



## STATEMENT OF ENVIRONMENTAL OBJECTIVES

Geophysical Operations in the Anangu Pitjantjatjara Yankunytjatjara Lands  
Region of the Officer Basin.

July 2009

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## 1. EXECUTIVE SUMMARY

This Statement of Environmental Objectives (SEO) for Geophysical Operations in the Anangu Pitjantjatjara Yankunytjatjara Lands region of the Officer Basin has been prepared in accordance with the requirements of Sections 99 and 100 of the *Petroleum Act 2000*.

The environmental objectives outlined in this SEO have been developed based on the Environmental Impacts Report (EIR) for the Anangu Pitjantjatjara Yankunytjatjara Lands region of the Officer Basin (Coffey Natural Systems, 2009).

The SEO describes the environmental objectives to be achieved whilst undertaking geophysical exploration and specifically on the Anangu Pitjantjatjara Yankunytjatjara Lands within Petroleum Exploration Licence (PEL) 138 and Petroleum Exploration Licence Applications (PELAs) 147 and 148. It also details defined conditions, assessment methods and criteria by which performance can be gauged and the required compliance auditing and reporting process.

This SEO has been developed by Coffey Natural Systems on behalf of Ahava Energy and has been subject to a rigorous process of consultation and feedback to ensure that all issues of concern among landowners and stakeholders have been adequately addressed.

Conditions of access have been negotiated between Ahava Energy and Anangu Pitjantjatjara Yankunytjatjara Executive Board and the relevant Traditional Owners regarding petroleum operations on the Anangu Pitjantjatjara Yankunytjatjara Lands. These conditions of access to the Lands are described in the conjunctive land access agreement for petroleum operations in Ahava Energy's PEL(A)s signed on July 14 2009. If any of the conditions of this agreement are breached, it will also be deemed to be a breach of this SEO. This is an active commitment made by Ahava Energy and is a regulatory stipulation of the Department of Primary Industries and Resources (PIRSA).

The land access agreement applies to PEL 138 and PELA 147 and 148. However, section 7 of the *Anangu Pitjantjatjara Yankunytjatjara Land Rights Act 1981* requires that Anangu must first obtain consent from the Traditional Owners prior to finalising any agreement in respect of those lands. This consultation process has already occurred for PEL 138 but not yet for PELA 147 and 148.

Consequently the agreement has been drafted so that it applies immediately to PEL 138 and provides for the section 7 process to be undertaken for the areas of PELAs 147 and 148. Once consultation has occurred, and if consent is given, the land access agreement contains a mechanism whereby the areas of PELA 147 and 148 are "brought into" the agreement and its terms apply to those areas.

## 2. INTRODUCTION

Ahava Energy currently holds PEL 138 and has two Petroleum Exploration Licence Applications (PELAs 147 and 148) in the Anangu Pitjantjatjara Yankunytjatjara Lands region of the Officer Basin. A requirement of the *Petroleum Act 2000 and Petroleum Regulations 2000* is that no regulated activity (such as seismic exploration for petroleum) under a licence can be carried out unless an approved statement of environmental objectives (SEO) has been developed and approved.

Geophysical exploration is defined as a regulated activity under the *Petroleum Act 2000* and therefore requires an approved SEO for the area or land system in which the activity is to be carried out. The *Petroleum Regulation No. 12* details that an SEO must contain:

- Environmental objectives relating to the relevant activity.
- Criteria to be used to measure and assess the achievement of the environmental objectives.

This SEO describes Ahava Energy's environmental objectives and the defined conditions that will be used to measure the achievement of the environmental objectives of geophysical exploration within the Anangu Pitjantjatjara Yankunytjatjara Lands region of the Officer Basin. This SEO outlines the auditing requirements of Ahava Energy, as well as other methods that may be applied by Ahava Energy, the government, landowners or other stakeholders to evaluate the level to which the described environmental objectives are achieved. These objectives reflect the findings of the EIR, prepared by Coffey Natural Systems (2009), for this regulated activity.

For the purpose of this document, 'environmental objectives' include objectives for the protection of the way of life of Anangu Pitjantjatjara Yankunytjatjara people. Throughout this document, peoples belonging to the Anangu Pitjantjatjara Yankunytjatjara Lands are referred to as, 'Anangu', meaning 'people'.

This document has also been prepared in the context of a broader program of environmental and social planning on the Anangu Pitjantjatjara Yankunytjatjara Lands, driven by the Anangu Pitjantjatjara Yankunytjatjara Executive Board. In anticipation of future resources development, the Executive Board has taken active steps to ensure such activities on the Anangu Pitjantjatjara Yankunytjatjara Lands act as a stimulus for broader improvement of the social situation on the Anangu Pitjantjatjara Yankunytjatjara Lands. It is understood both parties – Anangu Pitjantjatjara Yankunytjatjara and Ahava Energy – have agreed to collaborate to ensure such exploration and other future activities are conducted in a way which is aligned to the aspirations and needs of the Anangu Pitjantjatjara Yankunytjatjara Lands communities and helps maximise the benefits for those communities.

### 2.1 Scope

PEL 138, PELA 147 and PELA 148 are entirely within the Anangu Pitjantjatjara Yankunytjatjara Lands (as defined by the *Anangu Pitjantjatjara Yankunytjatjara Land Rights Act 1981*), an area of cultural and environmental importance in north-western South Australia. Specific conditions relating to exclusion zones on the basis of indigenous cultural significance are considered of high importance and will be determined through appropriate consultation and clearance surveys.

This SEO is applicable to geophysical exploration within PEL 138 and PELA 147 and 148 (see Figure 2.1) within the Anangu Pitjantjatjara Yankunytjatjara Lands region of the Officer Basin. Any future exploration in PELAs 147 and 148 (following their granting) would first require consultation with the Traditional Owners of those Lands to gain approval. Ahava Energy will not undertake any geophysical operations in the active Mintabie opal mining area.

The southern portions of PEL 138 and PELA 148 are located within the Woomera Prohibited Area (WPA) (see Figure 2.1). The Australian Department of Defence, which administers the WPA, must be notified prior to activities commencing in the WPA to gain access permits into or through this area.

The Walalkara Indigenous Protected Area (IPA) exists within the boundaries of PELAs 147 and 148. The Walalkara IPA is an area of indigenous-owned land where the Traditional Owners have entered into an agreement with the Australian Government to protect and enhance the biodiversity of the areas of unique conservation significance through traditional management techniques.

Vegetation clearance resulting from the geophysical exploration activities discussed in this SEO is exempt from clearance controls under Regulation 5 of the *Native Vegetation Act 1991* when prepared in accordance with an approved SEO. Although vegetation clearance will be avoided where possible, where vegetation clearance is unavoidable, it will be conducted in accordance with accepted industry environmental management practices.

Activities associated with the geophysical exploration that are covered by this SEO are as follows:

- Surveying and preparation of access tracks and seismic lines.
- Recording of two-dimensional seismic data.
- Recording of three-dimensional seismic data.
- Recording of other ground based geophysical data.
- Temporary campsite construction and associated activities.
- Up-hole drilling and logging.
- Restoration of lines, access tracks and campsites where required.
- Monitoring of selected locations.

These activities are discussed in detail in the companion EIR (Coffey Natural Systems, 2009).

## 2.2 Definition

Section 4(1) of the *Petroleum Act 2000*, provides the definition of *environment* as encompassing:

- Land, air, water (including both surface and underground water), organisms and ecosystems.
- Buildings, structures and cultural artefacts.
- Productive capacity or potential.
- The external manifestations of social and economic life.
- The amenity of an area.

The environmental objectives outlined in this SEO aim to incorporate all aspects of this definition.



