Cooper Basin Petroleum Production Operations

Statement of Environmental Objectives

November 2016

SENEX-CORP-EN-REP-010

Revision 1.2
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1 INTRODUCTION

This Statement of Environmental Objectives (SEO) has been prepared to meet the requirements of Sections 99 and 100 of the South Australian Petroleum and Geothermal Energy Act 2000 (the Act) and Regulations 12 and 13 of the Petroleum and Geothermal Energy Regulations 2000 (the Regulations).

This SEO was revised in November 2016 to address production operations within Petroleum Exploration License (PEL) 182. PEL182 was released for exploration by the South Australian Government in 2003 (SA Government, 2003) with special access conditions. Specials conditions are defined in the gazettal of the licence area (SA Government, 2003), which included the creation of two Special Management Zones within the tenement: a Walk In Zone (WIZ) and a Controlled Access Zone (CAZ). The gazettal also stated that specific Statements of Environmental Objectives will need to be developed for petroleum activities in the PEL182 Special Management Zones, to detail the access restrictions for the zones that the gazettal outlines.

Consequently this Statement of Environmental Objectives (SEO) has been revised to address petroleum production operations within PEL182 and the Controlled Access Zone (CAZ).

The Act and Regulations also require the development and implementation of an Environmental Impact Report (EIR). This SEO has been prepared on the basis of information contained within a revised Environmental Impact Report (EIR) (Senex, 2016).

1.1 Purpose

The intent of the SEO is to outline the environmental objectives to which production operations in the Cooper Basin will conform, and the criteria upon which the achievement of these objectives will be assessed.

The objectives of this SEO have been developed on the basis of the information provided in the EIR, and are in keeping with the objectives of the Petroleum and Geothermal Energy Act, which include:

- to minimise the environmental damage from exploration for, or recovery or commercial utilisation of, resources to which the Act applies
- to establish appropriate consultative processes involving people directly affected by regulated activities and the public generally
- to protect the public from risks inherent in regulated activities.

The Act broadly defines the environment to include natural, social, cultural and economic aspects. The environmental objectives outlined in the SEO incorporate all of these elements.

1.2 Scope

Senex also has interests in a number of other Petroleum Exploration Licence (PEL) areas and Petroleum Production Licences (PPL) in the South Australian Cooper Basin. Figure 1 shows the location of Senex’s PPLs and existing production facilities as at October 2016. Additional production facilities are likely to be added in the future as a result of Senex Energy’s exploration and drilling programs.

This SEO (and the EIR) have been written to address both current and potential future production activities in all land systems in the Cooper Basin, in order to develop a SEO that will address reasonably foreseeable future activities over the lifetime of the SEO.

This SEO applies to all Senex Energy production operations in the South Australian sector of the Cooper and Eromanga basins (including PEL182 and associated Controlled Access Zone (CAZ)).

Senex activities that are specifically covered by this SEO include:

- well operation and maintenance
- pipeline, trunkline and flowline construction, operation and abandonment
- production facility construction, operation, maintenance and abandonment (including extended production test facilities, camps and operational areas such as laydowns)
- produced formation water disposal operations
- waterflood activities for enhanced oil recovery
- road construction, maintenance and restoration
- waste management and land treatment unit operations.

This SEO does not apply to:
- exploration activities
- drilling activities
- sub-surface well / reservoir activities (with the exception of the aspects related to waterflood that are covered in this SEO),
- fracture stimulation
- well site and access track construction
- well completion
- pre-wellhead production
- down hole abandonment
- restoration of well sites and access tracks
- seismic operations

These activities are covered by other SEOs including:
- South Australia Cooper Basin and Arid Regions Geophysical Operations - Statement of Environmental Objectives (Santos 2012)
- South Australia Cooper Basin Operators Statement of Environmental Objectives: Drilling, Completions and Well Operations (Santos 2015)
- Statement of Environmental Objectives: Fracture Stimulation of Deep Shale Gas and Tight Gas Targets in the Nappamerri Trough (Cooper Basin), South Australia (Beach 2012).
- Geophysical Operations in PEL182, Cooper Basin Statement of Environmental Objectives, (Senex 2013)
- Senex Energy Fracture Stimulation of Oil Targets of the Eromanga Basin Formations in the Cooper Basin, South Australia – Statement of Environmental Objectives (Senex, 2015)
- Statement of Environmental Objectives for PEL 182 Controlled Access Zone Drilling, Completions and Well Operations (Senex, 2016a).
Figure 1: Current location of Senex Energy’s licence areas and petroleum production operations in the South Australian Cooper Basin as at October 2016.
2 ENVIRONMENTAL OBJECTIVES

Potential environmental hazards and consequences associated with production operations in the Cooper Basin have been identified in the supporting Environmental Impact Report (Senex, 2016). Senex Energy is committed to achieving a range of environmental objectives in regard to these potential hazards.

The environmental objectives for Senex Energy’s production operations are to:

1. Minimise any safety risk to the public and third parties
2. Avoid or minimise disturbance to stakeholders and/or associated infrastructure
3. Minimise disturbance and avoid impacts to soil
4. Minimise disturbance to native vegetation and fauna
5. Avoid the introduction or spread of pest plants and animals and pathogens and implement control measures as necessary
6. Minimise the disturbance to drainage patterns and avoid contamination of surface water and shallow groundwater resources
7. Minimise loss of aquifer pressure and avoid aquifer contamination
8. Minimise noise due to operations
9. Minimise air pollution or greenhouse gas emissions
10. Avoid disturbance to sites of cultural and heritage significance
11. Optimise waste avoidance, reduction, reuse, recycling, treatment and disposal
12. Minimise the impact of emergency situations
13. Remediate and rehabilitate operational areas to agreed standards.

3 ASSESSMENT CRITERIA

The environmental objectives identified above are subject to an assessment to measure the level of achievement. The assessment criteria for each objective will be one of the following:

1. Defined conditions – In some cases, the achievement of an objective can be assessed through ensuring defined conditions are met or carried out. Such conditions may include for example:
   - Prohibitions to undertake a specific action (for example, to achieve the objective ‘Minimise disturbance to native vegetation and fauna’ during construction of a pipeline may be to prevent clearing of Priority 1 vegetation or trees).
2. Defined requirements – the achievement of an objective can be assessed against the implementation of specific procedures or industry accepted standards required for an activity (e.g. the design, construction, operation and maintenance of the pipeline must meet the requirements of AS 2885).
3. **Goal Attainment Scaling (GAS) criteria** – Environmental objectives requiring visual assessment are likely to be prone to uncertainties of subjective judgement. To minimise this occurring, GAS is used to measure such objectives against a series of criteria described by a written description and/or photographically. GAS is applicable to measuring objectives related to minimising disturbances to natural vegetation, soil, and the rehabilitation of facilities, borrow pits and access tracks. GAS criteria are referenced where available and presented in Appendix A.

4. **Scientific Studies/Monitoring** – in some cases; the assessment of the environmental objectives may not be possible in the shorter term and may require longer term monitoring and scientific evaluation. In such cases, assessment criteria may be in the form of longer term data and information gathering, for example, the objective ‘minimise the impact of the production operations on surface water resources’ may require a study to determine the potential impact of cumulative hydrocarbon leaks.

Each objective for production operations will be assessed using a selection of the assessment options outlined above. This will enable Senex Energy to determine whether environmental objectives are being achieved. Comments on any variances will be recorded and reported where required as detailed in Section 4.

Table 1 outlines the objectives, management measures required to meet those objectives and the appropriate assessment criteria to determine if compliance with the objectives has been achieved.

The management measures provide a high level overview of Senex Energy’s systems, activities and/or procedures to achieve the environmental objectives.
### Table 1: Environmental Objectives and Assessment Criteria

