Kambalda to Esperance Gas Pipeline Environmental Plan

For:
Esperance Pipeline Company

PROJECT NUMBER: 101012-00267

DOCUMENT NUMBER: C9900f47

REV	DESCRIPTION	PREPARED BY	REVIEWED BY	APPROVED BY	DATE
A	Issued for review	PAB	WMcC/HB/LT	WMcC	25/10/12
B	Issued for further review after comments from DMP	LT	WMcC/HB	WMcC	6/12/12
C	Re-issued for further review by DMP	LT	WMcC/HB	WMcC	18/01/13
D	Clause 5.2.4 amended	NVS	WMC	WMC	21/01/14
E	Amend per Enviro Audit 2013	NVS			23/06/15
F	Amend per Enviro Audit 2013	WF	WMcC	WMcC	27/05/16

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ABBREVIATIONS

ALARP	As Low As Reasonably Practical
ANZECC	Australian and New Zealand Environment Conservation Council
APIA	Australian Pipeline Industry Association
AS	Australian Standard
COEP	Code of Environmental Practice March 2009
CP	Cathodic Protection
DMP	Department of Mines and Petroleum[1]
DEC	Department of Environment and Conservation
EAM	Esperance Area Manager
EP	Environmental Plan
EMT	Emergency Management Team
EP Act	Environment Protection Act
EPC	Esperance Pipeline Company
ERP	Emergency Response Plan
ERS	Esperance Receiver Station
FM	Facility Manager
IBRA	Interim Biogeographic Regionalisation for Australia
IRT	Incident Response Team
KEGP	Kambalda to Esperance Gas Pipeline
KP	Kilometre Point
KIS	Kambalda inlet Station
MD	Managing Director
MSDS	Material Safety Data Sheet
MLV	Mainline valve
NPS	National Pipeline Services
PDWSA	Public drinking water source area
PP Act	Petroleum Pipeline Act 1969
ROW	Right of Way
WA	Western Australia

[1] The Department of Mines and Petroleum under delegation, and on behalf, of the Minister for Mines and Petroleum

1 INTRODUCTION

1.1 Background

The Kambalda to Esperance Gas Pipeline (KEGP) was built and commissioned in early 2003 to transport high-pressure natural gas from Kambalda to Esperance to supply the Esperance Power Station and a small gas distribution network in the Esperance town site.

The Esperance Pipeline Company Pty Ltd (EPC) is the responsible licensee for the design, construction and operation of the KEGP under the Pipeline Licence.

EPC has appointed WorleyParsons Asset Management Pty Ltd (WPAM) as Facility Manager of the KEGP, and TW Power Services provide this Facility Management service. EPC has prepared this Environmental Plan (EP) to demonstrate to itself and third parties that environmental issues associated with the KEGP have been identified, assessed, and adequately managed throughout the operations and maintenance phase of the KEGP.

Approval to establish a gas undertaking in accordance with Section 55 (1) (b) of the *Energy Operators (Powers) Act* 1979 was granted to EPC by the Controller of Energy on the 30 October 2002 and Pipeline Licence No. PL 59 was granted by the Department of Mineral and Petroleum Resources, now DMP, on the 24th February 2003.

1.2 Proponent

EPC is the owner and operator of the Kambalda to Esperance Gas Pipeline PL59 and PL98 (KEGP shown in Figure 1.1. The KEGP is laid from Line Valve KLLV2 on the Kambalda Lateral Pipeline owned by Southern Cross Pipelines Australia Pty Ltd in Kambalda (KIS) and terminates at the Esperance Receiver Station (ERS). The ERS is a filtering and step-down regulating station that is designed to supply gas to the power station located in the Port of Esperance precinct.

The pipeline is approximately 341 km in length and is mainly underground, with the exception being eight above ground facilities, inlet and receiver stations, two scraper facilities and four mainline valves (MLV). It is located mainly within a 5-metre-wide right of way (ROW) within the existing Coolgardie – Esperance Highway main road reserve and the Kambalda to Esperance rail corridor.

1.3 Purpose and Scope

This document identifies the potential environmental and socio-economic impacts associated with the operation and maintenance phase of the gas pipeline, and outlines EPC's proposals for the avoidance, mitigation and management of the adverse impacts, and promotion of the positive impacts identified.

It also provides guidance to the pipeline operators and maintainers on how to manage the environmental aspects of a pipeline facility.

1.4 Objectives

The objectives of this Environmental Plan (EP) are to:

- demonstrate compliance with regulations;
- demonstrate that the operator has a good understanding of how pipeline operations will interact with the environment;
- demonstrate that environmental impacts and risks are as low as reasonably practicable (ALARP);
- ensure that procedures are in place to minimise the environmental effects associated with the gas pipeline activities;
- demonstrate that EPC has appropriate performance objectives, standards and measurement criteria.

1.5 Review

This Environmental Plan is revised every 5 years or earlier as required by the Petroleum Pipelines (Environment) Regulations 2012.

1.6 Legislative Requirements

The pipeline is required to be operated in accordance with the *Petroleum Pipelines Act* 1969 which is administered by the Western Australian Department of Mines and Petroleum (DMP). Under this Act EPC was granted a pipeline licence (No.PL 59) on 24th February 2003.

As part of the licence conditions EPC could not commence operation of the pipeline until an Environmental Plan (EP), acceptable to the DMP, is in place. Furthermore, continued operation is contingent on the ongoing implementation of and adherence to commitments made in this EP.

Other relevant legislation to operations and maintenance activities includes the:

Environment Protection Act 1986
Environmental Protection (Clearing of Native Vegetation) Regulation 2004
Petroleum Pipelines Act 1969
Gas Pipelines Access (Western Australia) Act 1998
Petroleum Pipelines (Environment) Regulations 2012
Environment Protection and Biodiversity Conservation Act 1999
Wildlife Conservation Act 1950 as at 30 Jan 2012
Wildlife Conservation (Specially Protected Fauna) Notice 12th Feb 2012
Aboriginal Heritage Act 2006
Australian Standard AS2885.1 AS2885.2 and AS2885.3

In addition associated regulations which address, amongst other things, matters relating to pollution and emissions are to be adhered to this legislation is administered by the Department of Mining and Petroleum.

1.7 Structure of EP

This EP addresses the following issues:

- Section 2 provides EPC's environmental policy;
- Sections 3 and 4 provide a description of the development and the environment in the vicinity of the facility;
- Section 5 details risk assessment and environmental management strategies for identified environmental effects;
- Section 6 provides the Performance Objectives, Standards and Criteria to be followed; and
- Section 7 describes the implementation strategies to be followed, including systems for monitoring, auditing and reviewing environmental performance, reporting and consultation. Details of the emergency response plans to be adopted are also provided.

2 ENVIRONMENTAL POLICY

Figure 1.2

TW Power Services

HEALTH, SAFETY & ENVIRONMENT POLICY

TW Power Services is committed to protecting the health and safety of all employees and ensuring that our activities are safe for the environment and the greater community.

Our Principles

- All incidents are preventable
- No task is so important that the risk of injury to people or uncontrolled impacts on the environment is justified; and
- Effective HSE management is a critical foundation for sustainable management.

Our Objectives

- No injuries to anyone, anytime
- Respect the community and the environment
- To show leadership in the field of HSE management
- To work in a responsible and sustainable manner

Our Methods

TW Power Services will meet these objectives by:

- Promoting a positive culture that maintains a focus on communication, consultation and employee engagement in all aspects of HSE management;
- Promoting ecological sustainability as part of our culture;
- Providing sufficient information, training, supervision and resources for staff to implement our HSE management systems;
- Applying risk management principles to the identification and control of hazards, work practices and behaviours that could cause accidents, injuries, illness, pollution or environmental harm;
- Measuring, monitoring and improving the effectiveness of our HSE management systems;
- Maintaining responsibilities and accountabilities of all employees and management personnel for the implementation of our HSE management system;
- Complying with all legal and regulatory requirements; Integrating HSE management into all aspects of the organisation;
- Building relationships with business partners who aspire to the same HSE standards; and reporting publicly and annually on HSE performance, measured against objectives and targets.

This commitment to HSE is our highest priority and will not be compromised.

This Policy applies to all operations where TW Power Services is performing work and covers all our activities and services.

Gareth Mann | Chief Executive Officer

Our Values | Commitment | Collaboration | Performance | Innovation

3 PROJECT DESCRIPTION

3.1 Route

The pipeline route was originally selected by progressively and iteratively working through commercial, social, technical and environmental criteria to identify an optimum pipeline alignment.

The pipeline corridor for the KEGP is approximately 341 km in length and alternates between existing road and rail reserves (with the exception of a small deviation into freehold land to avoid pockets of remnant vegetation adjacent to the road reserve and at the end point in the Port of Esperance precinct). Figure 3-1 shows the map route and stations along the pipeline route.

3.2 Operations

3.2.1 General

The pipeline flow of gas and control of the system is operated by the duty operator located at the Esperance Power Station control room. They are supported by 2 field operators and 1 supervisor from Programmed Facility Management who is the pipeline maintenance contractor.

The KEGP is buried in its entirety, but there are some above ground stations such as mainline valves (MLVs) and scraper stations 1 and 2. The pipeline comes above ground only at the Valve Station and Scraper Stations.

- Kambalda inlet station and Esperance receiver station.
- Two scraper station facilities.
- Bypass lines for the four MLVs.

Four MLVs have been positioned at regular intervals along the pipeline for isolation purposes. There are no inline compression facilities and the pipeline is free flow.

Operation and maintenance of the KEGP is in accordance with all applicable Australian Standards AS2885.3. Table 3.1 summarises the pipeline design specifications in compliance with the Australian Pipeline Standard *AS2885.1 Pipelines - Gas and Liquid Petroleum*. The gas pipeline has been designed to the have a life of 25 years. Nevertheless, it is anticipated that the pipeline will in fact be able to continue in service beyond that time line.

Operations and Maintenance Procedures are in force which will incorporate all routine and non-routine pipeline operation, maintenance and safety procedures. Odorant is injected into the pipeline at the Kambalda Inlet Station (KIS) in accordance with the Director of Energy Safety guide lines.

There is little evidence of the buried pipeline, except for pipeline marker posts and CP test points at regular intervals along the right of way (ROW). In areas of native vegetation, primarily at roadsides, regeneration of native species is evident along the right of way (ROW).