### 3. ENVIRONMENTAL OBJECTIVES

The *Petroleum Act 2000* sets out important environmental objectives under which exploration or geophysical operations must operate, these include:

- All activities under the Act that may adversely impact the environment should be managed to reduce those impacts.
- Elimination as far as possible of long-term adverse environmental impacts.
- Rehabilitation of land adversely impacted by regulated activities.

Environmental objectives for exploration and geophysical activities must:

- Outline criteria to be applied to determine whether the environmental objectives have been achieved for each case.
- Include conditions and requirements to be complied with to achieve the objectives.
- Impose reporting obligations on persons carrying out exploration or geophysical activities.

The environmental objectives for geophysical exploration in the Anangu Pitjantjatjara Yankunytjatjara Lands region of the Officer Basin are to:

- Minimise disturbance to the Anangu Pitjantjatjara Yankunytjatjara, infrastructure and social or economic ways of life.
- Avoid disturbance to sites of cultural and heritage significance.
- Minimise disturbance to native vegetation and fauna.
- Minimise land disturbance.
- Minimise the visual impact of the operations.
- Avoid the introduction of exotic species.
- Avoid litter, wastes and pollutants (including greenhouse gases and air emissions).
- Facilitate the rehabilitation of survey lines and access tracks.

The environmental objectives are outlined in more detail in Attachment A, along with defined conditions and how these objectives may be met. Adhering to the environmental objectives will also assist Ahava Energy in maintaining and enhancing its relationship with the Traditional Owners of the Anangu Pitjantjatjara Yankunytjatjara Lands.

Adhering to the environmental objectives during the proposed geophysical exploration activities will also conform with the national strategy for ecologically sustainable development which includes the principle of *'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'* (Ecological Sustainable Development Steering Committee, 1992).

## **4. ASSESSMENT METHODS**

It is a mandatory requirement under the *Petroleum Act 2000* that the environmental objectives, outlined in Section 3 Environmental Objectives of this document, are measured and reported on. The following methods were developed to facilitate the realisation of these objectives. These methods apply to the activities involved in the acquisition of geophysical data and one or more of the methods may be used.

### **4.1 Defined Conditions for Geophysical Operations**

Defined conditions are one criteria used to ensure that the environmental objectives set out in this document have been met.

Ahava Energy and associated contactors are obliged to operate under the defined conditions and any other criteria placed upon their operations as part of the approvals process. Defined conditions associated with geophysical exploration on the Anangu Pitjantjatjara Yankunytjatjara Lands may be set as a part of assessment criteria (as detailed in Appendix A) or as conditions on an activity approval.

Defined conditions are also interpreted as being the requirement to carry out certain actions in accordance with approved procedures, relevant legislation (such as the Environmental Protection Act 1993, Aboriginal Heritage Act 1988 and Fire and Emergency Services Act 2005), industry standards and with particular respect to the conjunctive land access agreement for petroleum operations in Ahava Energy's license areas.

An audit, pursuant to section 6.1 of this SEO, will be conducted to assess the level to which these conditions have been met.

### **4.2 Goal Attainment Scaling**

Goal attainment scaling (GAS) was adapted by the South Australian government agency, Primary Industries and Resources South Australia (PIRSA) to act as a tool to provide an equitable and transferable means of assessing the attainment of environmental objectives (see Attachment B). Descriptions provide a series of criteria that can be used to rate environmental disturbance from geophysical surveys. This tool is particularly useful in monitoring the impacts on natural vegetation and soil.

### **4.3 Industry Standards**

The Australian Petroleum Production and Exploration Association (APPEA) has established industry standards and procedures that may be adopted to guide and plan activities. These include the Code of Environmental Practice (APPEA, 2008) and the APPEA Principals of Conduct (APPEA, 2003). The licensee (Ahava Energy) may adopt the APPEA standards to provide an additional means of assessment of operations.

#### **4.4 Photographic Monitoring**

Establishing long-term photo-points is a commonly used method to monitor changes to an environment. Photo-points identified with markers should be placed at strategic points along the seismic lines to monitor the effects of the seismic activities. Photos should be taken prior to any activity, after the line has been prepared, after all operations have ceased (including rehabilitation), one year after operations have ceased and then can continue as required to demonstrate evidence of site recovery.

#### **4.5 Scientific Studies**

Surveys and monitoring programs (including ecological, social, cultural and any other specific relevant subjects) may not be possible in the shorter term and may require longer-term monitoring and/or scientific evaluation. In such cases, the assessment criteria may be in the form of longer-term data and information gathering and scientific studies. The results of such work could then be used to further develop or refine existing GAS criteria and environmental objectives.

#### **4.6 Stakeholder Liaison**

Periodic liaison with Traditional Owners and other interested stakeholders may further assist in the identification of additional issues of importance.

#### **4.7 Other Techniques as Appropriate**

Other methods of assessment and/or monitoring that prove to be useful may be developed as activities commence and the potential impacts to this land system become realised.

## **5. ASSESSMENT CRITERIA**

Each environmental objective contained within this SEO will be assessed using a selection of the assessment methods detailed in Section 4, Assessment Methods. The use of different assessment options as described in Section 4 will enable Ahava Energy, regulators and others to determine the level to which the defined objectives are met. Criteria relevant to each environmental objective are presented in Attachment A.

## 6. OPERATIONAL REPORTING

Regulation 33 of the Petroleum Regulations 2000 details that a licensee must submit annual reports to PIRSA detailing activities conducted within each licence area during the respective licence year, as well as the activities proposed for the ensuing licence year. An important part of this reporting is to ensure that each licensee regularly reviews, assesses and reports on their performance and compliance with the *Petroleum Act 2000*, Petroleum Regulations 2000 and this SEO. The licensee must also provide progress reports on geophysical activities in accordance with Regulation 34 under the *Petroleum Act 2000*.

### 6.1 Operator Auditing

Ahava will make an assessment of all lines prior to determining the extent of rehabilitation required. The assessment will provide the basis to which informs the scope and methods of rehabilitation based on PIRSA's expectations. The assessment is likely to be made in consultation with PIRSA. The geophysical operations will not be considered complete until Ahava Energy's rehabilitation program has been finalised. Following completion of the rehabilitation of the geophysical program site auditing of the environmental outcomes of the survey against the SEO will occur.

Prior to the commencement of geophysical operations, Ahava Energy will select a representative sample of lines (including some lines in environmentally sensitive areas) for assessment of rehabilitation requirements. The representative sample of lines should represent each of the land systems where activities occur and be easily accessible from roads and tracks. Other sites may be selected away from existing tracks or in less-sensitive areas on a random basis to provide a check of standards throughout the survey area. The geophysical crew is to be made aware that a representative sample of lines will be audited against the environmental objectives. However, the specific survey lines that will be audited will not be identified to the crew.

Ahava Energy's field representative will then conduct an audit of the nominated lines for compliance with the environmental objectives within the period of the survey. Where compliance with the objectives is not met, actions will be taken to ensure compliance prior to the completion of the survey. On completion of the survey an audit report will be prepared and submitted to PIRSA within two months following the completion of survey operations (i.e., following rehabilitation activities). Such an audit report will be referenced in the licensee's annual report to PIRSA and shall contain the following information:

- Line assessments conducted.
- Results from photo-monitoring points.
- Details of photo-monitoring reassessments
- Results of GAS audits.
- Other line assessments
- Reporting and discussion of incidents
- Report on compliance with regulatory, conditions, licence conditions and the SEO.

## **6.2 Government Auditing**

PIRSA may conduct random audits of geophysical exploration activities both in the field and in the office, using the assessment techniques defined in Section 4, Assessment Methods. The aim of these audits is to confirm if the environmental objectives are being achieved and verify the accuracy of the licensee's audit reports, the effectiveness of the licensee's Environmental Management System (EMS) and provide feedback to company personnel. The selection of sites to be audited will be random, to ensure vigilance on behalf of the licensee and contractors. However, the more environmentally sensitive land systems would be amongst the most likely sites for PIRSA audits.

