WSGP Significant Species Management Plan

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Revision: 1

Position	Name	(tick one column only)		Signature	Date
		Approve	Review		
Environment Manager	T. Jensen	☒	☐		22/ 1 / 2018

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REVISION HISTORY

Revision	Revision Date	Document Status	Revision Comments	Author	Approved By
A	9/06/2017	Issued for Review	Document creation	ERM	
B	10/10/2017	Final Draft	Senex	ERM	J. Earley
0	10/12/2017	Issued for Use	Senex	ERM	J. Earley
1	22/1/2018	Issued for Use	Senex	ERM	J. Earley

ABBREVIATIONS

The abbreviations provided below are used throughout this document.

Abbreviation	Description
AS	Australian Standard
ATW	Access to Work
CCA	Conduct and Compensation Agreements
CPF	Central Processing Facility
CSG	Coal Seam Gas
DEHP	Department of Environment and Heritage Protection
DoEE	Department of Environment and Energy
E&A	Exploration and Appraisal
EA	Environmental Authority
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP Act	*Environmental Protection Act 1994* (Qld)
EP Reg	*Environmental Protection Regulation 2008 (Qld)*
EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
ES	Ecological (Ground-truthing) Survey
GLNG	Santos Gladstone LNG
HSEMS	Health, Safety and Environment Management System
MNES	Matter of National Environmental Significance
PDA	Preliminary Desktop Assessment
PER	Public Environment Report
Production Area	The area within the WSGP Area that is the proposed action and currently subject to PL application 1022, PL application 1023 and PL application 1024
Qld	Queensland
RE	Regional Ecosystem
RoW	Right of Way
Senex	Senex Energy Limited ACN 008 942 827

Abbreviation	Description
SEVT	Semi-evergreen vine thickets
SSMP	Significant Species Management Plan
TEC	Threatened Ecological Communities
WSGP	Senex's proposed gas project, known as the Western Surat Gas Project in Queensland's Surat Basin

1. INTRODUCTION

Senex Energy Limited ACN 008 942 827 (Senex) has prepared this Significant Species Management Plan (SSMP) to outline the measures to be implemented for management of impacts to threatened ecological communities and species listed as Matters of National Environmental Significance (MNES) during construction and operation of the Western Surat Gas Project (WSGP).

The WSGP will involve the staged drilling of up to 425 wells and the construction and operation of supporting infrastructure over a period of approximately 30 years in the Production Area. The gas produced will be supplied raw or treated to domestic markets and neighbouring operators and distributed via existing pipelines and LNG processing facilities.

The Production Area is located approximately 30 kilometres north of the Warrego highway, between the townships of Roma and Wallumbilla, immediately to the north of GLNG's Roma fields. Land use of the Production Area and nearby surrounds is predominantly rural agricultural. The township of Roma is located approximately 23 kilometres south from the southern boundary of the WSGP.

An assessment of the biodiversity values across the Production Area identified known and potential presence of threatened ecological communities (TEC) and threatened species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). There is potential that during construction and operation activities Senex and its contractors will be required to manage potential impacts to significant species.

1.1. Purpose & Scope

This Significant Species Management Plan (SSMP) describes how Senex will manage potential impacts to significant species associated with conducting exploration, appraisal and production activities in the WSGP Production Area. It is an attachment to the WSGP Environmental Management Plan [SENEX-WSGP-EN-PLN-006].

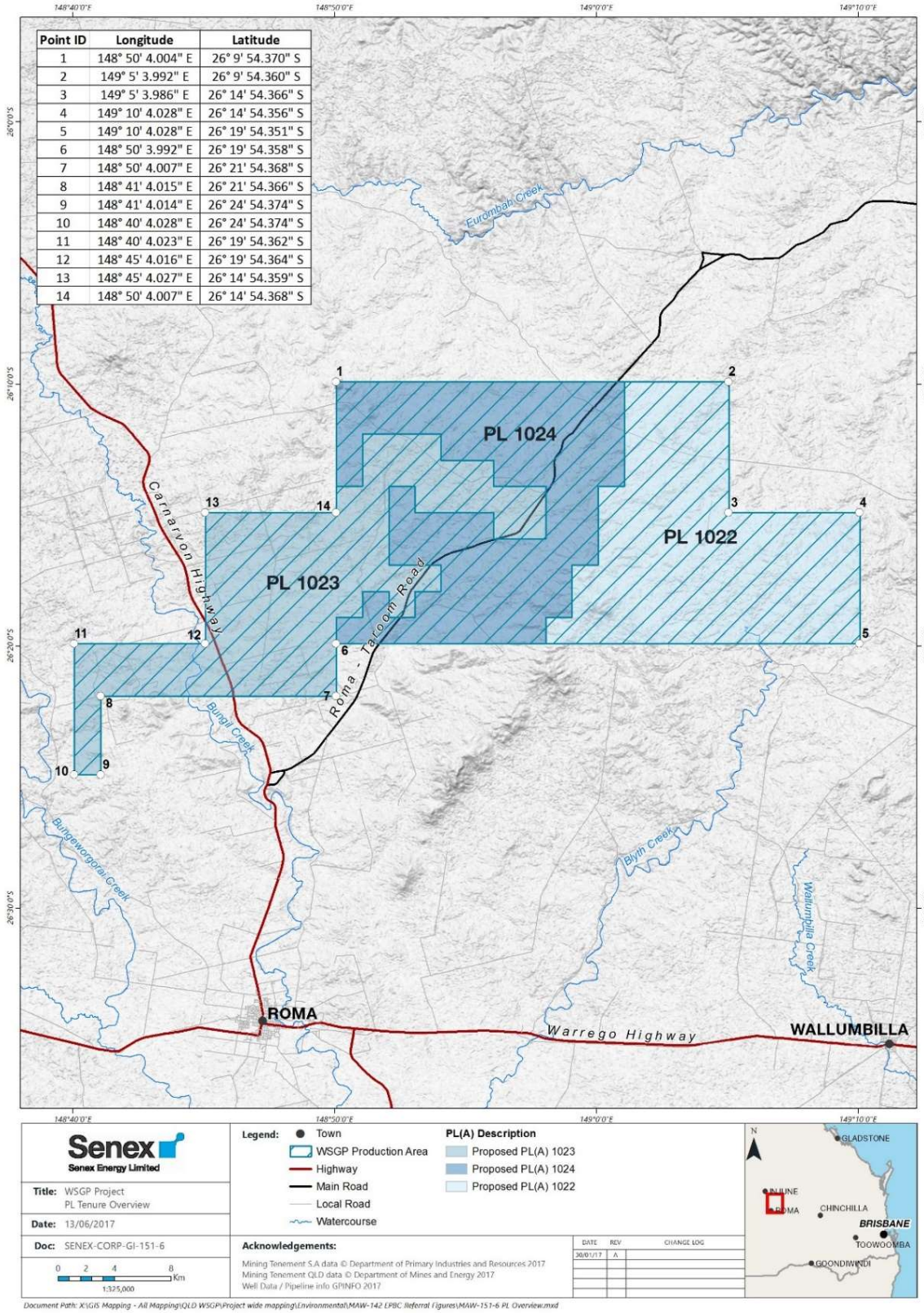
For the purposes of this plan 'significant species' are those species or communities considered to be Matters of National Environmental Significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Production Area, and the subject of this report, covers an area of approximately 686 square kilometres (see ***Figure 1-1***).

Broadly this SSMP describes:

- Significant species known or potentially present within the Production Area;
- Specific requirements for managing potential impacts to significant species during pre-construction, construction and operation phases of the Project; and
- Monitoring and reporting requirements.