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<th>Objective</th>
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| 1. Minimise any safety risk to Senex personnel, the public and third parties. | - Reasonable measures implemented to ensure no injuries or health risks to the public or third parties.  
- No injuries or incidents involving the public.  
- No uncontrolled operations related fires.  
- Emergency procedures implemented and personnel trained.  
- Installations meet appropriate and relevant Standards (e.g. AS, API)                                                                                                                                                                                                                                           | - All production facilities and pipelines are compliant with relevant standards.  
- Risk assessments and inspections of facilities and implementation of appropriate corrective actions.  
- All employees and contractor personnel complete a safety induction prior to commencement of work on site.  
- All employees and contractor personnel to undertake a refresher induction every 2 years.  
- Use of signage, bunting and traffic management practices to identify all potentially hazardous areas and to warn third parties of access restrictions to operational areas.  
- Incident record system (preventative and post incident review)  
- Emergency Response Plan (ERP) and procedures are in place. Annual exercise of the ERP.  
- Appropriate fire-fighting equipment on site.  
- Appropriate firebreaks (such as adequate earth breaks around camps and infrastructure) are maintained.  
- Regular fire safety and emergency response training for all operations personnel and review of procedures.  
- Established procedures for minimising fire risk during operations.  
- Smoking only in designated areas.  
- Safety, testing, maintenance and inspection procedures are implemented.  
- Safe work permits must be obtained to ensure only individuals with proper clearance can conduct works.  
- Appropriate PPE is issued and available as required in accordance with company operating requirements and applicable standards.  
- Measures implemented to minimise visibility of pipeline ROW at access track crossings (e.g. ROW width reduced to minimal safe distance, ROW doglegged, some trees or shrubs left on the ROW to break line of sight, verge of the track reinstated).  
- Communications with landholders.  
- All reports of unauthorized activity are reported and | The criteria for assessing the achievement of this objective have been developed on the basis of current understanding of the risks associated with production operations.  
| A key to achieving this objective in relation to production operations including pipelines and production facilities is to ensure that the visual prominence of these areas is as low as reasonably practical, including access track(s), to the extent where it is difficult for third parties to detect and therefore access them.  
| In the case of unauthorised public access, adequate signage needs to be displayed.  
| Fires or explosions at facilities could result in complications resulting in a spill of production fluids (formation water and hydrocarbon), atmospheric emissions, disturbance of native vegetation and wildlife habitat and risk to employees, contractors and the public.  
<p>| The movement of heavy equipment may present a risk to the safety of employees, contractors and the public. |</p>
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<td>2. Avoid or minimise disturbance to stakeholders and/or associated infrastructure.</td>
<td>- Where disturbance is unavoidable or accidental, infrastructure or land use is restored to the satisfaction of the landholder/owner or as near as practicable to undisturbed condition. - No unresolved reasonable landholder/third party complaints. - Landholder activities not restricted or disturbed as a result of activities unless by prior arrangement.</td>
<td>- Induction for all employees and contractors covers pastoral, conservation, tourism, legislation and infrastructure issues. - Timely notification to adjacent landholders / third party prior to &amp; during new or significant works. - All gates left in the condition in which they were found. - Fences repaired to equivalent standard following construction. - System is in place for logging stakeholder complaints to ensure that issues are captured and actioned as appropriate. - Record of disturbance management through appropriate documentation. - Potential sources of contamination are fenced as appropriate to prevent stock access. - Compliance with the requirements of the Cattle Care and Organic Beef accreditation programs. - In recognised conservation reserves (e.g. Innamincka Regional Reserve) excavations are left in a state as agreed with the responsible statutory body.</td>
<td>Limiting disturbance as much as practicably possible is fundamental to establishment and maintenance of good relation with stakeholders and the community. Many pastoral properties are certified under the Organic Beef and Cattle Care accreditation schemes and may be affected by fuel and chemical storage, moving machinery and contaminated sites.</td>
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<td>3. Minimise disturbance and avoid impacts to soil.</td>
<td>Construction Activities - The extent of soil erosion is consistent or less than surrounding land. - Any escape of petroleum, processed substance, chemical or fuel is either immediately contained and removed or assessed in accordance with NEPM guidelines and remediated in accordance with relevant guidelines in a timely manner. - No unauthorised off-road driving or creation of shortcuts.</td>
<td>Construction Activities Senex operational procedures and guidelines are in place and will be followed for construction activities, including: - Consideration of alternative routes during the planning phase to avoid environmentally significant /sensitive areas. - Top soil/subsoils are stockpiled separately and soil profiles appropriately reinstated following the rehabilitation of earthworks/excavations. - Rip areas of compacted soil (except on gibber plains and tableland environments) to assist rehabilitation. - Removal of gibber mantle to be avoided in gibber and tableland systems to minimise soil disturbance. - Restrict activities (including vehicle access) to production.</td>
<td>The impacts associated with soil disturbance can potentially include erosion and dust generation. The main sources of disturbance to soils are associated with pipeline, road and facility construction, creation of borrow pits, restoration activities, vehicle movement in off-road locations and sub-surface excavations (e.g. trenching).</td>
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<td>- No subsidence is evident over pipeline trenches.</td>
<td>- No evidence of significant subsoil on surface (e.g. colour) on the pipeline ROW following construction.</td>
<td>- Works are restricted to the minimum area required to safely undertake activities in accordance with procedures.</td>
<td>Subsurface access for drilling/production activities are permitted within the WIZ, but surface access for petroleum activities within the WIZ is limited to foot based geophysical activities only (i.e. no surface vehicle access can occur within the WIZ).</td>
</tr>
<tr>
<td>- No evidence of significant subsoil on surface (e.g. colour) on the pipeline ROW following construction.</td>
<td>- At pipeline dune crossings, dune profiles have been restored consistent with surrounding dune profiles.</td>
<td>- Design and construct roads with drainage features (e.g. culverts and offtakes) that avoid disturbance to natural drainage and minimise erosion and sedimentation.</td>
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<td>- At pipeline dune crossings, dune profiles have been restored consistent with surrounding dune profiles.</td>
<td>- No production activities undertaken on salt lakes or steep tableland slopes.</td>
<td>- Stabilise and control areas where there is potential for or signs of soil erosion or siltation occurring</td>
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<td>- No production activities undertaken on salt lakes or steep tableland slopes.</td>
<td>- No vehicle access in the PEL182 Walk In Zone (WIZ).</td>
<td>- Inspections undertaken as part of regular operations or following specific works or following significant storm events to look at evidence of erosion, subsidence, vegetation loss and compare to adjacent land.</td>
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<td>- Abandoned areas (e.g. borrow pits) are remediated and rehabilitated to be reasonably consistent with the surrounding area.</td>
<td>- Abandoned areas (e.g. borrow pits) are remediated and rehabilitated to be reasonably consistent with the surrounding area.</td>
<td>- Preventative measures implemented and monitored in susceptible areas.</td>
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<td>- 0, +1 or +2 GAS criteria are attained for goals related to these criteria (see Appendix A).</td>
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<td>- Restored borrow pits to have topsoil / overburden replaced and pit re-profiled where necessary to prevent erosion.</td>
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<td>- Also refer to Objective 6</td>
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**Spill Response / Contingency Planning**

- Results of emergency response procedures carried out in accordance with Regulation 31 show that an oil spill contingency plan is in place in the event of a spill is adequate and any necessary remedial action needed to the plan is undertaken promptly.
- Implementation of the Spill Response Plan and subsequent remedial action (including clean-up) is to be undertaken in accordance with the National Environmental Protection (Assessment of Site Contamination) Measure 1999 amended in 2013 and the SA EPA guidelines.
- Senex Spill Response Plan (reviewed annually) is up to date with specific scenarios relating to spills to creeks and floodplain areas.
- Spill response equipment is audited annually.

Potential sources of contamination associated with pipeline leaks/spills, spills of fuel or chemicals stored onsite and disposal of waste waters and produced formation waters. Disposal of hydrotest water is also a potential source of contamination during pipeline construction if water is treated with chemicals prior to use.
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| **Fuel and Chemical Storage, Handling and Transportation** | - Any escape of petroleum, processed substance, chemical or fuel is either immediately contained and removed or assessed in accordance with relevant guidelines in a timely manner.  
- Also refer to Objective 13. | - Annual spill response training exercise is undertaken.  
- Refer to Section 4 “Reporting” for clarification of incident reporting requirements | The main impact associated with this Objective is the potential contamination from fuel and chemicals, including the waterflood tracer and produced formation water.  
There is potential for contamination from chemical and fuel storage areas, from oil and gas systems at well heads, during transportation of fuel and chemicals and during transportation of wastes.  
Localised impacts may result from spills or leaks of well operation chemicals during storage and handling.  
The achievement of this Objective also contributes to the achievement of Objectives 4 and 6 in relation to minimising impacts natural habitats and water. |
| **Oil/Condensate Spills (Pipeline/Road Transport)** | - No trucking of oil within the CAZ during periods when watercourses are flooded and/or access roads are inundated.  
- No spills or leaks that affect an area that has not been specifically designed to contain such an escape.  
- Level of hydrocarbon continually decreasing for in situ remediation.  
- Soils remediated in consultation with DSD / EPA and to a level determined acceptable by the regulator. | - Implement appropriate flood and road condition monitoring and reporting procedures  
- Pipelines are compliant with AS2885 pipeline standards and the relevant Pipeline Integrity Management Plan.  
- Pipelines are routinely inspected and maintained in accordance with AS 2885 and the Pipeline Integrity Management Standard (Senex, 2013).  
- Spills or leaks are immediately reported and clean up actions initiated.  
- Records of spill events and corrective actions are maintained in accordance with company procedures. | |
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| Produced Formation Water (PFW) | - No salinisation or seepage evident outside designated pond area (e.g. adjacent dune corridor).  
- Water monitoring results indicate levels of Total Petroleum Hydrocarbons (TPH) below 30 mg/L in bunded holding / evaporation ponds and 10 mg/L in freeform evaporation ponds or natural disposal areas.  
- No evidence of visible hydrocarbons outside of interceptor ponds (e.g. in holding ponds or outside pond walls).  
- No evidence of overflow of product from interceptor pit or ponds.  
- No observed impacts to local vegetation.  
- Disposal of treated PFW restricted to defined areas in accordance with activity approval conditions. | - PFW treatment and disposal in accordance with approved procedures in EMS and accepted industry standards including compliance, where relevant, with the requirements of the Environment Protection Act 1993, including the Environment Protection (Water Quality) Policy 2015, the conditions of any SA EPA Authorisations, and the EPA Guideline Wastewater and Evaporation Lagoon Construction.  
- Site ponds appropriately¹ to minimise potential impacts.  
- Construct ponds using appropriate materials and suitable design criteria (freeboard, depths, lining etc.).  
- Ensure that interceptor pits are appropriately lined with an impermeable liner (e.g. HDPE).  
- Surface of interceptor pits to be regularly skimmed.  
- Ensure that tanks are well maintained and regularly emptied.  
- Ensure adequate freeboard is maintained on ponds.  
- PFW ponds fenced to prevent fauna and stock access.  
- Monitor evaporation pond water and sludge annually.  
- Monitor ponds for surrounding upwelling of PFW.  
- Undertake appropriate water quality monitoring where shallow groundwater exists in the vicinity of PFW ponds.  
- Records of volumes of PFW maintained and reported annually.  
- Use of process chemicals (e.g. biocides, emulsion breakers) is minimised and biodegradable or UV degradable chemicals used where available.  
- Quality of water tested prior to secondary use to ensure that it meets relevant criteria (e.g. ANZECC criteria for the intended site/use).  
- Breaker siphon to be installed between interceptor pond and evaporation ponds.  
- Relevant approvals for secondary use obtained where required (e.g. DSD, landholder). | |

¹ Appropriately manage means to take into consideration and assess relevant environmental factors (including location of surface water, shallow groundwater, potential flooding, location of vegetation, etc.) and take measures to reduce the potential impact on these factors through the use of best practice.
### Objective 4. Minimise disturbance to native vegetation and fauna.