Results from PIRSA audits will be summarised for inclusion into PIRSA's reporting on environmental management of petroleum operators and made public in PIRSA's annual report.

## **6.3 Third Party Audits**

Third parties may undertake audits of the field outcomes of geophysical operations. The audits may be commissioned by PIRSA, or the licensee, or by any independent parties (e.g., Anangu). If the findings of third party audits are to be compared with the operator and/or licensees, the same assessment criteria must be used. Items of note from these reports can be included in PIRSA's reporting on environmental management.

## 7. INCIDENT REPORTING

Under the Petroleum Regulations 2000, the SEO must identify events arising from regulated activities which may cause serious or reportable incidences.

Section 85 of the *Petroleum Act 2000* lists serious incidents as those where:

- A person is seriously injured or killed.
- An imminent risk to public health or safety arises.
- Serious environmental damage occurs or an imminent risk of serious environmental damage arises.

In addition to those listed above, serious incidents for the purpose of this SEO, based upon the environmental objectives, are:

- Disruption of social or economic way of life of Anangu (e.g., disruption to hunting, economic activities, and cultural ceremonies).
- Any disturbance to sites of cultural or heritage significance to Anangu.
- Removal of rare, vulnerable or endangered species without approvals or permits.
- Start of a fire where the public safety is at risk.

Reportable incidents are listed in the Petroleum Regulations 2000 as:

- A spill or leak outside of a containment area (including any quantity of petroleum substances, chemicals or other products outside of designated bounded areas).
- An incident identified as a reportable incident under the relevant statement of environmental objectives.

In addition to those listed above, reportable incidents for the purpose of this SEO, based upon the environmental objectives, are:

- Verified complaint from a landowner or community member regarding the project activities.
- An introduction of exotic species.
- Start of any unplanned fire not considered serious.
- Any flows from or contamination to aquifers as a result of uphole drilling.
- Scoring of a -2 pursuant to the goal attainment scaling of this SEO.

### 7.1 Reporting requirements

The *Petroleum Act 2000* requires that all serious incidents are reported to the Minister as soon as practical. The incident must be reported by telephone or facsimile in the first instance followed by a written report within three months. In practical terms this means that Ahava Energy is to notify the Minister (or a delegate of the Minister) as soon as possible following an incident. A written report must then be provided to the relevant agencies including details of:

- The name and business address of the licensee.
- The name and telephone number of a person who can be contacted about the matter.
- The time and date of the occurrence of the incident.
- The place where the incident occurred (using appropriate coordinates or distances from significant topographical features).

- In a case involving a spillage, the approximate quantity of the spillage.
- The approximate size of any area affected by the incident (if relevant).
- The nature and extent of any injury to a person and, if death has occurred, the cause and place of death.
- The steps that have been taken to control minimise or address any damage to any area affected by the incident.

Regulations under the *Petroleum Act 2000* require that reportable incidents will be reported on a quarterly basis, within one month of each quarter. The details reported must include:

- The time and date of the occurrence of the incident and the time and date of detection.
- The place where the incident occurred (using appropriate coordinates or distances from significant topographical features).
- In the case of a spillage the approximate quantity of the spillage.
- The approximate size of any area affected by the incident (if relevant).
- The cause of the incident.
- The steps that have been taken, or are proposed to be taken, to clean up and rehabilitate any area affected by the incident.
- The steps that have been taken, or are proposed to be taken, to prevent a recurrence of the incident.

Records of all incidents are the responsibility of the licensee and will be held by Ahava Energy and available to the relevant authorities upon request.

## **8. DOCUMENT REVISION**

This document will be subject to review within five years of its date of gazettal as per the requirements set out in Regulation 14 under the *Petroleum Act 2000*.

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## **Attachments**

Statement of Environmental Objectives for Geophysical Operations in the  
Anangu Pitjantjatjara Yankunytjatjara Lands Region of the Officer Basin

**Attachment A Environmental objectives and assessment criteria**

Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 1.</b> Minimise disturbance to the Anangu Pitjantjatjara Yankunytjatjara , infrastructure and social or economic ways of life.</p>	<ul style="list-style-type: none"> <li>• No reasonable concerns raised by Anangu are left unresolved.</li> <li>• Any breaches of the conjunctive land access agreement will also be deemed a breach of this SEO.</li> <li>• Ahava Energy and its contractors will obey all Anangu Pitjantjatjara Yankunytjatjara local customs and laws, including: alcohol prohibition and other conditions as defined in the conjunctive land access agreement.</li> <li>• All vehicles will be highly visible and travel at safe speeds to avoid collisions with persons and livestock.</li> <li>• Anangu will be notified prior to the commencement of survey activities as to ensure they are aware of the location and timing of geophysical operations, so that these areas can be avoided by Anangu to ensure their safety.</li> <li>• All incidents relating to the health and safety of Anangu as a result of geophysical operations will be reported to the APY Lands Executive Board on the same day that the incident has occurred.</li> <li>• All incidents relating to Anangu, infrastructure or which have disrupted Anangu social or economic way of life will be reported as an incident to the APY Lands Executive Board on the same day that the incident has occurred.</li> </ul>	<ul style="list-style-type: none"> <li>• Local Anangu should be given a safety briefing regarding geophysical operations from the operator prior to the commencement of geophysical activities.</li> <li>• Where Anangu are sufficiently skilled for assistance on tasks associated with geophysical operations (e.g., land clearance, cultural heritage clearances or environmental clearances) they may be employed by the contractor. Where they are not sufficiently skilled, the contractor may decide to provide training to enable Anangu to be employed for tasks associated with geophysical operations.</li> <li>• Periodic meetings should be held with Anangu to identify unresolved issues.</li> <li>• Damage to tracks will be avoided and any track damaged as a result of geophysical operations will be repaired.</li> <li>• Any artesian flows will be plugged and then monitored (unless otherwise advised by Anangu).</li> <li>• Gates will be left in the condition they are found. Fences should be restored to the satisfaction of land owners.</li> <li>• Seismic sources should not operate within 30 m of any facility.</li> <li>• Noise levels are to remain within appropriate acceptable limits.</li> </ul>	<ul style="list-style-type: none"> <li>• Ahava Energy has good systems of communication set up with the Anangu Pitjantjatjara Yankunytjatjara Lands communities. Community support is vital to ongoing exploratory activities.</li> </ul>

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
	<ul style="list-style-type: none"> <li>• Ahava Energy personnel and contractors will be inducted on cultural, conservation and legislative issues.</li> <li>• Any infrastructure will be avoided during survey activities.</li> <li>• An attainment of 0, +1 or +2 according to the GAS criteria for visual impacts (listed in Attachment B)</li> <li>• An attainment of 0, +1 or +2 according to the GAS criteria for impacts to infrastructure (listed in Attachment B)</li> </ul>		

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 2.</b> Avoid disturbance to sites of cultural and heritage significance.</p>	<ul style="list-style-type: none"> <li>• No disturbance to Indigenous cultural or heritage sites.</li> <li>• Anangu-appointed anthropologists who are accompanied by senior Traditional Owners will survey the proposed survey lines, flagging sites of cultural significance prior to the clearing and preparation of lines for geophysical operations. This process has been built into the conjunctive land access agreement between Ahava Energy and Anangu Pitjantjatjara Yankunytjatjara.</li> <li>• On-ground personnel are to be trained to identify and report unmarked cultural or heritage sites.</li> <li>• An attainment of 0, +1 or +2 according to the GAS criteria for impacts to infrastructure (listed in Attachment B)</li> </ul>	<ul style="list-style-type: none"> <li>• During line clearance all identified sites will be flagged and avoided.</li> <li>• On-ground personnel should be provided with protocols to follow upon the discovery of an unmarked site.</li> <li>• All crew working on site should be inducted in the significance of cultural and Aboriginal heritage sites as appropriate.</li> <li>• All identified sites should be reported using an environmental report form.</li> <li>• All environmental report forms pertaining to Indigenous cultural or heritage sites will be forwarded to the Anangu Pitjantjatjara Yankunytjatjara, PIRSA, Department of Premier and Cabinet's Aboriginal Affairs and Reconciliation (AARD) and where appropriate to the South Australian Police.</li> <li>• All documents relating to sites of cultural or heritage significance should be available for audit.</li> </ul>	<ul style="list-style-type: none"> <li>• The aim of this objective is to ensure that sites of cultural or heritage significance are identified and protected.</li> </ul>