FIGURE 3-1

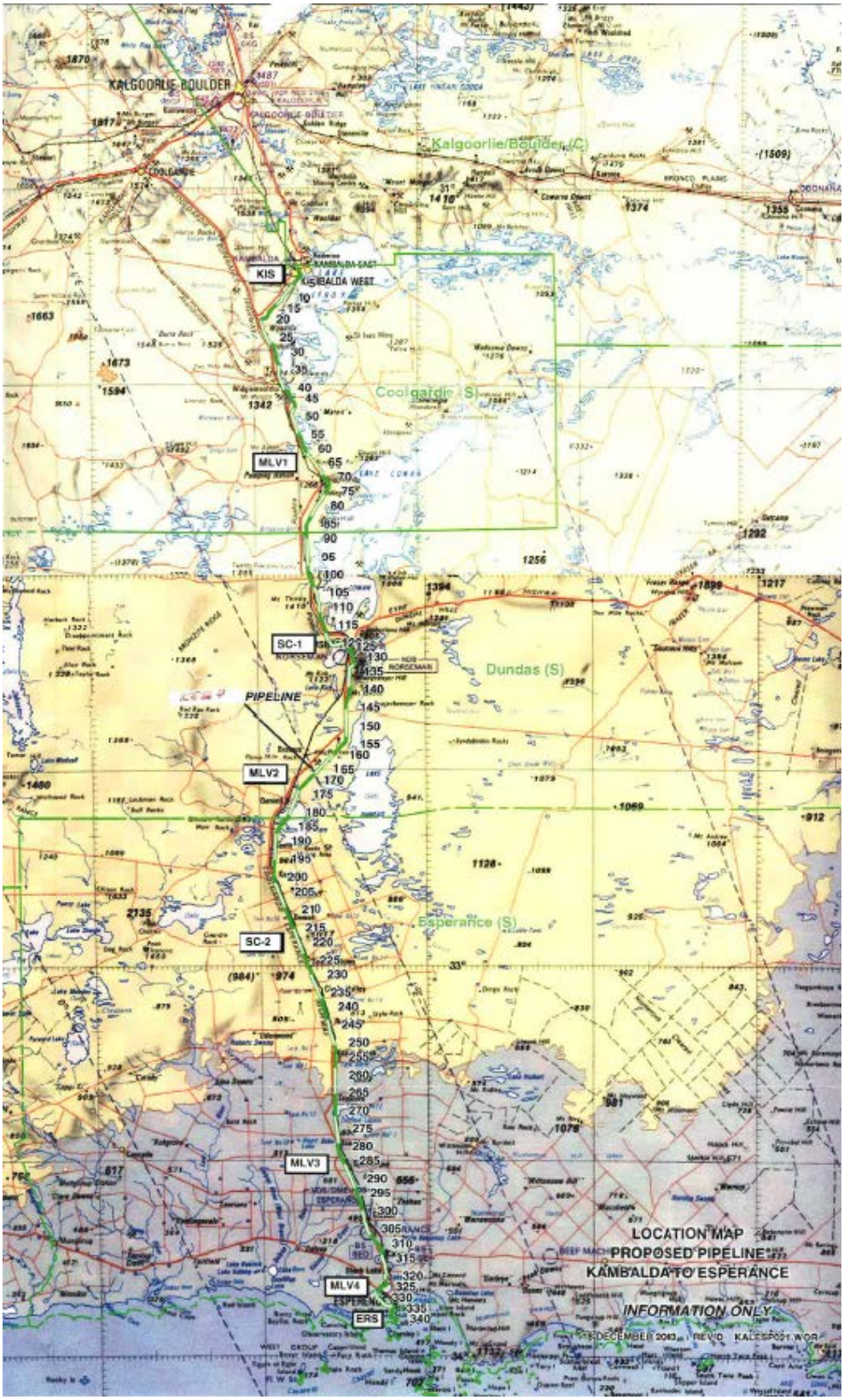

KALGOORLIE BOULDER
Kalgoorlie/Boulder (C)
KIS
KAMBALDA WEST
Coolgardie (S)
MLV1
SC-1
Dundas (S)
PIPELINE
MLV2
Esperance (S)
SC-2
MLV3
MLV4
ERS
LOCATION MAP
PROPOSED PIPELINE
KAMBALDA TO ESPERANCE
INFORMATION ONLY

TABLE 3-1 PIPELINE DESIGN PARAMETERS

Feature	Specification
Pipeline length (approx.)	341 kilometres
Operational corridor width	5 metres
Pipe diameter	150 millimetres NB
Pipe Wall thickness	Standard Wall 4.0mm Heavy Wall 6.4mm
Pipe steel grade	Standard wall API 5L Grade X52 Heavy wall API 5L Grade X65
Maximum allowable operating pressure	10.2 MPag
External coating	HDPE (Yellow Jacket) to AS1518
In-line compressor stations	None (free-flow)
Pig launching/receiving stations	4
Mainline valves	4
Depth of cover	1.2 metres depth of cover maintained As per AS2885.1 & AS4799
Cathodic protection	Impressed current
Design Temperature	60 ^{o} Celsius

3.2.2 Venting

Pipeline venting is not a normal operation, but may be required in emergency situations (e.g. sectional pipeline damage or leakages) or during In-Line Inspections (ILI) carried out on a 5 yearly basis. In such cases, venting will be a manual procedure. Venting is possible at all scraper stations and MLVs. These sites are situated at adequate distances from residences as determined by Pipeline Risk Assessment requirements in accordance with AS2885. There are no pipeline venting facilities at the Esperance Receiver Station as this is adjacent to a residential area. Emergency venting will be conducted cold will be undertaken in favourable local meteorological conditions that facilitate rapid atmospheric dispersion of the gas. A pipeline venting philosophy and procedure has been prepared as part of the (DMP approved) operations procedure 6.17 (document C9900a82).

3.2.3 Routine Inspections

Routine right of way and station patrols are undertaken to monitor the pipeline easement for operation and maintenance issues weekly. Particular attention is paid to vegetation and weed invasion, watercourse crossings and third party activities on the easement. Watercourse crossings are monitored on a regular basis and after high-flow events/rainfall for erosion and scour and potential remedial works.

In-line inspection tools (e.g. intelligent pigs) may be passed through the pipeline to inspect the integrity of the pipeline in accordance with AS2885.3

Patrol personnel will undertake scheduled field inspections on a weekly basis; the Esperance Area Manager will conduct ongoing consultation with regulatory authorities with regard to the maintenance and operation of the pipeline.

4 ENVIRONMENTAL DESCRIPTION

This section provides an overview of the main environmental features relevant to the operations and maintenance of the KEGP. In this EP information on flora and fauna is summarised from the detailed information provided in the EP.

4.1 Climate

Climatic patterns vary within the Goldfields to Esperance region and the frequency of rain in the region varies significantly. The average number of days of rainfall ranges from 65 at Kalgoorlie-Boulder to 140 at Esperance. The air masses bring year-round rainfall to the interior, but winter season rains predominate along the coastal belt and the Nullarbor. Remnants of cyclonic activity in Northern Australia bring occasional summer season rain to the region.

The Goldfields sub-region has a semi-arid climate characterised by low rainfall (averaging 260 mm at Kalgoorlie-Boulder) and a large temperature range. Average rainfall is relatively evenly spread throughout the year. The winter months of May to August have the highest and most reliable average rainfall, but intense rainfall can occur periodically in the summer months of December to April as a result of tropical cyclones.

The Esperance sub-region has a Mediterranean type climate with cool wet winters. The warm to hot summers are practically dry except for occasional thunderstorms. The coastal fringe experiences a milder climate than the inland areas as a result of the maritime influence, and strong winds are a notable feature. The town of Esperance and the immediate coastal belt receive about 625mm of rainfall annually, with some 68% occurring between May and October.

4.2 Geology and Hydrogeology

4.2.1 Geology

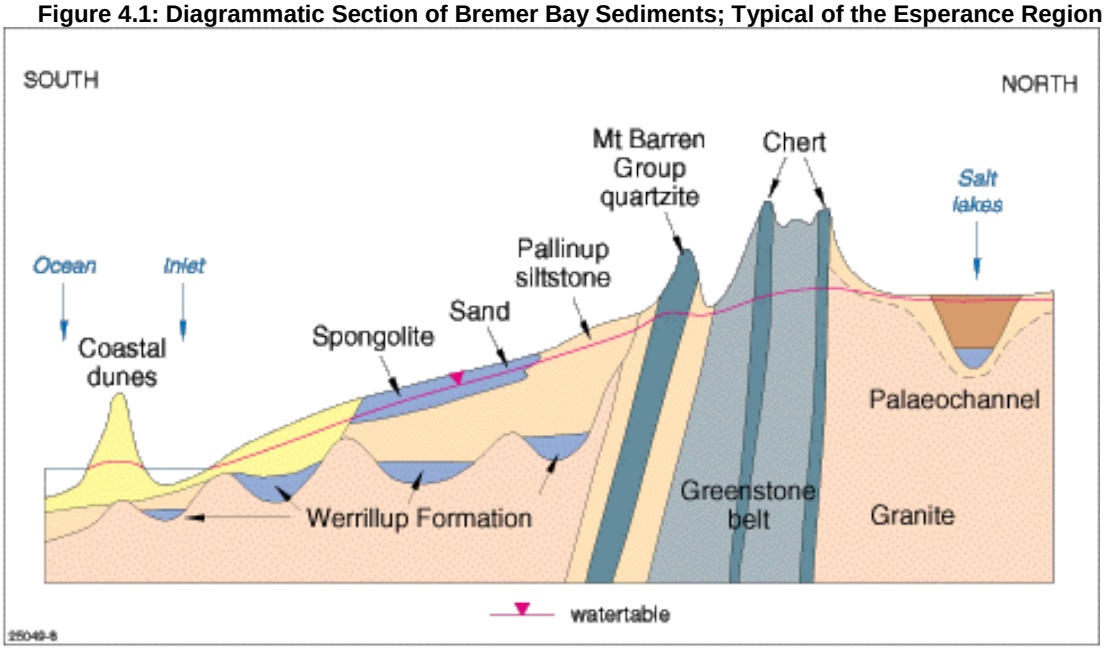
The study area is situated upon two main geological and structural units, namely the Yilgarn Craton and the Albany-Fraser Orogen. The Yilgarn Craton consists of granite, gneiss and volcanic and sedimentary rocks of Archaean age (greenstones), and hosts all the major gold and nickel mines of the region. The Albany-Fraser Orogen consists of an assortment of metamorphosed and un-metamorphosed sedimentary and volcanic rocks ranging from early to mid-Proterozoic age, with the metamorphosed rocks being associated with granite and gneiss.

4.2.2 Hydrogeology

The goldfields region overlies the Yilgarn Craton, and groundwater in the Goldfields occurs in alluvium, palaeochannels and fractured and weathered bedrock. Fresh water is extremely limited in the goldfields region. Saline or hypersaline groundwater from palaeochannels or bedrock aquifers is utilised by the mining industry. Stock supplies, where the salinity is suitable, are drawn by low yielding bores and wells in alluvium and weathered bedrock.

The Esperance Sand Plain Zone extends along the south coast and encompasses sediments of the Bremer Basin which overlie granite/gneiss bedrock of the Albany Fraser Orogen (see Figure 4.1). The main aquifers are in the Pallinup Siltstone and the Werillup Formation of the Bremer Basin. These sediments infill a buried topography on the basement rocks, and are a maximum of around 130m thick. The basal Werillup Formation is concealed by the overlying Pallinup Siltstone.

Figure 4.1: Diagrammatic Section of Bremer Bay Sediments; Typical of the Esperance Region



(Department of Fisheries and Water and Rivers Commission, 2001)

4.3 Landforms and Soils

The assessment of the landforms and soils along the alignment are based on literature reviews and desktop analysis. Five major geomorphic regions are recognised within the project area; these are represented in the following table (Table 4.1).

