Western Surat Gas Project
Environmental Management Plan

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		Approve	Review		
Environment Manager	T.Jensen	☒	☐		16/01/18

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REVISION HISTORY

Revision	Revision Date	Document Status	Revision Comments	Author	Approved By
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0	10/06/2017	Final	Document creation	J.Earley	T. Jensen
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1. INTRODUCTION

Stuart Petroleum Cooper Basin Gas Pty Ltd ACN 130 588 055 has prepared this plan to accompany the amendment application under Section 224 of the *Environmental Protection Act 1994* (EP Act) for Environmental Authority EPPG00651513 (WSGP EA). The Applicant is a wholly-owned subsidiary of Senex Energy Limited ACN 008 942 827.

Senex is planning to develop a gas project within petroleum tenures ATP 767, 795 and 889, referred to collectively as the Western Surat Gas Project (WSGP)[1]. The WSGP is located approximately 30 km northeast of Roma, in Queensland's Surat Basin. The location of the WSGP is presented in Figure 1.1.

Senex has determined through its CSG exploration and appraisal (E&A) activities that the southern portion of the WSGP acreage is sufficiently prospective to justify CSG production, and has recently applied for the grant of PLs 1022, 1023 and 1024 (referred to as the "Production Area") so that production activities can lawfully commence (See Figure 1.1). E&A will continue across the entire WSGP area, and the medium-term focus will be on production activities within the Production Area.

1.1. Purpose and Scope

This Environmental Management Plan (EMP) describes how Senex will manage potential environmental impacts associated with conducting exploration, appraisal and production activities (EAP activities) in the WSGP area and ensure compliance with EA conditions, industry guidelines and regulatory requirements. The objectives of this EMP are to ensure:

- Potential impacts on the surrounding environment are identified and addressed within an internal planning process and incorporated into field management procedures;
- Activities that have, or are likely to have, temporary impacts on the environment are monitored and managed; and

[1] The remaining blocks, being the Maisey block which has been sold to the Santos Gladstone LNG joint venture and the four blocks, known as Hawkins, located to the south of the Warrego Highway, all within ATP 889 (refer to Figure 1.1) are not part of the WSGP but are still covered by the WSGP EA and the EMP.

- Activities which have, or are likely to have, long term significant impacts on the environment or land use are managed appropriately and mitigated wherever practicable.

Broadly this EMP describes:

- Specific requirements for compliance with government regulatory requirements, EA and other approval conditions;
- Activities authorised to be undertaken on the WSGP area and Production Area;
- Methods to communicate and document environmental compliance activities for all activities;
- Environmental management measures to be implemented to minimise identified potential environmental impacts.

1.2. Supporting Plans and Procedures

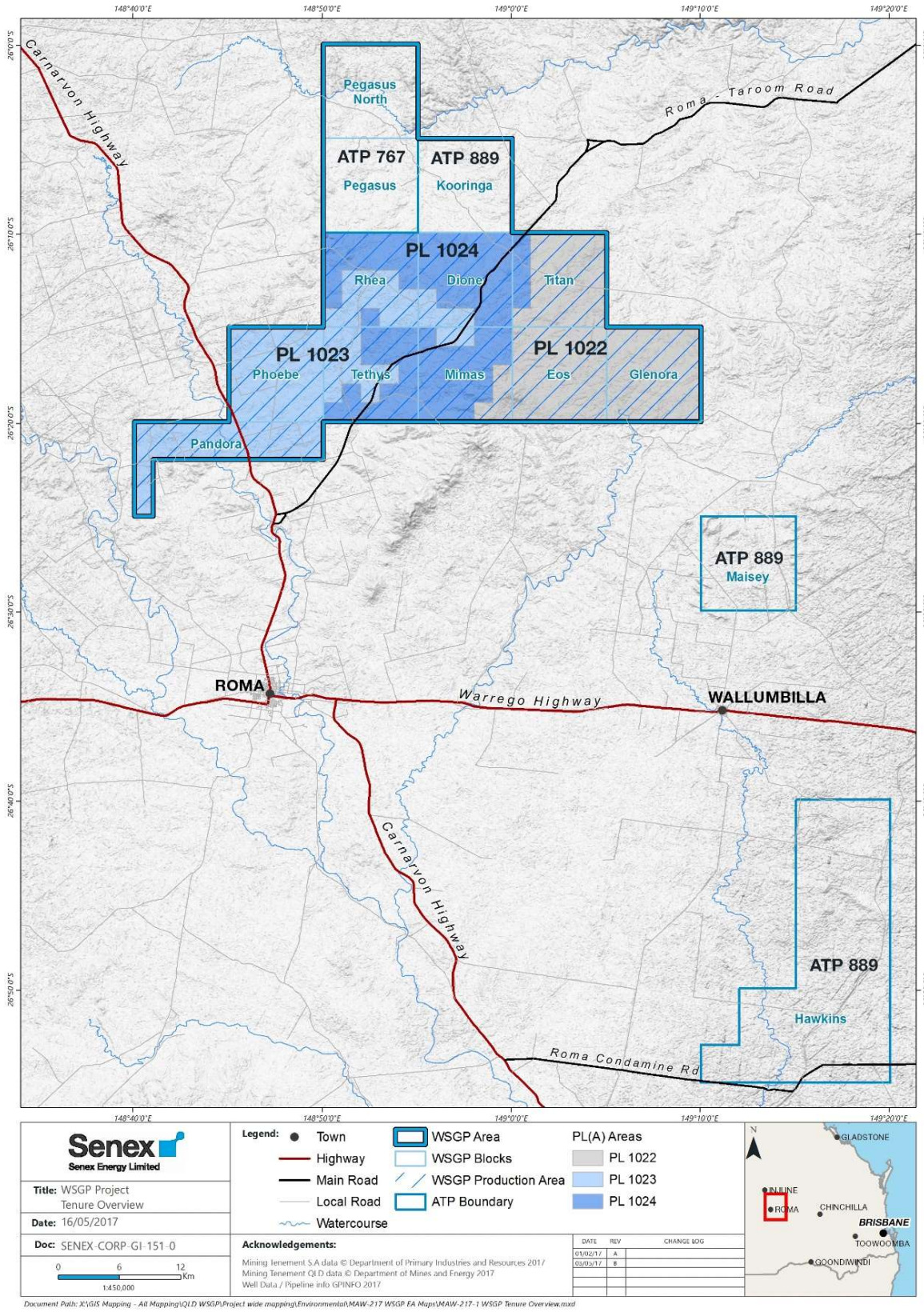
The EMP will be updated to reflect new or additional permit conditions, regulatory requirements, or as required by a risk assessment or changed project outcomes. Senex contractors will be provided with a copy of the WSGP EMP and will be required to comply with its contents.

This EMP is supported by a number of internal plans, procedures and processes including but not limited to the following:

- Senex Health, Safety and Environmental Management System;
- Environmental constraints and field development protocol [SENEX-WSGP-EN-PRC-002], comprising a GIS analysis tool integrated within infrastructure development and land access planning processes;
- WSGP Safety Management Plan [SENEX-WSGP-HS-PLN-001] that includes incident notification, response, investigation and reporting procedures;
- WSGP Emergency Response Plan [SENEX-WSGP-ER-PLN-001] that references the Senex Spill Response Plan [SENEX-CORP-ER-PLN-006] (Appendix B) and includes contingency procedures for emergency environmental incidents;
- Senex Action Item Tracking Register (AITR) database which tracks complaints, grievances and all other items required to be actioned;
- WSGP Biosecurity Management Plan [SENEX-WSGP-EN-PLN-002] and WSGP Vehicle Weed Hygiene Procedure [SENEX-WSGP-EN-PRC-003];
- Senex Waste Management Procedure – Qld Operations [SENEX-WSGP-EN-PRC-001];

- WSGP Rehabilitation Management Plan [SENEX-WSGP-EN-PLN-003];
- WSGP Erosion and Sediment Control Plan [SENEX-WSGP-EN-PLN-004];
- WSGP Biodiversity Values Confirmation Methodology [SENEX-WSGP-EN-PRC-010];
- WSGP Fauna and Stock Management Procedure [SENEX-WSGP-EN-PRC-004];
- CSG Water Management Plan [SENEX-WSGP-EN-PLN-008]; and
- Biodiversity Offset Strategy in accordance with the *Environmental Offsets Act 2014* [SENEX-WSGP-EN-PLN-010].

Figure 1.1 The location of the WSGP's production area with PLs under application



2. LEGISLATIVE REQUIREMENTS

2.1. State Legislation

The principal legislation regulating petroleum and gas activities for the WSGP is the *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act). The principal environmental legislation is the *Environmental Protection Act 1994* (EP Act) and associated regulation and protection policies.

The EP Act specifies the 'general environmental duty', outlining that a person must not perform their duties in a manner which will cause, or is likely to cause, environmental harm unless the person takes all reasonable and practical measures to prevent or minimise the harm.

The WSGP EA was granted to Senex in accordance with the EP Act, and Senex and all contractors undertaking petroleum activities within the WSGP must comply with the conditions of the EA to meet their respective obligations under the EP Act.

Fisheries resources and development in fisheries habitat areas in Queensland are regulated under the *Fisheries Act 1994* (Qld). The most relevant provisions in the *Fisheries Act 1994* (Qld) relate to installation of temporary and permanent waterway barriers ("waterway barrier works"), which may be assessable development under the *Sustainable Planning Act 2009* (Qld).

The *Nature Conservation Act 1992* (Qld) provides a framework for protecting native flora and fauna, which are classified as being either endangered, vulnerable, near threatened or least concern, and are referred to as "protected plants" and "protected animals", respectively. A clearing permit is required where a survey has identified the presence of an endangered, vulnerable or near threatened plant species. The permit must be obtained prior to clearing and under the Act an offset condition may be required for the clearing activity.

The *Waste Reduction and Recycling Act 2011* (Qld) establishes the framework for waste management and resource recovery in Queensland, including the waste and resource management hierarchy, the "user pays" principle, the proximity principle and product stewardship principles. Waste management strategies must be aligned with the hierarchy and principles under this Act.

The *Water Act 2000* (Qld) provides a framework for planning and regulating the use and control of water in Queensland. The Act provides a wide range of tools for the regulation of in-stream (i.e. watercourses, lakes and springs) and overland water flow and groundwater within the context of "sustainable management and efficient use" of water.

Obligations also exist under other Queensland legislation for carrying out petroleum activities on the WSGP area, a number of which are identified in the following sections of this EMP. It remains the duty of Senex employees and contractors to meet all obligations under Queensland legislation before undertaking activities on the WSGP area. The Senex Environment Manager should be contacted where assistance is required.

2.2. Commonwealth Legislation

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) is the principal piece of environmental legislation administered by the Commonwealth Government

that is relevant to the WSGP. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, groundwater associated with coal seam gas projects, and heritage places defined in the Act as matters of national environmental significance. Approval conditions are expected as an outcome of the EPBC approval process for the production project and will be incorporated into this Plan accordingly.

The EPBC Act requires the principles of ecologically sustainable development to be taken into account for a new development proposal if that proposal is likely to a result in a significant impact on the environment.

