Karratha approximately 12 km south east of Karratha in the Pilbara Region of Western Australia (WA). The City of Karratha contains the major towns of Karratha, Dampier and Wickham and the smaller towns of Roebourne and Point Samson.

The economy of the Cape Lambert/Wickham area is heavily dominated by mining operations and servicing, with the RTIO Cape Lambert ship loading facility which is one of the longest and tallest jetties in Australia. The majority of the residences and facilities in Dampier and Wickham are owned by Rio Tinto.

Other regional centres in the Pilbara are Tom Price, Paraburdoo and Pannawonica. These centres provide services to the pastoral, natural gas, salt, iron ore and other mining industries within the area. Nearby towns include Point Samson and Roebourne which provide services to the industries within the area.

Wickham is the main support town for the port operations at Cape Lambert and has a population of approximately 1,800 residents (Australian Bureau of Statistics, 2006). Karratha is the main support town for the Dampier Port Operations and has a population of approximately 19,000.

4.3.2 Cultural Heritage

The 40m wide PL8 and 30m wide PL106 Pipeline easements were cleared in 1984 and 2015 respectively. Aboriginal heritage matters were addressed with the respective parties during the construction and are ongoing through the operational stages of PL8.

Existing sites do exist adjacent to the PL8 and PL106 easements and are managed through the RTIO Approvals Coordination Database. Access to off-ROW area is restricted and no clearing of vegetation (including driving over vegetation) is permitted unless authorized by a RTIO Approval Permit.

No clearing or ground disturbing activities are anticipated during the Commissioning Phase and if required will require assessment through the RTIO Approvals Coordination Database and in accordance with the *Aboriginal Heritage Act 1972*. Note that any identified heritage sites will only be fenced if there is ground disturbance proposed in the vicinity.

Should during the course of the activity items that may have aboriginal significance be discovered, the management strategies in accordance with section 13.12 of the PL106 Environment Plan will be implemented.

5 DESCRIPTION OF ACTIVITIES

5.1 CONSTRUCTION OF NEW PIPELINE SECTION

The gas pipeline and cathodic protection (CP) equipment will be buried below ground in a trench system within a 30 m wide construction Right-of-Way (CROW). The construction will be contained within the PL106 License Area and a small section (100m) within the PL8 boundary.

Construction of the pipeline and associated equipment will include the following major works:

- Mobilisation to site and preparation of the CROW, including survey, avoidance site fencing installation, clearing and grading
- Installation of temporary support facilities including offices, power generation, workshop and storage facilities and ancillary amenities at an existing laydown area off the PL106 licensed area.
- Fabrication and construction of the pipeline from the tie-in point at PL8 to the termination at the Cape Lambert delivery station
- Installation of pipeline inspection gauge launcher/receiver compound
- Flooding, gauging and testing of the pipeline
- Installation of CP
- Demobilisation and site rehabilitation

Construction activities for the Project are scheduled as below.

Table 6: Construction Schedule

Construction Activity	Start Date	End Date
Survey	17 August 2015	22 August 2015
Clear and Grade	20 August 2015	30 August 2015
Trenching	31 August 2015	8 September 2015
Haul, String & Bend	2 September 2015	11 September 2015
Welding	7 September 2015	12 September 2015
NDT	8 September 2015	13 September 2015
Coating	10 September 2015	15 September 2015
Lower in and Tie-ins	12 September 2015	20 September 2015
Backfill and Re-instate	14 September 2015	24 September 2015
Hydrostatic Testing	24 September 2015	2 October 2015
Facilities Install	6 July 2015	29 October 2015

5.2 COMMISSIONING OF THE PIPELINE

Commissioning of the pipeline will follow the construction phase. Commissioning will involve the introduction of gas into the existing PL8 pipeline until full pressurisation is achieved at the PL106 Delivery station (end of line).

Commissioning activities include:

Stage 1 Construction verification – review and acceptance of construction documentation to ensure the pipeline is fit for the intended purpose.

Stage 1B PL8 Verification – review and acceptance of the existing PL8 pipeline records to ensure the pipeline is fit for the intended purpose.

Stage 2 – Pre-commissioning – ground activities including right of way inspection, facilities inspections and prepping all above ground facilities including PL8 Inlet Station (Area 100), PL8 MLV (Area 150) and PL106 Delivery Station (Area 200).

Stage 3 No Load Commissioning – involves detailed testing, preparation and powering up of all equipment ion readiness for gas. It includes such matters as filling water bath heaters and communication tests.