TABLE 4.1: GEOMORPHOLOGY ALONG THE KEGP CORRIDOR

Geomorphic Region	Land System	KP Marker	Geomorphic Description	Associated Soils
Southern Goldfields District	Not described	0 – 200	Combination of sand plain and granite outcrops, and low lying broad alluvial plains containing numerous intermittent (mostly dry) drainage lines and large playas fringed by sand dunes. (Commander et.al, 1992)	Alluvium of clayey sands and clay occurs in the main valleys, Calcrete may occur close to the centre of valleys or adjacent to salt lakes to a thickness of up to 15 metres (FD & WRC, 2001).
Esperance Mallee District	Scadden	200–295	Gently undulating plateau, with no major rivers. Some minor intermittent drainage lines. Numerous salt lakes with associated dunes and lunettes. (McArthur, 1991)	Complex pattern of soils. Typically calcareous sands underlain at a variable depth by strongly mottled and saline sandy clays. (McArthur, 1991)
Esperance Plains District	Esperance Plains	295–324	Extensively eroded lateritic plateau (McArthur, 1991); which now exists as a gently undulating sand plain with low rises and hills. (Overhue et.al, 1993)	Generally deep sandy grey sands overlying gravel layer underlain by yellow clay. Depth to clay is variable (10-500cm). Some elevated lateritic remnants. (McArthur, 1991)
Esperance Coastal District	Gore	324–328	Narrow discontinuous coastal lowlands overlain in places by the Tooregullup sand dunes. Features large areas of wetlands and lakes fed by saline watercourses of Esperance Plains (Overhue et.al, 1993)	Sandy yellow duplex soils occur on the level plain, with saline grey-blue duplex soils present on the poorly drained winter-wet flats. (Overhue et.al, 1993)
	Tooregullup	328–341	The Tooregullup Land System represents the Holocene coastal dunes, consisting mainly of parabolic sand dunes and associated swales. (Overhue et.al, 1993)	Soils are generally deep calcareous white sands with small areas of calcareous sandy loams evident in the swales. (Overhue et.al, 1993)

KP = Kilometre Point

4.4 Hydrology and Water Resources

4.4.1 Existing Environment

4.4.1.1 Hydrogeology

The Goldfields-Esperance region (with the exception of its coastal area) is the driest in WA. Rainfall is infrequent and occurs erratically throughout the year. Two hydrogeological regions occur within the study area:

Kalgoorlie Plain (KP 0 – 324) - The hydrogeology of this region is complex, reflecting the variety of bedrock types, the structure, and the degree of weathering and fracturing. Recharge is low because of the low rainfall, high evaporation, heavy soils, well-developed vegetation cover and internal drainage. Most groundwater in this part of the region is saline or hypersaline. Where drainage lines exist, they are usually short and flow only after rain, and drain into the willow salt lakes common in the region.

Esperance Sub-region (KP 324 – 341) - The hydrogeology of this region has many surface rivers and streams; a reflection of the higher rainfall experienced near the coastline. There are numerous small to large permanent lakes, with some intermittent tiny lakes and swamps and small to large areas subject to inundation.

4.4.1.2 Wetlands and Drainage Lines

The alignment crosses several salt lakes and drainage lines, including Lakes Cowan and Lefroy. The majority of the lakes and drainage lines along the alignment are saline and remain dry, except following rare heavy rainfall events. The notable exception is the Esperance Lakes system (see below), located immediately north of Esperance. No other major wet water features are present along the pipeline alignment, or are within a distance likely to be affected by the KEGP.

Esperance Lakes Nature Reserve

The route alignment deviates around Lake Warden 32257, which forms part of the Esperance Lakes Nature Reserve. The Esperance Lakes system is one of nine wetland areas in Western Australia recognised as Wetlands of International Importance under the Ramsar Convention (a treaty that provides the framework for international cooperation for the conservation of wetland habitats). The system is also listed on the National Estate Register in recognition of its significance for waterbird conservation.

The Esperance wetlands comprise a system of lakes and marshes of variable salinity set behind coastal dunes. The main lakes from west to east include Lake Warden, Windabout Lake, Woody Lake, Wheatfield Lake and Mullet Lake. The water regime varies from ephemeral to almost permanent with springs giving rise to willow brackish wetlands. Warden, Woody, Wheatfield and Mullet Lakes are saline and are permanent or occasionally dry out in autumn whereas all other wetlands are seasonal.

4.4.1.3 Freshwater and Potable Water Supplies

Superficial fresh groundwater resources are limited to the Esperance sub-region. As stated previously, the water resources of the Kalgoorlie Plain are saline to hypersaline. As such, inland regions are reliant on artesian bores and/or rainfall catchments for their drinking water supplies, although Kambalda is connected to the Goldfields Water Supply Scheme.

The major groundwater resources of the Esperance sub-region are contained in regional, catchment controlled flow systems, where it slowly migrates under gravity towards the rivers and oceans. Freshwater lakes are not common in the region and groundwater salinity in the Esperance sub-region is closely related to rainfall and evaporation with a general trend of increasing salinity towards the north. Most groundwater is saline, and drinking water resources are extremely valuable within the region due to the relatively scarce nature of fresh water.

The pipeline corridor dissects three Water Reserves and Catchment Areas which exist for the protection of town water supplies. These Catchment Areas are proclaimed under the *Country Areas Water Supply Act (1947)* and are managed and administered by the DEC. The pipeline alignment is located within road or rail reserve that passes through Public Drinking Water Supply Area's (PDWSA) for the settlements of Esperance (KP36-338), Gibson (KP307-312) and Salmon Gums (KP225-231).

4.5 Vegetation Communities

4.5.1 Existing Environment

4.5.1.1 Bioregional Representation

Beard (1990) divides WA into three primary vegetation provinces; Northern, Eremaean (or Desert) and South-West. However, Beard also identified a transition zone, which contained elements of both the South-West and Eremaean provinces, referred to as the South-West Interzone.

Within these Western Australian provinces (and the Interzone) are 26 bioregions, as listed in the Interim Biogeographic Regionalisation for Australia (IBRA); formulated by the Australian and New Zealand Environment Conservation Council (ANZECC) in 1998.

The pipeline corridor passes through three IBRA bioregions. Two are within the South-West Province (*Esperance Plains* and *Mallee*); however, the *Coolgardie* bioregion is located within the South-West Interzone.

4.5.1.2 Vegetation Communities

Beard (1979) identified vegetation systems of the Esperance area and also classified those systems into structural formations by physiography, which were then subdivided into associations based on species composition.

Past clearing for agriculture has led to widespread salinisation of the Esperance agricultural region, and unsustainable pastoral activities have caused a decline in the

native plant communities. As such, remnant vegetation in the region is significant for both its intrinsic value, and importance in maintaining the viability of the natural systems which support agriculture.

4.5.1.3 Conservation Estates

The pipeline alignment is largely within road and rail reserve and does not directly impact on any conservation estate or registered natural heritage site, however there are several such sites adjacent to the proposed alignment. These include:

- Kambalda Nature Reserve 33300
- Binaronca Rock Nature Reserve 32552
- Lake Gilmore Nature Reserve 42943
- 25 Mile Rocks Nature Reserve 8029
- Norseman Aboriginal Reserve 22465
- Brockway Forest ReserveF197/25
- Red Lake Nature Reserve 29680
- Truslove Nature Reserve 27985
- Truslove Town Site Nature Reserve 15818
- Triangular Nature Reserve 31313
- Esperance Lakes Nature Reserve (includes Ramsar Wetlands) 32257 & 15231

Name	X	Y	Longtitude	Latitude	Area sq/m
25 Mile Rocks Nature Reserve	369901	6465227	121.62	-31.94	4938048
Binaronca Nature Reserve	382460	6488960	121.75	-31.74	26365105
Brockway Forest Reserve	384480	6424364	121.77	-32.31	10319034
Esperance Lakes Nature Reserve	395429	6257393	121.87	-33.82	6440904
Kambalda West Nature Reserve	365810	6542510	121.59	-31.24	1545320
Norseman Aboriginal Reserve	376352	6447649	121.69	-32.1	3717743
Ramsar Wetland Boundary	399028	6258472	121.91	-33.81	5881661
Red Lake Nature Reserve	379659	6332024	121.71	-33.14	293375
Triangular Nature Reserve	382767	6295601	121.74	-33.47	193774
Truslove Nature Reserve	380078	6310341	121.71	-33.34	1039149

4.6 Pathogen and Weeds

The pipeline corridor is largely located within road and rail corridor, which has transported animals, goods and raw materials for over 100 years. During this time, numerous introduced flora species have colonised the road and rail reserves and their surrounds. The development of the Esperance agricultural area in the 1950's, resulted in the introduction of many non-indigenous plant species to the region, some of which have now become environmental and/or agricultural weeds.

Similarly, mining and agricultural development has also provided opportunities for the spread of native and introduced environmental and/or agricultural soil pathogens.

Pathogens

DEC has previously advised that no infections of Dieback (*Phytophthora* sp.) or Canker (*Cryptodiaporthe* sp.) are known to occur within the pipeline alignment. Current information from DEC indicates that Die-back occurrence is located only to the east of Esperance, away from the KEGP pipeline alignment. No other die-back infestation has been recorded by DEC for the pipeline alignment from Kambalda to Esperance.

Agriculture Western Australia has advised that no agricultural pathogens are known to occur within the pipeline corridor and surrounding areas, however White Snails are an emerging pest in the region, and these are known to occur in the rail reserve near Esperance. There are also unconfirmed reports of White Snail near Scaddan and Salmon Gums.

Weeds

Environmental weeds are flora species which displace or adversely dominate native species, altering not only the diversity and interactions of the flora, but also its value as fauna habitat. Most potential weeds are 'disturbance opportunists", possessing characteristics that enable them to successfully colonise disturbed ground and out-compete other plants located on the site. In bushland, weeds displace natives, inhibit regeneration, alter fauna resources, affect nutrient cycling, and change fire characteristics. The result is degradation and eventual simplification of the bushland ecosystem.

Agricultural weeds are plants that pose a threat to the viability of agricultural operations. They may reduce yield, contaminate and degrade produce or poison stock.

During the original development of this Environmental Plan Agriculture Western Australia has advised that the following weeds are known to occur within the project corridor and surrounding areas. They are not listed as declared weeds by the Agriculture Protection Board under the *Agriculture and Related Resources Protection Act, 1976*; however, they represent a threat to local agriculture and require management by land managers to prevent their spread:

- Statice (*Limoneum* spp.) also known as Winged Sea Lavender - occurs near Salmon Gums.

- Onion Weed (*Asphodelus fistulosus*) - occurs between Scadden and Salmon Gums.
- Wild Radish (*Raphanus raphanistrum*) - occurs between Esperance and Scadden.

Opuntioid cactus

Opuntioid cacti or cactus (Opuntia species, Cylindropuntia species and Austrocylindropuntia species except C. californica) are declared pests in Western Australia (WA). Additional to the original weeds identified, some of these cactus species have been identified at various locations in the KEGP RoW. It must be noted that this infestation in not limited to the KEGP RoW but this forms part of a wider spread of this weed along the rail corridor and farmland in the region.

- Life cycle

  Prickly Pear species have several features that enable them to compete and become pests. Prickly pear species are drought resistant because of their succulent nature, their lack of leaves and their thick, tough skins. These features result in plants that use the majority of their internal tissues for water storage and their outer parts to reduce water loss and damage by grazing and browsing animals. They can remain vigorous in hot, dry conditions that cause most other plants to lose vigour or even die. Some species develop underground bulbs that enable the plant to resist fire and mechanical damage.

  Prickly pear is established from either seed (by germination) or plant segments (by vegetative reproduction).

- What's been done?

  A trial of the release of the cactoblastis moth was carried out at four locations around Salmon Gums and Scaddan in 2014. This release was supported by TW Power Services and South Coast NRM. This was initially successful however due to the cold winter temperatures the larvae has died out and alternative options are now being considered.

  The Esperance Weeds Action Group (EWAG) has since been established and has been working with the Department of Agriculture and Food WA (DAFWA) and the Shire of Esperance to

  A breeding colony of cochineal insects has been established by the EWAG members to release as an alternative biological control.

- Alternative Options?

  There are a number of options for chemical control including foliar spray, stem injection and basal bark/cut stump.

  Biological control methods include cactoblastis moth or cochineal insect release.

- What is cochineal?

  Cochineal insects are soft-bodied, flat, oval-shaped scale insects (Dactylopius sp.) from which the natural dye carmine is derived. A primarily sessile parasite native to tropical and subtropical South America as well as Mexico and Arizona, this insect lives on cacti in the genus Opuntia, feeding on plant moisture and nutrients.

  The females, wingless and about 5 mm (0.20 in) long, cluster on cactus pads. They penetrate the cactus with their beak-like mouthparts and feed on its juices. After mating, the fertilised female increases in size and gives birth to tiny nymphs. Adult males can be distinguished from females in that males have wings, and are much smaller.

4.7 Fauna

Based on a search corridor extending 25 km either side of the pipeline alignment the Wildlife Conservation Act 1950 issued a Wildlife Conservation (Specially Protected Fauna) Notice on the 17th of Feb 2012 lists a number of species that may potentially occur in the area.