Figure 1-1 WSGP Production Area



1.2. Senex Environmental Management

Senex is committed to conducting its operations and activities in an environmentally sound and responsible manner. Activities are planned and managed to minimise disturbance to the environment as far as practicable by utilising environmental standards consistent with development in technology, industry codes of practice and relevant statutory requirements.

Senex will manage potential impacts of the proposed activities in a manner consistent with the management approaches employed for E&A activities, and where relevant, additional measures commensurate with production phase activities. There are existing management procedures and plans currently implemented and plans developed for the producing gas field that are relevant to management of significant species (see below).

Senex is committed to conducting its operations and activities to minimise disturbance to the environment in which it operates by using environmental standards consistent with development in technology, industry codes of practice and relevant statutory requirements. Senex has a Health, Safety and Environment Management System (HSEMS) that establishes a framework under which environmental management of Senex's activities takes place. It also ensures the identification of environmental impacts and that measures are in place to mitigate, measure and review impacts as well as environmental performance.

This SSMP forms part of the environmental management procedures established within the HSEMS. Senex will incorporate the relevant management actions into procedures and plans for contractors to comply with its contents.

Additionally, the following plans and procedures support the SSMP to manage significant species:

- WSGP Environmental Management Plan [SENEX-WSGP-EN-PLN-006]
- Environmental Protocol for Field Development and Constraints Analysis, comprising a GIS analysis tool integrated within infrastructure development and land access planning processes [SENEX-WSGP-EN-PRC-002]
- WSGP Fauna and Stock Management Plan [SENEX-WSGP-EN-PRC-004]
- Environmental incident and safety management procedures comprising notification and incident response and reporting procedures
- WSGP Rehabilitation Plan [SENEX-WSGP-EN-PLN-003]
- WSGP Biosecurity Plan [SENEX-WSGP-EN-PLN-002]
- WSGP Biodiversity Offsets Strategy [SENEX-WSGP-EN-PLN-010].

2. LEGISLATIVE REQUIREMENTS

The WSGP was referred to the Commonwealth Department of the Environment and Energy (DoEE) in April 2015 as a controlled action. In May 2015, DoEE made a decision (EPBC 2015-7459) that the proposed action was a controlled action for the following controlling provisions:

- Wetlands of international importance (section 16 & 17B)
- Listed threatened species and communities (section 18 & 18A)
- Listed migratory species (section 20 & 20A)
- A water resource, in relation to coal seam gas development and large coal mining development (section 24D & 24E).

Following a review of more recent subsurface data, the WSGP was refined from up to 1000 wells to 425 wells in 2016. A proposal to vary the EPBC Referral (EPBC 2015-7469) was granted in March 2017, and in April 2017 it was determined that the proposed action be assessed by Public Environment Report (PER). This SSMP has been prepared to support the requirements of the PER.

3. ROLES AND RESPONSIBILITIES

Senex is responsible for ongoing management of activities on the WSGP area. All Senex employees and contractors are responsible for conforming to applicable Australian and Queensland laws and regulations and for conducting work in accordance with permit requirements and this plan.

Roles and responsibilities of Senex personnel and contractors in relation to this management plan are summarised in ***Table 3-1***.

Table 3-1 Roles and Responsibilities

Role	Responsibilities
Senex Environmental Manager	▪ Secure and manage environmental and associated approvals. ▪ Overall responsibility for environmental compliance, including monitoring, data collection and reporting. ▪ Report incidents to the Department of Environment and Heritage Protection (DEHP) and other Government agencies / stakeholders as required. ▪ Ensure resources are available to manage environmental obligations and responsibilities. ▪ Ensure that all personnel are competent to perform their assigned duties and have received appropriate training and inductions. ▪ Implement an environmental compliance system that includes audits and assurance to help ensure compliance with approval conditions and other regulatory requirements. ▪ Maintain environmental management documentation including this SSMP and associated plans and procedures, and update as required.
Senex Land Access Manager	▪ Secure land access for Senex activities including land access agreements/land access rules or Conduct and Compensation Agreements (CCA) with landholders whose properties will be impacted by Senex activities. ▪ Engage with landholders and liaise with Senex Site Supervisor(s) to ensure activities are undertaken in accordance with the Queensland Land Access Code 2010 and conditions of any land access agreements/land access rules or CCAs. ▪ Compile and distribute Access to Work documentation (ATW) prior to commencing activities on site.

Role	Responsibilities
Senex Site Supervisors (Drilling, Completions, Civil Construction etc.)	▪ Represent Senex on site. ▪ Responsible for ensuring this SSMP and other relevant environmental procedures are implemented on site, including any site-specific requirements identified during the planning phase. ▪ Ensure that Senex staff and contractors comply with regulatory requirements including all relevant Approval conditions and requirements of the ATW. ▪ Induct the Contractor Site Supervisor into relevant requirements of the EA, SSMP and supporting plans and procedures applicable to their activities on site. ▪ Ensure all site visitors are inducted appropriately. ▪ Ensure toolbox and other safety talks adequately address environmental matters to be considered on site as relevant to the work being undertaken including those identified in the ATW (e.g. property-specific weed hygiene requirements). ▪ Ensure that the Contractor Site supervisor is resourced to adequately supervise the work being conducted on site. ▪ Ensure activities do not harm or disturb cultural heritage objects or areas of significance. ▪ Ensure that the requirements under any native title agreement are adhered to. Ensure compliance with landholder agreements or CCA conditions as defined in the ATW. ▪ Ensure vehicle and machinery weed washdown requirements are complied with as specified in this EMP and supporting procedures and plans. ▪ Empower all project staff to stop work when the potential for environmental harm is perceived. ▪ Report to the Senex Environmental Manager on environmental matters and provide all relevant reporting and monitoring documentation as required. ▪ Report to the Land Access Manager on landholder and property matters.
Contractor Site Supervisor	▪ Adequately identify and address any risks associated with the Contractor's activities prior to commencing, and develop a construction methodology that has due regard for identified risks. ▪ Ensure that appropriate training and inductions in the requirements of this SSMP, EA conditions and other regulatory requirements as relates to their activities have been carried out by Contractor's personnel. ▪ Ensure that Contractor personnel are adequately supervised. ▪ Implement this SSMP on site, including any site specific requirements identified in Site Environmental Requirements documents, the ATW or as directed by the Senex Site Supervisor. ▪ Ensure all activities are carried out in accordance with the requirements set out in the SSMP, EA conditions and as specified in other relevant documents including tender documentation and contract with Senex. ▪ Immediately notify the Senex Site Supervisor of any incidents and non-compliances with the EA, this SSMP, supporting plans or procedures. ▪ Report to the Senex Site Supervisor as instructed and provide all reporting and monitoring information to the Senex Site Supervisor as required. ▪ Ensure that monitoring records are collected and retained. ▪ Empower all project staff to stop work when the potential for environmental harm is perceived. ▪ Implement a program of internal environmental audit against this EMP and

Role	Responsibilities
	supporting plans and procedure.
Contractor Personnel	▪ Undertake training and induction as required to competently undertake activities on the WSGP area. ▪ Carry out all activities in compliance with this SSMP identified in planning, the ATW or as directed by the Contractor Site Supervisor and/or Senex Site Supervisor. ▪ Immediately notify the Contractor Site Supervisor of any incidents and non-compliances this SSMP.
Senex Environment Team &/ or Field Environment Representative	▪ Assist the Senex Site Supervisor as required in ensuring that all petroleum activities including those undertaken by Contractors are conducted in accordance with the SSMP. ▪ Promote environmental awareness amongst the workforce and hold site meetings on environmental matters as required. ▪ Assist the Senex Site Supervisor in providing training in the form of toolbox talks and pre-works meetings on environmental matters. ▪ Notify the Senex Site Supervisor and Environment Manager immediately of any environmental incidents and non–compliances from the EA conditions, the SSMP and other associated plans and procedures, and liaise with the Construction Site Supervisor to investigate and report on the incident or noncompliance. ▪ Ensure that all records, environmental approvals, and permits are managed, maintained and stored as appropriate and copies of the SSMP are available as required. ▪ Co-ordinate implementing rehabilitation plans and programs as required for the WSGP area. ▪ Undertake monitoring in accordance with this SSMP, supporting plans and procedures and Approval conditions as directed by the Senex Environment Manager. ▪ Complete Environmental Audits as directed by the Environment Manager.
Fauna Spotter / Catcher	▪ Hold a valid Queensland Fauna Spotter/Catcher and Rehabilitation permit issued by DEHP under the *Nature Conservation Act 1992.*

4. KNOWN AND POSSIBLE SIGNIFICANT SPECIES

Significant species that have the potential to occur in the Production Area, and their known/preferred habitats are provided. The information contained in this section has been summarised from the WSGP Public Environment Report [SENEX-WSGP-EN-REP-033].