Stage 4 Load Commissioning – A staged process that includes introduction of gas to the inlet facility, pressurise to the MLV, pressurise to the PL106 Delivery Station, pressurise PL106 Delivery Station and commissioning of the Water Bath Heaters.

Table 7: Commissioning Schedule

Commissioning Activity	Start Date	End Date
Mobilisation	1 December 2015	16 December 2015
Pre-Commissioning	1 December 2015	5 December 2015
No Load Commissioning	5 December 2015	8 December 2015
Load Commissioning – Introduction of Gas	8 December 2015	15 December 2015
Handover to Operations		16 December 2015

Once commissioned and in agreement with RTIO, the pipeline will be handled over to the nominated pipeline operator APA group.

6 ENVIRONMENTAL HAZARDS AND CONTROLS

A series of hazard identification (HAZID) and environmental hazard identification (ENVID) risk workshops were conducted for Project construction and commissioning. Risk workshops were held in accordance with the Australian Standard for Pipelines AS 2885.1 and AS/NZS ISO 31000. The risk management process concentrated on the hazard identification, risk assessment and risk mitigation components.

The development of the Environment Plan derived from the outcomes of the risk assessment workshops. The key areas of environmental risk and the controls for management and mitigation of these risks are shown in Table 8.

Table 8: Environmental Hazards and Management/Mitigation Controls

Environmental Hazards and Potential Impact	Management and Mitigation Controls
Lighting for night construction works potentially disturbing fauna: ❑ Disruption to fauna such as nesting turtles at watercourse crossing or coastal habitat.	❑ No lighting for night construction will be positioned at the watercourse or coastal/beach habitat. ❑ Project night works will only occur during the 24 hour hydrotest and located within the existing industrial zone to the inland east of Cape Lambert Rail Operations.
Excessive dust from construction activities: ❑ Community nuisance and impact to stakeholders.	❑ Regular water application program to reduce dust generation. ❑ Liaising with stakeholders to ensure dust levels are acceptable in the vicinity of the Project.
Excessive noise and vibration from construction activities: ❑ Community nuisance and impact to stakeholders.	❑ Construction works only to be completed during daylight hours. ❑ Noise levels will be monitored if necessary in response to reasonable substantiated complaints and appropriate mitigation methods implemented. ❑ Liaising with stakeholders to ensure noise and vibration levels are acceptable in the vicinity of the Project.
Release of hydrotest water: ❑ Scouring and sedimentation. ❑ Contamination from hydrotest water quality and chemical additives	❑ Potable water to be used for hydrotesting. ❑ Flow diffusers will be used to reduce water velocity to minimise potential for erosion. ❑ Silt traps will be used to minimise sedimentation from discharge.
Unauthorised clearing of vegetation (outside NVCP) boundary or in excess or NVCP allocation): ❑ Breach of NVCP licence. ❑ Permanently removing or temporarily disturbing native vegetation or significant vegetation communities/habitats.	❑ All personnel involved in vegetation clearing will receive ground disturbance and clearing permit training. ❑ No work will commence without an NVCP, RTIO Approval Request Permit, and KT-OSD JV Clearing Permit in place. ❑ CROW boundary will be pegged and demarcated by polypipe secured onto star pickets along the clearing boundaries. ❑ Appropriate clearing boundaries will be displayed on relevant maps and construction drawings. ❑ All clearing will be tracked and reviewed in the Clearing Permit register.

Environmental Hazards and Potential Impact	Management and Mitigation Controls
Unauthorised disturbance to flora species and significant ecological communities and habitat areas: ❑ Damage to/loss of significant native flora and vegetation. ❑ Potential impacts to native fauna habitats – particularly *Lerista nevinae* habitat.	❑ Flora, ecological community and habitat avoidance areas will be mapped, identified in the field and fenced where appropriate. ❑ Avoidance areas will be displayed on relevant maps and construction drawings. No avoidance areas exist with the construction footprint. ❑ Incidental discovery of conservation significant flora species, fauna habitats or ecological communities will result in work to cease in the affected area until guidance on remedial actions is provided by RTIO, in consultation with DER where required. ❑ No more than 1 ha of the *Lerista nevinae* habitat identified on NVCP approval 5121/2b of the Project may be disturbed.
Introduction of foreign weed species onto Project area: ❑ Weed species competing with native vegetation and therefore adversely affecting native flora, vegetation, ecological communities and native fauna.	❑ All mobile equipment including vehicles will be inspected before entry to site. Mobile equipment will be certified and stickered to verify "weed-free" status. ❑ A wash-down bay will be available offsite to high-pressure clean any vehicles, machinery, plant or equipment identified as contaminated. ❑ Any imported fill material will be obtained from a reputable supplier and inspected for vegetative or other organic matter (e.g. seeds) prior to arriving on site.
Spread of existing weed species within Project area: ❑ Weed species competing with native vegetation and therefore adversely affecting native flora, vegetation, ecological communities and native fauna.	❑ All known locations of colonies of weed species will be included on Project mapping. Buffel grass and kapok populations in this area of Cape Lambert are ubiquitous and are thus highly unlikely to be isolated in any practical sense. No other species have been identified requiring avoidance or isolation on the CROW.
Project water use: ❑ Breaching licence conditions. ❑ Depletion of scarce water resources.	❑ Water will be source using potable water supplied by Water Corporation WA, through a Rio Tinto standpipe. Abstraction quantities will be recorded and reported regularly to RTIO.
Construction of the watercourse crossing: ❑ Banks or creek bed inadequately restored resulting poor re-vegetation, erosion and scouring.	❑ Construction and rehabilitation will be in compliance with the Permit to Interfere with Bed and Banks of a Watercourse PMB 180359(1). ❑ Works will be designed to preserve water flows, and mitigate erosion and sedimentation impacts to the watercourse during and post construction.