Details of these reported species and the types of their preferred habitat are outlined in Table 4.2.

TABLE 4.2: FAUNA SPECIES THAT MAY OCCUR WITHIN THE PROJECT AREA

Common Name	Taxanomic Name	Recorded Siting & Habitat
Chuditch or Western Quoll	*Dasyurus geoffroii* *Rare/Likely to become extinct, Div. 1 (Mammals)*	Uncommon and patchily distributed in the wheatbelt and south coast areas. It is highly mobile and appears able to utilise bush remnants and corridors. It has been recorded near Munglinup and has been reintroduced to Cape Arid National Park. There is a 1974 record from Kambalda. Individuals could occur in the project area.
Malleefowl	*Leipoa ocellate* *Rare/Likely to become extinct, Div. 2 (Birds)*	Once widely distributed across southern Australia. Prefers woodland or shrub land with an abundant litter layer that provides essential material to build its nest mound. Likely to occur along the route north of Salmon Gums, but may also occur to the south.
Carnaby's Cockatoo	*Calyptorhynchus latirostris* Threatened Species Day 2004	Frequents proteaceous scrubs and heaths and adjacent eucalypt woodlands. Breeding may occur in the area where there are stands of mature hollow bearing trees such as Salmon Gum (*Eucalyptus salmonophloia*).
Western Ground Parrot	*Pezoporus wallicus flaviventris* *Rare/Likely to become extinct, Div. 2 (Birds)*	Rare and patchily distributed along the south coastal area from Denmark to Cape Arid. Inhabits low dense shrub lands and has been recorded in the Esperance area.
Recherche Cape Barren Goose	*Cereopsis novaehollaindiae grisea* *Rare/Likely to become extinct, Div. 2 (Birds)*	Occurs mainly on the islands of the Recherche Archipelago but also frequents mainland coastal areas around Esperance.
Peregrine Falcon	*Falco perigrinus* Since 1971 all Australian raptors have been protected by legislation	Uncommon. Prefers areas with rocky ledges, cliffs, watercourses or open woodland.
Carpet Python	*Morelia spilota imbricate* *Other protected Fauna. Div. 3 (Reptiles)*	One record of this species about 90km east of the Pipeline route. Broadly distributed across much of the south-west, and has been given protected status. Prefers woodland and mallee. This species is as it is not common anywhere in its range
Quenda	*Isoodon obesulus fusciventer* *The Quenda is soon to be removed from the State Threatened Fauna List*	Still occurs in parts of the south coast. Occurs in patches of remnant vegetation with a moderately dense understorey (e.g. Esperance area)
Western Brush Wallaby	*Macropus irma*	Occurs in areas of woodland supporting a dense shrub layer

Common Name	Taxanomic Name	Recorded Siting & Habitat
Hooded Plover	*Thinornis rubricolis rubricolis* *Endangered Species*	Recorded along the margins and willows of salt lakes within the project area.
Crested Shrike-tit	*Falcunculus frontatus leucogaster* is near-threatened	Uncommon. May inhabit of woodlands and may occur in the project area.
Crested Bellbird	*Oreoica gutteralis gutteralis* *Indicators*	Sedentary and solitary specie. Inhabits the drier mallee woodlands and heaths of the southern parts of the State. It may occur within the project area.
Western Rosella	*Platycercus icterotis xanthogenys* *Rare/Likely to become extinct, Div. 2 (Birds)*	Occurs in eucalypt and casuarina woodlands and scrubs, especially of Salmon gum and tall mallees. Its distribution extends from the wheatbelt to Lake Cowan and Lake Dundas.
Unnamed elapid snake	*Rhinoplocephalus spectablis bushi*	Occurs as an isolated population near Scaddan and is known only from three specimens. Storr et al. (1986: 104) mentioned that two snakes from Scaddan (430 km SW of the rest of the species' range) possibly represented a third subspecies of Rhinoplocephalus spectabilz's. An additional two specimens have confirmed the distinctness of the Scaddan population.

4.8 Cultural Heritage

Based on previous studies (see Section 1.5), there is only one European heritage site listed (Dempster Homestead) on the State Heritage Register which is adjacent to the re-aligned pipeline corridor area.

There are no other registered cultural heritage sites that are present within the pipeline route alignment. The heritage site (Tommy Windich off Hughes Rd leading to Port) is the only listed aboriginal site but is some 200m away from the re-aligned pipeline route.

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4.9 Infrastructure

Broad infrastructure categories existing in the study area are included in Table 4.3. This infrastructure has been identified by surveyors in the field and marked on survey drawings.

TABLE 4.3: EXISTING INFRASTRUCTURE IN THE STUDY AREA

Infrastructure Category	Infrastructure	Location Description
Linear	Roads	Goldfields Highway (sealed, single carriageway) Coolgardie - Esperance Highway (sealed, single carriageway) Harbour Road (sealed, single carriageway) Sealed roads and access tracks Unsealed roads and access tracks
	Rail	Kambalda to Esperance Railway
	Electricity power lines Low voltage buried cables	Various locations None or very few
	Water and sewerage pipelines	Existing Kalgoorlie to Esperance water pipeline There are no water reservoirs in the Project Area.
	Fibre optic cables and other communications	Various locations
Non-linear (point locality)	Port	Port of Esperance
	Community infrastructure (private & public)	Towns – Kambalda West, Norseman, Salmon Gums, Grass Patch, Scaddan, Gibson and Esperance
	Agricultural processing and storage facilities	Grain Silos (Scaddan, Salmon Gums, and Esperance)

4.10 Socio-Economic Assessment

The land uses within the study area primarily comprise mining, manufacturing, agriculture, and forestry.

Mineral extraction and downstream processing has the greatest influence on the economic development and transport system of the region, particularly in the northern part of the Project Area from KP 0 to KP 200. There are approximately 6 mines currently operating within 50 km either side of the pipeline alignment. Mincor Ltd operates several mines in the Goldfields, and the ore is transported in bulk to the Port of Esperance.

Agriculture activities predominantly exist in the southern part of the study area. The pipeline alignment enters the Esperance agricultural zone at KP 200, where the predominant agricultural activities are broad-acre cropping and grazing. The agricultural zone extends south to KP324, beyond which hobby farms and various mixed uses can be found until the regional town centre of Esperance.

From Kambalda to Esperance the pipeline route traverses three local shires. Details of these shires are represented in the following table (Table 4.4).

TABLE 4.4: LOCAL SHIRES AND POPULATIONS IN THE STUDY AREA

Shire	APPROX. KP	Area (km^2)	Centres in the Project Area		Resident Population	Primary Economic Base
Coolgardie Shire	KP0 to KP87	30,400	District Service Centre	Kambalda West	3,800	Gold and nickel mining
			Local Service Centre	Widgiemooltha		
Dundas Shire	KP87 to KP185	92,725	District Service Centre	Norseman	1,600	Gold mining, tourism and pastoralism
Esperance Shire	KP185 to end point	42,450	Sub-regional centre	Esperance	15,000	Agriculture, tourism, super phosphate production, fishing, port activity, salt extraction and meat processing
			Local service centres	Gibson, Scaddan, Grass Patch and Salmon Gums		

Source: 25 September 2012 local shire

5 ENVIRONMENTAL RISK ASSESSMENT

5.1 Methodology

An assessment of the risk of potential environmental impacts of the KEGP and issues was carried out based upon a standard risk management approach consistent with the Australian/New Zealand Standard AS/NZS ISO 31000:2009 *Risk Management* and HB 203:2006 *Environmental risk management- Principles and process.*

This process involved:

1. Identifying the environmental aspects;
2. Description of potential environmental impacts;
3. Identification of management strategies;
4. Assigning a consequence severity rating (Table 5.1);
5. Assessing the likelihood/frequency (Table 5.2); and
6. Determining the level of residual risk (post management) for each potential impact (Table 5.3).

The management practices identified are designed to keep risks as low as reasonably practicable (ALARP) and economically achievable. Taking these management practices into consideration the residual risk is calculated.

TABLE 5.1: QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Descriptor	Description
1	Insignificant	No lasting effect; Low level impacts on biological or physical environment. Limited damage to minimal area of low significance.
2	Minor	Minor effects on biological or physical environment. Minor short term damage to small area of limited significance
3	Moderate	Moderate effects on biological or physical environment. Moderate short-medium term widespread impacts
4	Major	Serious environmental effects with some impairment of ecosystem function (e.g. displacement of a species)
5	Significant	Very serious environmental effects with impairment of ecosystem function. Long term widespread effects on significant environment e.g. National Park, unique habitat

TABLE 5.2: QUALITATIVE MEASURES OF LIKELIHOOD

Level	Descriptor	Description
A	Almost certain	Is expected to occur in most circumstances
B	Likely	Will probably occur in most circumstances
C	Possible	Might occur at some time
D	Unlikely	Could occur at some time
E	Rare	May occur in exceptional circumstance

TABLE 5.3: QUALITATIVE RISK ANALYSIS MATRIX-LEVEL OF RISK

	Consequences				
Likelihood	Insignificant 1	Minor 2	Moderate 3	Major 4	Significant 5
A (almost certain)	H	H	S	S	S
B (likely)	M	H	H	S	S
C (possible)	L	M	H	S	S
D (unlikely)	L	L	M	H	S
E (rare)	L	L	M	H	H

Legend

S: Significant risk; immediate action required

H: High risk; senior management attention needed

M: Moderate risk; management responsibility must be specified

L: Low risk; manage by routine procedures.

5.2 Identification and Assessment of Environmental Effects

In general, pipeline operations and maintenance will have minimal environmental impacts. Common activities include pipeline corridor inspections, maintenance of the pipeline stations, pipeline corridor and associated facilities (e.g. valves, cathodic protection equipment), internal pigging of the pipeline every five years, and the use and handling of odorants at KIS.

5.2.1 Pipeline Management Corridor

The pipeline corridor for the KEGP is approximately 340 km in length and alternates between existing road and rail reserves (with the exception of a small deviation into freehold land to avoid pockets of remnant vegetation adjacent to the road reserve and at the end point in the Port of Esperance precinct).

5.2.1.1 Access

During operations the pipeline right of way (ROW) is regularly inspected. The majority of the pipeline is located in a road/rail corridor located in remote areas so that any access impacts are limited. However, careful planning can further reduce these potential risks and the pipeline inspection programme (as per AS 2885.3) will include those aspects listed in APIA Code of Environmental Practice (COEP, March 2009) section 5.2.

5.2.1.2 Soil and Ground Stability

The pipeline easement disturbed from trenching activities during excavation has been rehabilitated. However, this is regularly monitored to ensure any potential problems such as soil erosion, ground subsidence, and sedimentation in waterways do not arise. The inspection programme as mentioned in section 5.2.above includes a schedule and remedial action if needed. It is the Esperance Area Managers responsibility to audit the right of way by inspection every 12 months; the report includes depth of cover (DOC) erosion and general condition of the right of way (ROW).

5.2.1.3 Vegetation Management

If it is poorly rehabilitated the pipeline easement disturbed during maintenance work may result in poor vegetation cover which can cause the problems outlined in the previous section. The above mentioned procedures are implemented to reduce risks as low as practicable.

5.2.1.4 Weed/Pest Control

Weeds can invade disturbed areas to the detriment of other vegetation.

As part of the RoW Patrol Program as per Work Instruction C9900d21 and the reporting template C9900f67 is utilised to capture RoW conditions such as erosion as well as weed surveillance.

EPS supports activities to prevent the spread of the cactus species and its eradication. Section 4.6 give details regarding this weed's features.

EPS supports the eradication of this weed through:

- Support of the Esperance Weed Action Group (EWAG) activities to address the cactus weed including participation in this group and support of initiatives.
- Address risk of spreading of the weed though managing the vehicle movement in the invested areas and during the slashing activities (clearing plant growth for Right of Way) along the pipeline route to keep the KEGP ROW accessible as required by Regulatory Authority.