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<th>Waste Disposal (domestic, sewage and sludge)</th>
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#### Construction Activities

- Visual monitoring undertaken at secondary use sites as appropriate (e.g. salinity, vegetation health, contamination).
- Refer to Objective 11.

### Guide to How Objectives Can Be Achieved

- Planning and assessment of proposed activities to minimise impact.
- Sensitive land systems (e.g. wetlands) and areas of high value biological significance avoided wherever possible. Where activities are undertaken in these areas (i.e. no practicable alternative), appropriate review, assessment and mitigation measures are in place.
- Use existing cleared areas for camps, laydowns and turnaround.
- Diversions or holding facilities for produced water are located to avoid impact on defined drainage connecting to Ramsar floodplains.
- Removal of mature trees avoided as far as practicable.
- Flagging of trees or stands of trees for avoidance where appropriate.
- Extended testing and permanent production facilities including storage loading and water disposal located outside.

### Comments

- Biological "High value" areas currently are only formally defined by the Special Management Zones associated with Coongie Lakes in Innaminka Regional Reserve. Environmental assessments (professional opinion with observational support) are necessary for establishing significance or otherwise of localities. The Ramsar wetland boundary is an administrative convenience, covering as it does extensive non-wetland areas.
- Regularly inundated wetlands associated with main stream flows of Cooper Creek, and their riparian fringe and associated drainage areas are likely to possess high biological value areas.
- Primary risks to native fauna include clearing of habitat and obstruction of movement through cleared areas, entrapment in trenches or excavations, fuel and chemical storage and

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2 Field Guide refers to the Field Guide to the Common Plants of the Cooper Basin – South Australia and Queensland (Wiltshire and Schmidt 2003)

3 In the Cooper Basin, ‘important’ vegetation typically includes:
   - plants of Priority 1 or 2 species as defined in the Field Guide (which predominantly include tree and larger shrub species that are long lived and/or do not regenerate readily from seed or rootstock)
   - vegetation that is restricted in distribution and/or is locally important (e.g. for habitat or for land stability)
   - vegetation communities identified as conservation priorities in the South Australian Arid Lands Biodiversity Strategy (DEH 2009)
   - vegetation that provides important habitat for rare or threatened fauna.

Whether vegetation is ‘important’ at a particular site needs to be considered in the context of the land system and the local and regional environmental setting.

Rare, vulnerable or endangered flora would also fall within the definition of ‘important vegetation’; however additional approvals must be obtained if the removal of listed (under South Australian National Parks and Wildlife Act 1972 and the Environment Protection and Biodiversity Conservation Act 1999) rare, vulnerable and endangered species is unavoidable.
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| Borrow Pits | 0, +1 or +2 GAS criteria for goals related to this objective (Appendix Table A1 to A2) or where 0, +1 or +2 GAS criteria are not attained; plans for remediation are documented and implemented in a timely manner. (Note: see Objective 13 for final borrow pit rehabilitation (i.e. at relinquishment)) | - The type and density of vegetation on rehabilitated sites is consistent with the surrounding landscape, but less mature. Note: assessment will take into account that regrowth is a time and rainfall dependent process.  
- No vehicle access in the PEL182 Walk In Zone (WIZ).  
- 0, +1 or +2 GAS criteria attained for goals related to this objective listed in (Appendix A).  
- The type and density of vegetation on rehabilitated sites is consistent with the surrounding landscape, but less mature. Note: assessment will take into account that regrowth is a time and rainfall dependent process.  
- Proposed construction areas have been assessed for rare, vulnerable and endangered flora and fauna species before the commencement of construction.  
- Consideration of sensitive vegetation during vegetation trimming and / or clearing activities  
- Vegetation and tree limbs trimmed rather than cleared where possible.  
- Minimise area of clearing to that required to safely undertake activities in accordance with procedures.  
- Where possible (e.g. pipeline ROW) root stock is not removed and only light grading or no grading is used. | management and waste management activities.  
Subsurface access for drilling/production activities are permitted within the WIZ, but surface access for petroleum activities within the WIZ is limited to foot based geophysical activities only (i.e. no surface vehicle access can occur within the WIZ).  
The aim of this objective is to also maximise the potential for vegetation regrowth. |
| Fuel and Chemical Storage and Management | Refer to assessment criteria for Objective 3. | - Pits are not established in locations which pose an unacceptable hazard to stock or wildlife.  
- Sensitive land systems (e.g. wetlands) avoided wherever possible. Where activities are undertaken in these areas (i.e. no practicable alternative), appropriate review, assessment and mitigation measures are in place.  
- Borrow pits are re-used, where appropriate, as evaporation or water storage ponds or restored to a standard consistent with the surrounding land use.  
- Borrow pits are restored to minimise water holding capacity, where agreements are not in place with stakeholders.  
- In recognised conservation reserves (e.g. Innamincka Regional Reserve) excavations are left in a state as agreed with the regulator.  
- Undertake a review of legacy borrow pits established prior to the introduction of the 2014 GAS criteria (DSD, 2014) using a risk based approach to identify pits that are a priority for management. | Refer to Objectives 3 and 6. |
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<td>Waste Management</td>
<td>Refer to assessment criteria for Objective 11.</td>
<td>Waste Management  - Covered bins are provided to prevent wildlife access.  - All loads of rubbish are covered during transport to the central waste facility.  - Waste pits are not established in locations which pose an unacceptable hazard to stock or wildlife.  - Sewage treatment facilities are operated and maintained in accordance with design criteria.  - Facilities, PFW ponds and areas of contamination are fenced as appropriate to prevent wildlife and stock entering.</td>
<td>Potential impacts of waste on vegetation and fauna also addressed under Objective 11.</td>
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<tr>
<td>Native Vegetation Act</td>
<td>- Significant Environmental Benefit (SEB) for native vegetation clearance approved by DSD (where delegated authority applies) or Native Vegetation Council.  - SEB obligation is ultimately satisfied / implemented.  - Significant environmental benefit work undertaken in a timely manner.</td>
<td>Native Vegetation Act  - Work (or payment to Native Vegetation Fund) to achieve SEB for native vegetation clearance associated with Senex activities.  - SEB requirement either:  - Determined using the Guidelines for a Native Vegetation Significant Environmental Benefit Policy for the Clearance of Native Vegetation Associated with the Minerals and Petroleum Industry (DWLBC, 2005); or  - Negotiated with DEWNR and the Native Vegetation Council where SEB calculation differs from the standard methodology in the Guidelines.</td>
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<td>Fauna Management</td>
<td>- Native fauna casualties associated with construction activities restricted to as low as reasonably practical.</td>
<td>Fauna Management</td>
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<td>Fire Danger Season Restrictions and Education</td>
<td>- All personnel are fully informed on the fire danger season and associated restrictions.</td>
<td>Fire Danger Season Restrictions and Education - Include Fire Season education as part of the induction.</td>
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<td>5. Avoid the introduction or spread of pest plants, pest animals and pathogens and implement control measures as necessary.</td>
<td>- Weeds or feral animals are not introduced into, or spread in operational areas as a result of production activities. - The presence of weeds or pathogens in operational areas is consistent with or better than adjacent land.</td>
<td>- All vehicles and equipment appropriately cleaned prior to entering the Cooper Basin or after operating in an area of known weed infestation. - Discharge water (e.g. vehicle and equipment wash-down water) appropriately collected and disposed of in accordance with ANZECC and EPA criteria. - Regular patrols undertaken to monitor for outbreak of weeds on production sites and if required implement controls to manage spread. - For operations within regional reserves where there is potential for the introduction or spread of weeds will be undertaken in consultation with the DEWNR Ranger. - Records of detection, monitoring or eradication of weed or other pests or noxious species introduced by production</td>
<td>Movement of vehicles and equipment from other regions of the State or interstate are a potential source of weed or pathogen introduction and spread. The most effective technique to prevent the introduction and spreading of weed species is thoroughly cleaning vehicles and equipment prior to entering the Cooper Basin. Borrow sourcing can result in spread of weeds (particularly in floodplain areas). Borrow sources should be in weed free areas.</td>
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<td>6. Minimise disturbance to drainage patterns and avoid contamination of surface water and shallow groundwater resources.</td>
<td><strong>Construction Activities</strong>&lt;br&gt;- Construction activities (e.g. access tracks or pipelines) are located and constructed to maintain pre-existing water flows (i.e. channel contours are maintained on floodplains and at creek crossings).&lt;br&gt;- No new water affecting activities as defined under the NRM Act undertaken unless relevant permits have been obtained.&lt;br&gt;- No unauthorised discharge or escape of any liquid (including wastewater, petroleum, processed substance, chemical or fuel) or solid waste to surface and/or shallow groundwater.&lt;br&gt;- For excavations, surface drainage profiles restored to a state that is consistent with pre-existing condition and surrounding area.&lt;br&gt;- No impacts to groundwater or surface water as a result of construction activities.&lt;br&gt;- No blockage of any creek(^1) channels within the PEL182 CAZ.&lt;br&gt;- No earthmoving activities to occur within the PEL182 CAZ when floodwaters(^2) pose an inundation risk to areas where earthworks are occurring or proposed to occur.</td>
<td><strong>Construction Activities</strong>&lt;br&gt;- Construction activities are designed and managed to avoid significantly impeding or diverting water flows. Localised flows (e.g. minor channels or other water pathways) may be diverted around facility if required.&lt;br&gt;- Fuel, oil and chemicals are stored, handled and transported in accordance with applicable standards and guidelines e.g. Australian Standard AS 1940, Australian Dangerous Goods (ADG) Code, EPA guidelines 080/12 Bunding and Spill Management.&lt;br&gt;- Sensitive land systems (e.g. wetlands) avoided wherever possible. Where activities are undertaken in or near these areas, appropriate review, assessment and mitigation measures are in place to ensure that surface water flows are maintained and contamination of surface water and groundwater is avoided.&lt;br&gt;- Extended testing and permanent production facilities, including storage, loading and water disposal, located above lower levels of frequently inundated floodplains.&lt;br&gt;- Installation of culverts or other drainage management devices where appropriate.&lt;br&gt;- Implement appropriate flood monitoring and reporting procedures.&lt;br&gt;- Regular patrols undertaken to look for evidence of erosion, abnormal vegetation growth or death.&lt;br&gt;- Observations are also to be undertaken following significant storm events.&lt;br&gt;- Where required, water quality monitoring is carried out and the monitoring results retained.</td>
<td>The main threats to drainage patterns and surface waters are considered to be the interruption of natural flows as a result of earthworks through watercourse channels and creek bank disturbance.&lt;br&gt;Construction activities in the Cooper Basin should aim to minimise any impact to existing drainage systems. This may be achieved by avoiding sensitive areas and/or utilising appropriate construction methods to avoid windrows.&lt;br&gt;Any remediation work will be undertaken immediately upon completion of all activities.&lt;br&gt;Where there is a potential for tracks or road to form additional drainage lines in regional reserve areas consultation will be undertaken with the DEWNR Ranger regarding design specifications.</td>
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\(^1\) Creeks are defined as those minor and major watercourses mapped to occur within the CAZ by the DEWNR topographical watercourse mapping dataset (DEWNR, 2016).