Environmental Hazards and Potential Impact	Management and Mitigation Controls
Fauna entrapment in trench/excavation/pipeline section/compounds: ❑ Fauna injury and/or death.	❑ Designated fauna clearing personnel will be trained in fauna identification, handling, basic first aid and euthanasia, and only these personnel may handle fauna. ❑ Open trench will be cleared and recorded twice daily by fauna clearing personnel, no later than 3 hours after sunrise (within 2.5 hours if daily temperatures are expected to exceed 35°C), with clearing to be repeated before sunset (i.e. 3-6pm). ❑ Open trench not to exceed a length capable of being inspected and cleared by fauna clearing personnel in the timeframes specified above. ❑ Welded pipe strings will be capped to prevent fauna entry. ❑ Fauna escape ramps or structures will be in place at bellhole excavations and at regular intervals in excavated trench. ❑ Approved fauna handlers to remove fauna or manage unwell and injured fauna appropriately.
Bush fire caused by construction activities: ❑ Loss or damage to fauna and/or vegetation.	❑ Selected construction staff will be trained in the use of fire fighting equipment. ❑ All vehicles will be fitted with tagged and approved dry chemical extinguishers. ❑ Fire fighting unit will be present during any relatively high fire risk activity..
Unauthorised disturbance to cultural heritage site: ❑ Damage to/loss of cultural heritage artefacts and/or values.	❑ No work will commence without an NVCP, RTIO Approval Request Permit and KT-OSD JV Clearing Permit. ❑ No heritage sites are located within the Construction footprint. Any sites within 100 m of the construction footprint will be actively avoided during construction.. ❑ Incidental discovery of potential cultural heritage material will result in work to cease immediately in the affected area until guidance on remedial actions is provided by RTIO in consultation with relevant authorities.

Environmental Hazards and Potential Impact	Management and Mitigation Controls
Spill of diesel/hazardous material: ❑ Localised environmental impact, potential for impacts to groundwater, flora, ecological habitat and fauna.	❑ Hazardous materials and fuels will be stored in appropriate containers and stored in bunded areas to mitigate the risk and severity of spills. ❑ Storage equipment, pipes, seals, bunds etc. will be inspected to ensure ongoing integrity. ❑ Material Safety Data Sheets will be maintained for all hazardous substances. ❑ Spills will be reported as appropriate and cleaned up as soon as practicable. Waste/contaminated material will be disposed of in accordance with waste management protocols.
Inappropriate disposal of waste: ❑ Loss of flora and vegetation through contamination of soil, surface water or groundwater. ❑ Loss of fauna habitat through contamination, leading to the disturbance, direct loss, reduced abundance and/or reduced diversity of fauna species.	❑ Waste streams will be minimised through reusing, recycling and recovering materials where practicable. ❑ Appropriate provision of waste bins and skips that are clearly marked with an emphasis on good housekeeping and waste management from all personnel. ❑ Waste bins and skips will be positioned and secured so that the attraction of fauna to project waste is minimised. ❑ All hazardous/controlled waste materials will be segregated from other waste streams, documented and tracked and removed from site by licensed contractors.
Poor execution of rehabilitation: ❑ Reduced success of native vegetation and habitat reforming, which could impact on the abundance and diversity of flora and fauna species. ❑ Erosion and scouring from rainfall events causing loss of topsoil resources and sedimentation. ❑ Impeding watercourses and drainage lines causing ponding and impacting on natural drainage systems.	❑ All construction sites other than areas used for permanent infrastructure will be returned to original contours and watercourses and drainage lines re-established. ❑ Significantly compacted areas such as laydowns and tracks will be ripped wherever possible (i.e. not possible in areas of hard rock). ❑ Topsoil and vegetation stripped and stored during construction will be respread. Topsoil will be tined to allow for the collection in the soil of water, seed and organic material necessary for revegetation.
Loss of topsoil through inappropriate soil storage from clearing/other ground disturbance: ❑ Loss of nutrient and seed content from soil impacts on the long-term success of site rehabilitation.	❑ Vegetation, topsoil and subsoil will be stored in separate windrows on the CROW, away from construction activity and any drainage lines, to retain soil qualities. ❑ Topsoil stockpiles will be located and stored so that topsoil loss due to runoff and erosion is minimised. Water will be applied to stabilise windrows and reduce loss due to dust.