5.2.2 Pipeline Leaks and Ruptures

Poorly maintained and monitored pipelines can leak and rupture which can cause a range of impacts to flora/fauna, property, other land uses, infrastructure, and people. As such the pipeline is managed in accordance with AS 2885.3 to reduce these risks to ALARP.

5.2.3 Waste Management

Waste is appropriately managed so as to avoid contamination and littering of the environment, minimise risk to personnel safety and avoid visual impacts.

The site induction includes requirements for waste management.

All general wastes will be contained within temporary designated facilities such as litterbins and skips. These facilities are of a design to ensure no runoff of liquids from the waste pile.

Where possible, waste items are recycled or removed from site after work is completed

General refuse is collected for disposal to local council approved disposal sites.

The use of hazardous wastes, such as waste fuel drums, solvents, rust proofing agents and primers, is minimised and managed in accordance with the requirements of relevant legislation and standards. Spill Response, Waste Management and Chemical Handling is covered by KEGP procedure 7.13.1 – C9900b98

5.2.4 Chemical Storage

The use and temporary storage of chemicals whilst on location can potentially cause a threat to the environment. Proper handling and storage procedures ensure that these are managed in a safe manner. MSDS's are available at the maintenance contractor's workshop, as are spill clean-up kits for use during maintenance activities. In addition, a spill clean-up kit is located at KIS. Odorant is stored at KIS but no other chemicals are stored on the KEGP. During any maintenance activities involving handling of chemicals and hazardous materials, a spill clean-up kit is mobilized.

Chemical storage is in accordance with Spill Response, Waste Management and Chemical Handling is covered by KEGP procedure 7.13.1 – C9900b98

5.2.5 Air Emissions

Air emissions can be generated from a range of activities e.g. vehicles, venting, etc. All potential risks/impacts from pipeline operational activities are addressed in the risk assessment. These activities are undertaken in accordance in AS 2885.3.

Purging, venting and flaring will be conducted as per C9900a82

5.2.6 Use and Handling of Odorants

Odorants can cause environmental harm if released unexpectedly. This risk is minimised by having odorant handling and maintenance procedures in place.

Odorant handling and maintenance of the odorant injection system is in accordance with C9900b13.

5.2.7 Bushfire Prevention

The main bushfire risk comes from patrol vehicles and spark-emitting maintenance work such as welding, grinding etc. As measures set out in AS 2885.3 will be adopted, together with having bushfire risk reduction procedures in place, as per The APIA Code of Environmental Practice 5.1.8 (COEP March 2009) risks are considered to be low.

KEGP operating procedure 7.13.2 – Bushfire Prevention and risk Reduction Procedure (C9900b99) is the applicable document.

5.2.8 Noise

Noise can be generated by a range of activities and/or sources including vehicles, machinery, gas venting etc. This can disturb households, other land users in the vicinity of the operations and stock or wildlife. The APIA Code of Environmental Practice 5.3 (COEP March 2009) lists a range of measures that if adopted should reduce the potential effects to a low risk. Examples include scheduling noisy activities in periods where it will be less of a nuisance. Any complaints are documented and followed up.

In regard to gas flaring and venting, operating procedure 6.17 document C9900a82 will be applied in regard to noise control.

5.3 Risk Assessment Summary

Table 5.4 below lists the overall residual risks based on the control measures identified.

TABLE 5.4: RISK ASSESSMENT

Aspects (Activities/Emissions)	Description of Potential Impacts on the Environment	Management Measures	Consequence Severity Rating	Likelihood / Frequency	Residual Risk
Pipeline Corridor Management- Access	- disturbance to flora/fauna - damage to other land uses - temporary disruption to residents, landholders; and other third parties - soil compaction, erosion and sedimentation - damage to known sites of indigenous significance - visual amenity - dust creation	• Wherever feasible use existing tracks, roads; • Plan activities so as to keep any disruptions to a minimum; • Include environmental aspects in inspection programme detailed in COEP section 5.1; • Notify landowners and regulators of any new issues. • Notify traditional owners and monitor activities in areas of potential buried cultural heritage materials for artefacts identification. • Reinstate trenched areas or disturbed soil/ or vegetation to normal condition as quickly as practicable. • Use of water cart where practicable to mitigate dust.	1	D	Low
Pipeline Corridor Management-Soil, ground and groundwater stability	- sol erosión - sedimentation - flora/fauna impacts -damage to other land-uses - subsidence of pipeline trench - exposure of pipeline -acid sulphate soil (ASS)	• Schedule regular inspections and document; • Ensure vegetation is maintained; • Vehicle access to be restricted to stable ground where practicable; • Include in inspection programme as detailed in COEP section 5.1.1; • Conduct annual pipeline patrol including aerial survey. • Affected site to be stabilised and re-instated • Minimise exposure of ASS soils to oxygen. Trenches backfilled within 48 hrs. Test ASS	1	D	Low

Aspects (Activities/Emissions)	Description of Potential Impacts on the Environment	Management Measures	Consequence Severity Rating	Likelihood / Frequency	Residual Risk
		soil stockpiles exposed for greater than one month			
Pipeline Corridor Management-vegetation management	- excessive vegetation regrowth; - lack of vegetation can lead to erosion, sedimentation, visual amenity etc. - disturbance to existing vegetation and faunal habitats	• Where practicable restrict access to areas recently re-vegetated; • Avoid disturbance to vegetation outside immediate pipeline corridor or access track; • Revegetation to be monitored as part of structured monitoring/remedial programme; • Included in Environmental Guidelines – Operations COEP section 5.1.1.1. • Where possible avoid fauna habitat during clearing. If required, advise environmental agency and engage consultant to relocate fauna to other locations.	1	C	Low
Pipeline Corridor Management-introduction of weeds/pathogens	- impact on local flora/fauna - introduction into agricultural areas - dieback	• Routine inspections to monitor re-vegetation and regeneration of construction corridor. Include in inspection programme as detailed in COEP section 5.1; • Active weed and pest control programme is required at sites identified as infested at least one year after easement construction. Thereafter as monitoring dictates. • Importation of fill material for ROW repair activities should only utilise materials that can be certified as weed free. • Topsoil stripped and removed from site	1	C	Low

Aspects (Activities/Emissions)	Description of Potential Impacts on the Environment	Management Measures	Consequence Severity Rating	Likelihood / Frequency	Residual Risk
		• Conduct plant hazard assessment and machinery cleanliness prior to works. • Monitor corridor clearing to ensure cleared areas do not exceed those necessary for ROW operational requirements.			
Pipeline leaks and ruptures	- air pollution; - harm to flora/fauna; - disruption to other activities and/or persons.	• Comply with AS 2885.3 (pipelines: operation and maintenance). • Initiate Emergency Response Plan if warranted • Notification of all relevant stakeholders of thee release. • Isolate affected pipeline section through isolation valves and or reduce operating pressure to mitigate gas emissions • periodic leakage surveys as per AS 2885.3 requirements	1	E	Low
Commissioning and Decommissioning	Failure of pipeline assets or welds leading to unplanned emissions	• Hydrostatic testing of pipe to AS2885.3 • NATA weld inspections • Commissioning Hazid workshop • Competent personnel • Approved procedures	3	E	Medium
Planned venting and other controlled emissions	air pollution; - harm to flora/fauna; - disruption to other activities and/or persons.	• Procedure C9900a82 • planned release of gases to be minimised • purpose built gas vents to be located away from residential/infrastructure as per AS requirements	1	C	low

Aspects (Activities/Emissions)	Description of Potential Impacts on the Environment	Management Measures	Consequence Severity Rating	Likelihood / Frequency	Residual Risk
		• planned gas releases in favourable meteorological conditions • Advise adjacent occupiers/authorities of pending venting. • equipment fitted with appropriate abatement devices • Routine inspections to monitor any fugitive emissions • Procedure documented and approved			
Waste management	- pollution of land, waterways; - inefficient use of resources; - visual amenity impacts.	• Comply with waste management procedures (see COEP 5.5 and section 5.2.3). • Prevent or minimise waste generation e.g. returnable containers, recycling etc.; • Use of non-hazardous materials where feasible; • Provide drip trays, bunded area • Storage in appropriate containers in controlled area; • Disposal at approved landfill facilities; • Minimise waste disposal to landfill. • Provide spill clean-up kit at site • MSDS's to be available	2	C	Med

Aspects (Activities/Emissions)	Description of Potential Impacts on the Environment	Management Measures	Consequence Severity Rating	Likelihood / Frequency	Residual Risk
Chemical Storage and Hazardous Materials	- contamination of soil and water, including groundwater; - air and odour emissions - personnel and fauna exposure	• Spill clean -up kit at site; • MSDS's must be available; • Use drip trays; • Comply with spill response procedures (see COEP Section 5.8) • Spills to be reported and clean up immediately • Chemical/hazardous materials to be stored in approved containers and properly marked for information. • All liquid/hazardous materials must be bunded. • Periodic CP survey and inspection of pipeline assets to identify emissions or spills due to corrosion	1	D	Low
Air emissions	- release of air pollutants; - greenhouse gas emissions; - odour emissions;	• Planned release of gases to be minimised and managed in a controlled and environmentally responsible manner; • Venting procedure documented and activity to be manned 100% of the time; • Purpose built gas vents are designed to be located away from residential/infrastructure as per AS2885.3 requirements; • Planned gas releases in favourable meteorological conditions; • Advise adjacent occupiers/authorities of pending venting. •	1	C	Low

Aspects (Activities/Emissions)	Description of Potential Impacts on the Environment	Management Measures	Consequence Severity Rating	Likelihood / Frequency	Residual Risk
Use and handling of odorants	- contamination of air	• Odorisation procedure in place; • Maintenance procedure for equipment. • Odorisation storage tank re-supply procedure in place; • Odorant injection plant maintenance procedure in place. • Routine inspections to monitor any fugitive emissions. `	1	D	Low
Pigging Operations	Venting of Gas Discharge of Pyrophoric Dust.	• Possible need for venting carried out under correct venting procedures 6.17 • Dust contained by monitoring and change out of ERS line filters as per procedure 6.01.01	2	D	Low

Aspects (Activities/Emissions)	Description of Potential Impacts on the Environment	Management Measures	Consequence Severity Rating	Likelihood / Frequency	Residual Risk
Bushfire prevention	- loss of flora/fauna - damage/loss of property, crops -damage/loss of infrastructure	• Bushfire prevention procedures applied (see COEP Section 5.1.8). • Hot works permit obtained and no fires lit along pipeline corridor.	1	E	Low
Noise emissions	- reduction of amenity due to noise	• Schedule noisy activities for periods that are less likely to cause a nuisance; • Local residents and other stakeholders to be informed of noise potential prior to activities being undertaken that may create higher noise levels; • Monitor noise levels when changes to operations takes place to ensure they are within acceptable limits.	1	C	Low

6 PERFORMANCE OBJECTIVES AND STANDARDS

6.1 Definitions

Environmental Performance Objectives: means a statement of the objectives or goals for protecting the environment relevant to the specific proposed activity;

Environmental Performance Standards: means quantifiable standards for determining whether performance objectives or goals are achieved;

Environmental Performance Criteria: means monitoring and specific requirements used to measure whether performance standards are met.

These are summarized in Section 6.2 below.