4.1. Threatened Ecological Communities

4.1.1 Brigalow (*Acacia harpophylla* dominant and codominant) TEC

The WSGP PER documents there is 958 ha of Brigalow TEC extent mapped within the Production Area (based on regional ecosystem mapping). The community is sparsely distributed across the Production Area in isolated patches. It is analogous with remnant and regrowth RE types 11.9.5 and 11.9.5a (see ***Figure 4-1***).

The community conservation advice (DoE, 2013) cites all patches that meet the key diagnostic characteristics and condition threshold, as well as the buffer zones (particularly where these are native vegetation), are considered areas critical to the survival of the community. The buffer zone is defined as the area that lies immediately outside the edge of a patch but is not part of the ecological community.

The community conservation advice (DoE, 2013) lists threats to the Brigalow TEC to include factors that may reduce extent or cause decline in condition. This includes clearing, fire, invasive flora species (such as buffel grass, Rhodes grass and green panic grass), pest animal disturbance (such as feral pigs, goats, cane toads, cats, foxes and the noise miner), inappropriate grazing regimes and climate change.

The community across its distribution provides potential habitat for a number of listed threatened species including ooline (*Cadelia pentastylis*), Belson's panic (*Homopholis belsonii*), squatter pigeon (*Geophaps scripta scripta*), painted honeyeater (*Grantiella picta*), eastern long-eared bat (*Nyctophilus corbeni*), southern greater glider (*Petauroides volans volans*), collared delma (*Delma torquata*), yakka skink (*Egernia rugosa*), and Dunmall's snake (*Furina dunmalli*).

4.1.2 Semi-evergreen vine thickets (SEVT) of the Brigalow Belt (North and South) and Nandewar Bioregions TEC

The WSGP PER documents there is 225 ha of SEVT TEC extent mapped within the Production Area. The community is sparsely distributed across the Production Area. It is analogous with remnant and regrowth RE types 11.9.4a and 11.8.3 (see ***Figure 4-1***).

Current threats to the SEVT community are listed in the community recovery plan (DoEE, 2017) to include the high level of fragmentation of the landscape, lack of connectivity between fragments, continued clearing, inappropriate fire regimes, invasion by introduced pasture species, and increased grazing by domestic stock and native species.

The community provides habitat for a number of listed threatened species including ooline (*Cadelia pentastylis*) and yakka skink (*Egernia rugosa*).

4.1.3 Weeping Myall Woodlands TEC

Weeping Myall Woodland TEC is listed to be analogous with RE 11.3.2 (remnant and regrowth) (see ***Figure 4-1***). The WSGP PER documents this RE type is mapped within the Production Area, however no patches of *Acacia pendula*, the key diagnostic, were detected during field surveys in accessible areas. While there are no confirmed occurrences of the Weeping Myall TEC within the Production Area and its presence is considered unlikely, additional groundtruthing would be required to confirm presence and extent of occurrence. In the absence of detailed groundtruthing, there is 42 ha of remnant and regrowth woodland that is potential habitat for Weeping Myall Woodlands TEC (includes 33ha of regrowth and 9ha of remnant) within the Production Area. This calculation takes account of the DoEE listing advice that the TEC occurs as approximately 5% of patches of RE 11.3.2.

Conservation advice for the TEC (TSSC, 2008) lists the main threats to relate to clearing and ongoing degradation given the habitat requirement of highly fertile and arable soils where there is significant pressure from cropping.

4.2. Threatened Species

Table 4-1 below lists the threatened species that have the potential to occur in the Production Area, as well as their preferred habitats.

Table 4-1 EPBC Listed Species Potentially Occur within the Production Area

Species	General Note
Cadellia pentastylis	Grows in semi-evergreen vine thickets and sclerophyll vegetation, normally on upper and mid-slopes of the landscape. There were no individuals recorded as part of the field survey events and the nearest record is located 55km north-west of the Production Area. There are 1,407ha of potential habitat for the species mapped within the Production Area.
Homopholis belsonii Belson's panic	This species is generally supported by three types of habitat: • Rocky, basaltic hills supporting *Eucalyptus albens*/, *Geijera parviflora* (Wilga) woodland; • Flat to gently undulating alluvial areas supporting *Casuarina cristata* forest and sometimes Brigalow or Wilga; and • Drainage lines supporting *C. cristata* and sandy country dominated by Cypress pine-bloodwood-ironbark-she-oak forest There were no individuals recorded as part of the field survey events and the nearest record is located 28km south of the Production Area. There are 12,577ha of potential habitat for the species mapped within the Production Area.
Calidris ferrugenia Curlew sandpiper	Occurs around the coasts as well as inland, though in smaller numbers. Mainly found on intertidal mudflats in sheltered coastal areas, as also around non-tidal swamps, lakes and lagoons neat the coast. Inland, have been recorded around ephemeral and permanent lakes, dams, waterholes and bore drains usually with bare edges of mud or sand. There were no individuals recorded as part of the field survey events and the nearest record is located 238km east of the Production Area. There are 115ha of potential habitat for the species mapped within the Production Area.