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 3.</b> Minimise disturbance to native vegetation and fauna.</p>	<ul style="list-style-type: none"> <li>• Minimise the clearing of mature and priority trees.</li> <li>• No offline driving.</li> <li>• Vehicle access to survey lines will (where available) utilise existing tracks or pre-existing survey lines.</li> <li>• Minimise impact to species listed under state and federal Law.</li> <li>• Records of vegetation and habitat clearing will be kept and available for auditing.</li> <li>• All reports regarding listed flora and fauna sightings (when and if recognised), land clearance and restoration must be supplied to APYLMU and DEH</li> <li>• An attainment of 0, +1 or +2 GAS criteria for disturbance to vegetation (listed in Attachment B)</li> </ul>	<ul style="list-style-type: none"> <li>• Terrain and vegetation should be considered in the planning and design stages of geophysical surveys.</li> <li>• Flora and fauna surveys may be undertaken in association with the proposed field activities.</li> <li>• Environmental clearance surveys may be undertaken at the time of heritage clearance surveys to identify malleefowl mounds so that they can be flagged, mapped on GPS and avoided (weaved around). Identification of these habitats should make use of Anangu trackers.</li> <li>• Environmental clearance surveys may be undertaken at the time of heritage clearance surveys to identify habitat of great desert skink where possible, so that it can be mapped using GPS and the seismic route realigned to minimise disturbance of such habitats. Identification of these habitats should make use of Anangu trackers.</li> <li>• Areas with records of state and nationally listed flora and fauna species will be avoided where possible by providing contractors with maps and GPS coordinates of these records.</li> <li>• If avoidance of known locations is not possible, an onsite assessment of the potential to impact scheduled species on a case-by-case basis may occur (based on vegetation mapping, descriptions of species as detailed in section 4.6 of the EIR and in some cases in consultation with relevant experts).</li> <li>• All state and nationally listed fauna deaths as a result of regulated activities are reportable incidents, and the location of the fauna death should be recorded using GPS and photographed.</li> </ul>	<ul style="list-style-type: none"> <li>• The main impacts to native fauna include habitat clearing and fragmentation.</li> <li>• The aim of this objective is to minimise habitat loss and maximise the potential for natural regrowth and to avoid the introduction of exotic species.</li> <li>• A mature tree can be defined as, a single-trunked plant with a sufficient, recognisable girth with numerous secondary branches definably clear of the ground and above three metres in height. Only some mulgas and mallees on the Lands are likely to fit into this definition.</li> <li>• A priority tree means any tree, or species of tree, that has known cultural or ecological significance, or has significance by virtue of its location or distribution.</li> <li>• Given the experience gained from the Welbourn Hill 2D Seismic Survey, it is acknowledge that in areas of dense mulga woodland, there is no practical way to ensure that mature mulga will not be removed during line preparation for seismic surveys in PEL(A)s. Therefore removal of mature trees should occur only when unavoidable, and when weaving, detours and other mitigation strategies do not afford practical access.</li> </ul>

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 3.</b> Minimise disturbance to native vegetation and fauna (continued)</p>		<ul style="list-style-type: none"> <li>• Any sightings of listed fauna (especially malleefowl and their mounds and great desert skinks) will be reported to DEH and APYLMU, GPS coordinates collected and where possible photographs taken.</li> <li>• Creeks lined with river red gums, in particular, are important breeding habitat for many bird species, including scheduled species. Measures for minimising disturbance and access to these areas should be adopted, with known raptor nest-sites avoided during the breeding season.</li> <li>• Camps should not be located in sensitive areas (e.g., as identified in a desktop assessment), such as at known localities of scheduled flora.</li> <li>• Camp sites will (where possible) be stationed within the already cleared lines or in areas of previous disturbance as to minimise the environmental footprint.</li> <li>• Post survey monitoring and auditing will (where possible) utilise monitoring points installed by SA DEH, the pastoral board and APYLMU if available to enable long term trends to be assessed.</li> <li>• Native vegetation clearance should be minimised especially for significant and/or sensitive vegetation and/or habitat.</li> <li>• Removal of mature trees should occur only when unavoidable, and when weaving, detours and other mitigation strategies do not afford practical access.</li> <li>• Where possible rootstock will be left intact.</li> <li>• Campsites should be selected to avoid the preparation of new tracks.</li> </ul>	

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 4.</b> Minimise land disturbance.</p>	<ul style="list-style-type: none"> <li>• Anangu will be consulted regarding the placement of survey lines during work area clearance surveys.</li> <li>• No survey lines or access tracks will traverse salt lakes or clay pans other than on foot if necessary.</li> <li>• No spills are left untreated.</li> <li>• There is no off-line driving.</li> <li>• Location of survey lines and campsites will be available for audit.</li> <li>• Wherever practicable, width of line is reduced by line clearance equipment operating with raised blades.</li> <li>• Blading will occur only where necessary so as to minimise vehicle and tyre damage and to ensure safety of all personnel.</li> <li>• All line rehabilitation will meet the environmental and rehabilitation requirements detailed in the conjunctive land access agreement.</li> <li>• An attainment of 0, +1 or +2 GAS criteria for disturbance to land surface (listed in Attachment B).</li> </ul>	<ul style="list-style-type: none"> <li>• Survey lines and campsites should be designed and located to minimise soil disturbance.</li> <li>• Any requirement to cross sensitive or inundated land will be justified and in accordance with relevant procedures. All records relating to such crossings will be available for audit.</li> <li>• Terrain, land system type and potential impacts are considered in the planning stages of operations.</li> <li>• Best practice preparation techniques are used to minimise the height of dune cuts, while line width is as narrow as practicable.</li> <li>• Seismic lines are weaved in a smooth manner without sharp bends.</li> <li>• Operations in wet weather conditions are not undertaken should such operations compromise the achievement of these environmental objectives.</li> <li>• All clearing and survey activities will be undertaken to industry best practice, therefore minimising the requirement to actively rehabilitate and maximise the ability of the lines to naturally recover.</li> <li>• Fire education is included as part of staff inductions.</li> </ul>	<ul style="list-style-type: none"> <li>• The main sources of land disturbance are survey line preparation, vehicle traffic along the tracks and any restoration activities.</li> <li>• The impacts associated with soil disturbance can potentially include wind and water erosion, wheel rutting, soil compaction and dust generation.</li> <li>• Weaving at the bases or flanks of sand dunes is unlikely to be practical for vehicle access over dunes. Exaggerated weaving is likely to be impractical, with sharp bends leading to unwarranted soil banking. This leads to an unwarranted safety risk and impeded operational efficiency.</li> <li>• Line width criteria are referenced in the GAS chart under Disturbance to Land.</li> <li>• Wet weather conditions are permissible where such operations do not cause significant degradation of lines/access tracks (for example rutting and/or compaction). PIRSA acknowledges that certain vehicular movements may be required for OH&amp;S issues in such conditions and may result in line/access track degradation. Ahava will use its reasonable endeavours to limit such movement.</li> </ul>