6.2 Objectives, Standards & Criteria

Objectives	Standards	Criteria	Guidelines & Targets	Ref: Mitigation and Control Practices
ISSUE1: Social impact				
Minimise disturbance to existing land uses and infrastructure	PP Act 1969, Section 10, Clause 2(d)	All personnel to complete normal induction that includes environmental awareness component Manage, record and respond to all complaints received during activities EP compliance review to verify mitigation and control measures are implemented	APIA Code of Environmental Practice EPC Health, Safety, Environment Management System and Policy (refer Section 2)	7.3.2.1 - 7.3.2.4 7.3.21- 7.3.323
ISSUE 2: Natural Environment (Flora/Fauna/Soils)				
Minimise impacts on the natural environment	PP Act 1969, Clause 2(d) Bushfire prevention procedure	Inspection Procedures to include environmental checklist. Audit pipeline easement 12 months after construction completed. This will then be subsequently monitored through the annual KEGP pipeline patrol activity	APIA Code of Environmental Practice AS 2885.3 This EP	7.3.2.5- 7.3.2.13 7.3.3.20

ISSUE 3: Solid/Hazardous Materials: Handling & Waste Management				
Adopt correct handling methods and waste management to ensure no accidental chemical /hazardous spills that may cause harm to environment and or personnel.	EP Act, Section 49, 50	EP compliance review to verify mitigation and control measures are implemented	APIA Code of Environmental Practice EPC Environment Management System and Policy (refer Section 2) Pipeline contractors documented waste management procedure	5.7
ISSUE 4: Pollution Prevention: Spills/Emissions				
To have no spills of hazardous and non- hazardous materials or emissions that will impact on the environment.	PP Act 1969, Section 10, Clause 2(d) EP Act, Section 49, 50. Spill Response Procedures	All personnel to complete normal induction that has environmental awareness component. EP compliance review to verify mitigation and control measures are implemented	APIA Code of Environmental Practice EPC Environment Management System and Policy (refer Section 2) EPC Emergency Response Plan	5.8 5.8 C9900A85 – Appendix D
ISSUE 5: EP Implementation				
Ensure Environmental Plan is initiated and fully complied with resulting in nil incidents,	PP Act 1969 Licence Condition	Normal Induction to have environmental component. Compliance audit	This EP	7.2

7 ENVIRONMENTAL MANAGEMENT

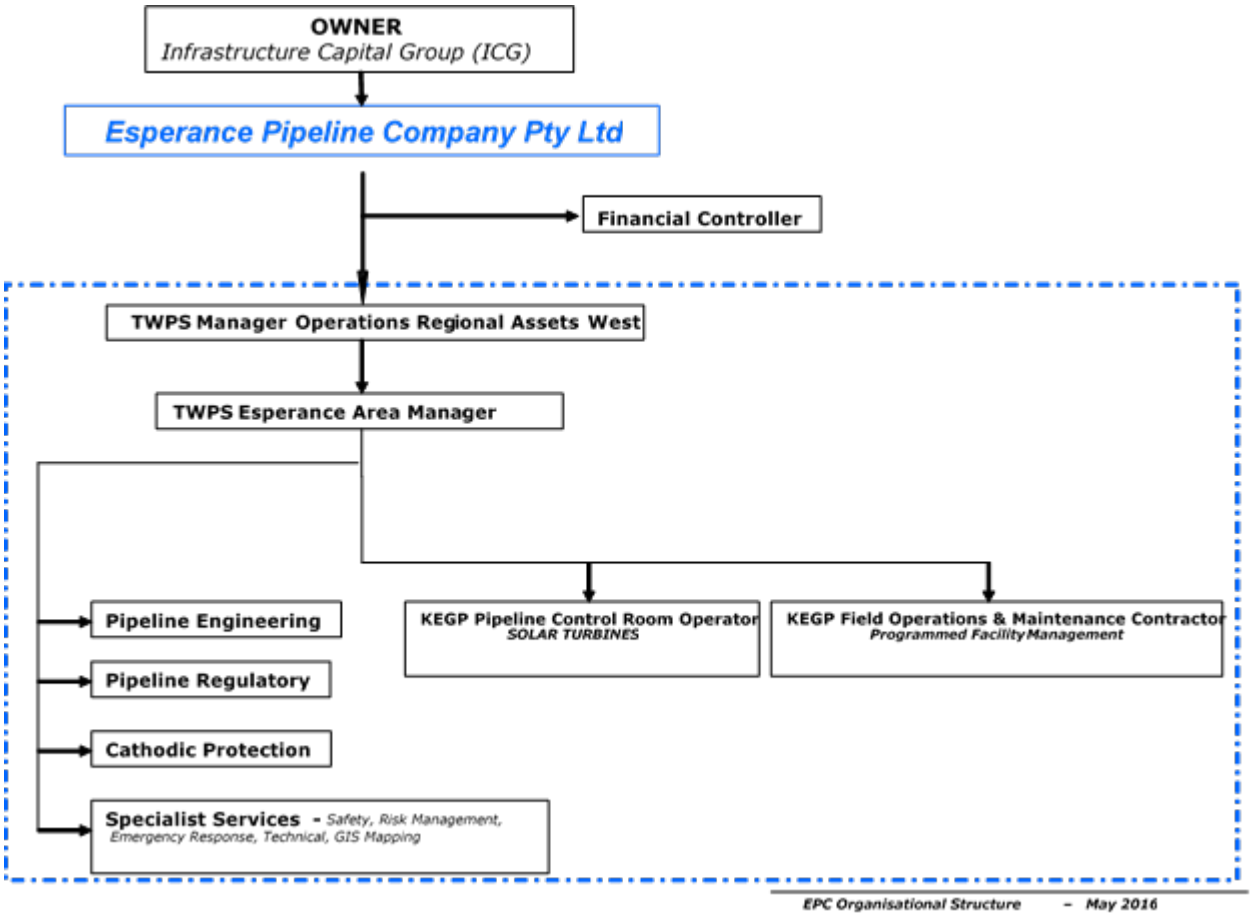
7.1 Roles and Responsibilities

The key responsibilities for Environmental Management are as follows:

- The EPC Board is responsible for ensuring that appropriate resources are allocated to meet EPC Management Systems and Policy requirements; and for establishing and regularly reviewing the Environmental Policy (see Section 2).
- The Facility Manager (FM) is responsible for the governance of the EP.
- The Esperance Area Manager is responsible and accountable for implementing the Environmental Policy within the operational area, through application of the Environment Plan;
- All Project personnel including EPC personnel and third party contractors are responsible and accountable to adhering to the Environmental Policy and this Plan in all tasks that they undertake.

Responsibilities and accountabilities for each position within the Company are documented to avoid confusion over responsibilities and accountabilities. Figure 7.1 shows the organisational chart.

FIGURE 7.1: ORGANISATIONAL CHART



7.2 Employee Selection, Competency and Training

Job descriptions for EPC employees and its representatives include safety and environmental responsibilities. These are used by Human Resources to recruit suitably competent personnel for EPC.

EPC reviews safety and environmental awareness performances as part of the annual employee performance feedback process and recommends ongoing training needs as appropriate. The training programme complies with the National Training Package for oil and gas pipeline control.

EPC ensures that its contractors have suitable employee selection, competency and training processes in place through review of their Workforce Management Plan and audit of their processes. It also requires its contractors to provide details of training and competency assessments, at specific intervals, for work carried out on the network.

EPC and contractor personnel receive induction training that is appropriate to their position or service responsibilities. On an ongoing basis, personnel's training needs are assessed to ensure that employees maintain a level of knowledge, skill as appropriate to the task, the Regulations and Acts as appropriate. Further training needs are identified for each personnel on an annual basis during the performance appraisal process.

All personnel, including contractors, will also be required to attend an induction prior to commencing any tasks. This is to be arranged by the Esperance Area Manager and records are kept by KEGP Esperance Office for a period of 5 years. As part of this normal induction an environmental component is included that addresses the following issues.

- The importance of conforming to the EPC Environmental Management System and Policy, the requirements of the Environment Plan and regulatory requirements.
- An understanding of the significance and potential of environmental effects associated with their work requirements.
- Personnel roles and responsibilities for environmental performance.
- An understanding of the relevant objectives and requirements of this EP.
- An understanding of the Emergency Response Plan and their role.

Emergency response drills and exercises are conducted on a regular basis.

7.3 Environmental Protection

Table 7.1 provides a listing of the practices to control and mitigate the potential environmental risks and impacts identified in Section 5 and also serves to meet the objectives, standards and criteria as set out in Section 6.

It is intended this table may be utilised as a checklist for use by the Esperance Area Manager as a means to check that the requirements of this Environmental Plan are being complied with.

Note: **R** = Responsible; **C** = Contributes;

Mitigation and Control Practice		EAM	Environ. Advisor/ Operations Manager	Field Supervisor
7.3.1 General				
7.3.1.1	Have EMS/Policy in place	**R**		
7.3.1.2	All personnel to have normal induction which includes environmental component	**R**		**C**
7.3.1.3	Audit/Compliance Review	**R**	**C**	**C**
7.3.1.4	Review Contractor work practices including permits to work and Job Safety Analysis (JSA) documents for compliance with laid down procedures when EPC procedures are not used Review EPC procedures as per document Control Manual.	**R**	**C**	
7.3.2 Pipeline Corridor Management				
7.3.2.1 - 7.3.2.4	• where feasible use existing tracks, roads; • plan activities so as to keep any disruptions to a minimum; • include environmental aspects in ROW Patrol Procedure as detailed in COEP section 5.1.1. • Notify landowners and regulators of any new issues. • Notify traditional owners and monitor activities in areas of potential buried cultural heritage materials for artefacts identification • Minimise exposure of ASS to oxygen. • Mitigate dust using water cart.			**R**
7.3.2.5 - 7.3.2.7	• schedule regular inspections and document; • ensure vegetation is maintained; • vehicle access to be restricted to stable ground where practicable;			**R**
7.3.2.8- 7.3.2.11	• where practicable restrict access to areas recently re-vegetated; • revegetation to be monitored as part of structured monitoring/remedial programme; • avoid disturbance to vegetation outside immediate pipeline corridor or access track; • Include in ROW Patrol Procedure as detailed in COEP section 5.1.1. • Reinstate disturbed landscape as soon as practicable to assure reasonable visual acceptance.			**R**

Mitigation and Control Practice		EAM	Environ. Advisor/ Operations Manager	Field Supervisor
7.3.2.12 - 7.3.2.13	• Routine ROW patrol to monitor re-vegetation and regeneration of construction corridor. Include in ROW patrol procedure as detailed in COEP section 5.1.1; • Active weed and pest control programme is required at sites identified as infested at least one year after easement construction. Thereafter as monitoring dictates. • Avoid using fill material which is not weed free for any ROW repair work. • Topsoil stripped and removed from site • Conduct plant hazard assessment and machinery cleanliness prior to works • Conduct annual pipeline patrol including aerial survey.			**R**
Mitigation and Control Practice		**EAM**	**Environ. Advisor**	**Supervisor**
7.3.3 Pipeline Operations and Maintenance				
7.3.3.1	• Comply with AS 2885.3 (pipelines: operation and maintenance).	**R**		**C**
7.3.3.2 - 7.3.3.6	• Waste management procedures in place (see COEP 5.7). • prevent or minimise waste generation e.g. returnable container, recycling etc.; • use of non-hazardous materials where feasible; • storage in appropriate containers in controlled area; • Disposal at approved facilities.			R
7.3.3.7 - 7.3.3.11	• Minimal practicable storage on-site; • spill clean -up kit at site; • MSDS's to be available; • drip trays, bunded area • have spill response procedures (see COEP Section 5.8) • Spills to be cleaned up immediately. • Chemical and hazardous materials to be properly stored in approved containers and its content clearly marked. • Periodic CP survey and inspection of pipeline assets to identify emissions or spills due to corrosion.			R

Mitigation and Control Practice		EAM	Environ. Advisor/ Operations Manager	Field Supervisor
7.3.3.12 - 7.3.3.17	• planned release of gases to be minimised; • periodic leakage surveys as per AS 2885.3 requirements; • purpose built gas vents to be located away from residential/infrastructure as per AS requirements; • planned gas releases in favourable meteorological conditions; • Advise adjacent occupiers/authorities of pending venting. • Hydrostatic testing to AS2885.3 • NATA weld inspection • Use of competent personnel • Procedure documented and approved • Commissioning Hazid workshop			R
7.3.3.18 - 7.3.3.19	• Odorisation storage tank re-supply procedure in place; • Odorant injection plant maintenance procedure in place. • Routine inspections of facility to monitor any fugitive emissions			R
7.3.3.20	• Bushfire prevention procedure to be put in place (see COEP Section 5.1.8).	R		C
7.3.3.21 - 7.3.3.23	• Schedule noisy activities for periods that are less likely to cause a nuisance; • local residents to be informed of noise potential prior to activities being undertaken; • equipment fitted with appropriate abatement devices;	R		C

7.4 Incident Notification, Investigation and Reporting

EPC will provide notification to all relevant environmental regulatory agencies of 'notifiable incidents' in accordance with regulatory requirements.