Environmental Hazards and Potential Impact	Management and Mitigation Controls
Greenhouse gas (GHG) emissions: ❑ Reduction in local air quality ❑ Climate change impacts ❑ Breach of National Greenhouse Gas Reporting System (NGERS) requirement.	❑ Selection of vehicles, machinery, and work practices will take into account GHG emissions and energy efficiency. ❑ Recording of vehicle fuel logs, collection of fuel receipts etc. will be completed in order to fulfil monthly and annual NGERS reporting requirements.

7 MANAGEMENT APPROACH

The EP and associated documentation have been developed to identify all relevant environmental risks and establish protocols and controls to mitigate these risks. The implementation of the EP will ensure that impacts from the construction and commissioning of CLPPL are reduced and sound environmental values are promoted.

Construction and commissioning of CLPPL will be performed by competent and qualified personnel engaged by the CLPPL Project Management Team. The Project Team will provide for routine inspections and auditing of the environmental performance of the site.

All employees and contractors on site will be required to undergo training in accordance with RTIO and CLPPL objectives. All site employees and subcontractors will be required to undergo a site specific induction, and an environmental induction component outlining environmental controls to be implemented during construction. The induction will provide necessary awareness of the EP, management plans, procedures and work practices to eliminate or minimise environmental risks.

Through site induction programs, all construction personnel (including contractors) will be informed of their key environmental legal responsibilities and the importance of managing environmental impacts during construction.

Additional environmental inductions and training, dependant on job role or tasks, may include:

- ❑ Clearing, topsoil and ground disturbance
- ❑ Fauna handling and rescue licences including *Lerista nevinae* awareness
- ❑ Spill response training
- ❑ Emergency response training
- ❑ Area specific inductions
- ❑ Mobile equipment plant operations (earthworks) training and competency

Environmental reporting will be completed using various environmental registers that will be compiled into weekly, monthly and annual reports. Environmental recording will be in sufficient detail to allow for assessment against EP performance objectives, standards and measurement criteria.

Environmental incidents will be recorded and reported in accordance with Project, RTIO and regulatory incident reporting requirements. Where non-conformance occurs, review of the relevant performance objectives, standards and measurement will be triggered to determine necessary corrective or preventative actions. A corrective action register and tracking system will be used so that action items can be followed and closed out.

8 CONSULTATION

Consultation has been undertaken by RTIO and the KT-OSD JV with stakeholders throughout the development of the EP and supplementary environmental documentation. Consultation will be ongoing with relevant stakeholders, and any stakeholders will be able to engage in consultation with the KT-OSD JV or the Company throughout Project completion. Consultation – in the form of workshops, meetings, risk assessments and regulatory approval processes – has been held with the following stakeholders:

- City of Karratha (formally Shire of Roebourne)
- EPA Service Unit
- Residents of Wickham
- Ngarluma Aboriginal Corporation
- Department of Environment and Conservation (now DER)
- Department of Mines and Petroleum
- Water Corporation
- Department of Water
- Office of Energy
- Department of Lands
- APA Group

Landholders along the existing PL8 License Area and constructed PL106 License Area are to be contacted before the Commissioning activity commences and any feedback or comments addressed before the activity commences.

9 CONTACT

Queries or requests for further information regarding CLPPL may be directed to:

Rod McNamara
Approvals Manager – KT-OSD Joint Venture
Level 15, St Martins Tower,
44 St Georges Terrace, Perth, 6000, Western Australia
T: +61 (0) 8 9320 0400 M: +61 (0) 0427 471 785 F: +61 (0) 8 9225 5551
E: Rod.McNamara@osdlimited.com