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 5.</b> Minimise the visual impact of the operations.</p>	<ul style="list-style-type: none"> <li>• Anangu are consulted on the locations of the survey lines.</li> <li>• Sand dune crest cuts will be offset along the length of the survey line to minimise visibility.</li> <li>• Post-survey rehabilitation will be conducted where required by PIRSA.</li> <li>• All line rehabilitation will meet the environmental and rehabilitation requirements detailed in the conjunctive land access agreement, this SEO and industry standards.</li> <li>• An attainment of 0, +1 or +2 according to the GAS criteria for visual impacts (listed in Attachment B).</li> </ul>	<ul style="list-style-type: none"> <li>• Survey lines and campsites will be located and designed to minimise visual impact.</li> <li>• Appropriate weaving of survey lines and use of vegetation and landforms to disguise survey lines.</li> <li>• Crest cuts and extensive side cuts on dune flanks will be avoided.</li> </ul>	<ul style="list-style-type: none"> <li>• The visual impacts of survey can be significant if no attempt to manage them is made.</li> <li>• The location of survey lines and their preparation are the key factors in determining the final visual impact.</li> </ul>

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 6.</b> Avoid the introduction of exotic species.</p>	<ul style="list-style-type: none"> <li>• The license holder must take all reasonable and practical endeavours to minimise the impacts of introducing exotic species into the licence areas.</li> <li>• Weeds or feral animal species are not introduced or spread further into the survey area via survey activities.</li> <li>• No increase occurs in the abundance of exotic species already present.</li> <li>• All vehicles and equipment will be inspected and assessed for the risk of contamination and if, required, cleaned prior to entering the survey area.</li> <li>• All records of vehicle or equipment cleaning will be kept for auditing purposes.</li> <li>• The introduction of exotic species via survey activities will be reported as an incident.</li> </ul>	<ul style="list-style-type: none"> <li>• All vehicle cleandown should occur in consideration of the DEH SA standard operating procedures for the prevention of the spread of Buffel grass and in accordance with 5.3.8 of the EIR.</li> <li>• All vehicles and equipment should be cleaned when moving from weed infested areas to non-affected areas.</li> <li>• Cleaning should be conducted in accordance with relevant procedures and accepted practices.</li> <li>• Environmental clearance surveys may be undertaken at the time of heritage clearance surveys to identify baseline predator numbers and the presence of noxious weeds (especially the presence of Buffel Grass (<i>Cenchrus ciliaris</i>)). Such clearance surveys should consult APYLMU to ensure that methodologies are consistent with those already used on the Lands.</li> <li>• Minimise land disturbance and soil disturbance as detailed in Objective 4, as disturbed soils can provide habitats to enhance the colonisation of weeds and pathogens.</li> <li>• Ongoing monitoring to assess the presence of invasive species, particularly weeds, pathogens and non-native predators such as foxes and cats should be conducted during rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>• The introduction of weed species is best prevented by thorough cleaning of vehicles and equipment prior to entering the survey area.</li> <li>• The presence of tracks can assist the movement of feral animals, i.e. foxes and cats, into new regions.</li> <li>• Particular attention should be given to reducing the risk of introduction of Buffel Grass (<i>Cenchrus ciliaris</i>) as it is a prevalent weed in the arid lands of South Australia with the ability to colonise new areas and choke existing native vegetation.</li> </ul>

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 7.</b> Avoid litter, wastes and pollutants (including greenhouse gases and air emissions).</p>	<ul style="list-style-type: none"> <li>• No camp or survey litter is left in the survey area.</li> <li>• Chemically degraded sewage waste will be transported from campsites and disposed of on site, but away from water courses or infrastructure.</li> <li>• No sites are left contaminated or without treatment.</li> <li>• Wastes will be disposed of in a way that is aligned with EPA requirements.</li> <li>• No spills are left untreated.</li> <li>• All pin flags and pickets will be removed upon completion of the survey.</li> <li>• Minimise greenhouse gas and air emissions.</li> <li>• An attainment of 0, +1 or +2 according to the GAS criteria for visual impacts (listed in Attachment B).</li> <li>• An attainment of 0, +1 or +2 according to the GAS criteria for pollution or litter (listed in Attachment B).</li> </ul>	<ul style="list-style-type: none"> <li>• The production of waste or litter should be reduced by the use of biodegradable or recyclable materials where possible.</li> <li>• Covered bins will be provided for waste materials.</li> <li>• All pin flags and pickets should be removed upon completion of the survey.</li> <li>• Campsite wastewater will be disposed of in an approved manner, e.g., EPA guidelines.</li> <li>• Chemical spills will be contained with bunding.</li> <li>• Vehicles and plant should only be refuelled within designated refuelling areas.</li> <li>• Spill response equipment should be available on site.</li> <li>• Oil spills should be ripped to an appropriate depth.</li> <li>• All spills will be reported as an incident.</li> <li>• All equipment should be well serviced and maintained.</li> <li>• EPA's Waste Hierarchy model (avoid, reduce, reuse recycle, recover, treat, dispose) should be complied with- all other wastes will be disposed of at an EPA licensed facility, licensed to accept the waste.</li> <li>• All chemicals must be stored appropriately (i.e., in lined, bunded areas). Bunded areas must have freeboard to hold a 1 in 100 year, 24hr rainfall event.</li> </ul>	<ul style="list-style-type: none"> <li>• Waste reduction and recycling is conducted as much as possible. Recycling options will be continually explored.</li> <li>• Sewage waste management will be managed in accordance with the <i>Public and environmental health (waste control) regulations 1995</i> and the Environmental Protection (Water Quality) Policy 2003.</li> </ul>

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Environmental objective	Assessment criteria	Guide to achieving objectives	Comments
<p><b>Objective 8.</b> Facilitate the rehabilitation of survey lines and access tracks.</p>	<ul style="list-style-type: none"> <li>• All areas are to be rehabilitated as soon as practical, either during or after the conclusion of survey operations.</li> <li>• All line rehabilitation will meet the environmental and rehabilitation requirements detailed in the conjunctive land access agreement.</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation of lines and access tracks will be done inline with industry best practice.</li> </ul>	<ul style="list-style-type: none"> <li>• The aim of industry best practice is to facilitate the most rapid natural rehabilitation of the soil profile and any vegetation.</li> </ul>

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**Attachment B Goal attainment scaling (GAS) criteria for assessing seismic line on completion of surveys**

	Measure	+2	+1	0	-1	-2
Non-Land System Specific	Visual impact (Objective 5 and 8)	<ul style="list-style-type: none"> <li>No evidence of survey operations.</li> </ul>	<ul style="list-style-type: none"> <li>Only wheel tracks are evident.</li> <li>Line of sight is highly impaired.</li> </ul>	<ul style="list-style-type: none"> <li>Established roads and tracks have been reshouldered.</li> <li>Doglegs and/or visual screens have been placed at established roads and tracks.</li> <li>First 50 m of seismic line either side of established road or track is rehabilitated and/or disguised and is not conducive for access.</li> <li>Line weaves at least every 500m.</li> <li>Line of sight is impaired.</li> <li>Line follows route that is most conducive to access by using naturally clear areas through vegetation.</li> <li>Dune cuts are offset from the line of sight.</li> </ul>	<ul style="list-style-type: none"> <li>No doglegs and/or visual screens at established roads or tracks in vegetated areas.</li> <li>Straight sections of line are between 500 and 750m in length.</li> <li>Dune cuts are not offset from the line of sight.</li> </ul>	<ul style="list-style-type: none"> <li>Line is clearly evident and dominates the landscape.</li> <li>Straight sections of line are &gt; 750m in length.</li> </ul>
	Disturbance to APY Lands and any infrastructure (Objective 1, 2 and 8)	<ul style="list-style-type: none"> <li>No impact to infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>Minor damage to fences and gates</li> <li>All fences and gates have been reinstated to original state or better.</li> </ul>	<ul style="list-style-type: none"> <li>Any impact to infrastructure has been reported and reinstated or repaired.</li> </ul>	<ul style="list-style-type: none"> <li>Repair to damaged infrastructure is incomplete or inappropriate.</li> <li>Damage has not been reported.</li> </ul>	<ul style="list-style-type: none"> <li>Damage to any infrastructure has been left unrepaired and not reported.</li> </ul>
	Pollution or litter (Objective 7)	<ul style="list-style-type: none"> <li>No pollution or litter.</li> <li>No pin flags.</li> </ul>	<ul style="list-style-type: none"> <li>No evidence of water or oil pollution.</li> <li>Maximum of 1 pin flag per km.</li> </ul>	<ul style="list-style-type: none"> <li>Wastewater and vehicle oil spills have been managed appropriately.</li> <li>No other litter.</li> <li>Maximum of 2 pin flags per km.</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle oil spills have not been remedied.</li> <li>Maximum of 10 pin flags per km</li> <li>Maximum of four items of other litter per km.</li> </ul>	<ul style="list-style-type: none"> <li>Oil spills of more than 20 L have not been remedied.</li> <li>Five or more items of other litter per kilometre.</li> <li>More than 10 pin flags per km.</li> </ul>

