Pancontinental Oil and Gas NL

ENVIRONMENTAL PLAN

PUBLIC SUMMARY

WALYERING 3D SEISMIC SURVEY, ONSHORE, PERTH BASIN, WA

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1. INTRODUCTION

Pancontinental Oil and Gas is an Australian based exploration company. Pancontinental Group Ltd is the operator of exploration permit EP 447 in Joint Venture partnership with UIL Energy Pty Ltd. As part of the farm-in agreement, Pancontinental is required to undertake a three–dimensional (3D) onshore seismic survey in the Perth Basin, Western Australia (WA).

This document summarises the environmental management of the proposed 3D seismic acquisition in the Perth Basin. This document has been prepared in accordance with Regulation 11(7) of the Petroleum and Geothermal Energy Resource Act 1967 (PGER Act). The DMP Guideline for the Development of the Environmental Plans, November 2016 was used as guidance for the preparation and submission of the Environmental Plan (EP).

Providing key stakeholder approvals are granted, Pancontinental is planning to commence activities in Q4 2018. Once approved by DMIRS, this EP will be used by Pancontinental personnel and Pancontinental's Contractors as a practical implementation and management tool when conducting the project activities.

Pancontinental Environmental Policy Management

Pancontinental's overarching environmental objective for the project is to avoid or minimise environmental risks to as low as reasonably practicable (ALARP) - refer to Attachment 1: Pancontinental Environment Policy. Pancontinental makes this commitment to all our workers, contractors, shareholders, stakeholders and the community.

Contractor

Pancontinental has commissioned Terrex Seismic (Terrex) to provide a plan for the acquisition of the 3D seismic survey. Terrex is an Australian owned and operated company who has been operating seismic surveys in Australia for over 30 years. Terrex will be managing the completion of all acquisition activities on behalf of Pancontinental. The procedures and other details described below are those utilised by Terrex under their Integrated Management System.

2. DESCRIPTION OF THE ACTIVITY

2.1 LOCATION

The seismic survey area is located approximately 150km by line of sight north of Perth and 20km by line of sight west of Dandaragan, within Petroleum Exploration Permit EP 447. The nearest town is Cataby that is located within the Project area. Pancontinental have designed the seismic survey to specifically image a previously identified sub-surface structure called the Walyering gas field.

2.2 GENERAL DETAILS

The Project is approximately a 92km^2 grid of orthogonal seismic lines. The source lines are in the north-south direction and are 280m apart and the receiver lines in the east-west direction are 360m apart. The total line length is approximately 595km. *Figure 2: Layout of 3D seismic survey* provided in Attachment 2 illustrates the layout of the 3D seismic survey. A summary of the key characteristics of the seismic survey and coordinates are provided in Table 1 and Table 1.1 below.

Table 1: Key characteristics of the seismic survey

Element	Description
Type of Survey	3D Seismic Survey
Nominated Contractor	Terrex Seismic
Timing	The preferred time is Q4 2018, subject to relevant environmental approvals
Duration of survey	~3-4 weeks
Total Length of Seismic lines (Km)	595km
Total extent of Vegetation Clearing	0 Ha (no clearing required)
Plant and Equipment details for the survey	Source vehicles – 4WD Utilities
Approximate number of persons involved	34
Operation hours	Daylight only

Table 1.1: Coordinates of the survey area

GDA/MGA50S	Easting	Northing
Coordinate 1	351694	6606420
Coordinate 2	354254	6607470
Coordinate 3	359794	6607480
Coordinate 4	360914	6603880
Coordinate 5	360914	6598560
Coordinate 6	357494	6595620
Coordinate 7	353914	6595640
Coordinate 8	351674	6599600

2.3 OPERATIONAL DETAILS

The Project includes the following (routine and non-routine) components:

- on-ground ecological assessment and heritage surveying;
- land access;
- pegging of seismic lines and seismic data acquisition;
- mobilisation and demobilisation;
- rehabilitation;
- emergency management and response.

On-ground ecological survey

Since June 2017 Pancontinental has undertaken a detailed desktop study of the existing environment within the Project area and carried out one reconnaissance surveys in November 2017.

Pancontinental also engaged 360 Environmental to undertake an Environmental Opportunities and Constraints (Ops and Cons) Assessment to ensure that current environmental desktop baseline data is available for environmental impact assessment and approval applications. The program also includes a single-season on-ground flora/vegetation survey. The on-ground ecological survey was carried out in November 2016. The ecological survey was carried over the areas of bushland.

Land access

Figure 3: *Tenure and Land Use* provided in Attachment 2 illustrates the tenure of the Project and surrounds. A large portion of the land within the proposed 3D seismic survey layout is currently used for agricultural purposes. The Project contains a number of live exploration and mining leases. These mineral licences and leases exist predominantly in the southern and central portion of the Project area.

A proposed power plant 'Joanna Plains Wind-Peaker Power' exists in the western portion of the Project. Infrastructure associated with the Parmelia gas pipeline is located on the western portion of the Project area. The proposed Waddi Wind Farm exists in the north-eastern portion of the Project Area.

Seismic survey lines preparation

Seismic survey lines are linear corridors along which all-terrain vehicles and trucks drive, and crew walk, during the conduct of a seismic survey.

The proposed positioning of seismic survey lines is determined by Pancontinental's geophysicist and exploration advisors, taking into account available geographic/topographic, geological and geophysical information, and the results of desktop and on-ground scouting, heritage surveys and ecological survey. Any environmentally or culturally sensitive areas identified in these surveys are either excluded from the seismic survey or alternative seismic survey methods (incorporating protective elements) are implemented (e.g. vehicle exclusion and hand carrying of geophones).

Previously the Project had a requirement to clear 50.14Ha of native vegetation using a mulcher, however through a redesign of the survey parameters that is now reduced to 0Ha of clearing. The seismic survey vehicles will be restricted to travelling on existing tracks, roads and firebreaks in the bushland areas. Geophone installation will be done by foot and hand placed, with no requirement for line preparation.