Species	General Note
Geophaps scripta scripta Squatter pigeon (southern)	Habitat generally defined as open-forests to sparse, open woodlands and scrub that are mostly dominated in overstorey by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species; remnant, regrowth or partly modified vegetation communities; and within 3km of waterbodies or courses. Species is known to access suitable waterbodies to drink on a daily basis. Suitable waterbodies include permanent or seasonal rivers, creeks, lakes, ponds, waterholes and dams. There were no individuals recorded as part of the field survey events and the nearest record is located 9km north of the Production Area. There are14,820ha of potential habitat for the species mapped within the Production Area.
Grantiella picta Painted honeyeater	Species is endemic to mainland Australia. Species inhabit mistletoes in Eucalypt forests/woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, Acacia dominated woodlands, paperbarks, Casuarinas, Callitris, and trees on farmland or gardens. Diet mainly consists of mistletoe fruits but also includes nectar and arthropods. There were no individuals recorded as part of the field survey events and the nearest record is located 17km south of the Production Area. There are 14,820ha of potential habitat for the species mapped within the Production Area.
Rostratula australis Australian painted snipe	Species generally inhabits shallow terrestrial freshwater wetlands, including temporary and permanent lakes, swamps and claypans. Additionally, the species utilises inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Species requires suitable wetland areas even in drought conditions. There were no individuals recorded as part of the field survey events and the nearest record is located 26km south of the Production Area. There are 115ha of potential habitat for the species mapped within the Production Area.
Nyctophilus corbeni South-eastern long-eared bat	Species is found in a wide range of inland woodland vegetation types including box/ironbark/cypress pine woodlands, Buloke woodlands, Brigalow woodland, Belah woodland, smooth-barked apple woodland, river red gum forest, black box woodland and various type of tree mallee. There were no individuals confirmed as part of the field survey events however, URS Anabat recordings detected a *Nyctophilus sp*., and the nearest record is located 94km east of the Production Area. There are 13,794ha of potential habitat for the species mapped within the Production Area.
Petauroides volans Southern greater glider	The species is largely restricted to Eucalypt forests and woodlands. The species if found in highest abundance in taller, montane, moist Eucalypt forests with relatively old trees and abundant hollows. Home ranges are typically small (1-4ha) but larger in low productivity forests and more open woodlands. Modelling studies suggest species require native forest patches of at least 160km^2 to maintain viable populations. Species was recorded by URS during surveys north of the Production Area in Pegasus north block on Eurombah Creek. There are 13,810ha of potential habitat for the species mapped within the Production Area.
Phascolarctos cinereus Koala	Inland area koala habitat includes woodlands and forests where food trees have reliable access to soil moisture, box gum or red gum woodlands on heavier soils in remnant or regrowth vegetation patches particularly riparian zones; and small, patchy and sparsely distributed woodlands, shrublands and forest in highly modified, agricultural-grazing landscapes. There were no individuals recorded as part of the field survey events and the nearest record is located 14km south-west of the Production Area. There are 13,810ha of potential habitat for the species mapped within the Production Area.
Delma torquata Collared delma	Species is found in Eucalypt-dominated woodlands and open forests in Landzones 3, 9 and 10. The Production Area is located in the 'may occur' distribution area for the species. There were no individuals recorded as part of the field survey events and the nearest record is located 13km south-west of the Production Area. There are 14,820ha of potential habitat for the species mapped within the Production Area.
Egernia rugosa Yakka skink	The species occurs in open dry sclerophyll forest, woodland and scrub. Core habitat has been identified within Mulga Lands and Brigalow Belt South Bioregions. The species was recorded by Boobook (2017) within the Production Area. Sightings included colonies in three areas. There are 14,904 ha of potential habitat for the species mapped within the Production Area.

Species	General Note
Furina dunmalli Dunmall's snake	The species is found in a broad range of habitats including forests and woodlands on black alluvial clay and clay loams dominated by Brigalow, other wattles, native Cypress or bull-oak; as well as various blue spotted gum, ironbark, white cypress pine and bull-oak open forest and woodland associations on sandstone derived soils. There were no individuals recorded as part of the field survey events and the nearest record located 43km south-east of the Production Area. There are 14,904ha of potential habitat for the species mapped within the Production Area.

Species information sourced from SPRAT profiles, Conservation Listing Advice and Threatened Species listing details found in DoEE website www.environment.gov.au, unless otherwise cited.
Area calculations based on regional ecosystem mapping and habitat/regional ecosystem associations.

4.3. Migratory Species

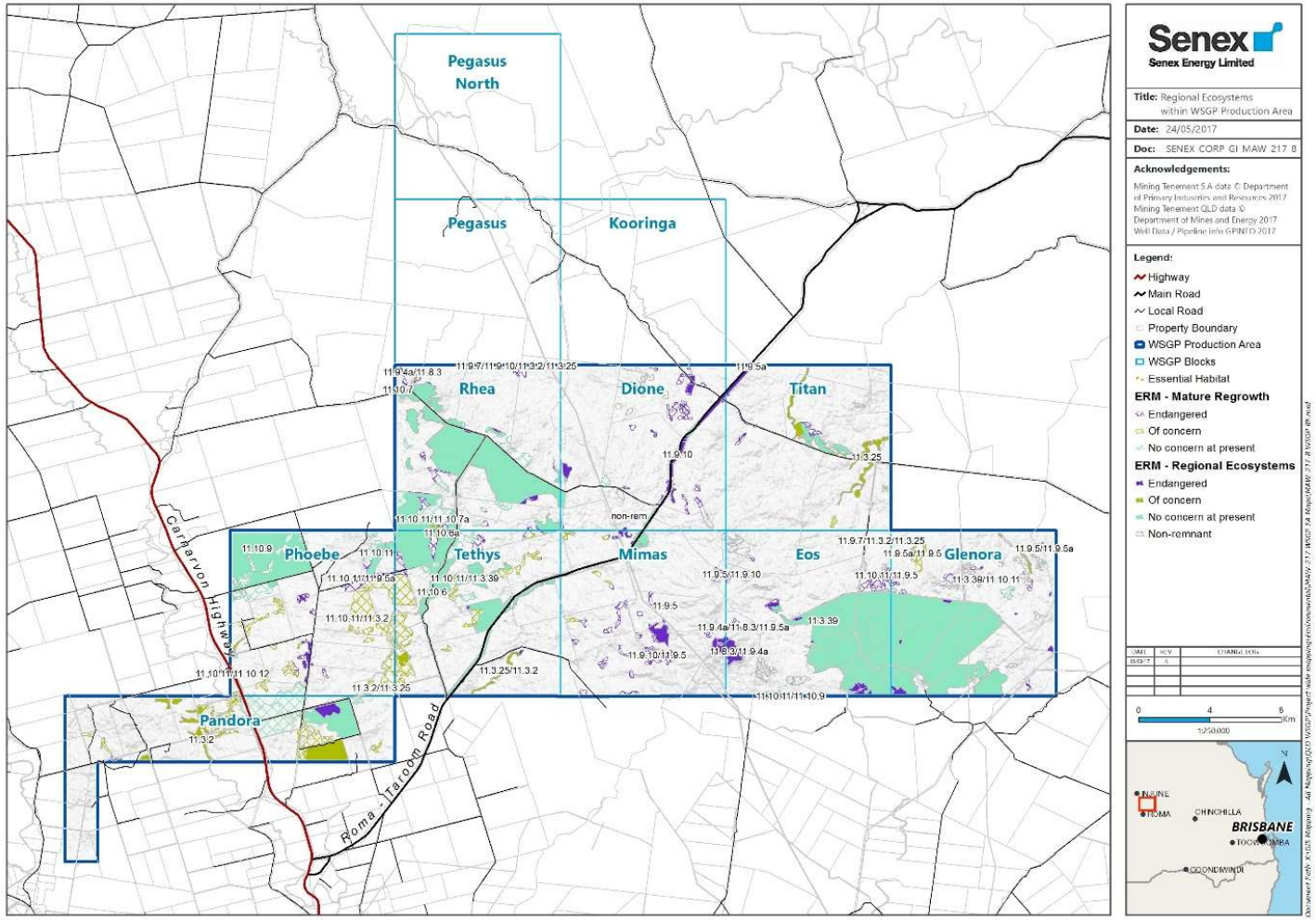
The assessment undertaken identified six listed migratory species with the potential to occur within the Production Area (as detailed in ***Table 4-2***). Habitat for these species is largely associated with waterways and waterbodies that may be present within the Production Area, and for some species the woodland communities associated with the waterways.

Table 4-2 Migratory Species Confirmed or Possibly Occurring within the Production Area

Species	Common Name	Brief Habitat Description	Likelihood of Occurrence Category	Mapped habitat extent (ha)
Apus pacificus	Fork-tailed swift	Aerial species	Possible	NA*
Callidris acuminata	Sharp-tailed sandpiper	Wetland species	Possible	115
Gallinago hardwickii	Latham's snipe	Wetland species	Possible	115
Hirundapus caudacutus	White-throated needletail	Aerial species	Possible	NA*
Myiagra cyanoleuca	Satin flycatcher	Eucalypt forests often near wetlands or watercourses.	Possible	13,810
Plegadis falcinellus	Glossy ibis	Freshwater marshes	Possible	115
Rhipidura rufifrons	Rufous fantail	Wet sclerophyll forests	Possible	14,035
Tringa nebularia	Greenshank	Wetland species	Possible	115
Tringa stagnatilis	Marsh sandpiper	Wetland species	Possible	115

*Almost exclusively aerial species; hence no habitat calculation undertaken.