7.4.1 Incidents

Incidents with actual or potential impacts on the biophysical environment (such as a spillage) shall be recorded and addressed immediately to DMP and DEC.
Any incidents (including actual or potential impacts on the biophysical environment, such as a spillage) are reported and documented in the weekly meetings between WPAM/TWPS and its contractors. Notifiable incidents are reported Environmental Incident report forms will be sourced on DMP's website: www.dmp.wa.gov.au.

DMP requires that any incident identified as having a potential or actual impact of 'moderate or more serious than moderate' environmental consequence must be

reported to the Department as soon as practicable, but within 2 hours as required by the Petroleum (Environment) Regulations, either orally or in writing.

Verbal notification is effected through DMP's environmental branch incident reporting number 0419 960 621. Written notification must be sent to DMP as soon as practicable, but within 3 working days after the initial notification and shall cover detailed information about the incident, investigation outcome and corrective actions.

Incidents are discussed and investigated and all corrective actions are documented and followed up for implementation. Where required, approval is gained from management for any resources necessary for the implementation of these corrective actions.

EPC incident procedure is documented in the Hazard, Incident & Accident Investigation & Reporting Procedure 7.07 (document C9900A92 and associated forms C9900A93 and A94) that defines the process of identification, investigation, corrective action and close out. Any EPC employee can use this procedure to report hazards that they observe or incidents that occur during the operation of the pipeline. The Hazard/Incident reporting forms are submitted to the EPC Area Manager for action and close out.

Incident and accident investigation is driven by the EPC Area Manager with assistance from HS&E advisors. Specialist incident investigators may be called on at the discretion of the EPC Area Manager.

Contractors are required to use the EPC incident reporting process that includes notification to the EPC Area Manager of incidents and ensures security of the incident site until such time as the EPC Area Manager gives approval for the area to be restored to normal working conditions.

Incidents and accidents that trigger escalating levels of notification and involvement by the EPC Area Manager are specified in the Hazard, Incident and Accident Reporting and Investigation Procedure 7.07 (document C9900A92).

The process for investigating failures and the subsequent analysis for implications on the management of risks can be found in document C9906d02 "HSE Event Investigation, Corrective Action and Closeout". It outlines a structured process for investigating, analysing and effectively managing corrective and preventative actions relating to HSE events through:

- The development of safety and environmental related policies and procedures
- The setting of objectives/KPI's
- Undertaking audits/inspections and analysing the data from those audits/inspections
- Identification and analysis of innovations and initiatives
- Implementing and monitoring corrective and preventative actions
- Undertaking management review

7.4.2 Reportable Incidents

Under Regulation 4 of the Petroleum (Environment) Regulations, a reportable incident is defined as an incident classified as a reportable incident under

environment plan for the activity; or an incident that has caused, or has the potential to result in, an adverse environmental impact or an environmental impact that has been categorised as moderate or more serious than moderate under the environmental risk assessment process described in this document.

EPC's reportable incident scenarios are shown in Table 7.2 below.

Table 7.2- Reportable Incidents

Description	Timing	Notification Recipient
Consequence Based Incidents		
1. Uncontrolled release of a significant volume of natural gas due to faulty equipment or other items from either above or below ground pipeline facilities	Verbally as soon as practicable but within 2 hrs. then in writing within 3 days.	DMP & EPA
2. Loss of containment of natural gas due to ruptured pipeline or facilities	Verbally as soon as practicable but within 2 hrs. Then in writing within 3 days.	DMP & EPA
Other Reporting Requirements		
1. Spills of hydrocarbons, odorants or hazardous material in excess of 80 litres to sea or inland waters	Verbally as soon as practicable but within 2 hrs. Then in writing within 3 days.	DMP & EPA
2. Spills of hydrocarbons, odorants or hazardous materials in excess of 500 litres in other areas	Verbally as soon as practicable but within 2 hrs. Then in writing within 3 days.	DMP & EPA
3. Spills of hydrocarbons, odorants or hazardous materials that affect a ground surface area greater than 100m3 or more.	Verbally as soon as practicable but within 2 hrs. Then in writing within 3 days.	DMP & EPA
4. An unplanned gaseous release to atmosphere 500m3 or more	Verbally as soon as practicable but within 2 hrs. Then in writing within 3 days.	DMP & EPA
5. Death or injury to individual(s) from a listed species during an activity	Verbally as soon as practicable but within 2 hrs. Then in writing within 3 days.	DMP & EPA
6. Unplanned impact caused to a matter of national environmental significance (NES) during an activity as per the Environment Protection and Biodiversity Conservation Act 1999.	Verbally as soon as practicable but within 2 hrs. Then in writing within 3 days.	DMP & EPA

7.4.3 Recordable Incidents

Under Regulation 4 of the Petroleum (Environment) Regulations, a recordable incident is defined as an incident arising from the activity that breaches a performance objective or standard in the EP that applies to the activity, and is not a reportable incident.

Where a planned project activity exists, these incidents will be compiled into the project monthly report and will be submitted to the DMP at the end of each calendar month. Information provided in recordable incident reports will include:

- a record of all recordable incidents that occurred during the calendar month;
- all material facts and circumstances concerning the recordable incidents that the operator knows of or is able, by reasonable search or enquiry, to find out;
- any action taken to avoid or mitigate any adverse environmental impacts of the recordable incidents; and
- the corrective action that has been taken, or is proposed to be taken, to prevent similar recordable incidents.

Note: Nil reporting will be conducted if no recordable incidents occurred during that month.

EPC's typical recordable incident scenarios are shown in Table 7.3 below.

Table 7.3 - Recordable Incidents

Description	Timing	Notification Recipient
1. Spills of hydrocarbons, odorants or hazardous material less than 80 litres to the sea or inland waters	Monthly on or prior to the 15th day of each month.	DMP
2. Spills of hydrocarbons, odorants or hazardous materials less than 500 litres in other areas	Monthly on or prior to the 15th day of each month.	DMP
3. Spills of hydrocarbons, odorants or hazardous materials that affect a ground surface area less than 100m³ or more.	Monthly on or prior to the 15th day of each month.	DMP
4. An unplanned gaseous release to atmosphere 500m3 or less.	Monthly on or prior to the 15th day of each month.	DMP

Recordable incidents are considered major incidents and must be captured and filed in the company's records and submitted to DMP at the end of each calendar month until the incident has been closed-out.

7.5 Monitoring, Review and Auditing

As part of the implementation of the environmental management strategies outlined in this section the following are undertaken:

- All incidents are reported to and investigated by the Esperance Area Manager;
- The Field Supervisor plans and undertakes regular inspections which the Esperance Area Manager l attends at least once per year to ensure compliance with this EP. Any departures are documented by the field staff and follow up actions taken and recorded.
- A formal audit is initiated by the EPC FM and is undertaken every second year to determine compliance with the EP.

7.6 Records and Reporting

The following records are kept and reported as part of the HSE Management System by the Esperance Area Manager:

- Any breach of government regulations;
- Any complaints lodged by external parties e.g. general public, other land-users etc.

This EP is a controlled document and is revised by the EPC FM every five years.

7.6.1 Routine Reporting

EPC also regularly perform routine reporting to relevant regulatory agencies on the following:

- Emissions and discharges report every 3 months – to DMP Environment Division
- Environmental Plan update every 5 years - to DMP Environmental Division
- Emergency Response Plan every 2.5 years – to DMP Environment Division.
- Annual Environmental report (includes monitoring reporting) – to DEC and DMP Environment Division. The reporting period covers 1st January to 31st December each year. Reports are submitted within 3 months of the end of the reporting period.
- Any change in its asset, organisational structure or operating environment - to DMP Resources Safety Division;
- Major safety incident – to DMP Resources Safety Division.
- Integrity of pipeline report every 5 years – to DMP Resources Safety Division

7.7 Emergency Planning and Control

EPC has included environmental emergencies in its Emergency Response Plan (ERP) document C9900a85. This plan includes responsibilities and actions to be undertaken. Amongst other things this includes the following items:

- Hazardous substances/chemicals; and
- Spills and gas releases.

The ERP addresses all categories of safety and environmental emergencies, including communication internal and external stakeholders and co-ordination protocols with emergency services.

The emergency response plan is regularly tested using both desktop and actual site simulations. It will also be re-tested if significant amendments are incorporated.

A copy of the ERP is in Appendix A of this document. Spillage management is described under Appendix D of the ERP.

7.7.1 Spill Response Plan

The Emergency Response Plan (refer Appendix A) details the organisational responsibilities, reporting requirements and resources available to ensure the effective and timely management of a spill to the environment (chemical or hydrocarbon).

Response will be based on a tiered structure and shall involve an Emergency Management Team (EMTL) and Site Response Team (SRT). The EMTL leader is the Esperance Area Manager who coordinates the frontline tactical response to a spill including associated reporting and notification requirements.

Potential liquid spill/unplanned environmental release scenarios for the KEGP operations are documented and risk-assessed in Section 6.2 (Issue 4) of this EP and the EPC Hazard Register (document C9900c26).

7.7.2 Environmental Monitoring

Potential impact of environmental items resulting from operational activities is detailed in Table 7.4 below.