The seismic survey lines do not always have to be continuous straight lines. Seismic survey lines can be deviated from the nominal mapped alignments by up to approximately 15 - 25m without losing definition in survey results. This allows survey lines to avoid rock outcrops, large trees, soaks, creek lines and other environmental values such as populations of conservation significant flora, vegetation or fauna habitat. The images below illustrate the line surveying and acquisition processes.

P.1 Line surveying and pegging

P.2 Installing the nodal geophones

P.3 Preparing for seismic acquisition

P.4 Seismic acquisition – 'vibe trucks'

3D Seismic Data Acquisition

Pancontinental will be utilising the HEMI 60 buggy vibrator. The system is designed for high quality geophysical prospecting with a 60,000 pound output vibrator that has broad band output and a high signal to noise ratio for the deepest penetrating surveys.

Seismic data acquisition involves applying a vibrating seismic energy source, such as a vibroseis truck at discrete surface locations. The resulting energy is reflected back from interfaces where rock properties change. By recording this reflected energy at an array of geophones placed in the ground surface, the results can be processed to produce an image of underground geological structures and a range of attributes that can be used to infer the physical rock properties.

The equipment used during the conduct of a seismic survey is typically as follows:

- a series of microphones (called geophones), which are placed in a line on the ground (~20m apart);

- low impact trucks ('vibe-trucks'), equipped with vibrating pads which travel along the seismic lines and introduce vibrations (which are picked up by the microphones) into the ground (~20m apart);
- a central control unit (located in a truck/ute), which sends the control signal to the 'vibe-trucks';
- a fleet of vehicles (including 4wds, trucks, low loaders and earthmoving equipment) for creating seismic lines, and transporting crew, supplies and equipment.

These processes are illustrated above on Photo 3 - Photo 4.

Workforce accommodation

Different personnel, equipment and supplies will be required over the life of the Project. As such there will be two separate mobilisation phases for the Project. The first phase being surveying and line preparation and the second, acquisition.

Phase one will require up to 4 personnel on site, while phase two will require up to 20-25 suitably qualified and experienced personnel. Personnel will be accommodated locally at existing nearby accommodation, potentially in Cataby or Dandaragan. There will be no onsite camp established as part of the Project.

Water Use

As personnel will be housed off site, water use for the Project will not be required.

Demobilisation and Rehabilitation

The majority of disturbed areas will be rehabilitated immediately following completion of the survey. Disturbed areas will require only minor civil works to return them to a condition similar to that of surrounding undisturbed areas. Rehabilitation works will be undertaken to establish a safe stable non-polluting landform similar to that of surrounding undisturbed areas.

On private farmland, Pancontinental will discuss preferred compliant rehabilitation requirements with affected landholders prior to undertaking the seismic activities and will revisit this with the affected landholders as soon as the seismic activities are completed. Rehabilitation will be completed as soon as practicable following completion of the survey but no later than 6 months after completion of the seismic activities and a written statement is obtained from the relevant landholder.

2.4 DETAILS OF CHEMICALS AND OTHAR SUBSTANCES

Regulation 15(9) of the PGER(E) requires an Environment Plan to disclose the details of all chemicals to be used in the course of the petroleum activity. Chemical disclosure is required for all 'down-hole' petroleum or geothermal related activities, including seismic activity. Pancontinental does not plan to undertake any seismic upholes during the course of this project.

3 EXISTING ENVIRONMENT

3.1 PHYSICAL ENVIRONMENT

The Project is located in the Shire of Dandaragan within the Wheatbelt Region of Western Australia. The area has a Mediterranean climate, with mean minimum of approximately 13.6˚C and a mean maximum of 24.2˚C. Average annual rainfall is 600.2 mm (BoM 2016).

The elevation ranges from 80 m Australian Height Datum (AHD) in the south-western corner to 220 m in the northern portion of the Project area (Geoscience Australia 2008). The Project area is located in the Perth subregion (SWA02) of the Swan Coastal Plain bioregion and the Lesueur Sandplain subregion (GES02) of the Geraldton Sandplains bioregion.

The Project area is located within a number of separate catchment areas. Each catchment area is associated with the significant streams in the landscape. Mullering Brook flows through the very north-western portion of the Project area (DoW 2015). Another watercourse called Minyulo Brook flows through the Project area from the north-eastern portion to the western portion of the Project area. The Douaraba Swamp exists along the Minyulo Brook within the Project area. A minor tributary

flows from the swamp to the south-western portion of the Project area (DoW 2015). Eneminga Brook a major drain flows through the southern portion of the Project area. Figure 5, Attachment 2, illustrates hydrology within the Project area.

The Project area is located in the Perth subregion (SWA02) of the Swan Coastal Plain bioregion and the Lesueur Sandplain subregion (GES02) of the Geraldton Sandplains bioregion.

No extraction of surface or groundwater is proposed for the seismic survey. No activities are proposed that will interact with surface or ground waters. The Project area does not fall within any Priority Drinking Water Source Areas (PDWSAs).

3.2 BIOLOGICAL ENVIRONMENT

Based on Pancontinental's desktop study, reconnaissance surveys and the on-ground ecological survey undertaken by 360 Environmental Pty Ltd (360 Environmental) on 22- 24, 29 & 30 November 2016, no Threatened species pursuant to the EPBC Act 1999 and/or gazetted as Declared Rare Flora (DRF) pursuant to the Wildlife Conservation Act 1950 (WC Act) were recorded during the survey.

A total of 56 taxa (including species, subspecies, varieties and forms) from 34 genera and 14 families were recorded in the ecological survey area. The commonly occurring families were; Myrtaceae (19 taxa), Restionaceae (11 taxa) and Proteaceae (6 taxa).