\(^2\) Floodwaters are defined as an overflow of a large amount of water beyond the normal limits.
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| of a watercourse. | **Production Activities**  
- Production facilities located to avoid areas subject to inundation as far as possible.  
- Surface drainage profiles restored to state that is consistent with pre-existing condition and surrounding area.  
- No unauthorised discharge or escape of any liquid (including wastewater, petroleum, processed substance, chemical or fuel) or solid wastes to surface water and/or shallow groundwater.  
- Any escape of petroleum, processed substance, chemical or fuel is either immediately contained and removed or assessed in accordance with NEPM guidelines and remediated in a timely manner.  
- All creek\(^1\) crossings of pipelines within the PEL182 Controlled Access Zone (CAZ) are to be buried and incorporate:  
  - two physical mechanisms of oil spill protection\(^2\); and  
  - two systematic mechanisms of oil spill protection\(^2\). | **Production Activities**  
Production facilities located to avoid areas subject to inundation as far as possible.  
Production operations will cease in event of imminent flood inundation of the facility. In floodplain land systems, the following steps may be undertaken well in advance if there is a risk of facility flooding:  
- Satellite imagery and upstream flood levels used to predict when floodwaters will reach the facility (generally take 2-3 months to reach lower Cooper).  
- Construction of bunds around wells, where appropriate, to increase protection.  
- Additional inspections of production facilities scheduled  
- Flowlines in floodplain areas will be designed to maintain integrity during inundation.  
- Creek\(^1\) crossings of pipelines in the CAZ, will be constructed in accordance with the control measures specified for sensitive areas under AS2885 Pipelines - Gas and Liquid Petroleum Part 1: Design and Construction Section 5.5.4 Design for Protection.  
- Interceptor pit (if present) skimmed to remove oil  
- Fuel tanks drained, engines and all hydrocarbons (e.g. fuel and lubricants) removed off-site.  
- Office/accommodation units tied down.  
Production facilities constructed to avoid spread of hydrocarbons during inundation following localised rainfall (e.g. appropriately sized/elevated bunds in accordance with the EPA Liquid Storage - Bunding and Spill Management Guidelines 080/12 (2012)).  
Produced Formation Water (PFW)  
- Refer to Objective 3.  
- Any discharge to waterways would be undertaken under EPA Authorisation and would comply with relevant regulations under the Environment Protection Act 1993.  
- PFW disposal ponds are located away from areas which are | |

\(^1\) Creeks are defined as those minor and major watercourses mapped to occur within the CAZ by the DEWNR topographical watercourse mapping dataset (DEWNR, 2016).

\(^2\) As defined by measures outlined in AS2885 Pipelines-Gas and liquid petroleum Part 1:
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<td><strong>Design and construction Section 5.5.4.</strong></td>
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<td><strong>Produced Formation Water (PFW)</strong></td>
<td>- Refer to assessment criteria for Objective 3.</td>
<td>- inundated during floods where possible (preferably above the 100 year flood level). - Interceptor pits are not located in areas prone to inundation by flooding. - Use of groundwater monitoring bores for PFW disposal ponds where appropriate (e.g. where risk of groundwater contamination is identified). The number and positioning of monitoring bores will be in accordance with relevant industry practice to ensure adequate coverage of any potential underground water contamination and movement.</td>
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<td>- No unlicensed discharge of water to waterways.</td>
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<td><strong>Waterflood Activities</strong></td>
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<td>- No significant change in surface water or groundwater contamination as a result of water flood activities.</td>
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<td><strong>Fuel and Chemical Storage, Handling and Transportation</strong></td>
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<td>- Refer to assessment criteria for Objective 3.</td>
<td>- Pumps &amp; associated equipment installed within containment device with an adequately sized containment sump. - Well contents (i.e. injected water) isolated from shallower aquifers by tubing and casing in well. - Compatibility studies conducted prior to injection.</td>
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<td>- No unauthorised discharge or escape of any liquid (including wastewater, petroleum, processed substance, chemical or fuel) or solid wastes to surface water and/or shallow groundwater.</td>
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<td><strong>Waste Disposal (domestic, sewage and sludge)</strong></td>
<td>- Refer to assessment criteria for Objective 11.</td>
<td>- Refer to Objective 3.</td>
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<td>- No unauthorised discharge or escape of any liquid (including wastewater, petroleum, processed substance, chemical or fuel) or solid wastes to surface water and/or shallow groundwater.</td>
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**Waste Disposal (domestic, sewage and sludge)**
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| Oil/Condensate Spills (Pipeline/Road Transport) | - No unauthorised discharge or escape of any liquid (including wastewater, petroleum, processed substance, chemical or fuel) or solid wastes to surface water and/or shallow groundwater.  
- All creek\(^1\) crossings of pipelines within the PEL182 Controlled Access Zone (CAZ) are to be buried and incorporate:  
  - two physical mechanisms of oil spill protection\(^2\); and  
  - two systematic mechanisms of oil spill protection\(^2\). | Oil/Condensate Spills | The major threat of spills is to soil, vegetation and watercourses directly impacted by the spill. Therefore, the achievement of this objective also consequently contributes to the achievement of Objectives 3, 4 and 6 in relation to minimising the impacts to soils, native vegetation and surface waters. |
| | | - Creek\(^1\) crossings of pipelines in the CAZ, will be constructed in accordance with the control measures specified for sensitive areas under AS2885 Pipelines - Gas and Liquid Petroleum Part 1: Design and Construction Section 5.5.4 Design for Protection.  
- Refer to Objective 3. | **Spill Response and Contingency Planning** | Avoidance of spills will be paramount in areas where the spill can be potentially spread beyond the immediate confines of the spill area into sensitive environments such as creeks and wetlands. |
| | | - Results of emergency response procedures, carried out in accord with Regulation 31, show that the oil spill contingency plan in place in the event of a spill is adequate and any necessary remedial action needed to the plan is undertaken promptly.  
- Oil spill contingency plan is reviewed annually and is up to date with specific scenarios relating to spills to creeks and floodplain areas.  
- Spill response equipment is audited annually.  
- Annual spill response training exercise is undertaken. | **Spill Response and Contingency Planning** |  |
| 7. Minimise loss of aquifer pressure and avoid aquifer contamination | - There is no uncontrolled flow to the surface (i.e. no free flowing bores).  
- Volume of water produced recorded.  
- No change in the capacity of third-party groundwater users to undertake their respective activities.  
- No unauthorised discharge or escape of any liquids (including water, petroleum, processed substance, chemical or fuel), or solid wastes to groundwater.  
- No impact on groundwater dependant ecosystems as a result of water usage is monitored, reviewed and management strategies implemented to minimise wastage.  
- Review water licensing requirements and allocation plans.  
- Monitoring programs implemented (e.g. through well logs, pressure measurements, casing integrity measurements and corrosion monitoring programs) to assess condition of barriers where integrity monitoring identifies potential issues, a risk assessment to evaluate safety and environmental impacts is undertaken to develop prevention and mitigation controls where appropriate.  
- Compliance with the current Environment Protection (Water Quality) Policy 2015. | Water usage is monitored, reviewed and management strategies implemented to minimise wastage.  
- Review water licensing requirements and allocation plans.  
- Monitoring programs implemented (e.g. through well logs, pressure measurements, casing integrity measurements and corrosion monitoring programs) to assess condition of barriers where integrity monitoring identifies potential issues, a risk assessment to evaluate safety and environmental impacts is undertaken to develop prevention and mitigation controls.  
- Compliance with the current Environment Protection (Water Quality) Policy 2015. | This objective seeks to protect the water quality and water pressure of aquifers that may potentially be useful as water supplies and to maintain pressure in target aquifers. |
<p>| | | | <strong>Note:</strong> The Cooper Basin Drilling, Completions and Well Operations SEO specifies detailed requirements for aquifer protection. |  |</p>
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|           | groundwater extraction or contamination\(^4\) (i.e. aquifers that may provide base flow to nearby waterholes). | **Waterflood Injection Wells**  
- Frequent quality testing of injection waters.  
- Compatibility studies conducted prior to injection.  
- Filtering of water to promote efficient injection into formation  
- Aquifer water quality monitored where appropriate through testing carried out during waterflood activities.  
- Regular pressure measurements undertaken to ensure well integrity is maintained (e.g. to ensure no communication between the tubing and casing)  
- Cement Bond Logs will be run to test for poor cement bonds.  
- Routine testing of the well bore and packer integrity. | |
|           | **Waterflood Injection Wells**  
- No significant change in water quality as a result of these activities. | |
|           | **Waterflood Injection Wells**  
- No significant change in water quality as a result of these activities. | |
|           | **Waterflood Injection Wells**  
- No significant change in water quality as a result of these activities. | |
| 8. Minimise noise due to operations. | - Operational activities have taken reasonable practical measures to comply with noise regulations, under the *Environment Protection Act 1993* and the requirements of the Environment Protection (Noise) Policy.  
- No unresolved reasonable complaints. | - Incident record system (preventative and post incident review).  
- Monitoring results, where deemed necessary (e.g. frequent complaints). | |