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	Measure	+2	+1	0	-1	-2
Non-Land System Specific	Uphole sites (Objective 4)	<ul style="list-style-type: none"> <li>No evidence of upholes.</li> </ul>	<ul style="list-style-type: none"> <li>No evidence of cuttings.</li> <li>Some evidence of operations.</li> </ul>	<ul style="list-style-type: none"> <li>Cuttings are evident but are dispersed around the hole.</li> <li>Subsidence is not evident.</li> <li>The hole has been plugged.</li> </ul>	<ul style="list-style-type: none"> <li>Cuttings form a mound.</li> <li>Subsidence is evident.</li> <li>Cuttings are markedly discoloured compared to natural ground surface.</li> </ul>	<ul style="list-style-type: none"> <li>Hole is open.</li> <li>Hole is leaking water.</li> </ul>
	Campsites (Objective 3, 4, 5, 6, 7 and 8)	<ul style="list-style-type: none"> <li>No evidence of campsite.</li> </ul>	<ul style="list-style-type: none"> <li>Only light wheel tracks are evident, with no rutting apparent.</li> </ul>	<ul style="list-style-type: none"> <li>Compacted areas ripped.</li> <li>Only grasses, herbs, small shrubs etc. are removed if necessary.</li> <li>Vegetation is respread when appropriate.</li> <li>Campsite located in naturally clear areas where possible.</li> <li>No obvious litter remaining on site.</li> </ul>	<ul style="list-style-type: none"> <li>Top soil removed but has been respread over the campsite.</li> <li>Obvious litter remaining on site.</li> <li>Areas of compaction and wheel rutting not ripped.</li> <li>Wastewater forms ponds or extensive boggy ground.</li> <li>Area of campsite unnecessarily cleared.</li> </ul>	<ul style="list-style-type: none"> <li>Extensive vegetation (includes mature and priority trees) clearance has occurred.</li> <li>Area cleared for campsite grossly exceeds that required.</li> <li>Top soil removed and has not been respread over the campsite.</li> <li>Extensive litter remaining on site.</li> <li>Extensive wastewater ponding.</li> </ul>
	Impacts on vegetation (Objective 3, 4, 5 and 6)	<ul style="list-style-type: none"> <li>No impacts on vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>No evidence of removal of vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>All vegetation, including mature and priority trees, has been removed only where absolutely necessary.</li> <li>Naturally cleared corridors have been utilised.</li> <li>Root stock is left intact where possible.</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation other than mature and priority trees, has been removed unnecessarily.</li> </ul>	<ul style="list-style-type: none"> <li>Mature trees and priority trees have been removed where other practical options were available.</li> <li>No apparent attempt has been made to retain root stock.</li> </ul>

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	Measure	+2	+1	0	-1	-2
Land Disturbance, Land System Specific	Dunes (Objective 1, 2, 3, 4, 5 and 8)	<ul style="list-style-type: none"> <li>No evidence of survey line.</li> </ul>	<ul style="list-style-type: none"> <li>Dune cuts are &lt;0.5 m deep.</li> </ul>	<ul style="list-style-type: none"> <li>Dune cuts are 0.5 m to 2.0 m deep (and are appropriate to the original height of the dune).</li> <li>Side cuts in dunes &lt; 1.0 m.</li> <li>Sand is stacked appropriately on dune.</li> <li>Line width is 4.5 m or less.</li> </ul>	<ul style="list-style-type: none"> <li>Dune cuts are 2 to 3 m deep (and are appropriate to the original height of the dune).</li> <li>Minor ramping of sand onto swale.</li> <li>Line width is between 4.5 m and 6.0 m.</li> <li>Minor rutting is still evident.</li> </ul>	<ul style="list-style-type: none"> <li>Dune cuts are &gt;3 m deep.</li> <li>Deep rutting from wet weather operations has occurred.</li> <li>Extensive ramping of sand onto swale.</li> <li>Line width is &gt; 6.0 m.</li> </ul>
	Sand Plains (Objective 1, 2, 3, 4, 5 and 8)	<ul style="list-style-type: none"> <li>No evidence of survey line.</li> </ul>	<ul style="list-style-type: none"> <li>No windrows are evident.</li> </ul>	<ul style="list-style-type: none"> <li>Offline tracking is not evident.</li> <li>Ground surface is cut only when necessary.</li> <li>Windrows are &lt; 0.3 m in height.</li> <li>Windrows are not continuous.</li> <li>Line width is 4.5 m or less.</li> </ul>	<ul style="list-style-type: none"> <li>Off line trafficking is evident.</li> <li>Ground surface has been cut unnecessarily.</li> <li>Windrows are &gt; 0.3 m and &lt; 0.5 m in height.</li> <li>Minor rutting is still evident.</li> <li>Line width is between 4.5 m and 6.0 m.</li> </ul>	<ul style="list-style-type: none"> <li>Windrows in swales are continuous.</li> <li>Windrows are &gt;0.5 m in height.</li> <li>Windrows are continuous for &gt; 500 metres of line.</li> <li>Deep rutting from wet weather operations has occurred.</li> <li>Line width is &gt; 6.0 m.</li> </ul>
	Drainage lines. (Objective 1, 2, 3, 4, 5 and 8)	<ul style="list-style-type: none"> <li>No evidence of survey line.</li> </ul>	<ul style="list-style-type: none"> <li>No interference with drainage channels (including bank structures and creek lines).</li> </ul>	<ul style="list-style-type: none"> <li>Only creek banks &lt; 0.5 m high have been cut.</li> <li>No windrows are evident.</li> <li>Creek channels have not been blocked.</li> <li>Crossing points most conducive for access are utilised (and detours implemented where appropriate).</li> <li>Line width is 4.5 m or less.</li> </ul>	<ul style="list-style-type: none"> <li>Creek banks 1 to 2 m high have been cut.</li> <li>Creek channels have been blocked by material &lt; 0.3 m deep.</li> <li>Windrows are evident and are &lt; 0.3 m in height.</li> <li>Wheel ruts exist</li> <li>Line width is between 4.5 m and 6.0 m.</li> </ul>	<ul style="list-style-type: none"> <li>Creek banks &gt; 2 m high have been cut.</li> <li>Creek channels have been blocked by material &gt; 0.3 m deep.</li> <li>Windrows are evident and are &gt; 0.3 m in height.</li> <li>Windrows are continuous for &gt;500 metres of line.</li> <li>Extensive wheel ruts exist.</li> <li>Line width is &gt; 6.0 m.</li> </ul>