3. ROLES AND RESPONSIBILITY

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 EMP 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 EMP 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 EMP 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, EMP, 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 commencement, and develop a construction methodology which has due regard for identified risks. • Ensure that appropriate training and inductions in the requirements of this EMP, EA conditions and other regulatory requirements as relates to their activities have been carried out for all relevant Contractor personnel. • Ensure that Contractor personnel are adequately supervised. • Implement this EMP 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 EMP, EA conditions, regulatory requirements and as specified in other relevant documents including tender documentation and contract with Senex. • Immediately notify the Senex Site Supervisor if cultural heritage sites, objects or human remains are found. • Immediately notify the Senex Site Supervisor of any incidents and non-compliances with the EA, this EMP, 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 supporting plans and procedure.
Contractor Personnel	• Undertake training and inductions as required to competently undertake activities on the WSGP area. • Carry out all activities in compliance with this EMP, Approval conditions, site environmental requirements identified in planning, the ATW or as directed by the Contractor Site Supervisor and/or Senex Site Supervisor.

Role	Responsibilities
	• Immediately notify the Contractor Site Supervisor if cultural heritage sites, objects or human remains are found. • Immediately notify the Contractor Site Supervisor of any incidents and non-compliances with the EA, this EMP, supporting plans or procedures.
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 EMP and in compliance with EA conditions. • 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 with EA conditions, the EMP and 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 EMP, Approval conditions and supporting procedures and plans are available as required. • Co-ordinate implementation of rehabilitation plans and programs as required for the WSGP area. • Undertake monitoring in accordance with this EMP, supporting plans and procedures and Approval conditions as directed by the Senex Environment Manager. • Complete Environmental Audits as directed by the Environment Manager.

4. ENVIRONMENTAL TRAINING AND INDUCTION

Environmental awareness training and inductions appropriate to the level of risk and type of work being performed will be provided to personnel, contractors and visitors as relevant. Senex contractors and consultants are made aware of the requirements of this EMP and associated procedures through the contracts and procurement process. Senex staff will undergo formal induction into the requirements of the EMP and associated plans and procedures.

4.1. General Training and Inductions

Training and inductions will cover:

- Environmental obligations responsibilities under the EP Act, Environmental Protection Regulation 2008 (EP Regulation) and the EA;
- Requirements of this EMP and other WSGP management plans and procedures;
- Environmental hazards and control measures;
- Emergency, incident and spill response procedures and incident notification procedures, including duty to report environmental incidents;
- Weed management and hygiene procedures;
- Water and waste management obligations; and

- Interactions with flora and fauna.

Relevant site-specific environmental information will be considered during site planning and disseminated through contract documentation to Contractors, through Site Environmental Requirement plans, ATW documentation to all site personnel, site start up meetings and toolbox sessions. Information may include:

- Land access requirements;
- Areas identified as containing weeds or being clean and weed free, and procedures for moving between these areas;
- Weed hygiene certification requirements;
- Environmentally sensitive areas that must be avoided;
- Any areas for which specific management measures must be implemented prior to working adjacent to or within; and
- Any significant flora and fauna species identified as potentially present in the work areas.

Records of staff and contractors who have undertaken training and inductions will be maintained to demonstrate achievement of competence by the HSE department. Training and induction material will be reviewed following change, incident investigations and hazard studies. Separate training and inductions are provided covering the topics of safety, cultural heritage and land access.

4.2. Fire Prevention Training

Fire on site has the potential to cause significant damage and/or injury to personnel, property, stock and the environment. The likelihood of fire starting in rural locations can be influenced by the condition of ground cover (e.g. tall, dry grass), the type and working condition of machinery, and human behaviour such as inappropriate disposal of cigarette butts.

Fire prevention will be covered as part of safety training and/or toolbox meetings to ensure all personnel are fully aware of the potential fire risk in the area in which work is being performed. Fire-fighting equipment and procedures will be in place at all Senex operated sites. Measures to aid in the prevention of fires may include:

- Providing appropriate fire-fighting equipment at Senex work sites.
- Training personnel in fire response procedures appropriate to the work place.
- Fitting Senex vehicles and/or other contractor vehicles and machinery with fire extinguishers which comply with the relevant Australian standards.

- Ensuring Senex vehicles and/or contractor vehicles and machinery have efficient exhaust systems free from leaks.

- Inspecting the underneath of vehicles for, and removal of, collected flammable material as required (e.g. after working in long grass).

5. DESCRIPTION OF PETROLEUM ACTIVITIES

5.1. Petroleum Wells

5.1.1 Exploration and Appraisal Wells

Exploration wells are drilled to determine the location, extent, thickness, permeability, gas content and gas saturation of coal seams present in the target area. The location of well sites, access tracks and associated infrastructure will be site-specific depending on location and characteristics of the hydrocarbon reservoir and local environmental conditions. Well pads are typically up to 1 hectare (ha) to safely accommodate the drilling rig and associated equipment. Water is required by the drilling process and may be pumped or trucked to site.

Appraisal or pilot wells are used to determine the most effective way of producing from the exploration wells. Appraisal testing involves drilling a cluster of wells in one area, usually in a diamond or square pattern, with one central well and several wells surrounding it. The data is then be used in future gas field development planning to optimise well spacing, water and gas infrastructure, water treatment options and pump sizes.

A dam or tank is generally associated with the pilot project and is constructed to receive and hold produced water. The size and specification of the dam or tank is determined using information collected during exploration, and is built based on the potential for use during production activities (refer to Section 7.7).

5.1.2 Production Wells

Production wells will generally be drilled where nearby E&A has been successful. As for E&A, production wells will generally require a lease pad of up to 1 ha, to accommodate erosion and sedimentation controls and site specific requirements. Drilling shall be undertaken in accordance with the DNRM *"Code of Practice for the construction and abandonment of petroleum wells and associated bores in Queensland".*

5.1.3 Drilling Material

While drilling, fluid is circulated down the drill string and up the annulus (space) between the drill string and well wall. Drilling fluid generally consists of a mixture of water, clays, fluid loss control additives, density control additives, and viscosifiers. Oil-based and synthetic oil-based drilling muds are not to be used.

To avoid well formation damage and to limit corrosion, a drilling fluid specific for each well is selected that is appropriate to the well design, and any locally experienced and anticipated geological conditions. The standard drilling fluid used by Senex is water-based. Potassium chloride or similar, may be used as a weighting agent to help control swelling clays. Organic polymers and clays may be added to the base fluid to raise the viscosity and assist in removing drill cuttings. Compounds that include benzene, toluene, ethylbenzene, or xylenes, known as BTEX, will not be used.

Drilling fluids are selected and managed to ensure all products are used in accordance with the manufacturer's recommendations and relevant Safety Data Sheets (SDS). The name, type and quantity of each drilling fluid additive used on each well are recorded by Senex.

5.2. Gas and Water Gathering Pipelines

Gas and water gathering pipelines are required to transport gas from the well site facilities to compression facilities, and produced water from the wells to the holding dam(s) or tanks. Gathering pipeline operation and maintenance must be in accordance, to the greatest extent, practicable, with the relevant sections of the *APIA Code of Environmental Practice: Onshore Pipelines 2009.*

Gathering pipelines from the wells to compression facilities will be constructed of high-density polyethylene (HDPE) pipe. The HDPE gathering system shall be designed and installed in accordance with *APGA Code of Practice Upstream Polyethylene Gathering Networks – CSG Industry Version 4.0.*

The gathering pipelines will require clearing a right of way (RoW) up to 18 metres that will include an access track. Once operating, a narrower RoW will be maintained above the pipeline necessary to ensure pipeline integrity and a vehicle access track will be retained. Prior to commissioning, the pipelines will be tested with compressed air.

In certain locations, high-point vents and low-point drains may also be required. High-point vents will be a float-type mechanism. Low point drains will generally be manually operated with a provision to automate their operations in certain circumstances. Pipeline wastewater may be released to land, as authorised by the EA, where it meets acceptable standards.

5.3. Medium Pressure Infield and Sales Gas Pipelines

Medium pressure infield pipelines from field compressor facilities to the Central Processing Facility (CPF), and a sales gas pipeline transporting gas from the CPF to a tie in point for sales will be constructed of steel. The pipeline shall be buried and comply with *AS2885 Pipelines – Gas and Liquid Petroleum.*

Steel pipelines will be hydrotested prior to commissioning to ensure operational integrity. Where hydrotesting is required, hydrotest water will be managed as authorised by the EA; water that contains chemical additives (e.g. biocides and oxygen scavengers) will be managed as detailed in Section 7.7.

5.4. Central Processing Facility

A single central processing facility (CPF) will be strategically located to service the WSGP. The CPF will collect gas from the producing wells via field compressor facilities, where it will be processed to sales gas specification for delivery to neighbouring tenement holders &/or into the existing delivery pipelines. Major equipment items at the CPF include:

- Inlet separation/ slug catcher;
- Multiple compressor units;
- Tri-ethylene glycol dehydration units;
- Sales gas metering and control;
- Flare;
- Oily water separation, treatment and storage;
- Control room;
- Utility air system;
- Power generation and power back up system;
- Waste oil, diesel and lube oil storage area; and
- Chemical storage area.

5.5. Field Compressor Facilities

Field compressor facilities (FCF's), collecting and compressing gas for transmission to the CPF, will enable gas to be transported from wells to the CPF over longer distances than would be possible using free flowing gas from the well directly to the CPF. Each FCF will generally be contained within a 100m x 100m fenced area and located adjacent to field water facilities to reduce the overall land disturbance area and make efficient use of shared site utilities, such as electricity. At larger FCF's (i.e. Glenora FCF), the flare exclusion zone may require additional space to be taken up to 100m x 100m making the area 200m x 100m.

5.6. Flares

Flares will be used for disposing of excess produced gas in the event it cannot be processed or for controlled depressurisation of gas plant facilities (CPF and FCF). Each flare will be sized to match the capacity of the compressor facility with additional margins for anticipated depressurisation events. The flare will be located in an appropriate exclusion zone to prevent unauthorised access. The exclusion zone size will range from a radius of ~30m for 10MMscf/d and up to a 50m for 21MMscf/d for larger plant throughput.

5.7. Produced Water

The volume and quality of produced water resulting from wells will vary from across the WSGP area. Ongoing appraisal activities will produce important data to enable Senex to better understand the characteristics and volumes of water produced from its wells and inform the strategies for future management of produced water.

Produced water has the potential to be beneficially used for a range of purposes in both treated and untreated (raw) forms. Produced water management options are considered in the context of the DEHP *CSG Water Management Policy 2012* that identifies the hierarchy of disposal options. The preferred option is beneficial use with a view to maximising benefits to the community. Where produced water can be beneficially used it is no longer considered a waste under the EP Act.

Where practical, Senex will use untreated CSG produced water to support ongoing development / construction activities such as dust suppression, drilling, well completions and workovers, facilities construction, hydro-testing of gathering networks, and landscaping and rehabilitation. Any untreated produced water used as part of WSGP activities will be undertaken in accordance with the '*General beneficial use approval: Associated water (including coal seam gas water)*', any new End of Waste Codes that may be approved, or as authorised by the EA for drilling and irrigation.

Senex anticipates further utilising the CSG produced water for beneficial use by establishing landowner water supply agreement (WSAs). An estimate of current groundwater use in the vicinity of the WSGP area is ~230 ML/year, which includes groundwater abstraction for stock and domestic, stock intensive, irrigation and other agricultural purposes. The applicability of beneficial use of produced water management options for a particular geographical location depends on several factors including landowner requirements, land uses, existing water availability and geology.

5.7.1 Dams

Dams are necessary for holding produced water prior to beneficial use or disposal. In the Production Area individual dams may be used as part of a larger produced water management network. Once dams are no longer required they shall be decommissioned and rehabilitated; unless they are retained via an agreement with the landholder and in accordance with EA conditions.