A total of 5 Priority flora species were recorded in the ecological sur vey Area. The species names and the number of individuals recorded, in brackets, are as follows: *Lyginia excelsa* P1 (195), *Babingtonia delicata* P1 (12), *Beaufortia eriocephala* P3 (18), *Conostephium magnum* P4 (107) and *Eucalyptus macrocarpa subsp. elachantha* P4 (30).

Several wetlands were recorded across the Project area. The wetland vegetation conditions ranged from Very Good to Degraded. This was due to a varying degree of disturbance from weeds, kangaroos and historical clearing. Introduced species were observed during the survey; however no Declared Plants, as listed under the Biosecurity and Agriculture Management Act 2007 (BAM Act) or Weeds of National Significance (WONS) were recorded.

There were no Conservation Category Wetlands (CCW), as defined by The Department of Parks and Wildlife (DPaW) Geomorphic Wetlands Dataset, identified in the Project area. Nor were any Bush Forever sites or Regional Ecological Linkages identified. There are several small pockets of ESA's located within the Survey Area. These pockets represent the historical locations of T/ DRF and their buffer zones.

Six natural vegetation associations were described for the Survey Area. In addition to the associations, four vegetation units were mapped, these included areas that have been altered by disturbance.

The intact native vegetation of the ecological survey area was Banksia spp. Woodland (BW30% & BW10%), Proteaceous Heath, Riparian vegetation, Corymbia calophylla/ Eucalyptus spp. Open Woodland and a Closed Heath. The remaining vegetation of the ecological survey area consisted of rehabilitated vegetation and cleared areas that contained *Eucalyptus spp*. and/ or *Melaleuca spp*. over weedy grasses.

The Project area is not part of any Regional Ecological Linkage as defined by the Perth Biodiversity Project's Draft Regional Ecological linkage network.

A DPaW NatureMap Fauna Search and a DotE Protected Matters Search was undertaken with a 10km buffer from the centre of the Project (DPaW 2016; DotE 2016). The NatureMap Report identified one Threatened fauna species, one Priority 1 fauna species, three fauna species protected under international agreement and one other specially protected fauna species as occurring within 10km of the centre of the study area (360 Environment, 2016).

The DoE Protected Matters Search Tool identified four Threatened fauna species and four Migratory species as occurring within 10 km of the centre of the Project area (Desktop report, 360 Environment 2016).

Majority of the conservation significant fauna species identified in the State and Federal database searches are bird species and therefore are unlikely to be impacted by the movement of trucks within the Project area. The only ground dwelling conservation significant fauna identified in the searches are the land snail (*Bothriembryon perobesus*), Malleefowl (*Leipoa ocellata*) and Chuditch (*Dasyurus geoffroii*). These species are not likely to be significantly impacted by the temporary use of the site by vehicles.

3.3 HERITAGE

A search of the Department of Aboriginal Affairs (DAA) Aboriginal Heritage Inquiry System identified a number of 'Other Heritage Places' and one 'Registered Site' within the Project area, DAA 2015. *Figure 5*, Attachment 2 provides locations of registered cultural heritage sites. The Registered Site, Mullering Brook (Place ID. 4640) runs through the very north-western corner of the Project area. This site is registered due to mythological significance of the brook to the aboriginal people.

A search of the Heritage Council of Western Australia inHerit database did not identify any State Heritage Places within or nearby the Project area (State Heritage Office 2016).

Pancontinental has Heritage Protection Agreements in place with the Yued People. Management of cultural heritage will be undertaken in accordance with the provisions of these Agreements. Pancontinental Management recognises the need, and is committed to the preservation of Indigenous and European cultural heritage and artefacts. Bombora will conduct operations with regard to areas of cultural significance.

4 ENVIRONMENTAL RISK ASSESSMENT

An evaluation of environmental risks and impacts in relation to the Project was carried out in accordance with the methodology and principles outlines in the Australian and New Zealand Standard *AS/NZS ISO 31000:2009 Risk management* and HB 203:2006 *Environmental Risk Management – Principles and Process.* The main operational aspects or elements of the seismic survey in the risk identification process are:

- Seismic lines preparation;
- Driving seismic vehicles to acquire data;
- General activities;
- Unplanned and non-routine events;
- Interaction with services and stakeholders
- Rehabilitation.

Table 2: Environmental Risk Assessment, Objectives, Performance Indicators and Measurement Criteria provides a summary of the risk assessment including impact descriptions, mitigation and management measures proposed for individual impacts. The proposed mitigation and management measures will be implemented throughout the survey to reduce environmental risks to ALARP.

Should any risks or impacts change prior to the commencement of the project, Pancontinental will notify the DMIRS. This EP will be revised and changes will be resubmitted to the DMIRS for approval as required by Regulation 11(7) (8) of the PGER (Environment) Regulations 2012.

5 MANAGEMENT APPROACH

Pancontinental's overarching environmental objective for the project is to avoid or minimise environmental risks to as low as reasonably practicable (ALARP). Pancontinental has developed specific performance objectives for the Project to meet Pancontinental's Environment Policy commitments, protect identified environmental values and reduce impacts on the environment to ALARP.

To ensure Pancontinental's environmental commitments are met, environmental performance indicators have been established for each objective. Environmental performance will be measured and reported against these indicators as part of the Pancontinental's commitment to continuously improve environmental, health and safety performance. The specific objectives and performance indicators for each environmental aspect of the project are summarised in *Table 2* below.

Pancontinental developed specific management plans that details proposed management initiatives and practices that will be implemented to avoid and mitigate impacts to identified environmental values. With the application of these management commitments, the risk assessment identified that the overall residual impact to identified environmental aspects is considered to be medium to low.