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	Measure	+2	+1	0	-1	-2
Land Disturbance, Land System Specific	Salt lakes. (Objective 1, 2, 3, 4, 5 and 8)	<ul style="list-style-type: none"> <li>No evidence of survey line.</li> </ul>	<ul style="list-style-type: none"> <li>No evidence of shot holes.</li> <li>Little evidence of foot tracking.</li> </ul>	<ul style="list-style-type: none"> <li>Only footprints are evident.</li> <li>No significant evidence of shotholes.</li> </ul>	<ul style="list-style-type: none"> <li>Minor evidence of shotholes.</li> </ul>	<ul style="list-style-type: none"> <li>Wheel tracks exist</li> <li>Bog holes are evident.</li> <li>Dominant evidence of shotholes (e.g., cratering, blow out, discolouration).</li> </ul>
	Stony plains and hills. (Objective 1, 2, 3, 4, 5 and 8)	<ul style="list-style-type: none"> <li>No evidence of survey line.</li> </ul>	<ul style="list-style-type: none"> <li>Only wheel tracks are evident.</li> </ul>	<ul style="list-style-type: none"> <li>Line has been rolled or walked.</li> <li>No blade work on slopes.</li> <li>No blade work elsewhere unless absolutely necessary.</li> <li>No windrows are evident</li> <li>No offline trafficking evident.</li> <li>Line width is 4.5 m or less.</li> </ul>	<ul style="list-style-type: none"> <li>Off line trafficking is evident.</li> <li>Wheel ruts exist.</li> <li>Line width is between 4.5 m and 6.0 m.</li> </ul>	<ul style="list-style-type: none"> <li>Stony mantle has been removed.</li> <li>Windrows are evident.</li> <li>Extensive wheel ruts exist.</li> </ul>

Notes

- (a) All vertical measurements to be measured from normal ground surface.
- (b) If any criterion (dot point) within a -1 or -2 cell occurs, a score of -1 or -2 will then be allocated.
- (c) For all 0, +1 and +2 cells, all relevant criteria (dot points) within the cell must be satisfied to score at that level.
- (d) Some criteria at -2 levels may also be subject to defined conditions, but are included in this table to ensure that they are clearly identified.
- (e) The Field Guide for the Environmental Assessment of Recently Completed Seismic Lines in the Cooper Basin, South Australia. (Kane, A, 2006, PIRSA Information Sheet, P8) provides photographic outcomes which are also relevant to some of the land systems found on the APY lands region of the Officer Basin.
- (f) *Windrows* in this context also refers to the mounding of soil or gibber through the action of wheel trafficking and associated dispersal of soil/gibber away from wheel tracks as well as the material deposited at the edges of the seismic lines by line preparation machinery.
- (g) It is noted that Occupational Health and Safety issues for personnel in the field is of primary importance and it is further noted that a negative GAS score should be not allocated where it can be shown that for the safety of the personnel in the circumstances, actions were taken that would otherwise be characterised by the allocation of a negative GAS score.
- (h) *Line width* means the working area of the seismic line (i.e. shortest distance in metres between the lowest points of opposite windrows where they exist).
- (i) *Mature trees* are defined as being single trunked plants with a significant and recognisable girth with numerous secondary branches definably clear of the ground and above three metres in height. Only some mulgas and mallees on the Lands are likely to fit into this definition.
- (j) *Priority Tree* means any tree or species of tree that has known cultural or ecological significance by virtue of its location or distribution.

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**Attachment C Stakeholder comments regarding the proposed seismic exploration in Anangu Pitjantjatjara Yankunytjatjara Lands region of the Officer Basin and response to the SEO**

No.	Agency of Individual	Issues and comments raised	Response to issues and comments
1	Miscellaneous	Minor grammatical changes required.	Actioned. All grammatical changes have been amended to both the EIR and SEO.
2	Traditional Owners of the Officer Basin region of the Anangu Pitjantjatjara Yankunytjatjara Lands (Shannon Lester)	Everybody is happy for the project to go ahead, in principal the relevant Traditional Owners say yes.	Noted.
3	Traditional Owners of the Officer Basin region of the Anangu Pitjantjatjara Yankunytjatjara Lands (Teddy Edwards)	We are happy to proceed with the project. We believe that the project will be good for future generations and in providing employment and education to Anangu.	Noted.
4	Traditional Owners of the Officer Basin region of the Anangu Pitjantjatjara Yankunytjatjara Lands (Yami Lester)	We are happy to proceed with exploration around Mintabie and Walatina, however further consultation would be required if any activities are proposed north of Mt John.	Noted. No exploration is planned for areas north of Mt John
6	Traditional Owners of the Officer Basin region of the Anangu Pitjantjatjara Yankunytjatjara Lands (Yumi Lester)	If drilling is done at a later date, we request that water wells are left open for Anangu use.	Noted, no drilling is proposed in the present survey; however the drilling of wells would be addressed in additional SEO if drilling for petroleum reserves commences.
7	PIRSA	Comment regarding the dot point discussed in 5.3.1 "all vehicles are thoroughly cleaned to prevent the introduction of weeds into the survey area".  Is this a defined requirement? Should it be a required inspection first, and a risk assessment to determine whether the vehicle needs to be	Actioned. A new section has been added to the EIR Section 5.3.8 detailing industry best practice operating procedures for prevention of the spread of weeds and pathogens and is based on the DEH SA standard operating procedure for the prevention of spread of Buffel Grass

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		cleaned (and to what level of cleaning is required – brushing, washing, chemical washing)?	Objective 6 reflects the changes made to Section 5.3.8 of the EIR.
8	Department of Health	Risk control/ management issues to ensure that the public, e.g. Anangu are not endangered are not mentioned in any great detail. 7.6.2 refers to emergency response plans but there is no further information in either of the two documents.	Actioned. See Objective 1.
9	APY Mining Tenement Officer	There may be unrecorded malleefowl and their nest mounds in the PEL. Expert assistance will be required in identifying nest mound sites. Conserving malleefowl nest sites along with great desert skink burrows would have to be one of the highest priority objectives.	Actioned. See Section 5.1.5 of the EIR, environmental clearance protocols and SEO Objective 3.
10	APY Land Management	APYLMU employs Anangu and non-Anangu staff who have significant expertise in native flora and fauna and they should be employed (recommend one experienced Anangu surveyor and one expert non-Anangu malpa) to provide advice to Ahava consultants and traditional owners on potential locations/habitat of threatened flora and fauna and impacts of activities.	Actioned. See Objective 1
11	APY Land Management	Tracks of any sort are utilised by feral predators. They therefore provide an opportunity for an increase in predation on threatened species populations and there is significant evidence across Australia for this. Predator numbers should therefore be monitored before and after survey lines are installed. It would be great if this could work in with other predator monitoring in the APY Lands so that data is comparable.	Actioned. See Section 5.1.5 of the EIR Environmental Clearances and Objective 6.
12	APY Land Management	Section 5.1.8 Potential for all wastes (recyclable and non-recyclable) should be removed from the APY Lands as per the proposed APY lands Waste Management strategy.	Actioned see Objective 7.
13	APY Land Management	Section 5.1.11 Post survey monitoring and auditing should utilise monitoring points installed by SA DEH, the pastoral board and APY Land Management if available to enable long term trends to be assessed.	Actioned see Objective 3.
14	APY Land Management	Further details of hygiene measures are required.	Actioned. See Objective 6 and Section 5.1.5 of the EIR.
15	APY Land Management	Objective 5 avoid introduction of predators and exotics. Ongoing monitoring to assess the presence of invasive species, particularly weeds, pathogens and non-native predators such as	Actioned. See Objective 6 and Section 5.1.5 of the EIR.