Figure 4-1 RE Types Occurring in the WSGP Production Area



5. POTENTIAL IMPACTS TO SIGNIFICANT SPECIES

Activities associated with the proposed development have the potential to cause both direct and indirect impacts to MNES, with the level of impact depending on the type and location of the activity proposed. Potential impacts have been identified for each species and community. Key threats for each MNES are discussed in Section 4 and these have been considered in the context of the potential impacts identified.

The main potential impact to ecological values within the Production Area relates to vegetation clearing activities for well pads, pipeline right of ways (RoWs) that include tracks, and other infrastructure. Although the Production Area is dominated by cleared/disturbed land, remnant/regrowth vegetation provides habitat and refuge values. These vegetated areas include patches of TEC and habitat for threatened species.

Table 5-1 lists the threatened species that may be impacted in the production area as well as key threats and vulnerabilities such that appropriate management measures can be implemented.

Table 5-1 Project Impacts to Significant Species

Significant Species	Habitat Loss	Indirect Impacts	Notes
Threatened Ecological Communities			
Brigalow (*Acacia harpophylla* dominant and codominant)		✓	• Remnant and regrowth patches will be avoided by site layout; clearing of buffer zone has potential to impact TEC • Vulnerable to invasive flora species (e.g. - buffel grass, Rhodes grass and green panic grass) • Vulnerable to pest animal disturbance (e.g. - pigs, goats, cane toads, cats, foxes and noisy miner)
Semi-evergreen vine thickets (SEVT) of the Brigalow Belt (North and South) and Nandewar Bioregion		✓	• Threatened by fragmentation of the landscape • Vulnerable to invasion by introduced pasture species • Vulnerable to increased grazing (domestic and native)
Weeping Myall Woodlands	✓	✓	• Will be avoided by site layout • Vulnerable to habitat loss and fragmentation, and land degradation processes, due to species' requirements for highly fertile soils, as well as overgrazing and weed invasion.
Threatened Flora			
Cadellia pentastylis Ooline	✓	✓	• Will be avoided by site layout • Vulnerable to grazing and soil compaction by domestic stock, feral goats and pigs • Vulnerable to insect attack and herbivory • Habitat threatened by tunnel and sheet erosion processes
Homopholis belsonii Belson's panic	✓	✓	• Proposed action may occupy approximately 209ha of potential habitat. • Site layout will aim to avoid impacting species • Vulnerable to clearing, weed invasion, and grazing by non-native species.

Significant Species	Habitat Loss	Indirect Impacts	Notes
Threatened Fauna			
Calidris ferruginea Curlew Sandpiper	✓	-	• Proposed action may occupy approximately 3ha of potential habitat. • Main threatening processes to the species are likely occurring outside of Australia. Within Australia the species is vulnerable to habitat fragmentation and loss • Vulnerable to changes in the water regime and invasive plants.
Geophaps scripta scripta Squatter pigeon (southern)	✓	✓	• Proposed action may occupy approximately 240ha of potential habitat. • Vulnerable to fragmentation of habitat through habitat clearing • Vulnerable to degradation of habitat via overgrazing, weeds (including buffel grass) • Vulnerable to predation by avian and terrestrial predators (including birds of prey, dingo, fox, and cat).
Grantiella picta Painted honeyeater	✓	✓	• Proposed action may occupy approximately 240ha of potential habitat. • Key threat to the species is habitat loss. • Vulnerable to competition with and predation by invasive species (e.g. - *Rattus rattus*), • Vulnerable to the deliberate destruction of mistletoe • Vulnerable to nest predation and road deaths.
Rostratula australis Australian painted snipe	✓	✓	• Proposed action may occupy approximately 3ha of potential habitat. Vulnerable to degradation of habitat (aquatic habitats) including trampling by domestic stock • Vulnerable to predation by feral animals (fox, cat).
Nyctophilus corbeni South-eastern long-eared bat	✓	✓	• Proposed action may occupy approximately 220ha of potential habitat. Vulnerable to habitat degradation associated with altered fire regimes • Nocturnal species may be vulnerable to light and noise during night operations • Vulnerable to disturbance of roosting sites
Petauroides volans Southern greater glider	✓	✓	• Proposed action may occupy approximately 238ha of potential habitat. • Vulnerable to habitat fragmentation or altered fire regimes • Vulnerable to entanglement in barbed wire fencing, Vulnerable to competition from sulphur-crested cockatoos and Phytophthora root fungus • Nocturnal species may be vulnerable to light and noise during night operations.

Significant Species	Habitat Loss	Indirect Impacts	Notes
Phascolarctos cinereus Koala	✓	✓	• Proposed action may occupy approximately 238ha of potential habitat. • Vulnerable to fragmentation and degradation of habitat • Vulnerable to an increase in frequency and severity of drought and fire and periods of extremely high temperature • Vulnerable where there is lack of access to refuges • Vulnerable to mortality due to vehicle strike • Nocturnal species may be vulnerable to light and noise during night operations.
Delma torquata Collared delma	✓	✓	• Proposed action may occupy approximately 240ha of potential habitat. • Vulnerable to fragmentation and degradation of habitat as a result of stock overgrazing and weed invasion • Vulnerable to micro-habitat loss when rocks, coarse woody debris and ground litter are removed • Vulnerable to impacts of agricultural chemical use.
Egernia rugosa Yakka skink	✓	✓	• Proposed action may occupy approximately 240ha of potential habitat. • Vulnerable to habitat degradation including as a result of inappropriate roadside management • Vulnerable to feral animal predation by foxes and cats • Susceptible to population crashes given high site fidelity.
Furina dunmalli Dunmall's snake	✓	✓	• Proposed action may occupy approximately 240ha of potential habitat. • Vulnerable to habitat overgrazing by domestic stock • Vulnerable to predator invasion of habitat by introduced weeds.
Migratory Species			
Apus pacificus Fork-tailed swift	-	-	• As this species is almost exclusively aerial, no habitat loss within the Production Area is expected due to project activities and as such no direct or indirect impact is expected.
Callidris acuminata Sharp-tailed sandpiper	✓	✓	• Proposed action may occupy approximately 3ha of potential habitat. • Key vulnerabilities of the species include loss of habitat caused by the drainage and the modification of wetlands.
Gallinago hardwickii Latham's snipe	✓	✓	• Proposed action may occupy approximately 3ha of potential habitat. • Vulnerable to drainage and the modification of wetlands.
Hirundapus caudacutus White-throated needletail	-	-	• As this species is almost exclusively aerial, no habitat loss within the Production Area is expected due to project activities and as such no direct or indirect impact is expected.
Myiagra cyanoleuca Satin flycatcher	✓	✓	• Proposed action may occupy approximately 238ha of potential habitat. • Vulnerable to invasive flora and fauna species.

Significant Species	Habitat Loss	Indirect Impacts	Notes
Plegadis falcinellus Glossy ibis	✓	✓	• Proposed action may occupy approximately 3ha of potential habitat. • Wetland destruction or degradation including water diversion and drainage is the key threatening process to the species.
Rhipidura rufifrons Rufous fantail	✓	✓	• Proposed action may occupy approximately 238ha of potential habitat. • Vulnerable to invasive flora and fauna species.
Tringa nebularia Greenshank	✓	✓	• Proposed action may occupy approximately 3ha of potential habitat. • Vulnerable to siltation or pollution of wetlands • Vulnerable to weed or pest invasion induced changes to the quantity or quality of food resources • Vulnerable to daytime disturbance by human activities
Tringa stagnatilis Marsh sandpiper	✓	✓	• Proposed action may occupy approximately 3ha of potential habitat. • Vulnerable to water pollution or changes to the water regime

6. PRE-CONSTRUCTION MANAGEMENT MEASURES

6.1. Relevant Significant Species

There are no on-ground activities planned during pre-construction that will result in impacts to significant species, however, design aspects will consider potential impacts to significant species.