Table 2: Environmental Risk Assessment Summary

Hazard	Potential Impact	Pre-treatment			Performance objective	Mitigation measures/ management control	Post-treatment		
		likelihood	Consequence	Inherent risk			likelihood	Consequence	Residual risk
Line preparation, seismic trucks and support vehicles movements during seismic acquisition	Temporary disturbance to native vegetation, flora and fauna species and its habitat.	D	3	High	No impact to environmentally sensitive areas and conservation significant flora and fauna species and its habitat.	Initially, the proposed activity involved the clearing/mulching of 40.11 ha of native vegetation to allow the seismic trucks to gain access into the survey area. Pancontinental has used the mitigation hierarchy to further reduce environmental impacts by redesigning the seismic survey layout to eliminate clearing of native vegetation. No clearing of native vegetation is proposed within the survey layout. Existing tracks and firebreaks will be used as access tracks for the seismic trucks instead of clearing/mulching source and receiver lines. Instead of clearing/mulching receiver lines, trained personnel will walk into vegetated areas and place geophones manually on the ground. Mitigation measures and management control will be in accordance with Pancontinental's Native vegetation, flora and fauna Management Plan.	A	1	Low
	Soil compaction, rutting, erosion and alteration to local drainage	C	1	Low	Avoid and minimise soil disturbance and avoid alteration to drainage and direct watercourse crossing.	The project will be carried out during dry weather conditions. No topsoil disturbance including removal of topsoil is proposed. Most vehicle and machinery movements will be at very slow speed. There will be no off-road driving, traversing or creation of short-cuts, traffic will be restricted to designated corridors only. Mitigation measures and management control will be in accordance with Pancontinental's Soil and Land Management Plan.	B	1	Low
Introduction or spread of weeds, plant diseases and feral fauna through use of survey equipment (geophones) and vehicles movements	Loss of native vegetation, flora species and fauna habitat.	C	4	High	Avoid and/or minimise the introduction or spread of weeds or pathogens and feral fauna	Eliminating the risk of introducing or spreading weeds or pathogens is not possible. However, this risk can be reduced by avoiding clearing of native vegetation and soil disturbance during wet conditions. Initially, Pancontinental proposed to clear 40.11 ha of native vegetation. To further reduce environmental impacts Pancontinental redesigned the seismic survey to eliminate clearing of native vegetation. No clearing of native vegetation and therefore disturbance of soil is proposed thus reducing the potential for weed invasion and spread. Mitigation measures and management control will be in accordance with Pancontinental's Weeds, Pathogens and Pest Management Plan.	B	2	Low
	Increase in feral fauna species, increased predation and competition for resources through accessibility and use of linear pathways	B	2	Low			A	1	Low
Fuel combustion from the seismic trucks and support vehicles	GHG emissions and contribution to climate change	C	1	Low	Reduce GHG emissions and air pollution and	Population within the project area is sparse. The project activities will be limited to approximately 25-29 vehicles with total fuel consumption during the project life of approximately 32-35kL. The ambient noise levels near the vibrator will not exceed 75dBA at 7m. Seismic acquisition is planned during daylight time only (7am to 6pm) and is unlikely to exceed the noise criteria for 4WD vehicles set out in WA Environmental Protection (Noise) Regulations 1997. Consultation with relevant utility operators. Mitigation measures and management control will be in accordance with Pancontinental's Air Pollution, Noise and Vibration Management Plan.	B	1	Low
Generation of acoustic signals (vibration) and noise	Nuisance or disturbance to sensitive receptors (landholders, native wildlife, water bores, public utilities and belowground infrastructure).	B	3	Medium	Minimise noise/vibration impacts on sensitive receptors		A	1	Low
Waste generation during the project operations	Visual pollution generated by litter, contamination of soil, modification of native and feral fauna habitat.	C	1	Low	Optimise waste avoidance, reduction, reuse, recycling, treatment and disposal.	Given the relatively short-term life of the project, no significant amount of waste is expected during the project. Waste will be limited to daily waste generation equal to average household waste generation generally associated with daily human activities (kitchen scraps, sewage, paper and packaging material). Mitigation measures and management control will be in accordance with Pancontinental's Waste Management Plan and Terrex's Procedure for Housekeeping and Waste Disposal (TS-PRO-40, Rev 3, Jan 2017).	A	1	Low
Disturbance to cultural and historical heritage sites of significance during lines preparation and seismic acquisition	Loss of site and artefacts, disruption of Indigenous activities.	B	3	Medium	Avoid disturbance to sites of cultural and heritage significance	There are a number of aboriginal heritage sites (registered and lodged) within the Project area. The locations of the cultural heritage sites are known and defined as "no-go' zone. No data acquisition north of Mullering Brook. On-going consultation with the Yued People during planning, acquisition and completion of the survey and Heritage Protection Agreement (HPA) are in place. Mitigation measures and management control will be in accordance with Pancontinental's Cultural Heritage Management Plan and the Heritage Protection Agreement with the Yued People.	A	1	Low
Interaction with public services, industries, agricultural activities and infrastructure during seismic acquisition.	Unavailability/ inaccessibility of services (ambulance, police, rescue brigade) for local community. Damage to the road surface, impact the efficiency, safety and amenity of roads. Impact on crop or stock, nuisance to and restriction of landholder activities.	A	1	Low	Minimise interference to existing land use, infrastructure and public services	All project activities on private properties will be coordinated in accordance with Land Access Agreements. Approved Safety Management Plan, Emergency Response Plan and Traffic Management Control will be in place prior to the commencement of the ground activities. Appropriate speed limits for seismic trucks and support vehicles will be applied in the field. Stakeholder consultation including Landholders and infrastructure operators have been undertaken during the planning stage and will be ongoing during the survey. Mitigation measures and management control will be in accordance with Pancontinental's Social and Agricultural Interaction Plan and Safety Management Plan.	A	1	Low
Refuelling of seismic trucks and equipment on-site. Mobile fuel	Escape of hazchem and liquid hydrocarbons <70L resulting in localized contamination of soil contamination and land	C	2	Medium	Prevent spills and minimise impacts from spillage, leakage and other escape of	The project will involve a refuelling in the field using a mobile service tank. It is expected that the mobile fuel service tank will have capacity of approximately 2,000L of fuel. The tank will be self-bunded and manufactured in accordance with *Australian Standards 1940:2004 and 3780:2008*. This risk assessment is based on a spill greater than 70L (reportable amount) but limited to the maximum amount of 2,000L spill (the worst case scenario).	B	1	Low