Dam locations will depend on gas well locations, in addition to environmental and social factors including soil types, conservation values, catchment areas, land uses, cultural heritage, and landholder agreements. Senex will ensure that all new dams are designed and constructed in accordance with the prescribed standards (with appropriate reference to the DEHP Guideline, "*Structures which are dams or levees constructed as part of environmentally relevant activities*" and DEHP "*Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933)*").

Specific dam designs will be developed by a suitably qualified and experienced person and will be assessed for their consequence category. Information on dam design, construction and post-construction specifications will be lodged with DEHP as required at relevant stages prior to its operation, in accordance with EA conditions. Dams determined to be of significant or high consequence will be added to the Senex WSGP regulated dam register, to be provided to DEHP upon request.

5.8. Roads and Access Tracks

Access tracks are required on the WSGP area to enable the construction and operation of gas wells and supporting infrastructure. Established access tracks will be used wherever possible, with purpose built access tracks constructed where existing tracks are not suitably located. Appropriate drainage and erosion and sediment controls are to be installed and maintained for construction and ongoing use of access tracks. A typical access track consists of a 6m carriageway, but may be wider in certain locations to provide for particular operational purposes, i.e. truck turnarounds. Where access tracks are required to cross waterways the Self-Assessable Codes for Waterway Barrier Works (Codes) must be complied with (DAF, 2013 located at https://www.daf.qld.gov.au/fisheries/habitats/ fisheriesdevelopment/self-assessable-codes). If the waterway crossings proposed cannot comply with the Codes, Senex is required to obtain a Development Approval under the *Queensland Sustainable Planning Act 2009*.

Once construction is complete, the access track disturbance is rehabilitated to the minimum width possible whilst ensuring safe use of the track or road. Rehabilitation requirements for waterway crossings are specified in the Codes.

5.9. Borrow Pits and Laydown Areas

Borrow pits are typically required as a source of gravel and other materials used on an as required basis for the construction of well sites, access tracks and laydown/hardstand areas. Laydown/hardstand areas are required to store equipment and materials such as pipe.

5.10. Camps and Sewerage Treatment

Temporary camp(s) will be required to accommodate drilling, well completion and construction crews. The need for temporary camps is dependent on the proximity, available services and amenities of the towns nearest the WSGP area. The camps will provide accommodation, mess facilities, communications, vehicle maintenance and parking areas, fuel handling and storage areas, and provision for the collection of general, recyclable and regulated waste streams.

Sewage treatment plants will generally form part of the camp infrastructure and may be closed or open systems. Any irrigation of treated effluent and/or greywater on site will be undertaken in accordance with the requirements outlined in Section 7.11 and other relevant Local and State Government approvals.

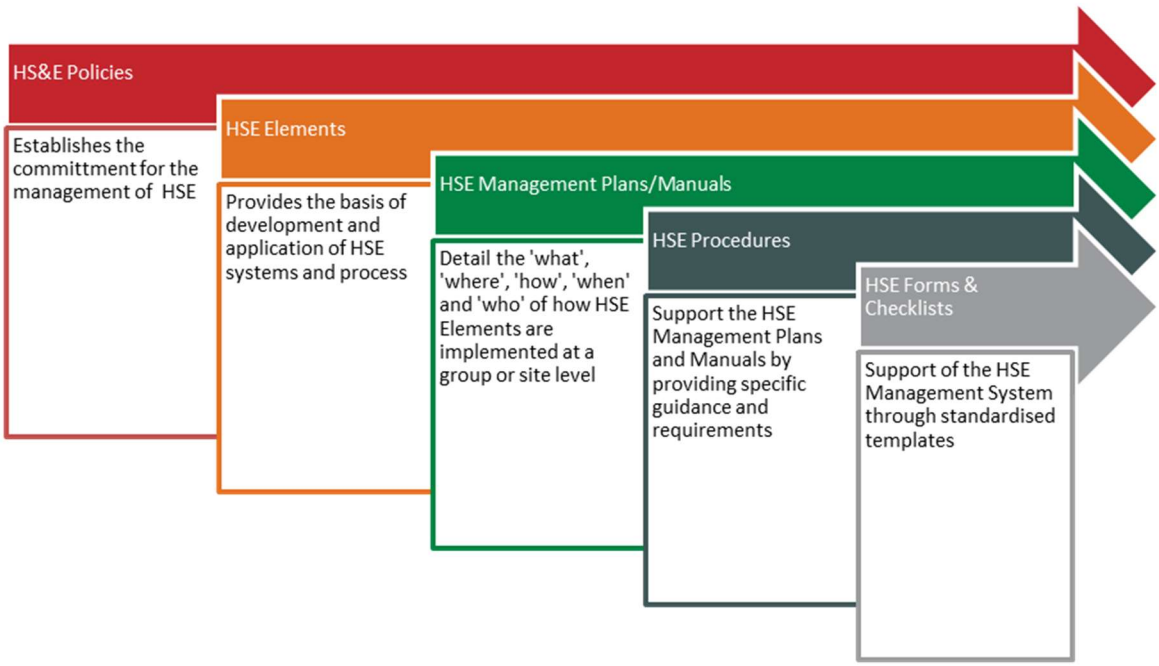
6. ENVIRONMENTAL MANAGEMENT

6.1. Health, Safety and Environment Management System

The Senex Health, Safety and Environment Management System (HSEMS) provides a framework that establishes expectations and parameters to drive continuous improvement in HSE performance. The HSEMS is applicable to all Senex worksites and personnel working for or on behalf of Senex.

The HSEMS (Figure 6.1) has a hierarchical document structure, with Health, Safety and Environment policies setting the corporate commitments for HSE management. The HSEMS framework includes 10 HSE elements; of which environmental impacts and effects is one. Potential environmental impacts and effects of Senex operations and activities are identified and managed, using a risk based and systematic approach.

Figure 6.1 Health, Safety and Environment Management System



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. Environmental impacts are to be identified and measures are set in place to mitigate, measure and review impacts and environmental performance. This EMP is a component of the HSEMS.

By implementing the HSEMS Senex aims to:

- Conduct operations in compliance with all relevant environmental legislation, regulations, licences, permits, standards, approvals and authorities;

- Clearly allocate responsibilities for environmental performance at all levels within Senex and its contractors;
- Develop environmental competency through instructing and educating employees and contractors;
- Continuously improve environmental performance through setting appropriate objectives and targets, providing sufficient financial and human resources to meet these objectives and targets, and where reasonably practicable applying research and development outcomes, cleaner production principles and using environmentally sustainable products and resources;
- Apply best industry practice in the management, supply and delivery of oil and gas product; and
- Communicate with stakeholders and the community about environmental commitments, its application and Senex's performance.

6.2. Senex Policy

Senex's Environmental Policy (Appendix A) governs the development and implementation of Senex's EMS, and, along with the EMP, are the key tools used by Senex to carry out petroleum activities in an environmentally acceptable manner.

7. ENVIRONMENTAL MANAGEMENT CONTROLS

This section outlines the environmental management methods and controls that must be implemented by all personnel while undertaking activities in the WSGP area to assist in meeting the overall environmental objectives for the Project.

7.1. Site Assessment and Internal Approval Process

To assist in meeting EA conditions, prior to carrying out any disturbance, construction or operational activities on the WSGP area, approval must be obtained from the Senex cultural heritage, land access and environmental managers. Approval for disturbance is to be initiated using the WSGP Field Development and Constraints Protocol (SENEX-WSGP-EN-PRC-002). Site selection also considers engineering requirements, geological constraints, cultural heritage requirements and landholder requirements. As part of the site selection and approval process a site survey will be conducted. The site survey findings will be captured in Site Environmental Instructions prepared for specific activities and areas. This report is used to decide whether the activity can proceed in that location and inform development of appropriate impact mitigation measures. Requirements for other approvals such as vegetation clearing permits, waterway barriers works permits and the requirement for offsets will also be determined at this stage.

Once all clearances, permits and approvals are in place, including any measures required under this EMP, final approval will be granted for the work to proceed by way of the Access To Work (ATW) permit.

All personnel and contractors will familiarise themselves with ATW requirements prior to commencing works.

7.2. Housekeeping Measures

The following housekeeping measures will be undertaken within the WSGP:

Environmental Controls
• No firearms, traps, nets or pets are permitted on site or in camp. (Traps can be authorised for use by the Environment Manager for ecological assessments.). • No fires are permitted on site or in camp. • Feeding of native animals is not permitted. • Personnel must stay 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. • Only water from a Senex approved source should be used. • Adequate and properly maintained firefighting equipment will be present on site and potential ignition sources controlled.

7.3. Vehicle Management and Access

Performance Criteria
• All site vehicles must be equipped, maintained and operated in a safe manner. • All access to private property must be in accordance with landholder agreements and CCAs, as identified in the ATW. • Signage must be in place to warn third parties of access restrictions to construction and operational areas, with particular warnings when potentially dangerous activities are being undertaken. • All works on public roads must be in accordance with relevant approvals from local council or Department of Transport and Main Roads (DTMR).

Management Measures
• Vehicles and personnel will only enter and exit the site at designated access points from designated access tracks and roads. Vehicles, plant, machinery and equipment must remain on formed access tracks at all times unless agreed otherwise as specified in the CCA and identified in the ATW. • All gates must be left in the condition in which they are found. Damage caused to gates or fences by Senex activities is to be reported to the Senex Site Supervisor immediately. • Vehicles must carry adequate firefighting equipment including a fire extinguisher. • The integrity of private roads and tracks must be maintained at all times. • All vehicles must be maintained weed free.
Monitoring and Reporting
• Heavy equipment and vehicle movements will be managed according to local council/DTMR requirements.

7.4. Pest and Weed Management

Performance Criteria
• No spread of invasive plants (declared weeds) or high priority pest flora or fauna species within or outside of works area due to Senex activities (refer definitions and species in WSGP Biosecurity Management Plan [SENEX-WSGP-EN-PLN-002]). • Invasive plants (declared) and high priority weeds identified in the WSGP Biosecurity Management Plan [SENEX-WSGP-EN-PLN-002] must be managed in accordance with ATWs, CCAs, Land Access Code 2010 requirements, Biosecurity Act 2014 and other regulatory requirements, and relevant Senex supporting procedures and plans.
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. • 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 CCA provisions, and local, state and national regulatory requirements.
- All vehicles, plant and equipment must be maintained weed free.

Relevant Plans and Procedures

- WSGP Biosecurity Management Plan [SENEX-WSGP-EN-PLN-002].
- WSGP Vehicle Weed Hygiene Procedure [SENEX-WSGP-EN-PRC-003].

Monitoring and Reporting

- The Senex Site Supervisor must be notified of any pest sightings or weed infestations found on site, including infestations which have been reported by others (e.g. drilling staff, landholders).
- Records of all weed notifications and inspection data is to be maintained by the Senex Environment Manager.
- Records of weed washdown and certification must be kept in the vehicle at all times and made available to landholders on request, and presented to the Senex Site Supervisor upon initial entry to site.

7.5. Chemical and Fuel Storage

Performance Criteria

- No uncontrolled release of chemicals, oil or fuel is to occur to the environment.
- 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 Code.

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 tank with safety valves.
- Appropriate spill response equipment must be available on site and/or with vehicles, and regularly maintained.