\(^4\) Definition of contamination – as per section 5B of the *Environment Protection Act 1993*. 
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| 9. Minimise air pollution or greenhouse gas emissions. | - Reasonable practical measures implemented in design and operation to minimise emissions.  
- No complaints received related to dust nuisance.  
- Compliance with regulatory and legislative requirements. | - Conduct all production activities in accordance with appropriate industry accepted standards and legislative requirements.  
- Continual review and improvement of operations.  
- Appropriate Emergency Response Procedures are in place.  
- Incident record system (preventative and post incident review).  
- Develop and implement procedures to manage dust generated as a result of production activities (reduce vehicle speeds, dust suppression). | Atmospheric emissions occur as a result of standard production operations.  
Emissions of particular significance are:  
- Combustion by-products (e.g. NOx, SOx, CO);  
- Organic carbon and carbon particulates (black smoke); and  
- Flared/vented hydrocarbons (gases). |
| 10. Avoid disturbance to sites of cultural and heritage significance. | - Work Area Clearances have been carried out for proposed construction areas and access tracks.  
- Any identified cultural heritage sites have been flagged (where appropriate) and avoided. | - Consultation, as necessary, with stakeholders in relation to the possible existence of heritage sites.  
- Site examined by relevant native title group for cultural heritage material prior to work on areas not previously cleared.  
- Senex has negotiated agreements or determinations in place with native title holders. Compliance with the requirements of these agreements and determinations will ensure that this objective is achieved.  
- Records of surveys maintained and available for auditing.  
- Areas requiring remediation which lie outside previously surveyed sites should be surveyed in accordance with company heritage clearance procedures.  
- Senex has a mechanism in place to appropriately report and respond to any sites discovered during operations.  
- Induction for all employees and contractor addresses heritage site recognition and management. | This objective is to ensure that any sites of cultural (Aboriginal or non-Aboriginal) heritage significance are identified and protected.  
New and suspected sites must be recorded and copies of the records submitted to Department of State Development, Aboriginal Affairs and Reconciliation Division (DSD-AARD). |
| 11. Optimise waste avoidance, reduction, reuse, recycling, treatment and disposal | - Waste is segregated and transported to an Environment Protection Authority (EPA) approved waste disposal facility for recycling or disposal in accordance with approved procedures.  
- No evidence of rubbish or litter on easements or at facilities.  
- Waste material is contained and disposed of in accordance with any | - Minimise generation of waste and where practicable, reusable biodegradable or recyclable materials will be procured.  
- Waste management complies with the EPA waste Hierarchy model (avoid, reduce, reuse, recycle, recover, treat, dispose).  
- Waste streams are segregated on site to maximise opportunities for waste recovery, reuse and recycling.  
- Provide suitable covered bins for the collection, segregation and storage of wastes.  
- Small camp sites, itinerant and isolated locations – waste material such as paper, cardboard and food scraps buried | Waste reduction requires continual improvements in purchasing, efficiency of use and reuse. Geographical isolation may limit the viability of some recycling opportunities. However, continual review of recycling options is required to ensure that improvements are implemented as far as practicable.  
No evidence of non-compliance with local or state government regulations |
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|           | EPA licensing requirements and the *Environment Protection Act 1993.* | where not feasible to transport to EPA licensed facility  
- Ensure bins are not accessible by wildlife.  
- All transported waste is adequately secured and covered.  
- Design and operation of any domestic waste disposal facility in accordance with EPA licence and guidelines.  
- Regular inspections for litter undertaken.  
- Waste disposal records and chemical manifests maintained.  
- Appropriately licensed contractors used for any hazardous waste disposal and records are maintained for all hazardous waste disposal.  
- Discharged water (e.g. washdown or hydrotest water) meets appropriate ANZEC and EPA criteria for point of disposal. | Wastes that are to be buried will be at an appropriate location and depth (as is reasonably practicable) in order to prevent exposure of waste by fauna or wind/water erosion. Once covered, the site will also be compacted to further minimise the risk of future exposure. |
| Sewage and Grey Water |  
- Waste water (sewage and grey water) disposed of in accordance with the *South Australian Public Health (Wastewater) Regulations 2013* or to the Department of Health’s satisfaction.  
- No spills or leaks from sludge treatment process and sludge pits. |  
Sewage and Grey Water  
- All waste disposal to occur as appropriate on site (grey water) or at an appropriately licensed facility (domestic or industrial waste)  
- All wastewater (sewage) disposal is in accordance with the *South Australian Public Health (Wastewater) Regulations 2013* (which requires that the waste water disposal system must either comply with the SA Health On-site Wastewater Systems Code or be operated to the satisfaction of the Department of Health) and the *Environment Protection (Water Quality) Policy 2015*.  
- Evidence/records maintained to show that appropriately designed sewage facilities have been constructed.  
- Sewage treatment facilities maintained and operated in accordance with design criteria.  
- Treated sewage waste water disposed in accordance with approved procedures in EMS and accepted industry standards.  
- Treated sewage waste water not released in areas where it is likely to enter surface waters. | |
| Produced Formation Water (PFW) |  
- Refer to Objective 3. |  
Produced Formation Water (PFW)  
- Refer to Objective 3. | |
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| Land Treatment Areas for Soil Remediation | **- No increase in contamination at any land treatment unit / designated treatment area.** | Land Treatment Areas for Soil Remediation  
- Land treatment areas constructed and operated in accordance with procedures and DSD and EPA approvals/requirements.  
- Records of soil added to land treatment areas to be maintained and reported annually (including quantity, location of source).  
- Monitoring of surrounding soil and groundwater for contaminants annually or as required by licence.  
- Monitoring and reporting of remediation. | Land Treatment Areas for Soil Remediation  
Periodic reports as required detail quantity, level of contamination and proposed ongoing operation of the land treatment units. |
| Land Treatment Areas for Soil Remediation | **- Land treatment areas constructed and operated in accordance with procedures and DSD and EPA approvals/requirements.**  
**- Records of soil added to land treatment areas to be maintained and reported annually (including quantity, location of source).**  
**- Monitoring of surrounding soil and groundwater for contaminants annually or as required by licence.**  
**- Monitoring and reporting of remediation.** | Land Treatment Areas for Soil Remediation  
Periodic reports as required detail quantity, level of contamination and proposed ongoing operation of the land treatment units. | |
| Minimise impact of emergency situations. | **- Emergency response procedures are effectively implemented in the event of an emergency.**  
**- Emergency response exercises are aligned with credible threats and consequences identified in the risk assessment.** | Incidence report system (preventative and post incident review).  
- Emergency response trials and associated documentation.  
- Records of regular emergency response training for all personnel and review of procedures. | |
| Contaminated Site Remediation | **- Contaminated sites are remediated to a level as determined satisfactory by the regulator.**  
**- Refer to assessment criteria for Objectives 3, 4, 6 and 11.**  
0, +1 or +2 GAS criteria are attained for ‘minimise the visual impact’ and ‘revegetation of indigenous species’ as listed in Appendix Table A4. | Rehabilitation/abandonment plans for regulated activities will be developed in consultation with relevant stakeholders. | |
| Construction Site and Access Track Restoration | **- Rehabilitation of redundant areas and access if no further petroleum exploration likely.**  
**- Compacted soil areas have been ripped (except on gibber and tablelands) and soil profile and contours are reinstated following completion of operations.**  
**- Where possible and subject to operational schedules, progressive rehabilitation of disturbed sites will be undertaken.**  
**- Redundant plant and equipment, and associated infrastructure, is considered for reuse, recycling or disposal in accordance with applicable regulations.**  
**- Areas where plant and equipment have been decommissioned and removed, the site will be reinstated and rehabilitated.**  
**- In assessing, and subsequently mitigating, the potential for impact and the success of rehabilitation activities, consideration will be given to the GAS criteria. A GAS criteria | Rehabilitation plans for regulated activities will be developed in consultation with relevant stakeholders.  
Construction, operation and decommissioning activities that result in disturbance to land and/or drainage channels, or contamination of soils, surface waters or groundwater, either by their nature (e.g. authorised land clearance) or through abnormal or emergency events (e.g. loss of containment) will be rehabilitated (if required) to ensure that activities associated with the identified end land use will not be negatively impacted. |
### Objective | Assessment Criteria | Guide to How Objectives Can Be Achieved | Comments
--- | --- | --- | ---
Production Facility Abandonment
- Surface structures are removed and the ground surface re-contoured to approximate pre-existing contours unless alternative agreement is reached with the regulator and stakeholders.
- 0, +1 or +2 GAS criteria are attained for 'minimise the visual impact' and 'revegetation of indigenous species' as listed in Appendix Table A4, unless alternative agreement is reached with the regulator and stakeholders.
- Refer to criteria for contaminated site remediation under this objective (above).
- Refer to the assessment criteria for Objective 11.