Hazard	Potential Impact	Pre-treatment			Performance objective	Mitigation measures/ management control	Post-treatment		
		likelihood	Consequence	Inherent risk			likelihood	Consequence	Residual risk
service tank operations. Vehicle/ equipment accident or component failure.	degradation.				hazardous substances.	Chemicals and substances other than diesel fuel Terrex transports in vehicles and containers that meet road safety standards for transportation of all such chemical. Amount of chemicals and substances other than diesel fuel will not exceed 20L container each. In the event of an accident on the road which resulted in a spill, Terrex will respond in accordance with Terrex TS-PRO-32 – Emergency Preparedness and Response and notify the road safety authorities as it is obligated to do as a fuel transporter. Refuelling will be undertaken in accordance with Pancontinental's minimum requirements for refuelling and Terrex TS-SOPMECH008 and TS-SOP-GEN019. All materials will be stored and handled in accordance with *Australian Standards 1940:2004 and 3780:2008*, manufacturer's instructions and as described in MSDS for each identified material. A *Hazardous Materials Register* will be maintained by Terrex and MSDS for each registered material will be available on-site. All vehicles including a mobile fuel service tank will be equipped with suitable clean up equipment (spill kit). In case of spill, the spill will be managed in accordance with the OSCP. Field personnel will be trained to implement the OSCP. The spill drill will be part of the Emergency Response drill and performed prior to the survey. In case of an environmental damage caused by a spill resulting from the Project activities, Pancontinental is responsible to complete necessary restoration activities. A spill incident will be reported to the DMIRS in accordance with Reg.28 of the PGER (E) Regulations 2012. Mitigation measures and management control will be in accordance with Pancontinental's Oil Spill Contingency Plan.			
	>70L but limited to 2,000L spill of hydrocarbons from rupture of the mobile service tank resulting in soil, water contamination and land degradation contained to the refuelling site area. Increase risk of fire	B	3	Medium			A	3	Medium
Fire resulting from refuelling, primary ignition sources from working equipment, machinery exhausts, electrical systems, cigarette butts, 3rd party activities, authorised burning, vandalism.	Smoke hazard, injury or death of native fauna, GHG emissions, changes to ecological values, damage to properties.	C	4	High	Avoid and prevent fire	Consultation with the DFES will take place prior to the project activities. An approved *Emergency Response Plan* will be implemented. Fire drill and use of fire-fighting equipment training will be conducted prior to the commencement of the activity. Consultation with the Local Fire Authority will take place prior to seismic activities. A water truck with a 2,000L water tank and firefighting equipment will be with the crew at all times. Each 4WD vehicle will be equipped with correct fire extinguishers. Field personnel will be inducted including smoking and driving behaviour. Smoking will be prohibited within high risk fire areas and during total fire ban period unless designated smoking areas established. Lighting of fires will be prohibited. All vehicles will use diesel fuel. Emergency services will be contacted on 000 in case of uncontrolled fire. Mitigation measures and management control will be in accordance with Pancontinental's Fire Response Plan.	A	3	Medium
A failure to successfully complete rehabilitation	Degradation of land through soil erosion, introduction of weeds, pests and pathogens.	B	3	Medium	Rehabilitate disturbed areas similar to pre-clearing conditions to ensure original ecological function is established	The disturbed areas will be restored immediately following completion of the survey. Due to no clearing of native vegetation is proposed, the disturbed areas will require only minor civil works to return them to a condition similar to that of surrounding undisturbed areas. Mitigation measures and management control will be in accordance with Pancontinental's Rehabilitation Program.	A	1	Low

6 IMPLEMENTATION STRATEGY

The implementation strategies were developed to ensure environmental objectives are met and performance indicators are achieved over the course of the Project. The strategy describes specific mitigation measures and management practices that will be applied to the operations to reduce environmental impacts to land, water, air and cultural heritage.

Once this Environmental Plan is approved, these practices and procedures will be used by Pancontinental personnel and Pancontinental's contractors and sub-contractors as a practical implementation and management tool when conducting the Project activities. In order to ensure that the environmental objectives are achieved all field personnel including Pancontinental, contractors and sub-contractors must comply with this EP. In addition, the approved Safety Management Plan (SMP) and contractor's Site Specific Management Plan (SSMP) will be implemented to assist with management of safety and emergency responses.

The Pancontinental Site Representative will be present in the field at all times during the survey and will ensure that Pancontinental's environmental requirements are met in all aspects of the survey's operations. This will be verified via audits, inspections, monitoring and review.

Pancontinental will ensure that all contractors and sub-contractors have the following documents and procedures in place prior to commencement of the survey:

- Copy of this approved EP and associated reporting and compliance documents
- Site Specific Management Plan
- Oil Spill Contingency Plan
- Emergency Response Plan (ERP)
- Re-fuelling procedure
- Records of field personnel trainings and inductions.

6.1 ROLES AND RESPONSIBILITIES

The survey specific roles and responsibilities are detailed in implementation strategies. Pancontinental will appoint Terrex Seismic as the Principal Contractor to deliver the project. The Contractor's responsibilities will be incorporated into a bridging document prior to the commencement of the seismic survey.

Generally, the seismic contractor is responsible for surveying the seismic lines and acquiring the seismic data. The contractor will be responsible for exhibiting an environmental "duty of care" and meeting Pancontinental's environmental objectives described in this Plan. Pancontinental is responsible for clearly defining and communicating the project management and responsibilities for the seismic survey, monitoring the seismic line preparation and data acquisition and ensuring that disturbed areas are rehabilitated as soon as practical and that rehabilitation performance indicator are met.