- An inventory of all chemicals maintained on each site is to be maintained by the Senex Site Supervisor.
- Safety Data Sheets (SDS) are to be maintained on site at all times and for all chemicals.
- Storage areas must be sealed, bunded, and adequately ventilated.
- Storage and refuelling areas will be preferentially located away from watercourses, sensitive areas and any source of ignition as determined by the Senex Site Supervisor.
- Incompatible substances are to be segregated according to SDS specifications.
- All flammable liquids used are to be stored and dispensed only from approved containers.
- Substances not in use are to be sealed and safely stored in a secure area.
- Substance storage/containment and disposal must be in accordance with the SDS (including personal protective equipment, ventilation, spill containment and precautions to avoid fire).
- Containment bunds and/or sumps will be drained periodically of accumulated rainwater to prevent overflow and subsequent pollution of the surrounding land and watercourses.

Relevant Plans and Procedures

- Senex Spill Response Plan [SENEX-CORP-ER-PLN-006] (Appendix B).
- Senex Hazardous Substances and Dangerous Goods Procedure [SENEX-CORP-HS-PRC-010].
- WSGP Emergency Response Plan [SENEX-WSGP-ER-PLN-001].
- WSGP Safety Management Plan [SENEX-WSGP-HS-PLN-001].
- Senex Personal Protective Equipment Procedure [SENEX-CORP-HS-PRC-12].

Monitoring and Reporting

- All chemical, oil and fuel storage areas are to be inspected at least weekly for temporary storage, and monthly for permanent storage areas during the operating phase by the Contractor Site Supervisor and/or the Senex Site Supervisor.
- All spills are to be contained immediately and managed through the Senex Spill Response Procedure.
- Emergency events will be managed in accordance with the contingency procedures in the WSGP Emergency Response Plan.

- Incident details must be recorded immediately and notified through the Senex Incident reporting systems, reported and investigated.

7.6. Cultural Heritage

Performance Criteria
• No avoidable loss or disturbance of items or areas of cultural value due to Senex activities. • No complaints related to impacts on cultural heritage from the local community or traditional owners.
Management Measures
• Cultural heritage (CH) Induction as per Mandandanji Cultural Heritage Induction Procedure [SENEX-CORP-NT-PRC-003]. • Cultural heritage clearance is to be undertaken prior to commencing any works other than preliminary walk-over type surveys (e.g. ecology surveys, bore baseline assessment) within the WSGP area. • No works are to be undertaken or access permitted within areas marked as cultural heritage 'no go' areas. • The Senex Site Supervisor must be notified immediately if any cultural heritage sites, objects or remains are located. Should this occur, work must cease immediately.
Relevant Plans and Procedures
• WSGP Cultural Heritage Management Agreement [SENEX-WSGP-NT-AGR-001] (Confidential). • Cultural Heritage and Native Title Management Procedure (Queensland [SENEX-CORP-NT-PRC-002]. • Mandandanji Cultural Heritage Induction Procedure [SENEX-CORP-NT-PRC-003].
Monitoring and Reporting
• Any incidents including access into cultural heritage no-go zones or damage to any items or areas of cultural heritage value must be reported to the Senex Site Supervisor who in turn will report to the Approvals Manager. • Non-compliance and incident reporting will be closed out by management to ensure prompt rectification, as required.

7.7. Water Management

Performance Criteria
• Contaminants must not be directly or indirectly released to water. • No accidental or uncontrolled release of water to waterways or drainage lines. • No use of pipeline wastewater or produced water on site except in accordance with EA conditions and Beneficial Use Approval (BUA) conditions, or approved End of Waste Codes as relevant.
Management Measures

• No discharges of water to land or surface waters will occur without authorisation from the Senex Site Supervisor having consulted with the Senex Environment Manager.
• **Produced water**[2] may be re-used in drilling and wellhole activities.
• Produced water may be used for construction purposes provided the use:
  ○ Does not result in negative impacts on the composition and structure of soil or subsoils;
  ○ Is not directly or indirectly released to waters;
  ○ Does not result in runoff from the construction site; and
  ○ Does not harm surrounding vegetation.
• Produced water may be used for dust suppression provided the amount applied does not exceed the amount required to effectively suppress dust.
• The use of produced water for dust suppression must:
  ○ Not cause on-site ponding or runoff;
  ○ Be directly applied to the area requiring suppression;
  ○ Not harm vegetation surrounding the area being dust suppressed; and
  ○ Not cause visible salting.
• Produced water may be disposed of by irrigation in accordance with the BUAs or EA conditions where approved by Senex Site Supervisor having consulted with the Senex Environment Manager.
• Operate water treatment facilities (if required) to meet required treated water quality for intended use.
• **Pipeline waste water** (e.g. hydrostatic test water, flush water from low point drains), may be released to land provided, if it meets the following water quality parameters:

[2] Definitions for all items in bold are provided in Appendix A of the EA

- Electrical conductivity (EC) does not exceed 3000µS/cm
- Sodium adsorption ratio (SAR) not exceeding 8
- pH between 6.0 and 9.0
- Heavy metals (measured as a total) meets the respective short term trigger value in section 4.2.6, Table 4.2.10- Heavy metals and metalloids in Australian and New Zealand Guidelines for Fresh and Marine Water Quality
- Does not contain biocides.

- Pipeline wastewater must be released in a way that does not result in visible scouring or erosion or pooling or run-off or vegetation die-off.
- **Dams** must only be constructed as authorised by the ATW and under the design and conditions specified by the Senex Project Execution and Environment teams.
- All dams are must be constructed, operated and maintained in accordance with accepted engineering standards.
- For **regulated structures,** the consequence category must be assessed in accordance with the DEHP Manual for Assessing Consequence Categories and Hydraulic Performance of Structures and the DEHP Guideline 'Structures which are dams or levees constructed as part of environmentally relevant activities'.
- Water production forecast (quality, quantity) shall be determined and reviewed via an appropriate reservoir model.

Relevant Plans and Procedures

- DEHP Manual for Assessing Consequence Categories and Hydraulic Performance of Structures (EM635).
- DEHP Guideline 'Structures which are dams or levees constructed as part of Environmentally Relevant Activities' (EM634).
- Register of Regulated Dams maintained for each regulated dam.

Monitoring and Reporting

- Visual inspection of areas where produced water and/or pipeline wastewater is used will be undertaken during and post-application as required to ensure conditions are being met.
- Monitoring and inspections including of water levels, water quality and early signs of loss of structural or hydraulic integrity will be undertaken by a suitably qualified and experienced person to ensure conditions are being met.
- Seepage monitoring of regulated structures will be undertaken to ensure conditions are being met.

7.8. Noise and Vibration Control

Performance Criteria
• Noise generated by WSGP activities must not exceed the limits specified in the EA. • No noise-related complaints received.
Management Measures
• Potentially impacted sensitive receptors will be identified in the ATW. • Prior to construction and other noisy activities, landholders will be notified of the nature and expected duration of noisy activities. • Construction hours will be in accordance with EA conditions and requirements of the Environmental Protection (Noise) Policy 2008. • Noise impacts and requirements for noise mitigation will be considered during the engineering design and site planning processes. Noise impacts will be minimised by adopting measures in the EPP Noise hierarchy as appropriate (e.g. locating activities at suitable distances from noise sensitive places). Facility specific noise modelling will be undertaken during the design phase, where required. • Noise modelling or assessment will be undertaken for temporary and operational activities to assess expected noise emissions at potential sensitive receptors. • Operators of construction equipment will be made aware of potential noise impacts and will be required to employ techniques and/or equipment to minimise noise emissions where necessary. • Where blasting is required, a blast management plan will be developed in accordance with AS 2187, and EA conditions for blasting operations.
Relevant Plans and Procedures
• Prior to conducting any blasting activities, a blast management plan will be developed in accordance with AS 2187, and EA conditions for blasting operations. • Incident Reporting and Investigation Procedure [SENEX-CORP-HS-PRC-004].
Monitoring and Reporting
• Noise complaints will be recorded in the Senex Stakeholder Management database and appropriate corrective actions taken (commensurate to the magnitude of the impact and non-conformance).

- Noise monitoring during construction activities will be undertaken where required in accordance with EA conditions and provisions of the EPP Noise.
- Where noise levels exceed those prescribed in the EA, corrective actions will be defined as part of the incident investigation.
- Non-compliance and incident reporting will be closed out by senior management to ensure prompt rectification and change management as required and appropriate.

7.9. Air Quality

Performance Criteria

- Dust or other air quality emissions must not cause environmental nuisance at any sensitive place as provided by EA conditions.
- For authorised point sources, the fuel burning and combustion facilities will be operated so that releases to air do not exceed authorised EA limits.
- Authorised ground level concentrations are not exceeded.

Management Measures

- Site specific modelling or assessments will be undertaken to assess potential air emissions at the design stage for operating infrastructure at potential sensitive receptors and to meet approval requirements.
- An air receiving environment monitoring program (AREMP) will be prepared and implemented in accordance with the EA conditions.
- Landholders or residents of adjacent sensitive places will be advised of planned works prior to the commencement of activities.
- Staff and contractors will be made aware through induction and general site instruction of the potential to generate dust emissions and mitigation and management measures that should be implemented.
- Vehicles, plant and equipment will be regularly maintained to ensure all machinery is in good working order and does not generate excessive air emissions. Plant and equipment must be operated in their proper and effective condition.
- Vehicles, plant and machinery must comply with site-specific speed limits to minimise dust generation.
- During construction and operating, disturbed areas and access roads will be watered using a water cart/truck on an as-required basis in accordance with the ATW requirements to minimise the potential for environmental nuisance due to dust. Note: dust suppression using produced water must comply with EA conditions (refer to Section 7.7).

Flaring and Venting

- Unless venting is authorised under the P&G Act, waste gas must be flared:
  - Using an automatic ignition system; and
  - Where a flame is visible at all times while waste gas is being flared; and
  - With no visible smoke emissions other than for a total period of no more than 5 minutes in an 2 hours; or
  - Using an enclosed flare.
- Odour complaints shall be recorded in the Senex Stakeholder Management Database and appropriate corrective actions taken (commensurate to the magnitude of the impact).
- Fugitive emissions shall be mitigated through appropriate well design and construction that is undertaken in accordance with accepted industry standards.

Relevant Plans and Procedures

- Incident Reporting and Investigation Procedure [SENEX-CORP-HS-PRC-004].
- WSGP Safety Management Plan [SENEX-WSGP-HS-PLN-001].
- An air receiving environment monitoring program (AREMP) will be prepared and implemented as required.

Monitoring and Reporting

- In accordance with the AREMP.
- Point source air monitoring for each fuel burning or combustion facility will be undertaken once in the first three months after commissioning, and annually thereafter (when operating at maximum conditions), to ensure authorised limits are not exceeded.
- In the event of an environmental nuisance complaint, an incident report will be raised in accordance with the Senex Incident Reporting and Investigation Procedure and investigated. Where undertaken, dust/air quality must be monitored in accordance with EA requirements.
- Any complaints relating to air quality including environmental nuisance will be recorded and actioned in a timely manner through the Senex Stakeholder Management database.

7.10. Waste Management

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.

Management Measures
• All waste generated must be stored, handled and transported in accordance with the WSGP Waste Management Procedure and appropriate standards / regulatory requirements. • The Safety Data Sheet (SDS) for materials should be referenced to assist with the appropriate identification for handling and disposal of waste material. • 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. • Items of general waste are not to be disposed of in sump or pits. • Waste material (including domestic waste) must be collected and stored in covered bins to prevent loss and scavenging by animals. • Recyclable materials will be segregated (e.g. glass and cans, scrap metals, used chemical and fuel drums and timber pallets) in designated containers for recycling where reasonably practicable. • All wastes regulated wastes are to be transported offsite by a licensed contractor to a suitably licensed facility for reuse, recycling or disposed unless authorised under the EA as being able to be disposed of on-site. • All waste materials that must be removed from site will be removed once activities are completed. • Green waste may be used on site for both rehabilitation and sediment and erosion control.