6.2. Potential Impacts

There are no on-ground activities planned during pre-construction that will result in impacts.

6.3. Management Measures and Performance Criteria

As no activities are planned during pre-construction that will result in impacts, no management measures have been proposed.

Although no management measures have been proposed Senex operates all activities under the WSGP Environmental Protocol for Field Development and Constraints Analysis [SENEX-WSGP-EN-PRC-002] (Constraints Protocol) that provides guidance for infrastructure sighting to consider, among other aspects, the selection of preferential locations aimed at managing potential environmental impacts. This is the primary mechanism to achieving further avoidance and minimisation of impacts to significant species. Broadly, the protocol includes:

1. *Desktop environmental constraints analysis* – involves review of GIS mapping layers relating to the proposed infrastructure locations. Depending on the nature of constraints locations may be revised to avoid or minimise disturbance where possible.
2. *Site surveys* – once the preferred location is identified site surveys are undertaken to confirm suitability of the location. Suitability considerations include firstly, landholder requirements, secondly, constructability, thirdly, environmental features (such as significant species) and cultural heritage clearance. Site surveys are documented in a Survey Report.
3. *Post-survey environmental constraints analysis* – survey results are used to further refine the infrastructure locations.

The WSGP Fauna and Stock Management Plan [SENEX-WSGP-EN-PRC-004] incorporates an 'Identify' phase when likely presence of Significant Species Fauna and fauna habitat is determined through Preliminary Desktop Assessment (PDA) and where required an Ecological Ground-truthing Survey (ES). The ES is undertaken by a suitably qualified person to confirm the on-ground biodiversity values prior to final site selection and any site disturbance.

As Senex have no planned activities during the pre-construction phase that will result in impacts, the driving performance indicator is *no adverse, measured impacts to the environment during pre-construction.*

7. CONSTRUCTION MANAGEMENT MEASURES

7.1. Relevant Significant Species

Relevant significant species that have the potential to be impacted during construction phases are detailed in ***Table 7-1***.

Table 7-1 Potentially Impacted Significant Species

Threatened Ecological Communities (TECs)	
Brigalow (*Acacia harpophylla* dominant and codominant) TEC	Semi-evergreen vine thickets (SEVT) of the Brigalow Belt (North and South) and Nandewar Bioregions TEC
Weeping Myall Woodlands TEC	
Threatened Species (Flora)	
Ooline (*Cadellia pentastylis*)	Belson's panic *(Homopholis belsonii*)
Threatened Species (Fauna)	
Curlew sandpiper *(Calidris ferrugenia*)	Squatter pigeon (southern) *(Geophaps scripta scripta)*
Painted honeyeater *(Grantiella picta*)	Australian painted snipe *(Rostratula australis*)
South-eastern long-eared bat *(Nyctophilus corbeni*)	Southern greater glider *(Petauroides volans*)
Koala *(Phascolarctos cinereus*)	Collared delma (*Delma torquata*)
Yakka skink (*Egernia rugosa*)	Dunmall's snake *(Furina dunmalli*)
Migratory Species	
Sharp-tailed sandpiper *(Callidris acuminata*)	Latham's snipe(*Gallinago hardwickii*)
Satin flycatcher (*Myiagra cyanoleuca*)	Glossy ibis (*Plegadis falcinellus*)
Rufous fantail (*Rhipidura rufifrons*)	Greenshank (*Tringa nebularia*)
Marsh sandpiper *(Tringa stagnatilis*)	

7.2. Potential Impacts

Potential impacts to significant species include:

- introducing and/or spread of weed species as a result of vehicle movements across the landscape - at least three Category 3 Invasive plant species have currently been recorded within the Production Area, competing with native species;
- increasing pest species' populations or the introduction of pest species, competing with and potentially predating upon native species, or harmful to a species becoming established in an area of important habitat;
- disturbing or displacing fauna species from foraging or roosting habitat as a result of noise and and/or light generated during construction activities (particularly during night-time operations);
- degrading habitat adjacent to construction areas as a result of dust, contaminants released or other edge effects during construction activities. Changes to microclimates in adjacent habitat has the potential reduce value to native flora and fauna;

- introducing barriers to movement in the event construction pathways create a gap in vegetated movement corridors (largely riparian vegetation zones);
- injury/fatality or destruction of individuals of threatened species during construction activities;
- substantially modifying habitat (including by fragmenting, altered fire regimes, nutrient cycles or hydrological cycles), or the destruction or isolation of an area of important habitat; and
- seriously disrupting the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a significant species.

7.3. Management Measures and Performance Criteria

Management measures to minimise impacts to significant communities and species during construction activities are based on the mitigation hierarchy:

1. Avoid direct and indirect adverse impacts;
2. Mitigate and manage any unavoidable direct and indirect adverse impacts; and
3. Remediate and rehabilitate impacted areas to promote long-term recovery.

Management measures and associated Performance Criteria to be implemented during project construction phases are provided in the sections below.

7.3.1 Housekeeping

7.3.1.1. General Environmental Management Controls

- Site inductions and pre-start meetings will be held for all personnel attending the work site. The information discussed will include flora and fauna management issues at the site and any specific requirements;
- No firearms, traps, nets or pets permitted on site or in camp;
- Feeding of domestic or native animals is not permitted;
- Personnel must remain within areas approved for operations (cleared work zones) and not drive off approved access tracks or enter exclusion areas or ‘no-go’ zones;
- All rubbish and waste materials including cigarette butts are to be disposed of in the appropriate bins, or in the absence of bins, removed daily from site. All personnel are responsible for ensuring that sites remain litter free; and
- Adequate and properly maintained firefighting equipment will be present on site and potential ignition sources controlled.

7.3.2 Pests and Weeds (Invasive Species)

7.3.2.1. Management Measures

- Activities must be planned so that movement of vehicles, plant, machinery and equipment avoid moving between properties, corridors or areas with weed infestations;
- Site specific weed management requirements must be defined prior to access to any property or work site and outlined in the ATW, to be followed by all staff and contractors;
- Vehicle hygiene procedures must be implemented where risk of weed introduction or spread is identified;
- Pest and weed management control activities will be undertaken as directed by Senex;
- Weed management and control methods will depend upon the location, weed species identified, the degree of the infestation, relevant landholder agreement or Conduct and Compensation Agreement (CCA) provisions, and local, state and national regulatory requirements; and
- If declared pest animal species (as identified by the Senex Biosecurity Management Plan [SENEX-WSGP-EN-PLN-002] are trapped or otherwise contained at a work site the Fauna Spotter/Catcher will be contacted to deal with the animal.

7.3.2.2. Performance Criteria

- No spread of declared or high priority pest flora or fauna species within or outside of works area due to Senex activities;
- Weed species must be managed in accordance with CCAs*, Land Access Code 2010* requirements*, Biosecurity* Act 2014 and other regulatory requirements, and relevant Senex supporting procedures and plans; and
- A weed monitoring program will be developed to provide opportunity for early detection of weed outbreaks or new areas of establishment as required.