Pancontinental Site Representative will be present in the field during activities. The Terrex Crew Manager is responsible for reporting daily on operations activities to the Pancontinental Site Representative. Pancontinental Land Access Officer will organise land access on private properties and ensure compliance with land access protocols. Pancontinental Project Manager will be responsible for compliance with approved EP including inspections, monitoring, data collection and reporting as prescribed under relevant regulations.

All Pancontinental personnel, contractors and sub-contractors must comply with this Environmental Plan.

6.2 TRAINING, INDUCTION AND COMPETENCIES

All personnel will be suitably trained and experienced in the works that they are to perform. Contractors shall maintain and provide to Pancontinental a Competency Training and Induction Matrix including details of qualifications and competencies for their team members. Personnel are obliged to have valid certifications and medicals prior to the project activities and provide copies when requested.

All workers (including contractors and subcontractors) are required to complete field induction. Training, induction and awareness content and how this relates to the responsibility of personnel are addressed in the implementation strategy framework for each objective or group of objectives. All field personnel including Pancontinental employees, contractors, visitors, auditors etc. will be required to attend field induction prior to activities. All workers will be made aware during induction of relevant environmental obligations to perform their jobs in an environmentally responsible manner.

6.3 ENVIRONMENTAL REPORTING

Incident reporting will be undertaken in accordance with Regulation 16, 28, 29 and 30 of the PGER(E) Regulations 2012 and as prescribed in s.3.8 of the Guideline for the Development of the Environmental Plans in WA, DMP 2016.

Regulation 28 of the PGER (E) Regulations requires Pancontinental to report to DMIRS any reportable incident that classified as a reportable incident in the Environment Plan for the project; or an incident has caused, or has the potential to cause, an adverse environmental impact; and an environmental impact that has been categorised as moderate or more serious than moderate under the environmental risk assessment process described in the EP.

DMIRS will be notified via email petroleum.environment@dmirs.wa.gov.au or via DMIRS Submissions Portal within two hours of Pancontinental Site Representative becoming aware of a reportable incident occurring. In addition to the notification provided to the DMIRS, Pancontinental will submit a written report to the DMIRS within three (3) days of the initial notification. The DMIRS Environmental Incident Report Form template ENV-PEB-189, Rev3.0, 2012 will be used.

Recordable incidents will be reported to DMIRS in accordance with Regulation 30 (4d) of the PGER (E) Regulations. Any incident that occurs during the project and which breaches an environmental performance objective or standard in this EP, but is not reportable, is a recordable incident.

Pancontinental will maintain a record of all recordable incidents that occur during the Project activities and report to DMIRS no later than 15 days following the end of each calendar month.

In accordance with Regulation 34 of the PGER (E) Regulations, Pancontinental will report to DMIRS on a three monthly basis the estimated emissions and discharges to the environment as a result of the project. This reporting will commence immediately upon beginning the project and will continue until completion of the project.

Pancontinental will provide an environmental close-out report within three (3) months of completion of the seismic activities. The close-out environmental report will summarise environmental performance of the project activities to enable DMIRS to determine whether the EP objectives have been achieved, performance indicators are met and the implementation strategy complied with.

In addition to the close-out report, an annual rehabilitation report covering the ongoing rehabilitation and monitoring activities will be submitted to DMIRS within 12 months following the completion of the seismic activities. Annual rehabilitation report will be submitted annually for a period until the rehabilitation is considered successful.

7 STAKEHOLDERS CONSULTATION

Consultations have been undertaken with the following stakeholders:

- DMIRS
- South West Aboriginal Land & Sea Council
- The Yued People
- Department of Lands
- Department of Main Roads
- Shire of Dandaragan
- Cataby Roadhouse
- Landholders
- Iluka Resources Ltd
- Cooljarloo Mine, Tronox Pty Ltd

- APA Group (Parmelia pipeline)
- Terrex Seismic

Land Access Agreements with various land users and landholders have been finalised. Consent from APA Group was granted to work in and around the pipeline to a buffer of 25m of the gas pipeline. Consent from the Shire of Dandaragan was granted to access the reserve and road reserve areas. No concerns were raised from the Departments of Lands and Main Roads.

Pancontinental will continually consult with relevant government authorities, community, interested third parties and organisations on all operations, as required until the project is completed.

8 CONTACTS

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Abbreviations

ALARP	As low as reasonably practical
ATR	Action Tracking Register
Pancon	Pancontinental Oil and Gas NL
2D	Two Dimensional
DAA	Department of Aboriginal Affairs
DRF	Declared Rare Flora
EP	Environmental Plan
EP	Exploration Permit
EP447	Petroleum Exploration Permit EP447
EP Act	Environmental Protection Act 1986
OEPA	Office of the Environmental Protection Authority
EPBC	Environmental Protection and Biodiversity Conservation Act 1999
ESA	Environmentally Sensitive Area
ERP	Emergency Response Plan
IMS	Integrated Management System
DFES	Department of Fire and Emergency Services
GHG	Greenhouse Gas
GIS	Geographical Information System
GPS	Global Positioning System
HSE	Health, Safety and Environment
MSDS	Material Safety Data Sheets
NR	Nature Reserve
NP	National Park
PGER Act	Petroleum and Geothermal Energy Resources Act 1967
PPE	Personal Protective Equipment
SSMP	Site Specific Management Plan
SMP	Safety Management Plan
OH&S	Occupational Health & Safety
OSCP	Oil Spill Contingency Plan
UCL	Unallocated Crown Land
UHF	Ultra High Frequency
WA	Western Australia

ATTACHMENT 1: PANCONTINENTAL ENVIRONMENTAL MANAGEMENT POLICY

PANCONTINENTAL
Oil & Gas NL

PANCONTINENTAL OIL & GAS NL – ENVIRONMENT AND SUSTAINABILITY POLICY

Scope:

This policy covers all Pancontinental Oil & Gas NL activities that impact on the environment. We are committed to planning and undertaking operations in a manner which minimises our impact on the environment and supports the sustainable development of the area of operations.