- Only licensed waste contractors may collect, transport and dispose of regulated waste from the site.

Drilling Material

- All drilling and exploration waste fluids and muds must be contained in an appropriately constructed containment structure for disposal, remediation or re-use where possible.
- If sumps are to be used to store residual drilling material or drilling fluids, they must be decommissioned (no longer used) following the completion of drilling activities.
- Adequate freeboard must be maintained on the sump at all times to prevent overflow during storage for the duration of drilling activities.
- Where drilling muds are removed from site they must be disposed of to a licensed facility or authorised EA process.
- **Waste fluids**[3], (other than flare precipitant stored in flare pits, or residual drilling material or drilling fluids stored in sumps) must be contained in either above ground containers or a dam.
- Produced water may be re-used for drilling and well-hole activities or where approved, re-used under a Beneficial Use Approval (BUA) or End of Waste Code. Any proposed re-use must be confirmed with the Senex Environment Team.

Residual Drilling Material

- Residual drilling material must be stored in sumps for the duration of drilling, after which it must be removed from site for disposal. The exception to this is where drilling material meets approved quality criteria and can be disposed of using the mix-bury-cover method as approved by Senex Environment Team; or the drilling material is approved by the Senex Environment Team as being of acceptable quality for disposal to land.

Sewage from Mobile or Temporary Facilities

- Treated sewage effluent or greywater can be released to land in accordance with EA conditions. Any proposed release to land must be confirmed with the Senex Environment Team.
- Treated sewage effluent or greywater must meet or exceed secondary treated Class C standards for a treatment systems <150 equivalent persons.
- Release of treated sewage effluent of greywater must be:
    - to a designated (fenced and signed) area;

[3] Definitions for all items in bold are provided in Appendix A of the EA

- not result in pooling or run-off or aerosols or spray drift or vegetation die-off; and
- the contaminated release area must be kept vegetated with groundcover (not weeds).

- Waste gases, predominantly methane but also carbon dioxide, are expected to be generated at each well head. The accepted industry practice to deal with waste gases is to vent the gas to the atmosphere or, alternatively, flare the gas. Reuse of the waste gas is preferable to indiscriminate flaring. Where possible, waste gas should be used for power generation otherwise it shall be flared in accordance with authorised flaring conditions.

Relevant Plans and Procedures

- Senex Waste Management Procedure – Qld Operations [SENEX-WSGP-EN-PRC-001].
- Waste Tracking Procedure [SENEX-WSGP-EN-PRC-006].

Monitoring and Reporting

- Records will be maintained of all wastes removed from the site, including waste type and volume or weight as outlined in the WSGP Waste Tracking Procedure.
- Waste tracking documentation will be maintained by the Contractors Supervisor and provided to the Senex Site Supervisor for all trackable waste removed from site.
- All waste records will be provided to the Senex Environment Manager by the Senex Site Supervisor on a monthly basis or upon request.

7.11. Land Disturbance and Flora Management

Performance Criteria

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

Management Measures

- Implement the WSGP Significant Species Impact Management Plan.

- During project planning, the Environmental Protocol for Field Development and Constraints Protocol will be used to preferentially minimise disturbance to biodiversity values.
- Within ESAs, infrastructure must be preferentially located in areas of non-remnant vegetation.
- Prior to undertaking activities that result in significant disturbance to land, an ecological survey must be undertaken by a suitably qualified person.
- Vegetation must not be cleared unless authorised under a Senex ATW. The ATW must be approved prior to any vegetation clearance or disturbance occurring.
- Positive visual markings or pegs are to be used to identify the extent of any vegetation to be removed.
- Any sensitive areas, such as ESAs or threatened plants/communities adjacent to the work area should be communicated via toolboxes to project staff and contractors.
- 'No-go' areas will be GPS located and clearly marked e.g. with bunting, flagging tape. No-go areas will be prohibited to enter for construction staff and contractors and will only be accessed by authorised persons for relevant activities, where necessary.
- Wherever reasonably practicable, vegetation will be removed at ground level by cutting or slashing rather than removing root stock.
- Mature trees, including hollow bearing trees, will preferentially be avoided, or clearing will be minimised where possible.
- Hollow bearing trees, where cleared, will be retained as habitat, where possible.
- Cleared vegetation/green waste that cannot be used on-site for rehabilitation and/or sediment erosion control should be stockpiled to facilitate re-spreading or salvaging.
- Vehicles or equipment are to remain within authorised work zones, particularly during vegetation clearing activities to prevent unnecessary land and vegetation disturbance.

Relevant Plans and Procedures

- WSGP Environmental Protocol for Field Development and Constraints Analysis [SENEX-WSGP-EN-PRC-002].
- WSGP Significant Species Impact Management Plan [SENEX-WSGP-EN-PLN-009].
- WSGP Erosion and Sediment Control Plan [SENEX-WSGP-EN-PLN-004].
- Site Environmental Instructions issued for each phase of the WSGP.

- ATW for the project phase.

Monitoring and Reporting

- Each site will be ground-truthed and the extent and biodiversity value recorded (including GIS coordinates of the area) during pre-clearance surveys by a suitably qualified ecologist.
- This data will be retained on Senex record management and GIS systems.
- Vegetation clearance works will be supervised by the Senex Site Supervisor or designated representative.
- Coordinates of areas cleared of vegetation and/or where ground disturbance takes place will be recorded in GIS format by the Construction Site Supervisor and provided to the Senex Site Supervisor and managed by the GIS team.

7.12. Fauna and Stock Management

Performance Criteria

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

Management Measures

- Implement the WSGP Fauna and Stock Management Procedure.
- Implement the WSGP Species Management Program.
- Implement the WSGP Significant Species Impact Management Plan.
- Active work areas, pits, sumps and other areas hazardous to fauna and stock must be fenced or covered to prevent access.
- Clearing of mature or hollow bearing trees will be avoided where reasonably practicable, and otherwise undertaken in accordance with the WSGP Species Management Program.
- Measures to prevent fauna entrapment and facilitate escape must be implemented during the construction where required (e.g. open excavations).
- Excavations and trenches must be inspected for trapped fauna on a daily basis.
- Where identified as required, a qualified fauna spotter-catcher will conduct a search immediately prior to clearing of vegetation for the presence of fauna species. Where fauna are detected, the spotter catcher will assess and implement

the most appropriate method to avoid or minimise impacts on that fauna as a result of clearing.

- Stockpiled timber where left for more than 24 hours should be to be inspected for fauna prior to mulching.
- Natural vegetation buffers along creeks and rivers shall not be disturbed unless authorised under an ATW and only at the location specified.
- 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.
- Any restrictions placed on stock movements in the vicinity of work areas will be agreed with landholders and identified in the ATW so that any disruption is minimised.

Relevant Plans and Procedures

- WSGP Fauna and Stock Management Procedure [SENEX-WSGP-EN-PRC-004].
- WSGP Species Management Program [SENEX-WSGP-EN-PLN-012].
- WSGP Significant Species Impact Management Plan [SENEX-WSGP-EN-PLN-009].
- Incident Reporting and Investigation Procedure [SENEX-CORP-HS-PRC-004].
- Site Environmental Instructions issued for each phase of the WSGP.

Monitoring and Reporting

- Fauna and stock deaths must be immediately communicated to the Contractor Site Supervisor or Senex Site Supervisor as appropriate and then the Senex Environment Manager/ Senex Land Manager-Queensland
- Fauna spotter-catcher update on interactions and reporting must be provided as required to the Senex Site Supervisor then to the Senex Environment Manager.
- Reports on fauna interactions are to be provided to regulatory authorities as required.

7.13. Watercourse and Wetlands

Performance Criteria

• Water quality during construction and maintenance does not exceed authorised release limits.
• The construction or maintenance of linear infrastructure in a wetland must not result in the:
  ○ Land disturbance and clearing of riparian vegetation outside of the minimum area practicable to carry out the works; or
  ○ Ingress of saline water into freshwater aquifers; or
  ○ Draining or filling of the wetland beyond the minimum area practicable to carry out the works.
• After the construction or maintenance works for linear infrastructure in a wetland are completed, the linear infrastructure must not:
  ○ Drain or fill the wetland;
  ○ Prohibit the flow of surface water in or out of the wetland;
  ○ Lower or raise the water table and hydrostatic pressure outside the bounds of natural variability that existed before the activities commenced;
  ○ Result in ongoing negative impacts to water quality;
  ○ Result in bank instability; or
  ○ Result in fauna ceasing to use adjacent areas for habitat, feeding, roosting or nesting.

Management Measures
• Petroleum activities within any wetland area or watercourse must be carried out in accordance with an approved ATW. Watercourse crossings will be limited to those strictly necessary for construction or operation of infrastructure and only at locations approved in the ATW. • Any waterway barrier works (works that pose a barrier to water flow) must only be undertaken where authorised under an ATW and only at the location specified. • Where required, watercourse crossing points will be adequately stabilised to prevent erosion. • Positive visual markings or pegs are to be used to identify the extent of any vegetation to be removed. • 'No-go' areas will be GPS located and clearly marked e.g. with bunting, flagging tape. • Construction activities must be managed to minimise interference with overland flow paths.

- Clean stormwater will be diverted around disturbed land wherever practicable.
- For linear Infrastructure (e.g. pipelines) - Construction or maintenance activities in wetlands or a watercourse must be only be carried out under the authorization of an ATW and under the supervision of a Senex environment representative to ensure conditions of the EA are achieved.

Relevant Plans and Procedures

- Site Environmental Instructions issued for each phase of the WSGP.
- WSGP Erosion and Sediment Control Plan [SENEX-WSGP-EN-PLN-004].
- ATW for the specific scope of work.

Monitoring and Reporting

- Watercourse crossings must be monitored for erosion and sedimentation during construction, with at least weekly inspections during dry conditions, and daily inspections during rainfall of >50mm in one day or >100mm over 4 days or as soon as watercourse access is re-established after flooding.
- During periods of flow, surface waters downstream of construction areas near a watercourse or wetland area will be monitored for water quality. (Table from Schedule G, EA):

Parameter	Background water turbidity	Authorised water quality
Turbidity (NTU)	Wetland- where background water turbidity is above 45NTU	No greater than 25% above background, when measured within a 50m radius of the construction or maintenance activity.
	Wetland – where water turbidity is equal to, or below 45 NTU	No greater than 55 NTU, measured within 50m of the construction or maintenance activity
	Watercourse – where background turbidity is above 45 NTU	No greater than 25% above background water turbidity measured within 50m downstream of the construction or maintenance activity.
	Watercourse – where background tubidity is equal to, or below 45 NTU	A turbidity limit of no greater than 55 NTU applies, measured within 50m downstream of the construction or maintenance activity.
Hydrocarbons		No visible sheen or slick.

- Records of all erosion and sediment control and water quality checks will be maintained by the Senex Site Supervisor and provided weekly during period of activity in the wet season and monthly at other times to the Senex Environment Manager.

- Construction or maintenance works on linear infrastructure in wetlands or watercourses must be monitored by a Senex Environment representative to ensure compliance with the EA conditions.