7.3.3 Chemical and Fuel Storage

7.3.3.1. Management Measures

- All fuel, oil and chemicals are to be stored, transported and handled in accordance with appropriate standards including AS 3780:2008 – The storage and handling of corrosive substances, AS 1940:2004 – The storage and handling of flammable and combustible liquids, AS 3833:2007 – Storage and handling of mixed classes of dangerous goods in packaged and intermediate bulk containers;
- Bulk fuel tanks stored outside a bunded area must be contained within a self-bunded (double skinned) tank with safety valves;
- Appropriate spill response equipment must be available on site and/or with vehicles, and regularly maintained;

- Storage areas must be sealed, bunded, and adequately ventilated;
- Storage and refuelling areas will be preferentially located away from watercourses, and wetland habitats; and
- Containment bunds and/or sumps will be drained periodically of accumulated rainwater to prevent overflow and subsequent pollution of the surrounding land and watercourses.

7.3.3.2. Performance Criteria

- No uncontrolled release of chemicals, oil or fuel is to occur to the environment; and
- All chemicals, oil and fuel must be handled, stored and effectively contained, and transported appropriately and in accordance with relevant Australian Standards (AS) and Australian Dangerous Good Codes.

7.3.4 Water Management

7.3.4.1. Management Measures

- No unauthorised discharges of water to land or surface waters.

7.3.4.2. Performance Criteria

- No contaminants directly or indirectly released to water; and
- No accidental or uncontrolled release of water to waterways or drainage lines.

7.3.5 Emergency and Incident Response

7.3.5.1. Management Measures

- Personnel who observe an environmental incident, including a spill, must immediately notify the Contractor Site Supervisor who will then notify the Senex Site Supervisor;
- In the event of a chemical, oil or fuel spill, the spill will be contained and cleaned up as outlined in the Senex Spill Response Plan; and
- Incident reports must contain information required by the WSGP Safety Management Plan and Incident Reporting and Investigation Procedure.

7.3.5.2. Performance Criteria

- All emergencies on site will be managed in accordance with the WSGP Emergency Response Plan;
- All incidents are reported, notified and investigated in accordance with the WSGP Safety Management Plan and Senex Incident Reporting and Investigation Procedure; and
- All spills are managed in accordance with the Senex Spill Response Plan.

7.3.6 Waste Management

7.3.6.1. Management Measures

- All waste generated must be stored, handled and transported in accordance with the *WSGP Waste Management Procedure* and appropriate standards/regulatory requirements;
- All wastes must be transported in covered or sealed containers to prevent the loss of waste materials during transport;
- All sites will be kept free from litter;
- Waste material (including domestic waste) must be collected and stored in covered bins to prevent loss and scavenging by animals;
- Green waste may be used on site for either rehabilitation or sediment and erosion control or both;
- Release of treated sewage effluent of greywater must be:
    - to a designated (fenced and signed) area;
    - not result in pooling of run-off or aerosols or spray drift or vegetation die-off; and
    - the contaminated release area must be kept vegetated with groundcover (not weeds).

7.3.6.2. Performance Criteria

- Contaminants must not be directly or indirectly released to land;
- Waste is appropriately managed to avoid or minimise the potential for:
    - Release of hazardous waste to land or waters either through inappropriate waste disposal or accidental release;
    - Inadequate waste management leading to inappropriate disposal or inadequate re-use and recycling; or
    - Impacts to the environment, land use or well-being of people resulting from inappropriate storage, handling or disposal of waste.
- Waste is managed at all Senex sites in accordance with the waste and resource management hierarchy and the waste and resource management principles under the EP Regulation and the *Waste Reduction and Recycling Act 2011.*

7.3.7 Flora Management

7.3.7.1. Management Measures

- Prior to undertaking activities that result in significant disturbance of land in areas of native vegetation, an ecological survey must be undertaken by a suitably qualified person;
- Vegetation must not be cleared unless authorised under a Senex ATW permit. The ATW must be approved prior to any vegetation clearance or disturbance occurring;
- Infrastructure shall avoid EPBC threatened communities, and aim to avoid threatened flora species where practicable, and must be preferentially located within non-remnant vegetation;
- Wherever reasonably practicable, vegetation will be removed at ground level by cutting or slashing rather than removing root stock;
- Avoid then minimising the clearing of mature trees where possible;
- Cleared vegetation/green waste not used on-site for rehabilitation and/or sediment erosion should be stockpiled to facilitate re-spreading or salvaging;
- No vehicles or equipment are to areas move outside the cleared work zone to prevent unnecessary land and vegetation disturbance; and
- 'No-go' areas will be GPS located and clearly marked e.g. bunting, flagging tape.

7.3.7.2. Performance Criteria

- Clearing of native vegetation must be minimised to that necessary for construction and operational activities;
- No clearing is undertaken without appropriate authorisation and approvals; and
- Clearing of vegetation and protected plants must be in accordance with relevant permits or exemptions issued under the EPBC approval conditions, *Nature Conservation Act 1992* and relevant EA conditions.

7.3.8 Fauna Management

7.3.8.1. Management Measures

- PDA and ES (where required) will be conducted to identify the likelihood of habitat features to support fauna, particularly threatened species;
- Wherever practical, fencing will be installed around construction sites and areas (pits/voids) that present hazards to stock or fauna;
- Vegetation clearing will be undertaken in a sequential manner to direct fauna towards adjacent habitat and not into other hazardous areas;

- Fauna will be preferentially allowed to move off on their own accord. Where this does not occur and immediate access is required, a Fauna Spotter/Catcher will be contacted to relocate the animal;
- Natural vegetation buffers along creeks and rivers shall not be disturbed unless authorised under an ATW and only at the location indicated on the Site Environmental Instruction;
- Vehicle speed limits (maximum 40km/hr) will apply throughout construction;
- Where activities may impose barriers to the movement of fauna for extended period of time, reasonable measures will be implemented to facilitate fauna movement around or through active work areas;
- Any waterway barrier works (works that pose a barrier to water flow and fish movement) must only be undertaken where authorised under an ATW and only at the location indicated on the Site Environmental Instruction;
- Sumps, flare pits, pipeline trenches and other deep, unfenced voids will have fauna exit points with ramps installed (at regular intervals) and in accordance with the WSGP Fauna and Stock Management Plan [SENEX-WSGP-EN-PRC-004];
- Excavations and trenches must be inspected for trapped fauna on a daily basis, within two hours of sunrise and prior to backfilling or laying pipe;
- The amount of artificial lighting and the number of hours lights are operational will be minimised wherever reasonably practical; and
- Where activities are to be undertaken that may impact fauna or fauna habitat the Fauna Spotter/Catcher procedure (within the WSGP Fauna and Stock Management Plan [SENEX-WSGP-EN-PRC-004]) will be implemented.

7.3.8.2. Performance Criteria

- Damage to or destruction of wildlife habitat is avoided or minimised; and
- No injury, entrapment or death of wildlife or domestic stock, as a result of Senex's activities.

Additional to management measures identified in the sections above, the outcomes of Constraints Protocol and avoidance planning will be implemented, and used to inform the management measures during construction. Section 6.3 describes this process in greater detail.

8. OPERATIONS MANAGEMENT MEASURES

8.1. Relevant Significant Species

Relevant significant species that have the potential to be impacted during operation phase are detailed in ***Table 8-1*** below.