At Pancontinental, we work towards ensuring that we:

- Comply rigorously with environmental laws and regulations.
- Are committed to within our facilities and operations acting to reduce our rates of emissions, energy and waste.
- Are committed within our facilities and operations to minimise impact to the environment in which we operate.
- Build a clear understanding of the risks to our company of key environmental issues and building strategic plans to address these risks.
- Develop a culture of sustainable environmental management by:
  - developing the awareness and involvement of our Board and employee;
  - implementing systems for environmental management;
  - setting objectives and associated monitoring systems to enable continuous improvement processes.
- Actively consider the use of alternative energy sources, and low emissions technology, as these become economically viable.
- Environmental management across our company, partners and stakeholder.
- Incorporate environmental considerations into our business decision-making processes.
- Engage with our contractors, joint venture partners and stakeholders to develop improved environmental sustainability practices.
- Review this policy and our performance every two years against our environmental targets.

John Begg
Chief Executive Officer
Pancontinental Oil & Gas NL

4 July 2018

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ATTACHMENT 2: FIGURES

Figure 1 – Regional location of the project area

Figure 1: Layout of 3D seismic survey overlaid on Google Earth map

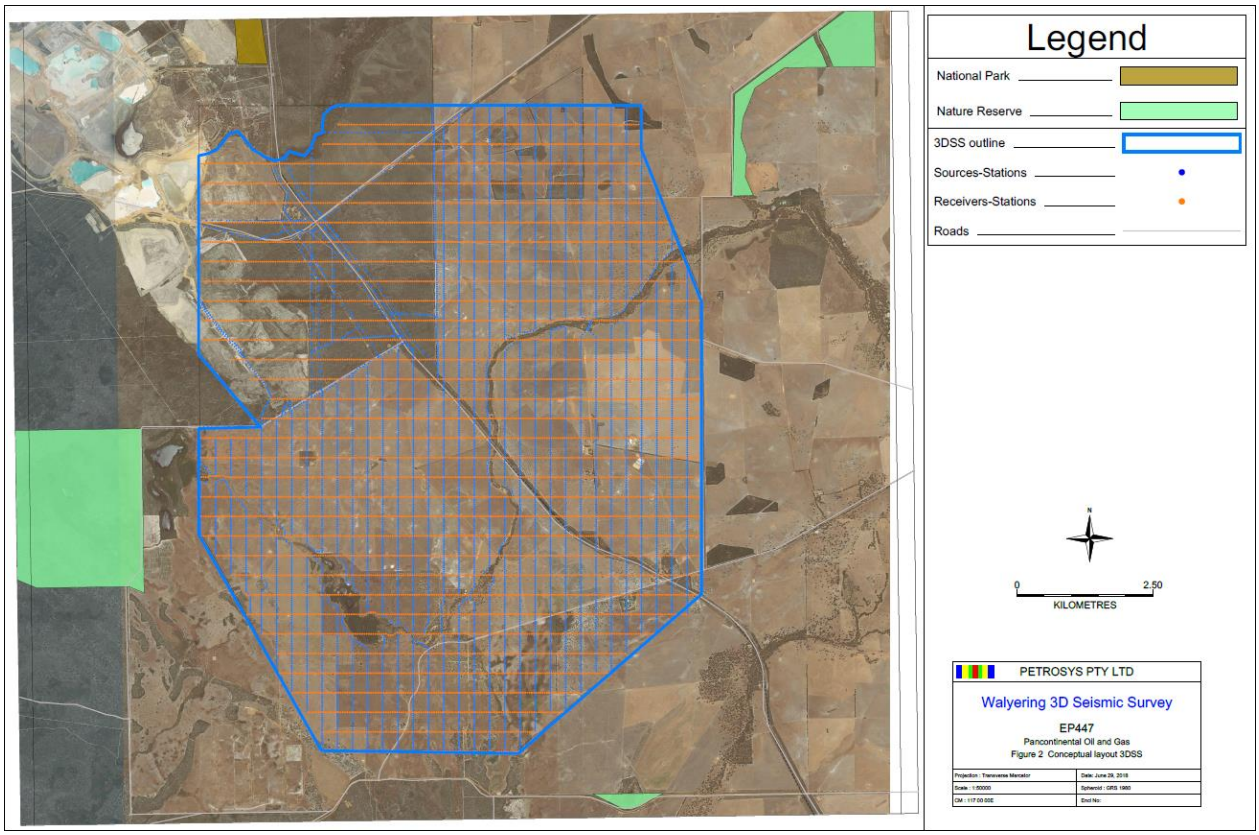

Figure 3: Tenure and Land use

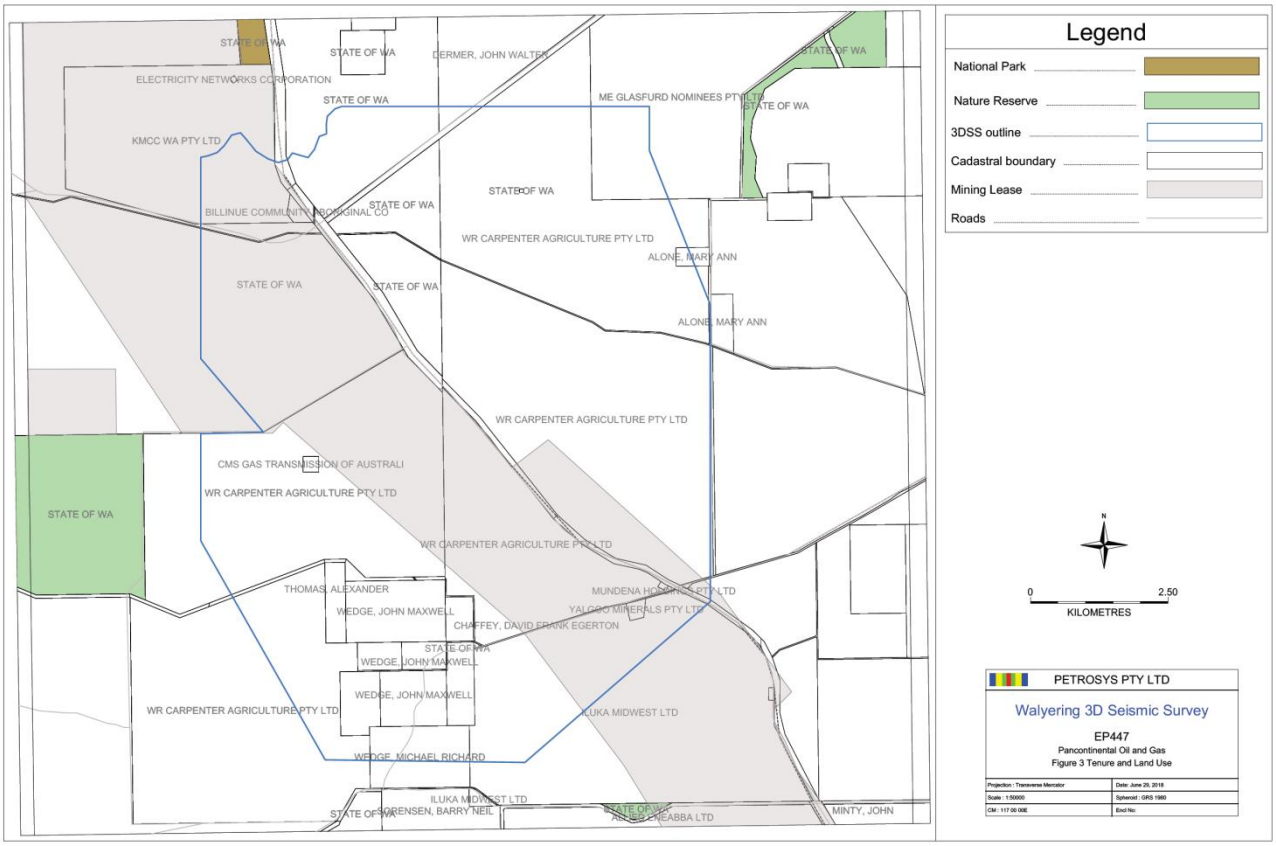

Figure 4: Environmentally Sensitive Areas

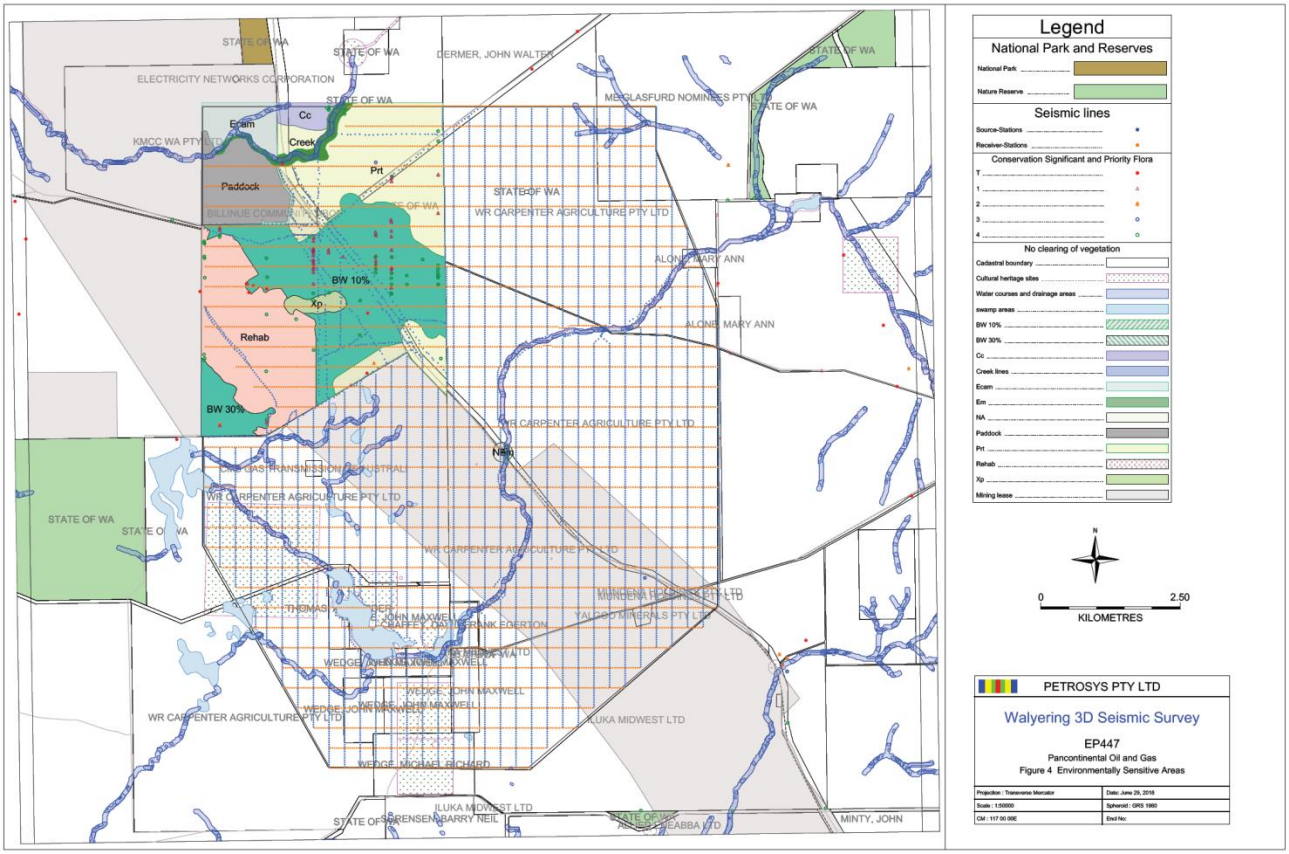

Figure 5: Hydrology and Cultural Heritage Map