7.14. Soil and Erosion Management

Performance Criteria
• Compliance with the WSGP Erosion and Sediment Control Plan and any contractor erosion and sediment control procedures. • Minimise soil erosion resulting from wind, rain and flowing water. • Mass movement, gully erosion, sheet erosion and tunnel erosion do not occur. • Topsoil managed to preserve its biological and chemical properties. • No preventable irreversible erosion or loss of soil from sites.
Management Measures
• Works on site will not commence until any relevant Contractor erosion and sediment control procedures have been approved by the Senex Site Supervisor and been installed as required on significantly disturbed land. • Sediment and erosion control must be managed in accordance with the WSGP Erosion and Sediment Control Plan and the Contractor's erosion and sediment control procedures. • Erosion and sediment control structures must be inspected periodically as required and after rain events and maintenance carried out where required. • All contaminated soils will be managed and remediated in accordance with EP Act requirements. • Where soil is moved to the site, a weed declaration will be provided. **Erosion and Sediment Control measures must:** • Ensure stormwater to pass through the site in a controlled manner and at non-erosive flow velocities. Divert clean water from the work site where practical. • Minimise the duration that disturbed soils are exposed to the erosive forces of wind rain and flowing water. • Minimise work-related soil erosion and sediment runoff. • Minimise negative impacts to land or properties adjacent to the activities (including roads).

- Inspect worksites periodically as required, before expected rainfall events, and after rain events and undertake maintenance where required as per the WSGP Erosion and Sediment Control Plan.

Topsoil

- Soil stripping (where necessary), where reasonably practicable, will not be undertaken in periods of high wind, rainfall or within the immediate period after rainfall to help avoid soil degradation.
- Topsoil (approx. upper 100 to 200 mm depending on soil type), which contains the bulk of the natural seed bank and organic matter will be stockpiled separately from subsoil.
- Topsoil is to be stockpiled in mounds no greater than 2 m height where reasonably practicable.
- Where reasonably practicable, topsoil will not be mixed with subsoil either during stockpiling or during re-placement on disturbed areas.
- Topsoil stockpiles will be located away from watercourses, natural drainage and flow lines to minimise erosion and waterway sedimentation.
- Erosion and sediment controls are to be established around topsoil stockpiles to minimise the loss of soil during rain and slumping events. Stockpiles and sediment controls are to be routinely checked.
- Once construction activities are complete, soil horizons will be reinstated in the order in which they are excavated to the extent practicable.

Relevant Plans and Procedures

- WSGP Erosion and Sediment Control Plan [SENEX-WSGP-EN-PLN-004].
- Site Environmental Instructions issued for each phase of the WSGP.

Monitoring and Reporting

- Regular inspections to monitor for potential erosion and sedimentation during construction works will be undertaken. These inspections will include at least weekly inspections during dry conditions, and daily inspections during rainfall of >50 mm in one day or >100 mm over 4 days or as soon as site access is re-established.
- Watercourse crossings will be monitored for erosion and sedimentation during construction at least weekly inspections during dry conditions, and daily inspections during rainfall of >50 mm in one day or >100 mm over 4 days or as soon as watercourse access is re-established after flooding.
- Records of all erosion and sediment control and water quality monitoring will be maintained by the Senex Site Supervisor and provided weekly during period of activity in the wet season and monthly at other times to the Senex Environment Manager.

8. ENVIRONMENTAL INCIDENT AND NOTIFICATION

8.1. Emergency and Incident Response

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 Procedures. • All spills are managed in accordance with the Senex Spill Response Plan.
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. • Contractors must have in place procedures for spill response which are in accordance with the Senex Spill Response Plan and will include details requirements for: ○ Minimising release; ○ Containing spilled material; ○ Raising the alarm and response; ○ Locations of spill kits; and ○ Management of contaminated material if necessary. • 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. • Incident reports must contain information required by the WSGP Safety Management Plan and Incident Reporting and Investigation Procedure. • Emergency Response drills will be performed to ensure readiness and identify opportunities for improvement.
Relevant Plans and Procedures
• WSGP Emergency Response Plan [SENEX-WSGP-ER-PLN-001] • WSGP Safety Management Plan [SENEX-WSGP-HS-PLN-001]

• Senex Spill Response Plan [SENEX-CORP-ER-PLN-006] (Appendix B) • Senex Incident Reporting and Investigation Procedure [SENEX-CORP-HS-PRC-004].
Monitoring and Reporting
• Refer to Section 8.2 for reporting and notification requirements for environmental incidents. • Regular inspection of spill response kits and general emergency preparedness.

8.2. Environmental Incident Notification

Senex requires that all incidents including spills are reported and fully investigated in accordance with their specific level of potential risk. The Senex Incident Reporting and Investigation Procedure (SENEX-CORP-HS-PRC-004) defines the process for the investigation and reporting of incidents and ensures that Senex meets all regulatory notification requirements. Senex's Spill Response Plan (SENEX-CORP-ER-PLN-006) provides the standard protocols that must be used to respond in an appropriate and timely manner in the event of a spill. The procedure details the following steps:

- Prevention – take actions to reduce or eliminate the likelihood of effects of an incident.
- Preparedness – take steps before an incident to ensure effective response and recovery.
- Response – contain, control or minimise the impacts of an incident.
- Recovery – take steps to minimise disruption and recovery times.

Figure 8.1 *Incident Reporting Steps*

Activities that have caused or are likely to cause environmental nuisance or environmental harm under the EP Act must be notified to DEHP. In addition the EA requires the following notification process to be complied with in the event of an incident.

Events that must be notified under the EA conditions include:

- Any unauthorised significant disturbance to land;
- Potential or actual loss of structural or hydraulic integrity of a dam;
- When the level of the contents of any regulated dam reaches the mandatory reporting level;
- When a regulated dam will not have available storage to meet the design storage allowance on 1 November of any year;
- Potential or actual loss of well integrity;
- When the seepage trigger action response procedure should be implemented;
- Unauthorised releases of any volume of prescribed contaminants to waters; and
- Unauthorised releases of any volumes of prescribed contaminants, in any mixture, to land greater than:
    - 200L of hydrocarbons; or
    - 1,000L of brine; or
    - 5,000L of untreated CSG water; or
    - 5,000L of raw sewage; or
    - 10, 000L of treated sewage effluent.

- Monitoring results where two out of any five consecutive samples do not comply with the relevant limits in the EA.

All notification of environmental incidents or events will be reported in accordance with the process in the Senex Incident Classification and Reporting Requirements Chart [SENEX-CORP-ER-CHA-002].

9. REHABILITATION

The timing and works undertaken as part of rehabilitation activities will be dependent on the activity type and operational stage of the project and governed by EA requirements. Some project activities such as drilling are temporary in nature, enabling transitional rehabilitation (also called progressive rehabilitation) to be undertaken once the disturbance area is no-longer required for operational activities. Other infrastructure and disturbance is longer-term requiring decommissioning and rehabilitation at the end of project life.

Significantly disturbed areas that are no longer required for ongoing petroleum activities will be rehabilitated within 12 months and be maintained to meet the relevant EA conditions and Senex acceptance criteria.

All infrastructure constructed by Senex will be removed from site except where it is to remain with the written agreement of the landholder. All decommissioning and rehabilitation activities will be undertaken in accordance with Senex acceptance criteria and EA conditions.

Further rehabilitation requirements are outlined in the WSGP Rehabilitation Plan (SENEX-WSGP-EN-PLN-003).

9.1. Well Pads

When no longer required for exploration or production purposes, a well is ‘plugged and abandoned’; a process that involves decommissioning the well and rehabilitating the site. This involves isolating the groundwater aquifers within the well using cement plugs as the sealing medium. The final cement plug is brought to surface and the wellhead is cut off approximately 1.5 m below the surface, capped with a metal identification plate and buried. The land is then rehabilitated to its pre-disturbed state or as agreed with the landholder. These works are undertaken in accordance with the P&G Act requirements and the Code of Practice for constructing and abandoning coal seam gas wells and associated bores in Queensland – Department of Natural Resources and Mines (Queensland): Edition 2.0, October 2013.

After completing primary drilling of the well, but usually before the completion rig is mobilised, drilling fluids and muds in sumps will be disposed of in accordance with EA conditions. Waste fluids and muds will be either removed from the WSGP area for disposal at a licenced facility, or disposed of using mix-bury-cover or other method of disposing to land that is certified as not causing environmental harm.

The disturbance area associated with well construction is then reduced through transitional rehabilitation after well completion to a hardstand area of approximately 0.36 ha. This is

maintained for the operational life of the well, typically up to 30 years. Transitional rehabilitation of well lease pads generally involves ripping any compacted areas, partial respreading of topsoil and direct seeding with species that will provide an appropriate level of groundcover and that are suitable considering the intended post-disturbance land use.

Once the well lease pad is no longer required for ongoing petroleum activities, final rehabilitation will be undertaken as follows:

- Decommissioning/removing the well head, pumps and other infrastructure.
- Cut and fill batters profiled to re-contour the land surface and drainage lines.
- Compacted hardstand areas are ripped.
- Stockpiled topsoil is respread.
- Topsoil is seeded with pasture grasses, or native species depending on the final land use.

9.2. Drilling Sumps

Drilling muds vary in profile and composition, depending on the depth, rock type, and drilling speed, however, drilling muds generally consist of water, clay materials, and some trace chemical additives (e.g. salts), and do not contain oil-based or synthetic compounds.

When used, drilling mud sumps are decommissioned once drilling activities have ceased. Where possible, drilling materials should be re-used or recycled. Drilling activities should be planned in a manner that allows maximum re-use of drilling materials, whenever possible. Clean drilling materials that do not contain harmful contaminants may also be disposed of on-site by using the mix-bury-cover method (in accordance with approved quality criteria).

Drilling materials that do not meet the quality acceptance criteria should be removed for appropriate disposal by a licensed waste contractor.

9.3. Gas and Water Gathering Pipelines

Pipelines trenches will be backfilled and topsoil reinstated within three months after pipe laying. During backfilling of pipeline trenches, soils should be replaced so that the topsoil and subsoil are consistent with the immediately surrounding area, this will allow for natural regeneration. Following soil replacement, areas will be revegetated. Areas required for operational purposes (i.e. access tracks and areas above pipelines) should be revegetated with pasture grasses, or native grasses and ground cover species depending on the final land use. Remaining areas no longer required for operational activities or maintenance will be rehabilitated to the post-disturbance land use.

Final rehabilitation of the gas and water gathering lines will occur after decommissioning of all pipelines. Where it is practical and safe to do so, the pipelines will be abandoned and left in-

situ in accordance with the *APGA Code of Practice- Upstream Polyethylene Gathering Networks- CSG Industry*, and *Australia Standard (AS) 2885 section 10.6 and section 8 of the Australian Pipeline Industry Association Code of Environmental Practice*. The pipelines will be left in-situ to avoid disturbing the re-established vegetation through excavation and removal. The overall objective is to leave the RoW in a condition that is as near as practical to pre-existing environmental conditions. If the pipelines are to be abandoned and left in-situ, an abandonment plan will be developed in accordance with *APGA Code of Practice – Upstream Polyethylene Gathering Networks – CSG Industry*. When abandoning in-situ, the pipeline section shall be abandoned in such a way to ensure that ground subsidence and the risk of contamination of the soil or groundwater is minimised.

The pipelines are to be disconnected from all sources of hydrocarbons that may be present in other pipelines, processing plant, meter stations, control lines and other appurtenances, and shall be purged of all hydrocarbons and vapour with a non-flammable fluid and then capped. Disposal of the purging fluid shall meet all relevant environmental and safety requirements. The pipeline will be decommissioned in a manner that minimises potential impacts to the environment, land use and third parties and guidance should be taken from AS 2885. All above ground pipes and supports along the pipeline should be cut-off at a minimum depth of 750mm below the natural surface, or at pipeline depth as determined by AS 2885.3. These pipes should be removed and capped off below the surface. All above ground signs and markers above the pipeline should be removed.