Table 8-1 Potentially Impacted Significant Species

Threatened Ecological Communities (TECs)	
Brigalow (*Acacia harpophylla* dominant and codominant) TEC	Semi-evergreen vine thickets (SEVT) of the Brigalow Belt (North and South) and Nandewar Bioregions TEC
Weeping Myall Woodlands TEC	
Threatened Species (Flora)	
Ooline (*Cadellia pentastylis*)	Belson's panic *(Homopholis belsonii*)
Threatened Species (Fauna)	
Curlew sandpiper *(Calidris ferrugenia*)	Squatter pigeon (southern) *(Geophaps scripta scripta*)
Painted honeyeater *(Grantiella picta*)	Australian painted snipe *(Rostratula australis*)
South-eastern long-eared bat *(Nyctophilus corbeni*)	Southern greater glider *(Petauroides volans*)
Koala *(Phascolarctos cinereus*)	Collared delma (*Delma torquata*)
Yakka skink *(Egernia rugosa*)	Dunmall's snake *(Furina dunmalli*)
Migratory Species	
Sharp-tailed sandpiper *(Callidris acuminata*)	Latham's snipe (*Gallinago hardwickii*)
Satin flycatcher (*Myiagra cyanoleuca*)	Glossy ibis (*Plegadis falcinellus*)
Rufous fantail (*Rhipidura rufifrons*)	Greenshank (*Tringa nebularia*)
Marsh sandpiper (*Tringa stagnatilis*)	

8.2. Potential Impacts

Potential impacts to significant species include:

- spreading weed species via vehicle movements across the landscape - at least three Category 3 Invasive plant species have currently been recorded in the Production Area;
- increasing pest species' populations or introducing pest species as a result of vehicle movements and inappropriate waste storage methods; attracting opportunistic scavenging fauna species;
- injury/fatality or destruction of individuals (including threatened species) during operational activities;
- introducing an invasive species harmful to a species becoming established in an area of important habitat, and
- seriously disrupting the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a species as a result of light or noise.

8.3. Management Measures and Performance Criteria

Management measures to minimise impacts to significant communities and species during construction activities are based on the mitigation hierarchy:

1. Avoid direct and indirect adverse impacts;
2. Mitigate and manage any unavoidable direct and indirect adverse impacts; and
3. Remediate and rehabilitate impacted areas to promote long-term recovery.

Management measures and associated Performance Criteria to be implemented during project operational phases are provided in the sections below.

8.3.1 Housekeeping

As for construction. Refer to Section 7.3.1.

8.3.2 Pests and Weeds (Invasive Species)

8.3.2.1. Management Measures

- Activities must be planned so that movement of vehicles avoid moving between properties, corridors or areas with weed infestations;
- Ongoing monitoring of weed invasions may be required and adaptive management activities may continue in operation phase.

8.3.2.2. Performance Criteria

- No spread of declared or high priority pest plants or fauna species within or outside of works area due to Senex activities; and
- Weeds must be managed in accordance with CCAs, *Land Access Code 2010* requirements, *Biosecurity Act 2014* and other regulatory requirements, and relevant Senex supporting procedures and plans.

8.3.3 Chemical and Fuel Storage

8.3.3.1. Management Measures

- All fuel, oil and chemicals are to be stored, transported and handled in accordance appropriate standards including AS 3780:2008 – The storage and handling of corrosive substances, AS 1940:2004 – The storage and handling of flammable and combustible liquids, AS 3833:2007 – Storage and handling of mixed classes of dangerous goods in packaged and intermediate bulk containers;

- Bulk fuel tanks stored outside a bunded area must be contained within a self-bunded (double skinned) tank with safety valves;
- Appropriate spill response equipment must be available on site and/or with vehicles, and regularly maintained;
- Containment bunds and/or sumps will be drained periodically of accumulated rainwater to prevent overflow and subsequent pollution of the surrounding land and watercourses.

8.3.3.2. Performance Criteria

- No uncontrolled release of chemicals, oil or fuel is to occur to the environment; and
- All chemicals, oil and fuel must be handled, stored and effectively contained, and transported appropriately and in accordance with relevant Australian Standards (AS) and Australian Dangerous Good Codes.

8.3.4 Water Management

8.3.4.1. Management Measures

- No unauthorised discharges of water to land or surface waters.

8.3.4.2. Performance Criteria

- No unauthorised release of contaminants directly or indirectly to water;
- No accidental or uncontrolled release of water to waterways or drainage lines; and
- No use of pipeline waste water or produced water on site except in accordance with EA conditions and (BUA) conditions as relevant.

8.3.5 Emergency and Incident Response

8.3.5.1. Management Measures

- Personnel who observe an environmental incident will notify the Senex Site Supervisor;
- In the event of a chemical, oil or fuel spill, the spill will be contained and cleaned up as outlined in the Senex Spill Response Plan;
- Any spills will be assessed by the Senex Site Supervisor supported by the Senex Environment Manager as required to determine appropriate remediation options such as the removal of contaminated material; and
- Incident reports must contain information required by the WSGP Safety Management Plan and Incident Reporting and Investigation Procedure.

8.3.5.2. Performance Criteria

- All emergencies on site will be managed in accordance with the WSGP Emergency Response Plan;
- All incidents are reported, notified and investigated in accordance with the WSGP Safety Management Plan and Senex Incident Reporting and Investigation Procedure; and
- All spills are managed in accordance with the Senex Spill Response Plan.

8.3.6 **Waste Management**

8.3.6.1. Management Measures

- All waste generated must be stored, handled and transported in accordance with the *WSGP Waste Management Procedure* and appropriate standards/regulatory requirements;
- All sites will be kept free from litter;
- Items of general waste are not to be disposed of to the sump or pits;
- Waste material (including domestic waste) must be collected and stored in covered bins to prevent loss and scavenging by animals;
- All waste materials that must be removed from site will be removed once activities are completed;
- Only licensed waste contractors may collect, transport and dispose of waste from the site.

8.3.6.2. Performance Criteria

- Contaminants must not be directly or indirectly released to land;
- Waste is appropriately managed to avoid or minimise the potential for:
    - Release of hazardous waste to land or waters either through inappropriate waste disposal or accidental release;
    - Inadequate waste management leading to inappropriate disposal or inadequate re-use and recycling; or
    - Impacts to the environment, land use or well-being of people resulting from inappropriate storage, handling or disposal of waste.
- Waste is managed at all Senex sites in accordance with the waste and resource management hierarchy and the waste and resource management principles under the EP Regulation and the *Waste Reduction and Recycling Act 2011*.

8.3.7 Flora Management

8.3.7.1. Management Measures

- No vehicles or equipment are to move outside the approved work area to prevent unnecessary land and vegetation disturbance; and
- 'No-go' areas will be GPS located and clearly marked e.g. bunting, flagging tape.

8.3.7.2. Performance Criteria

- Native vegetation onsite remains undisturbed throughout operation.

8.3.8 Fauna Management

8.3.8.1. Management Measures

- Active work areas, pits, sumps and other areas hazardous to fauna and stock must be fenced or covered to prevent access;
- Utilise a fauna spotter catcher, where required
- Vehicle speed limits (maximum 40km/hr) will apply throughout operation.

8.3.8.2. Performance Criteria

- Damage to or destruction of wildlife habitat is avoided or minimised; and
- No injury, entrapment or death of wildlife or domestic stock, as a result of Senex's activities.

9. MONITORING PROGRAM

Weed monitoring is a requirement of the WSGP Environmental Management Plan [SENEX-WSGP-EN-APA-006]. Similarly, monitoring of rehabilitation of the Production Area is a requirement of the WSGP Rehabilitation Plan [SENEX-WSGP-EN-PLN-003]. Monitoring undertaken for these components and any subsequent adaptive management will support the management of significant species and their habitats.

In addition, baseline data and species information, for threatened species, has been collected as part of biodiversity studies for the WSGP and ongoing ecological assessments undertaken with progressive exploration across the Production Area. These data will be collated and managed in a database that will be available to inform future studies (and site surveys) and analysed where appropriate.

10. REFERENCES

Boobook (2017) Glenora Eos Expansion Area EAR (draft report).

DoE (2013) Approved Conservation Advice for the Brigalow (*Acacia harpophylla* dominant and co-dominant ecological community). Available at http://www.environment.gov.au/biodiversity/threatened/communities/pubs/028-conservation-advice.pdf. Accessed 01/06/2017.

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