Pipeline Abandonment
Attainment of the following (unless otherwise agreed with stakeholders and approved by the regulatory authority):
- No evidence of waste, redundant

Outcome of -2 or -1 will trigger the requirement to undertake an assessment to qualify what is the potential long-term and/or post activity impacts to sensitive environmental receptors. Where the assessment identifies that the long-term health of sensitive environmental receptors and/or post activity use of land may be compromised remedial works will be undertaken to meet the Expected GAS Goal (0).

Production Facility Abandonment
The following steps will typically be undertaken unless otherwise agreed with the regulator and stakeholders:
- Hydrocarbon and contaminants will be reduced to an acceptable level in buried structures (e.g. pipelines, tanks, pits).
- Hazardous materials will be stabilised or removed including ground contamination.
- Surface infrastructure will be removed and re-used/recycled where appropriate.
- Waste will be removed and recycled where appropriate (refer to Objective 11).
- Foundations will be levelled and covered (the standard to which they will be restored will be defined as a result of stakeholder consultations).
- Disturbed areas will be re-contoured consistent with surrounding landform, natural drainage restored and compaction relieved where required to assist site regeneration.
- Contour banks and energy dissipating structures will be constructed where necessary to protect disturbed areas from erosion prior to stabilisation.

Pipeline Abandonment
The following steps will typically be undertaken unless otherwise agreed with the regulator and stakeholders:
- All aboveground pipes and supports will be assessed for the condition of the pipe for either salvage or for dismantling and

Abandonment of buried pipelines in-situ is environmentally preferable to the disturbance associated with their removal.

The condition of surface pipelines will be assessed for either salvage or for dismantling.
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| - equipment/infrastructure or signs and markers on abandoned pipelines.  
- Refer to criteria for contaminated site remediation under this objective (above).  
- Refer to the assessment criteria for Objective 11. | re-use.  
- All underground pipe work will be cut-off (at a minimum depth of 750mm below the natural surface or at pipeline depth, removed and blinded below the surface.  
- All aboveground signs and markers will be removed.  
- All pipeline protection systems will be removed to allow the pipeline to degrade in-situ.  
- Monitoring and auditing of abandoned pipelines will be undertaken.  
- All pipelines which are partially or wholly left in-situ will be accurately mapped and recorded. Records will be prepared and submitted to the appropriate authority. | and re-use.  
The overall objective is to leave the easement as near as practical to pre-existing environmental conditions, and decommission the pipeline in a manner that minimises impacts to the environment and stakeholders. |
# REPORTING

Regulation 12(2) requires an SEO to identify events that could cause a serious incident or a reportable incident within the meaning of Section 85 of the Act.

## 4.1 Definitions

The following descriptions have been provided to help clarify and elaborate on the definitions given in Section 85(1) of the Act and Regulation 32(1).

### Serious Incidents

Section 85(1) of the Act defines a ‘serious incident’ as an incident in which:

(a) a person is seriously injured or killed;

(b) an imminent risk to public health or safety arises;

(c) serious environmental damage occurs or an imminent risk of serious environmental damage arises;

(d) security of natural gas supply is prejudiced or an imminent risk of prejudice to security of natural gas supply arises;

(e) some other event or circumstance occurs or arises that results in the incident falling within a classification of serious incidents under the regulations or a relevant statement of environmental objectives.

### Reportable Incidents

Section 85(1) of the Act defines reportable incidents as incidents (other than a serious incident) arising from activities conducted under a licence that are classified under the Regulations as a reportable incident.

Regulation 32(1) classifies the following as reportable incidents:

(a) an escape of petroleum, a processed substance, a chemical or a fuel that affects an area that has not been specifically designed to contain such an escape; and

(b) an incident identified as a reportable incident under the relevant statement of environmental objectives.

Regulation 12(2) requires an SEO to identify events which could arise that could, if not properly managed or avoided, cause a serious incident or a reportable incident within the meaning of Section 85 of the Act.

Table 2 expands on section (85)(e) and Regulation (32)(b) for which DSD, in consultation with industry, has developed the following set of incident definitions relative to operations (drilling, completions and well operations) activities. These definitions are intended to provide consistency with Licence reporting. The purpose of the provision of examples within the definitions is to enable Licensees to clearly identify events that must be reported.

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6 As per the definition in Section 36 of the *Work Health and Safety Act 2012*.

7 That is, after taking into account relevant factors on a day and rights and obligations under contracts, a significant curtailment of firm service that detrimentally impacts or is likely to impact upon the security of electricity supply to South Australia or to gas supplies to a significant number of commercial and/or domestic gas users in SA.

8 In gaseous, liquid or solid state, as per Petroleum and Geothermal Energy Act definition.
Table 2: Incident definitions for operation (facility and pipelines) activities

<table>
<thead>
<tr>
<th>Serious Incidents</th>
<th>Reportable Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A person is seriously injured(^1) or killed.</td>
<td>1. An escape of petroleum(^5), processed substance, a chemical or a fuel that affects an area that has not been specifically designed to contain such an escape(^9) (other than a serious incident).</td>
</tr>
<tr>
<td>2. An imminent risk to public health or safety arises.</td>
<td>2. An event that has the potential to compromise the physical integrity of an asset or facility. For example:</td>
</tr>
<tr>
<td>3. Serious environmental damage occurs or an imminent risk of serious environmental damage arises. For example:</td>
<td></td>
</tr>
<tr>
<td>a. Disturbance to sites of cultural and/or heritage significance without appropriate permits and approvals(^3).</td>
<td></td>
</tr>
<tr>
<td>b. An escape of petroleum, process substance, a chemical or a fuel to a water body, or to land in a place where it is reasonably likely to enter a water body by seepage or infiltration, or onto land that affects the health of native flora and fauna species.</td>
<td></td>
</tr>
<tr>
<td>c. Detection of a declared weed, animal/plant pathogen or plant pest species that has been introduced or spread as a direct result of activities.</td>
<td></td>
</tr>
<tr>
<td>d. Any removal of rare, vulnerable or endangered flora and fauna without appropriate permits and approvals.</td>
<td></td>
</tr>
<tr>
<td>4. Security of natural gas supply is prejudiced or an imminent risk of prejudice to security of natural gas supply arises(^4).</td>
<td></td>
</tr>
<tr>
<td>5. An event that results in a rupture of a pressure containing asset or facility.</td>
<td></td>
</tr>
<tr>
<td>6. A regulated activity(^6) being undertaken in manner that involved or will involve a serious risk to the health or safety of a person emanating from an immediate or imminent exposure to a hazard.</td>
<td></td>
</tr>
<tr>
<td>7. Activity on a pipeline easement where the pipeline is contacted and repair action is required.</td>
<td></td>
</tr>
<tr>
<td>8. An uncontrolled gas release resulting in the activation of emergency response and/or evacuation procedures of an area in or adjacent to the gas release, and/or fire or explosion.</td>
<td></td>
</tr>
</tbody>
</table>

---

\(^1\) As per the definition in Section 36 of the *Work Health and Safety Act 2012.*

\(^2\) Pursuant to *Aboriginal Heritage Act 1988 and Heritage Places Act 1993*

\(^3\) Pursuant to *Native Vegetation Act 1991 (flora) and National Parks and Wildlife Act 1972 (fauna).*

\(^4\) That is, after taking into account relevant factors on a day and rights and obligations under contracts, a significant curtailment of firm service that detrimentally impacts or is likely to impact upon the security of electricity supply to South Australia or to gas supplies to a significant number of commercial and/or domestic gas users in SA.

\(^5\) Regulated activity as defined in Section 10 of the *Petroleum and Geothermal Energy Act 2000.*

\(^6\) Resulting in the issuing of a prohibition notice by SafeWork SA pursuant to Section 195 the *Work Health and Safety Act 2012.*

\(^7\) For the case where a detailed assessment is required to determine this, DMITRE recommends the incident be reported initially amended at a later date if required.

\(^8\) In gaseous, liquid or solid state, as per *Petroleum and Geothermal Energy Act 2000* definition.

\(^9\) An area assigned during a Hazard and Operability Process (HAZOP) study as a hazardous area for the purpose of gas venting, and designed as such, is considered to be an area specifically designed to contain a gas escape.