When it's either unsafe or not practical, decommissioning will be undertaken via removal, and the removal methods should be considered similar to those for pipeline construction, and shall comply with the relevant requirements of AS 2885.1.

After decommissioning of the pipeline compacted hardstands, access tracks and stockpile areas should be ripped to aid binding of the soil layers, increase water retention, helping water infiltrate into the soil, and thus increase seed germination success. Seeding will be undertaken on the remaining areas with an appropriate seed mix, depending on the post-disturbance land use to be achieved.

9.4. Access Tracks

Temporary access tracks no longer required for ongoing operational activities or not to be retained by the landholder will be closed and reinstated to a condition compatible with the surrounding land use. This will generally involve ripping to remove compaction, re-spreading stockpiled topsoil and revegetating. Landholder tracks in existence prior to construction will have access re-instated and will not be blocked in anyway. Where tracks are to be retained by landholders, any wheel ruts should be graded and erosion-control measures such as diversion drains installed to an agreed condition.

9.5. Waterway Crossings

Waterway crossings will be rehabilitated by re-contouring disturbed areas to match the surrounding land as soon as practicable after petroleum activities have ceased. The surface

will usually be lightly scarified before spreading the topsoil, to promote vegetation re-growth and protect against the topsoil loss. Temporary waterway barriers will be removed and reseeding undertaken to minimise erosion and promote regeneration of riparian vegetation.

9.6. Infrastructure, Camps, Laydown, Hardstand and Stockpile Areas

Rehabilitation will be undertaken when the area for infrastructure, laydowns, hardstands or stockpile areas is no longer required for operational activities. Once infrastructure is removed or transported off site, gravel is generally removed from the hardstand and any areas of contamination remediated or excavated for disposal at an off-site licensed facility. Compacted areas should be ripped and the area seeded with a species mix determined by the post-disturbance land use.

9.7. Dams

Produced water will be managed using holding dams and brine storage dams. Prior to decommissioning, landholders will be given the option to retain the WSGP dams for their own water storage purposes. Any residue in the dam must be quantified and tested to demonstrate that it is safe and fit the intended use of the dam.

Where brine storage dams are to be decommissioned, any saline residue or salt resulting from reverse osmosis will be stored in a tank for off-site disposal to an appropriately licenced facility. Holding dams will have all water removed (preferably through beneficial use options). Once any liquid is removed, dams will be rehabilitated to remove any source of potential contaminants and the land returned to a useable form. The process for decommissioning and rehabilitation the produced water holding and brine storage dams generally involve the following:

- Remove and recycle or dispose of synthetic liners.
- Assess any land contamination that may have occurred. In the case were some leakage of the liner system has occurred a contaminated land assessment should be undertaken as per the current National Environment Protection (Site Assessment) Measure (NEPM).
- Remediate soils through removal to a soil remediation area or in-situ treatment of contaminated soils where required or dispose of the contaminated soils to an off-site licensed facility.
- Retain clay materials where clay has been used as part of the containment system for reuse if reasonably practicable.
- Rehabilitate the site by pushing in dam embankments and filling in depressions to re-contour landforms to match surrounding topography. Any retained subsoil could be used to infill dams and topsoil can be respread.

- Revegetate the area by direct seeding with appropriate species based on post-disturbance landform.

10. ENVIRONMENTAL MONITORING AND AUDITING

Monitoring, auditing of, and reporting on, contractor and Senex on-site activities provides a direct measure of Senex's compliance with environmental regulations and EA conditions, together with an indication of the effectiveness of the HSEMS, EMP and supporting procedures and plans.

Environmental inspection, monitoring and auditing will be undertaken by the Senex Site Supervisor and Senex Environmental representative on a periodic basis to assess whether activities are in compliance with the requirements of these systems and documents.

10.1. Complaints and Grievances

Complaints and grievances will be recorded and responses (actions) tracked using Senex's Stakeholder management database. Records of complaints will be kept and must include the date, complainant's details, source, reason for the complaint, description of investigation and actions undertaken in resolving the complaint.

Depending on the nature of the complaint or grievance the responsibility and associated timeframes for addressing and closing out the complaint or grievance will be assigned to the relevant Senex personnel. Any investigations required to be carried out will be undertaken with input from relevant personnel. Results of any investigation including proposed mitigation or management measures will be recorded and the complainant informed of how Senex either proposes to, or has, resolved the issue.

10.2. Monitoring

All monitoring must be undertaken by a suitably qualified person who has professional qualifications, training or skills or experience relevant to the monitored subject matter as defined in the EA conditions. Monitoring to be undertaken on the WSGP area includes the following:

- Monitoring implementation of the EMP and supporting procedures and plans by the Senex Site Supervisor or the Senex Environmental representative as appropriate.
- Regular inspection of construction and operational activities by the Senex Site Supervisor or the Senex Environmental representative as appropriate.
- Environmental monitoring of over time for weed infestations with reference to the WSGP Biosecurity Management Plan [SENEX-WSGP-EN-PLN-002] and rehabilitation progress (e.g. photo-monitoring and audits) in the WSGP Rehabilitation Management Plan [SENEX-WSGP-EN-PLN-003].

- Reporting and analysis of regulated discharges, emissions and waste disposal.
- Any other prescribed monitoring in accordance with the conditions of the EA.

10.3. Auditing

Environmental audits will be managed by the Senex Environment Manager and undertaken as both scheduled and unscheduled activities. The audit program may include the use of external auditors and will include regular (e.g. annual) environmental compliance audits to assess compliance with this EMP, EA conditions and other regulatory requirements. The audit program will include audits of Contractor procedures and management plans and will be undertaken by the Senex Site Supervisor or Senex Environmental representative as appropriate.

11. RECORD KEEPING AND REPORTING

Senex and its contractors will maintain an appropriate and auditable record system. Environmental reporting information will include as relevant:

- Inspection / monitoring reports;
- Photographic records;
- Training and induction attendance and associated dates;
- Incident reports;
- Remedial actions taken following incident reports;
- Records of waste removal including waste tracking certificates; and
- Audit reports.

All records and data required to be maintained by EA conditions will be retained for a minimum of 5 years.

APPENDIX A – SENEX ENVIRONMENTAL MANAGEMENT POLICY

Environmental Management Policy

Document Number

SENEX-CORP-EN-POL-001

Senex Energy Limited

ENVIRONMENTAL MANAGEMENT POLICY

Senex Energy Limited (Senex) is an environmentally responsible company committed to conducting our business in a manner which ensures high standards of environmental management performance.

Senex will achieve this commitment through applying our core values to promote and maintain a culture of sustainability and continuously review and improve our environmental performance across the business.

We will achieve our environmental goals by actively focusing on:

- Assessing the potential impacts of our operations and activities on the local environment to limit disturbance;
- Operate in a safe and environmentally responsible manner;
- Empowering employees and contractors to achieve environmentally responsible operations and to improve environmental performance; and
- Maintaining and continuously improving environmental standards, systems and controls across all activities and operational areas.

Senex will ensure effective implementation of this policy through:

- Ensuring that environmental goals and standards are understood and adopted at all levels across the Company;
- Instructing and educating employees and contractors where appropriate of their environmental responsibilities;
- Reporting environmental incidents, determining the cause and where appropriate implementing changes to prevent a recurrence;
- Measuring our performance through regular monitoring, environmental audits and reporting; and
- Ensuring compliance with relevant laws, regulations and where appropriate industry codes.

Ian Davies
Managing Director
Senex Energy Limited

Approved – 15 December 2016

Review Date – 15 December 2018

APPENDIX B – SPILL RESPONSE PLAN

Spill Response Plan

Document Number:

SENEX-CORP-ER-PLN-006

Revision: 7

Position	Name	(tick one column only)		Signature	Date
		Approve	Review		
Environment Manager	Trina Jensen	☒			17/03/2017

Contents

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1	13/8/2012	Issue for Use	Reformat	Andre van Taak	Gary Proctor
2	4/9/2012	Issue for use	Change Oil Spill Response to Spill Response	Andre van Taak	Gary Proctor
3	22/01/2013	Issue for Use	Update to include Chemical spills	Mark Gittus	Gary Proctor
4	11/03/2013	Issue for use	Update of enviro response	Trina Jensen	Andre van Taak
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7	17/03/2017	Issued for Use	Document Review	Trina Jensen	

GLOSSARY OF TERMS

Term	Description
AITR	Action Item Tracking Register
ASX	Australian Stock Exchange
BCM	Business Continuity Management
BBL	Barrels. Note - 1 barrel equals 159 litres
CMP	Crisis Management Plan
CMTL	(Brisbane) Crisis Management Team Leader
Containment	Primary - a tank, vessel, pipe, truck or equipment intended to serve as the primary container or used for processing or transfer of material. Secondary – exists to contain or control a release from primary containment, includes bunds, collection and drainage systems, outer wall of double walled tanks etc.
Crisis	A crisis is a major event with potential shareholder impact, and negative impacts on company reputation and / or legal liability. It may be managed from the Brisbane office and it may require the assistance of external support services. A Crisis event may have broader company impacts such as media attention, legal liability, financial and business continuity implications. Some examples of a crisis event that would escalate beyond an emergency would include: • Fatality; • Significant environmental spill to sensitive area (e.g. Cooper Creek); • Destruction of, or significant damage to major infrastructure and/or assets; • Loss of well control & blowout.
Emergency	An emergency is an event that requires company resources and / or external resources not immediately available to the site. The initial event may have some impact outside the site and may involve the local emergency services and / or local Government authorities. An emergency will require a coordinated management response from the site-based emergency response personnel as well as support coordinated by the Brisbane-based emergency response personnel. Emergency events may include: • Situation requiring large scale evacuation by air; • Major environmental spill • Serious injury requiring medivac / multiple casualty events; • Extreme weather event; • Serious fire / explosion.
EMTL	(Brisbane) Emergency Management Team Leader
EPA	Environment Protection Authority / Agency
ER	Emergency Response
ERP	Emergency Response Plan
ERTL	(Site) Emergency Response Team Leader
HR	Human Resources

Term	Description
HSE	Health, Safety and Environment
IBC	Intermediate Bulk Container (chemical container)
LOPC	Loss of Primary Containment – an unplanned or uncontrolled release of any material (substance with the potential to cause harm due to its chemical or physical properties) from primary containment
OCR	(Senex) Onsite Company Representative
RL	(Site) Response Liaison
RM	(Site) Response Manager
RT	(Site) Response Team
RTL	(Site) Response Team Leader
SCBA	Self-contained breathing apparatus
Senex	Senex Energy Limited

1 INTRODUCTION

1.1 Purpose

This Spill Response Plan provides the standard protocols that must be utilised in order for Senex to respond in an appropriate and timely manner in the event of a spill. The procedure details the following steps:

- Prevention – take actions to reduce or eliminate the likelihood of effects of an incident.
- Preparedness – take steps before an incident to ensure effective response and recovery.
- Response – contain, control or minimise the impacts of an incident.
- Recovery – take steps to minimise disruption and recovery times.

In particular the procedure provides a common system and focus for spill response support and response hierarchy, which includes:

- Preserve life and ensure the safety of people;
- Minimise the impact on the environment; and
- Preservation of Senex's reputation, commercial operability and business continuity.