Table 7.4 – Items generated from KEGP operation for monitoring

Activity	**Items generated**	**General management principle**	**Data collection method**	**Report recipient**
Maintenance of pipeline valves, delivery and metering stations	Filters (non-oily, oily and gas)	Collected and transported by licensed contractor for recycling or disposal to regulated water landfill.	Waste receipt and disposal records from waste management contractor	Annual report to DEC and DMP
Ditto	Waste oils and greases	Collected and transported by a licensed contractor for recycling where possible.	Waste receipt and disposal records from waste management contractor	Annual report to DEC and DMP
Ditto	Packaging	General waste for disposal at a licensed landfill	Waste receipt and disposal records from waste management contractor	Annual report to DEC and DMP
Cleaning of pipeline – pigging (if	Pipe cleaning waste (pigging grit-scale,	Pigging grit – licensed contractor to transport regulated waste to a licensed	Waste receipt and disposal records from waste	Annual report to DEC and DMP

undertaken in the future)	rust, or other foreign material)	regulated waste landfill.	management contractor	
Spills of hydrocarbon based material	Potential hydrocarbon contaminated soil from spilled oils and greases.	Remediation in-situ for small quantities. Advice sought from enviro consultant regarding treatment options for larger spills (e.g. >200 L). Removal of soil under disposal permit for remediation or disposal at suitable facility.	Waste receipt and disposal records from waste management contractor	Quarterly report to DEC and DMP as required by regulation
Offices, crib room(s) site amenities along pipeline	Office waste- paper, cardboard packaging etc. Kitchen bin waste in facilities. First-aid waste. Kitchen and amenity wastewater .	Recyclable material to recycling facility (where available). Residual material local landfill. Wastewater from crib rooms and amenities will be hauled via vacuum truck and disposed at a local treatment facility.	Waste receipt and disposal records from waste management contractor	Nil
Clearing and grubbing pipeline corridor and access tracks	Green waste, topsoil and excavated material (stockpiled for backfilling and application to RoW)	Stockpiled/windrowed vegetation will be reapplied during restoration/rehabilitation of RoW All topsoil and excavated material reused for backfilling in RoW Nil RoW, access / service roads and string area preparation Hardstand materials All material used	Conduct survey at end of activity.	Annual report to DEC and DMP
Ditto	Introduced weed/pathogens sightings within	Visual inspection	Periodic pipeline patrol survey	Annual report to DEC and DMP

	disturbed area boundary.			
Trenching	Excavated material	All excavated material reused for backfilling in RoW to be spread across RoW All materials will be treated as per the waste hierarchy with general waste disposed to local licensed landfill	Conduct survey at end of activity	Annual report to DEC and DMP
Pipe cleaning and gauging Pipe testing – hydro testing 24 hour leak test	Pipe cleaning waste (pigging grit - scale, rust, or other foreign material) Hydrostatic test water not treated with biocides, corrosion inhibitor and oxygen scavengers	Pigging grit - licensed contractor to transport regulated waste to a licensed regulated waste landfill Hydro test water discharge to land (assume no chemical treatment of water is required as source is potable water)	Conduct survey at end of activity	Annual report to DEC and DMP

7.7.3 EPC Response Priorities

EPC's emergency response priorities in the event of an incident are to:

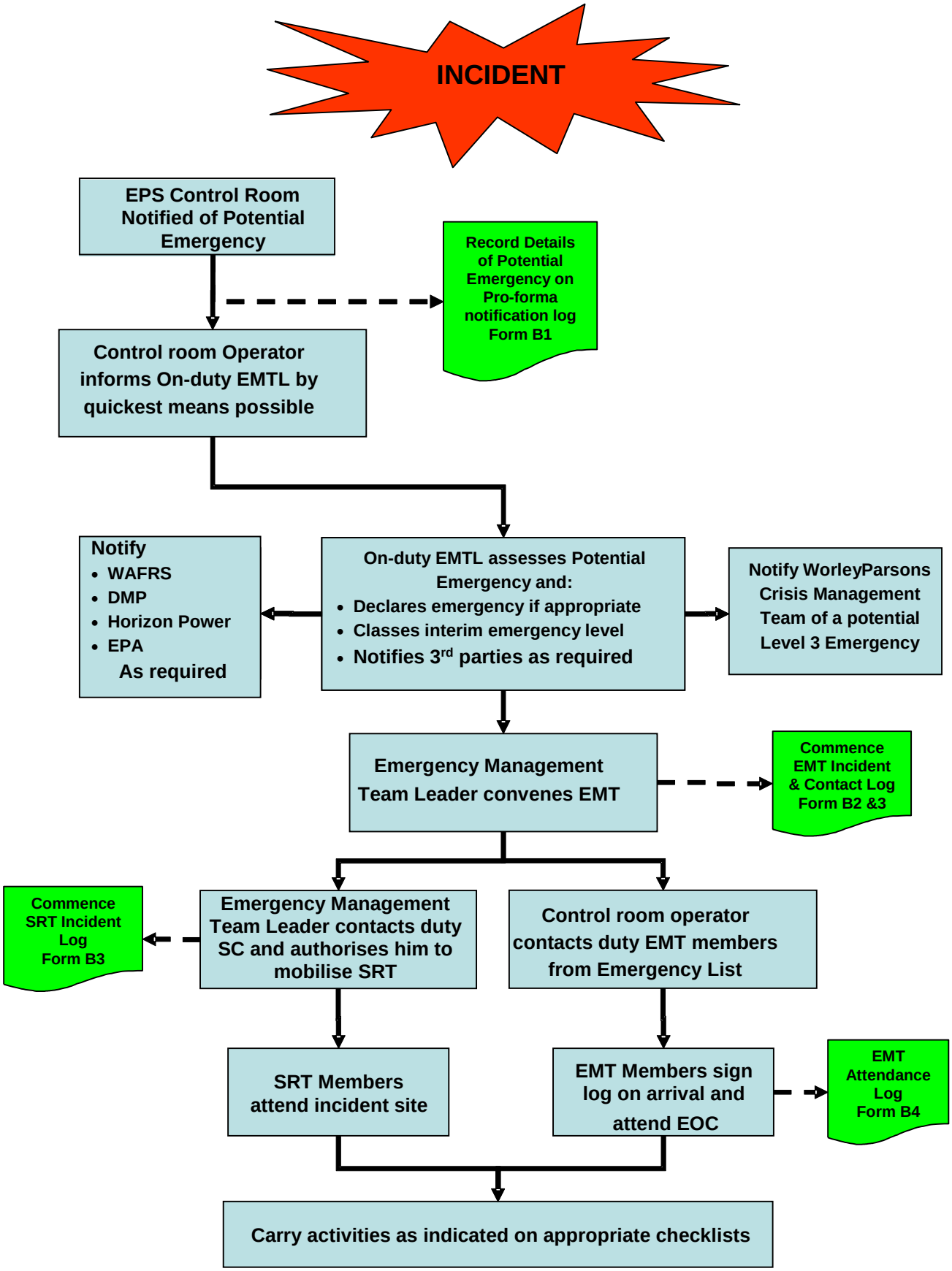
- Secure the safety of all personnel involved.
- Minimise any impact upon the environment.
- Minimise any impact on property and assets.

7.7.4 Emergency Management Structure

The Emergency Management Structure is based upon the Incident Response Team (IRT). Depending on the nature of the emergency, support will be provided to the IRT by the EPC Emergency Management Team (EMT).

The relationship between each of these groups is shown in Figure 7.5.

FIGURE 7.5: EMERGENCY RESPONSE STRUCTURE



The emergency response plan (ERP) documents the procedures, facilities and organisational roles/responsibilities required to ensure that EPC is prepared to effectively manage safety and environmental emergencies that could potentially result from the pipeline and associated facilities and any non-pipeline emergencies that may impact the KEGP.

It outlines emergency incidents that will trigger reporting requirements or notification of relevant agencies for scenarios such as gas release, explosion, major fires, odorant release, spills etc.

7.8 Decommissioning

The original design life of the pipeline was 25 years, however the Pipeline Integrity Management Plan allows for and extension of pipeline operations to 40 years or more.

Esperance Pipeline Company acknowledges a commitment to submit a de-commissioning and environmental rehabilitation plan at least 6 months prior to any planned decommissioning of the pipeline.

7.9 Consultation Held in Preparation of this EP

The following were contacted during the preparation of the various revisions of this plan:

Organisation	Representative	Comments
Department of Mines and Petroleum	Petroleum Division - Resource Safety - Environment	- Content of EP - Approvals
Department of Environment and Conservation	Petroleum Division - Perth Office - Esperance Office	- Content of EP - Approvals
WorleyParsons Safety and Risk	Malcolm Pritchard	- Risk workshops
WorleyParsons Hydrocarbons (Pipeline Systems)	Hedley Bond	- KEGP maintenance and operations - Emergency response plan
FESA	Peter Jones Manager HAZMAT Stuart McIntyre FESA District Manager, Esperance	- Site emergency exercises - Input to EPC's Emergency Response Plan
Main Roads	Randall Field	- PTA Corridor - Impact to KEGP - consultations made with key stakeholder

		- approvals
John Holland	Matt Dennison/MattTelfer	- Planned infrastructure construction activities along Harbour Road Esperance - CEMP
South Coast Natural Larvae	M. Kennewell	Release of Cactoblastis

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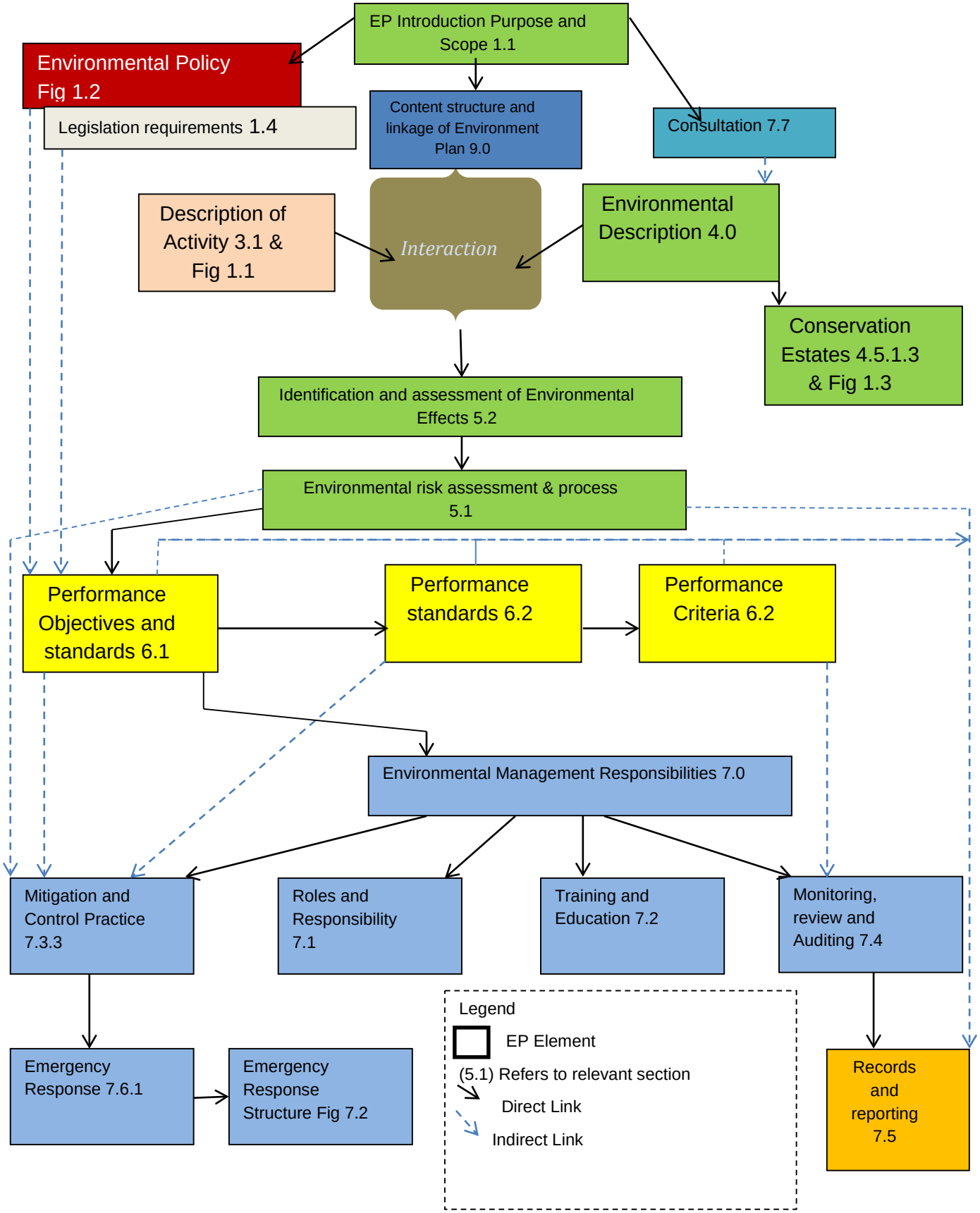
Kambalda to Esperance Gas Pipeline Project; Environmental Plan, for Esperance Pipeline Company Pty Ltd.

Emergency Response Plan, for Esperance Pipeline Company Pty Ltd

A new Rhinoplocephalus (Serpentes: Elapidae) from Western Australia, G.M. Storr.

9 CONTENT, STRUCTURE AND LINKAGE OF THE ENVIRONMENT PLAN



ATTACHMENT A – Emergency Response Plan Document C9900a85