\(^10\) As per the *Petroleum and Geothermal Energy Act 2000* definition, the term ‘pipeline’ includes tanks, machinery and equipment necessary for, or associated with, operation of the pipeline.

\(^11\) For reporting purposes, the incident is considered to have occurred at the time that a decision is made to repair or replace the defect, or reduce the Maximum Allowable Operating Pressure.

\(^12\) “Approval” as per AS2885 definition. Note that there may be situations where excursions are allowable under AS2885.

\(^13\) As per the Safety Management System process articulated in AS 2885.1-2012, or similar risk assessment process.
4.2 Reporting Requirements

4.2.1 Reporting to DSD

**Serious Incidents** must be reported to the Minister as soon as practicable after the occurrence, as per Section 85 of the Act and Regulation 32 of the Regulations.

**Reportable Incidents** must be reported to DSD on a quarterly basis within one month of the end of the quarter, as per Regulation 32 of the Regulations.

4.3 Reporting to EPA

Where applicable, incidents causing or threatening serious or material environmental harm under the *Environmental Protection Act 1993* must be reported to the EPA in accordance with Section 83 of the *Environmental Protection Act 1993*.

The Environmental Protection Act and its reporting obligation do not apply to:

- petroleum exploration activity undertaken under the Act, or;
- wastes produced in the course of an activity (not being a prescribed activity of environmental significance) authorised by a lease or licence under the Petroleum and Geothermal Energy Act when produced and disposed of to land within the area of the lease or licence.

4.4 Annual Reporting Requirements

Senex prepares Annual Licence Compliance Reports against the SEO objectives and these reports are publicly available on the Department of State Development (DSD) website at: [http://www.petroleum.statedevelopment.sa.gov.au/legislation_and_compliance/annual_reports](http://www.petroleum.statedevelopment.sa.gov.au/legislation_and_compliance/annual_reports)
## List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG Code</td>
<td>Australian Dangerous Goods Code</td>
</tr>
<tr>
<td>ALARP</td>
<td>As Low as Reasonably Practical</td>
</tr>
<tr>
<td>ANZECC</td>
<td>Australian and New Zealand Environment Conservation Council (in reference to the <em>Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000</em>)</td>
</tr>
<tr>
<td>AS 1940</td>
<td>Australian Standard AS1940 Storage and Handling of Combustible Liquids</td>
</tr>
<tr>
<td>AS 2885</td>
<td>Australian Standard AS2885 Pipelines – Gas and liquid petroleum</td>
</tr>
<tr>
<td>CAZ</td>
<td>PEL182 Controlled Access Zone</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon monoxide</td>
</tr>
<tr>
<td>DEWNR</td>
<td>Department of Environment, Water and Natural Resources (formerly DENR/DFW &amp; DEH/DWLBC)</td>
</tr>
<tr>
<td>DSD</td>
<td>Department of State Development (formerly DMITRE)</td>
</tr>
<tr>
<td>DSD-AARD</td>
<td>Aboriginal Affairs and Reconciliation Division, Department of State Development</td>
</tr>
<tr>
<td>EIR</td>
<td>Environmental Impact Report prepared in accordance with Section 97 of the <em>Petroleum and Geothermal Energy Act 2000</em> and Regulation 10</td>
</tr>
<tr>
<td>EPA</td>
<td>Environment Protection Authority (South Australia)</td>
</tr>
<tr>
<td>ERP</td>
<td>Emergency Response Plan</td>
</tr>
<tr>
<td>GAS</td>
<td>Goal Attainment Scaling</td>
</tr>
<tr>
<td>HAZOP</td>
<td>Hazard Operability Process</td>
</tr>
<tr>
<td>NEPM</td>
<td>National Environmental Protection Measure</td>
</tr>
<tr>
<td>NOx</td>
<td>Oxide of nitrogen</td>
</tr>
<tr>
<td>PEL</td>
<td>Petroleum Exploration Licence</td>
</tr>
<tr>
<td>PFW</td>
<td>Produced Formation Water</td>
</tr>
<tr>
<td>PIRSA</td>
<td>Primary Industries and Resources SA (now DSD)</td>
</tr>
<tr>
<td>PPL</td>
<td>Petroleum Production Licence</td>
</tr>
<tr>
<td>ROW</td>
<td>Right-of-Way</td>
</tr>
<tr>
<td>SEB</td>
<td>Significant Environmental Benefit</td>
</tr>
<tr>
<td>SEO</td>
<td>Statement of Environmental Objectives</td>
</tr>
<tr>
<td>SOx</td>
<td>Sulphur oxides</td>
</tr>
<tr>
<td>TPH</td>
<td>Total Petroleum Hydrocarbons</td>
</tr>
<tr>
<td>WIZ</td>
<td>PEL182 Walk-in Zone</td>
</tr>
</tbody>
</table>
5 REFERENCES


Appendix A

Standard Goal Attainment Scaling (GAS) Criteria for Borrow Pits and the Abandonment of Production Facilities

Note: Borrow pits established prior to the introduction of the November 2014 GAS criteria (DSD, 2014) and are suspended (i.e. not yet rehabilitated) may not achieve a 0, +1 or +2 score under the 2014 GAS criteria until immediately prior to license relinquishment. This should not be considered a non-compliance in the interim. Senex is proposing to undertake a review of existing borrow pits using a risk-based approach to identify borrow pits that are a priority for management.
### Table A1: GAS Criteria for Borrow Pit Construction (DSD, 2014)

<table>
<thead>
<tr>
<th>Goals</th>
<th>Goal Exceeded +2</th>
<th>Goal Exceeded +1</th>
<th>Goal Attained 0</th>
<th>Minor Shortfall -1</th>
<th>Significant Shortfall -2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1 - Minimise impacts on soil</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit sited and designed to minimise erosion and facilitate rehabilitation</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Gibber plain and tableland</td>
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<td>-</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dunefields</td>
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<td>-</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Floodplain</td>
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<td>-</td>
<td></td>
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</tr>
<tr>
<td><strong>Objective 2 - Minimise impacts on vegetation</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perennial vegetation clearance minimised</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit located in bare (including previously disturbed) area – no clearance required</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No trees or shrubs removed</td>
<td>No trees or shrubs removed where clearance could not have been avoided</td>
<td>Trees or shrubs removed where clearance could not have been avoided</td>
<td>Medium trees or shrubs (between 15 and 30cm diameter) removed where clearance could have been avoided</td>
<td>Large trees (over 30 cm diameter) removed and/or Trees or shrubs with hollows removed</td>
<td></td>
</tr>
<tr>
<td>Topsoils and seed source retained</td>
<td></td>
<td>Topsoil and vegetative material stockpiled and stable (i.e. unlikely to present erosion issues)</td>
<td>No topsoil and vegetative material stockpile evident</td>
<td>No topsoil and vegetative material stockpile evident</td>
<td></td>
</tr>
<tr>
<td>-</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objective 3 - Protect sites of natural, scientific or heritage significance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoid sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heritage surveys undertaken, significant sites identified, reported, flagged, recorded and avoided</td>
<td>-</td>
<td></td>
<td>Heritage surveys undertaken, significant sites avoided</td>
<td>Heritage surveys not undertaken or significant sites disturbed</td>
<td></td>
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<tr>
<td>-</td>
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</tr>
<tr>
<td><strong>Objective 4 - Minimise visual impacts – public roads (e.g. Strzelecki Tracks, Della Rd, Dillon’s Hwy, Cordillo Rd, Walkers Crossing, 15 Mile Track, Merty – Cameron Cnr, etc.)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pits sited appropriately</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit not visible from public road</td>
<td>Pit not clearly visible from public road due to some screening by vegetation or other landform</td>
<td>Pit more than 50m from public road</td>
<td>Pit less than 50m from public road</td>
<td>Pit less than 20m from public road</td>
<td></td>
</tr>
</tbody>
</table>

Minimisation of visual impact is required, including: 
- Pit located on sloping terrain
- Pit located on high sloping terrain
<table>
<thead>
<tr>
<th>Goals</th>
<th>Goal Exceeded +2</th>
<th>Goal Exceeded +1</th>
<th>Goal Attained 0</th>
<th>Minor Shortfall -1</th>
<th>Significant Shortfall -2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1 - Minimise water retention in pit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal or no water retention in pit footprint</td>
<td>No evidence of water retention</td>
<td>-</td>
<td>Minor retention - pit retains water for less than 1 month following rainfall event or drawdown of floodwaters (as a guide - max. water depth up to 0.2 metres) Or Water retention in pit consistent with surrounding land</td>
<td>Pit retains water for up to 3 months following rainfall event or drawdown of floodwaters (as a guide - max. water depth &lt; 1 metre) And Water retention in pit inconsistent with surrounding land</td>
<td>Pit holds water for more than 3 months following rainfall event or drawdown of floodwaters (as a guide - max. water depth &gt; 1.0 metre) And Water retention in pit inconsistent with surrounding land</td>
</tr>
</tbody>
</table>

| **Objective 2 - Minimise impacts on soil** | | | | | |
| Minimise soil erosion | Gibber plain and tableland | - | Gibber layer in situ Run-off controlled (e.g. contour banks or bunds above the batter slope) Localised minor erosion (typically pit sides)* | Gibber layer disturbed or removed in areas Run-off uncontrolled Minor gullying around pit and/or access tracks* | Widespread disturbance of gibber layer Run-off uncontrolled Moderate to severe gullying around pit and/or access tracks* |
| | Gibber layer in situ (apart from pit base and sides) Pit footprint soil surfaces stable No accelerated erosion on pit footprint | - | Gibber layer in situ Run-off controlled (e.g. contour banks or bunds above the batter slope) Localised minor erosion (typically pit sides)* | Gibber layer disturbed or removed in areas Run-off uncontrolled Minor gullying around pit and/or access tracks* | Widespread disturbance of gibber layer Run-off uncontrolled Moderate to severe gullying around pit and/or access tracks* |
| Other land units | Soil surfaces stable No accelerated erosion on pit footprint | - | Run-off controlled (e.g. contour banks or bunds above the batter slope) Minor erosion of pit sides or up-slope from pit* | Areas of pit footprint unstable with some uncontrolled run-off Moderate erosion* | Uncontrolled run-off Large areas of pit footprint unstable Active severe erosion* |

| **Objective 3 - Minimise impacts on vegetation** | | | | | |
| No weed** infestations on pit footprint | No weeds on pit footprint | - | Presence of weeds** on pit footprint consistent with pre-disturbance conditions and adjacent land | Weeds** present on pit footprint which is inconsistent with pre-disturbance conditions and adjacent land | Declared weeds*** present on pit footprint which is inconsistent with pre-disturbance conditions and adjacent land |