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		<p>foxes and cats will be conducted during rehabilitation.</p> <p>This will be conducted in consultation with APYLMU which conducts feral predator monitoring in other areas. Monitoring of feral predators needs to be comparable. Monitoring should begin before and/or as soon as survey lines are bulldozed/driven in order to get an idea of pre-clearing predator abundance.</p>	
16	APY Land Management	Add: "As region is poorly surveyed we suggest that flora and fauna surveys are conducted to determine presence of threatened species.	Actioned. A similar such objective has been included in Objective 3.
17	EPA	<p>Attachment A- Avoid litter and pollution</p> <p>The SEO, indicates that 'wastes are disposed of in a manner agreed under the conjunctive land access agreement with Anangu'. This contradicts section 5.1.8 of the EIR, which the EPA supports.</p>	Actioned. See Objective 7. Wastes will be disposed of in a way that is aligned with EPA requirements.
18	EPA	The EPA is in agreement with the Low Environmental Impact Classification of the application provided	Noted.
19	EPA	<p>Section 5.1.9 of the EIR, Camp sites and associated supplies.</p> <p>Wastes</p> <p>The EPA believes that wastes generated at camps, are considered an environmental risk due to the consolidation of staff and operational activities in one location for a period of time. The EPA's Waste Hierarchy model (avoid, reduce, reuse recycle, recover, treat, dispose) should be complied with. Containers subject to deposit legislation, along with other plastics, cans and glass are recyclable and should be segregated on site and transported to a licensed waste transfer facility, Clean paper and cardboard should also be managed in this manner.</p> <p>All other wastes, including putrescibles wastes, must be collected, segregated and disposed of at an EPA licensed facility, licensed to accept the waste.</p> <p>The proponent in Section 5.1.8 has committed to the EPAs requirement as indicated above.</p>	Actioned. See Objective 7.
20	EPA	<p>Sewage</p> <p>Treated sewage waste water must comply with the Environmental Protection (Water Quality) Policy 2003.</p>	Actioned. See Objective 7.

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		<p>Clause 11 of the Policy states:            "General obligation to avoid discharge etc. into waters.            A person who is undertaking an activity, or is an occupier of the land, must take all reasonable and practical measures (not being measures that themselves cause environmental harm) to avoid the discharge or deposit of waste from that activity or land-</p> <p>(a) into any waters; or            (b) onto land in a place from which is reasonably likely to enter any waters (including by processes such as seepage or infiltration or carriage by wind, rain, sea spray, or stormwater or by the rising of the water table).</p> <p>and, in taking those measures, must apply the waste management hierarchy.</p>	
21	EPA	<p>Waste water</p> <p>The proponent has referenced EPA Guidelines 509/04. The proponent should refer to this guideline during the construction and management of evaporation ponds for the disposal of waste water from laundry, showers and kitchen activities. A copy of the EPA Guidelines 509/04, wastewater and evaporation lagoon construction, can be obtained from <a href="http://www.epa.sa.gov.au/pdfs/guide_lagoon.pdf">www.epa.sa.gov.au/pdfs/guide_lagoon.pdf</a></p> <p>Where low pollutant loads of waste water from laundry, showers and kitchens are likely, the construction of evaporation pond for disposal of this material can be undertaken with less stringent requirements</p> <p>It is important that waste water is not allowed to freely permeate soils and evaporation ponds must not be constructed close to areas where sensitive landforms and surface waters are located or may occur.</p>	Noted and Actioned. Objective 7 reflects these comments.
22	DEH	<p>I note the existing Officer Basin SEO (Officer Basin Energy Pty Ltd) has "Flora and/or fauna surveys may be undertaken in association with proposed field activities" in column 3 for this objective. Something like this could be refined in terms of triggers for survey or further assessment.</p>	Actioned see, Objective 3 of the SEO. In addition a separate section regarding environmental clearance has been added to the EIR (See Section 5.1.5).
23	DEH	<p>Noted that it would be of value to provide data to DEH regarding evidence of malleefowl (mounds and animal sightings) and other</p>	Actioned. Objective 1.

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		fauna records within the exploration lines.	
24	DEH	Is it possible to include fauna which has not been recorded but is a possibility given appropriate habitat and appropriate trapping techniques (e.g., sandhill dunnarts)	Actioned. See Objective 1. If flora and fauna surveys are carried out survey methods will be discussed with DEH and APYLMU.
25	DEH	Vegetation clearance is only exempt from the provisions of the Native Vegetation Act 1991 under conditions which include minimisation of the clearance and avoiding significant/sensitive vegetation/habitat and satisfying this condition would require assessments of the significance of vegetation to be cleared. Also note the definition of clearance under the Act is very broad.	Actioned. See Section 2.1 and Objective 3.
26	DEH	<p>Conservation needs of specific species have been considered.</p> <ul style="list-style-type: none"> <li>• This may cover this in an in-direct way but something more specific in column 3 addressing further assessments on a case by case basis should be included.</li> <li>• Camps should not be located in sensitive areas (e.g. as identified in a desktop assessment), such as at known localities of scheduled flora.</li> <li>• A strategy for limiting the footprint of campsites and managing potential disturbance beyond the boundaries of campsites should be included.</li> </ul>	Actioned. See Objective 3.
27	DEH	Clarification: how is removal of mature trees defined? Retention of root stock is already an objective, so does this objective prevent e.g. pushing over mature trees with the blade, or does the condition only refer to complete removal from the ground (i.e. up-rooting)?	<p>A common definition of a tree is "A single-trunked plant with a sufficient, recognisable girth with numerous secondary branches definably clear of the ground and above three metres in height. Only some mulgas and mallees on the Lands are likely to fit into this definition.</p> <p>Given the experience gained from the Welbourn Hill 2D Seismic Survey, it is acknowledge that in areas of dense mulga woodland, there is no practical way to ensure that mature mulga will not be removed during line preparation for seismic surveys in PEL(A)s. Therefore removal of mature trees should occur only when unavoidable, and when weaving, detours and other mitigation strategies do not afford practical access.</p>

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			<p>See Objective 3.</p> <p>With reference to the comment on retaining rootstock - this is not an objective but one of many standard operating procedures that are designed to achieve an objective - in this case "to minimise the impact of operations on vegetation"</p>
28	DEH	<p>Minimise land disturbance':</p> <ul style="list-style-type: none"> <li>• Has a condition of 'no off-road driving'. This should be corrected to 'no off-line driving'.</li> <li>• Condition states 'No survey lines or access tracks traverse salt lakes or clay pans', i.e. no access to salina or playa lakes. This is an appropriate measure. There are inconsistencies with this and information in the EIR (s5.1.5, 5.1.7 &amp; 5.3.1) which suggests that access is allowed (albeit with specialised tyres, no use of heavy machinery, only hand-held tools etc). As this section is intended as a description of the activities to be conducted in the region, presumably it should not be in conflict with conditions applied to environmental objectives. If the intention is for foot-only access to be allowed, then this should be clarified.</li> </ul>	Actioned. See Objective 4.
29	DEH	<p>Avoid the introduction of exotic species:</p> <ul style="list-style-type: none"> <li>• Objective should also include not increasing the abundance of exotic species already present.</li> <li>• Camp cleanliness should be addressed, e.g. strategies around waste management and vehicle hygiene that will minimise attraction of ferals and promotion of weeds.</li> <li>• Comments should refer to other objectives e.g. minimising soil disturbance, as this is a contributing factor to weed growth and spread.</li> <li>• Buffel Grass (<i>Cenchrus ciliaris</i>) should be specifically mentioned as a priority for this objective as it is of major concern in this region.</li> </ul>	Actioned. See Objective 6 and 7.
30	DWLBC	<p>All chemicals must be stored appropriately (i.e., in lined, bunded areas). Bunded areas must have freeboard to hold a 1 in 100 year, 24hr rainfall event.</p>	Actioned. See Objective 7.