**Table A2: GAS Criteria for Borrow Pit Management (DSD, 2014)**
<table>
<thead>
<tr>
<th>Goals</th>
<th>Goal Exceeded +2</th>
<th>Goal Exceeded +1</th>
<th>Goal Attained 0</th>
<th>Minor Shortfall -1</th>
<th>Significant Shortfall -2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predictive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal or no water retention in pit footprint</td>
<td>-</td>
<td>-</td>
<td>Measures to minimise water retention implemented (e.g. up-slope runoff diverted by contour banks or bunds, rip base, etc.)</td>
<td>-</td>
<td>No measures to minimise water retention evident</td>
</tr>
<tr>
<td>Ongoing</td>
<td>No evidence of water retention</td>
<td>-</td>
<td>Minor retention - pit retains water for up to 3 months following rainfall event or drawdown of floodwaters (as a guide - max. water depth up to 0.2 metres) Or; Water retention in pit consistent with surrounding land</td>
<td>Pit retains water for up to 3 months following rainfall event or drawdown of floodwaters (as a guide - max. water depth &lt; 1 metre)* And Water retention in pit inconsistent with surrounding land;</td>
<td>Pit holds water for more than 3 months following rainfall event or drawdown of floodwaters (as a guide - max. water depth &gt; 1.0 metre)* And Water retention in pit inconsistent with surrounding land;</td>
</tr>
<tr>
<td><strong>Objective 2 - Minimise impacts on soil</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictive</td>
<td>Minimise soil erosion</td>
<td>-</td>
<td>-</td>
<td>Measures to minimise erosion implemented (e.g. up-slope runoff diverted by contour banks or bunds)</td>
<td>-</td>
</tr>
<tr>
<td>Ongoing</td>
<td>Soil surfaces stable</td>
<td>-</td>
<td>Minor erosion of pit sides or up-slope from pit*</td>
<td>Moderate erosion* Areas of pit footprint unstable with some uncontrolled runoff</td>
<td>Active severe erosion* Large areas of pit footprint unstable Uncontrolled run-off</td>
</tr>
<tr>
<td><strong>Objective 3 - Minimise impacts on vegetation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pit footprint revegetated with indigenous species (subject to time and preceding climatic conditions)</td>
<td>Vegetation community re-established with species and cover typical for land unit</td>
<td>Pit footprint revegetated with perennial species mix and cover levels typical for land unit</td>
<td>Pit footprint revegetated with species mix similar to surrounding area, some bare patches still present</td>
<td>Revegetation confined to base of pit, pit sides bare, species mix differs from surrounding area, annual species dominate</td>
<td>No revegetation evident</td>
</tr>
<tr>
<td>No weed** infestations on pit footprint</td>
<td>No weeds on pit footprint</td>
<td>-</td>
<td>Presence of weeds** on pit footprint consistent with pre-disturbance conditions and adjacent land</td>
<td>Weeds** present on pit footprint which is inconsistent with pre-disturbance conditions and adjacent land</td>
<td>Declared weeds*** present on pit footprint which is inconsistent with pre-disturbance conditions and adjacent land</td>
</tr>
<tr>
<td><strong>Objective 4 - Minimise visual impacts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrow pit effectively contoured and ripped</td>
<td>Pit contours indistinguishable from surrounding landscape Access tracks ripped</td>
<td>Pit contours blend in with surrounding landscape, although still evident</td>
<td>Pit sides battered and ripped along contours but pit still highly visible Topsoil and vegetative material re-spread over disturbed area</td>
<td>Pit sides battered but not ripped</td>
<td>No re-contouring of pit has occurred – pit sides very steep Topsoil and vegetative material not re-spread</td>
</tr>
<tr>
<td><strong>Objective 5 - Site to be left in a clean and tidy condition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Litter and other foreign materials removed</td>
<td>-</td>
<td>-</td>
<td>No litter and other foreign materials on pit footprint or surrounds</td>
<td>Scattered litter and/or other foreign materials on pit footprint or surrounds</td>
<td>Litter and/or other foreign materials common on pit footprint or surrounds</td>
</tr>
</tbody>
</table>


**Weeds are defined in these tables as any invasive plant that threatens native vegetation in the local area or any species recognised as invasive in South Australia.

***Declared weeds are defined in these tables as any exotic plant species that are currently declared under the Natural Resources Management Act 2004. Note: In a case where the landholder requests a borrow pit for pastoral watering purposes, pursuant to section 111(2)(b) of the Petroleum and Geothermal Energy Act 2000, the following may be applied to facilitate transfer of ownership and liability of the borrow pit to the landholder – 111—liability for damage caused by authorised activities (2) If a licensee provides the Minister with a report, made by an independent expert acceptable to the Minister, containing an assessment of the risk inherent in regulated activities, and of the precautions necessary to eliminate or minimise the risk, the Minister may enter into an agreement with the licensee under which – (b) the licensee’s liability under this section is limited or excluded.**
Table A4: Criteria for Assessing the Rehabilitation of Abandoned Production Facilities (PIRSA, 2009)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Goals</th>
<th>Expected Goal Exceeded</th>
<th>Goal Exceeded</th>
<th>Expected Goal Attained</th>
<th>Minor Shortfall</th>
<th>Significant Shortfall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access tracks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The track contours and colour blend with the surroundings and the earthworks disturbance is indistinguishable</td>
<td>The track contours and colour blend with the surroundings and the earthwork disturbance is beginning to blend also</td>
<td>The track surface has been contoured into the surrounding landscape, but the colour of foreign material contrasts with the surroundings</td>
<td>The track is prominent because of scaped surface, windrows along its edges or gully erosion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interdune and floodplain sites</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>The site contours and colour blend with the surroundings and the earthwork disturbance is indistinguishable</td>
<td>The site contours and colour blend with the surroundings and the earthwork disturbance is beginning to blend also</td>
<td>The site surface and edge have been contoured into the surrounding landscape, but the colour of foreign material contrasts with the surroundings</td>
<td>The site remains as a prominent consolidated surface with a distinct edge</td>
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</tr>
<tr>
<td><strong>Dune Sites</strong></td>
<td></td>
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</tr>
<tr>
<td>The edge and colour of the site blend with the surroundings. The site contours are indistinguishable whether viewed from the top or base of the dune</td>
<td>The edge and colour of the site blend with the surroundings. The site contours are visible only when viewed from the top of the dune; they cannot be seen from the base. Erosion gullies are present down the face of the dune, but they are not extensive or prominent</td>
<td>The site has been restored to the natural contour of the dune, but the contour of foreign material contrasts with the surroundings</td>
<td>Extensive gully erosion down the face of the dune and/or steep site edge are prominent</td>
<td></td>
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</tr>
<tr>
<td><strong>Gibber Sites</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Site is indistinguishable from the surroundings</td>
<td>Site matches adjacent contours and the gibber is uniformly spread with no imported material evident</td>
<td>Site matches adjacent contours, but is visible due to inconsistent spreading of the gibber and some bare areas</td>
<td>Site is poorly formed and predominantly bare due to incomplete spreading or loss of gibber</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Predictive rehabilitation on abandonment</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>There has been appropriate preparation of the ground surface to promote revegetation</td>
<td>The restored surface is inconsistent with the surroundings</td>
<td>No attempt has been made to restore the site</td>
<td></td>
</tr>
<tr>
<td><strong>Less than five years since abandonment</strong></td>
<td>The revegetation is extensive and mostly consists of annuals and biennials; perennials are beginning to establish which is consistent with surroundings</td>
<td>The revegetation is extensive and consists of annuals and biennials; in contrast to the surroundings there are no perennials</td>
<td>Colonisation of the original species is starting to occur</td>
<td>Revegetation with inappropriate species</td>
<td>No revegetation is occurring</td>
<td></td>
</tr>
<tr>
<td><strong>At least five years since abandonment</strong></td>
<td>The revegetation type, density and maturity is indistinguishable from the surroundings</td>
<td>The revegetation, mostly perennials, is consistent with the surroundings; but there is contrast in maturity between them</td>
<td>The revegetation consists of annual, biennials and perennials; but there are some bare patches which are inconsistent with the surroundings</td>
<td>The revegetation mostly consists of annuals and biennials; in contrast to the surroundings there are few perennials</td>
<td>There is no revegetation</td>
<td></td>
</tr>
</tbody>
</table>

* Note: Assessment will take into account that revegetation is a time and rainfall dependent process.