1.2 Scope

Procedures described in this manual are intended to support Senex in the event of a spill and to reflect the regulatory requirements for spill management. The procedure applies to all Senex operations, sites and/or activities undertaken by Senex and/or Contractor personnel on Senex business. Activities of primary contractors, subcontractors and suppliers are also covered under this plan whilst working on a Senex site.

1.3 Senex Crisis and Emergency Management Documentation Hierarchy

Documents associated with the Senex Spill Response Procedure are outlined in Figure 1 below.

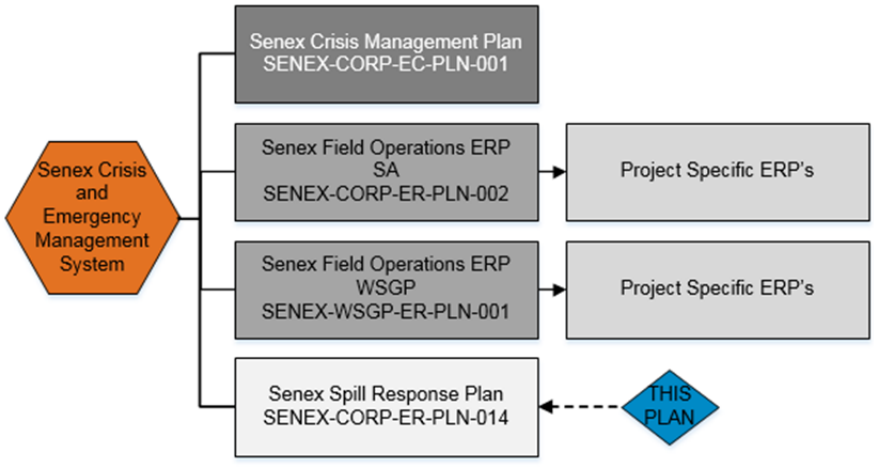


Figure 1 Senex Crisis and Emergency Response Document Hierarchy

2 RECOGNISING INCIDENT, EMERGENCY AND CRISIS SITUATIONS

2.1 Incident

For the purposes of this plan an incident is an unplanned or unexpected deviation from normal operations affecting HSE actual and potential consequences. An incident is resolved utilising the resources immediately available on site and may not require any external assistance.

2.2 Emergency

An emergency is an event that requires company resources and / or external resources not immediately available to the site. The initial event may have some impact outside the site and may involve the local emergency services and / or local Government authorities. An emergency will require a coordinated management response from the site-based emergency response personnel as well as support coordinated by the Brisbane-based emergency response personnel. Emergency events may include:

- Situation requiring large scale evacuation by air;
- Major environmental spill
- Serious injury requiring medivac / multiple casualty events;
- Extreme weather event;
- Serious fire / explosion.

2.3 Crisis

A crisis is a major event with potential shareholder impact, and negative impacts on company reputation and / or legal liability. It may be managed from the Brisbane office and it may require the assistance of external support services. A Crisis event may have broader company impacts such as media attention, legal liability, financial and business continuity implications. Some examples of a crisis event that would escalate beyond an emergency would include:

- Fatality;
- Significant environmental spill to sensitive area (e.g. waterway);
- Destruction of, or significant damage to major infrastructure and/or assets;
- Loss of well control & blowout.

3 SPILL CLASSIFICATION STANDARD

Senex has adopted the internationally accepted Tiered Response classifications to describe different categories of spill events, based on severity and location. Tier classifications are determined based on spill volume, environmental sensitivity, potential social impacts and other factors specific to the event.

3.1 Senex Tier 1 (Emergency/Crisis Event)

A Tier 1 Loss of Primary Containment (LOPC) event has the greatest potential consequences.

Volume	Typical Spill Scenario
LOPC of greater than 1, 000bbls or 1,000 tonnes	Event may be a result of a pipeline rupture or uncontrolled tank failure. Potential for catastrophic release with the potential for serious and long term environmental harm with widespread or permanent impact, significant impact on reputation, major breach of legislation, potential media exposure, activation of Senex Emergency Management or Crisis Management.
Response	
The response to a Tier 1 event will likely require mobilisation of additional resources and support. Response operation will utilise all of Senex's available spill response resources, augmented with additional resources where required. Support will be required from the Senex Emergency Management Team (EMT) and (if activated) the Crisis Management Team (CMT).	

3.2 Senex Tier 2 (Major Spills)

A Tier 2 LOPC event with a moderate consequence.

Volume	Typical Spill Scenario
LOPC between 10 – 1,000bbls or 10 - 1,000t	Event may be a result of a large fuel losses, failure during loadout, small to medium pipe failure. Potential for significant but short term environmental harm with localised or permanent impact, serious breach of legislation requiring urgent notification to regulators.
Response	
The response to a Tier 2 event will likely require clean-up using existing spill equipment and potentially requiring additional or specialised response equipment depending on volume and nature of spill. Support from the Emergency Management Team, if activated, may be required.	

3.3 Senex Tier 3 (Minor Event)

A Tier 3 LOPC event with a lesser or minor consequence.

Volume	Typical Spill Scenario
LOPC of less than 10bbls or 0 – 10t	Small operational spills which may result from refuelling, valve leaks, loadout, routine maintenance and operations. Minor and short term environmental with localised impact, no breach of legislation.
Response	
The response to a Tier 3 event can be resourced using spill response kits located at the site. Additional equipment may be required, e.g. to remove contaminated soil. No external support personnel or resources typically required.	

3.1 Severity Assessment and Assigning Tier levels

The severity assessment takes into account more than just spill volume and size of the impact area. It includes many of the factors which could result in the spill having greater social, environmental or economic consequences, and potential impacts on business reputation or operations.

Factors to consider when assigning Tier levels include:

- Potential for further spillage.
- Type of spill and its characteristics, e.g. toxic/hazardous vapour, gas, rate of evaporation & persistence of the oil in the environment.
- Effectiveness of immediate action to stop the spill continuing and to contain at source.
- Potential for spill to move or effect areas off-site?
- Daylight hours remaining until nightfall.
- Weather conditions will play a major part in the technical decision-making and could mean that response operations are more complex, or expensive, or take longer to complete.
- Other difficulties associated with the incident, e.g. fire, injuries (Medivac), emergency shut-down or stopping of operations, evacuation of site, well capping / relief well.
- Equipment and resources available and speed of deployment.
- Location of the spill. The location of the spill may be difficult to reach, or could involve complex logistics, or may pose safety risks for responders.
- Potential for impacts to nearby sensitive environmental areas (e.g. waterways).
- Attention from the media or public.
- Possible effects on people, landholders, businesses and communities located nearby.

4 SPILL RESPONSE PLANNING

4.1 Initial Site Survey

All Senex sites are surveyed prior to project commencement during the Environmental Assessment process. The Environmental Assessment completed for a site will provide relevant information that may support spill response activities. This information includes:

- Soil type;
- Details of any drainage or waterways present in the lease area or in the vicinity;
- Landholder or other infrastructure located nearby; and
- Environmentally sensitive areas.

4.2 Storage of Oil, Fuel and Chemicals

In order to minimise the risk of spillage Senex will ensure that all hazardous materials are transported, stored and handled in accordance with AS1940, Australian Dangerous Good Code and EPA guidelines. Bulk fuel tanks stored outside bunded areas must be contained within a self-bunded (double skinned) tank with safety valves.

The requirements for managing hazardous substance and dangerous goods at Senex sites are outlined in *Senex Hazardous Substances and Dangerous Goods Procedure (SENEX-CORP-HS-PRC-010).*

4.3 Personal Protective Equipment (PPE)

Provision and use of PPE during response operations will be strictly in accordance with the Senex *Personal Protective Equipment Procedure (Senex-Corp-HS-PRC-12)*. Supervisors/Emergency Response Manager will ensure that all personnel involved in response activities are adequately trained in the proper use, limitations, and care of the PPE equipment provided.

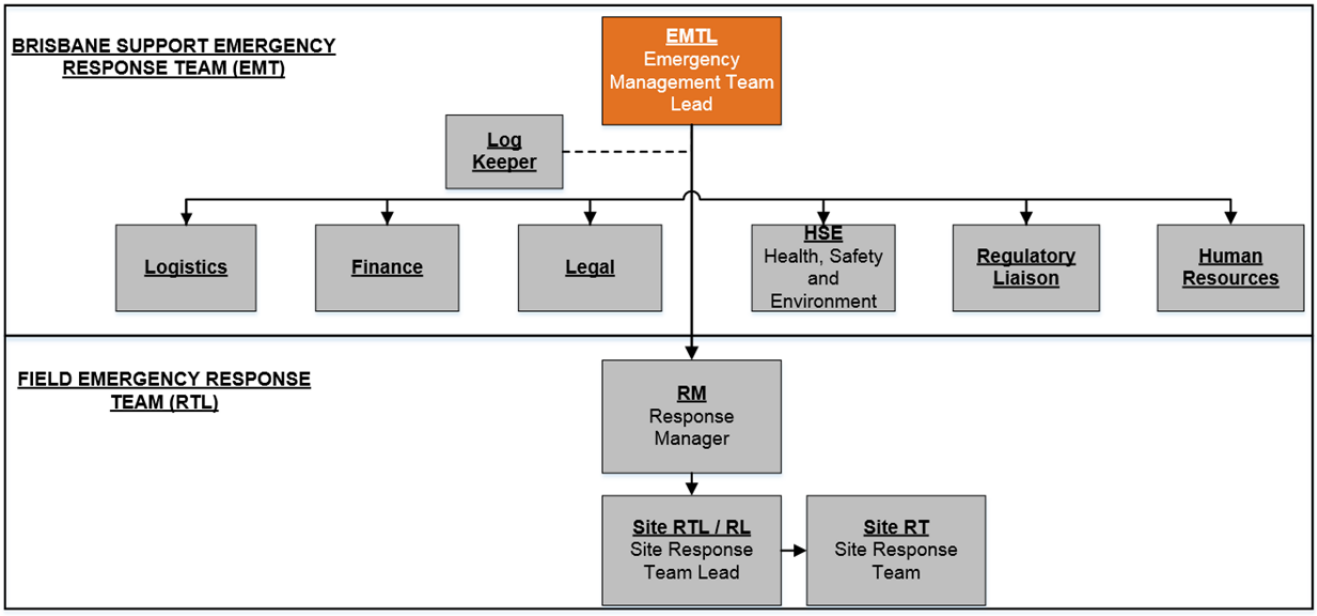
- Appropriate hearing protection will be worn during helicopter transport and cargo handling operations, and when operating mechanical equipment with high noise levels
- Proper protective clothing and other appropriate protective equipment will be worn when performing work involving the handling of highly volatile products; and
- Prolonged skin contact with crude oil can lead to skin rash. Provisions will be made to practice proper industrial hygiene.

5 SPILL RESPONSE STRUCTURE

The Senex response structure and support arrangements will depend on severity of the event but for Tier 1 and 2 events will typically consist of two distinct parts:

1. Field response led by the Response Team Leader (RTL), managed by the Response Manager (RM), with a team assembled based on resources available and the nature/severity of the spill; and
2. Corporate support led by the Emergency Management Team Leader (EMTL) with a team assembled to suit the support required by the RTL and RM.

Figure 2: Senex Emergency Response Structure (SENEX-CORP-ER-CHA-001 – Revision 2)



5.1 Roles and Responsibilities

The following section outlines the roles for key members of the spill response team and duties to be performed by each member of the response team in the event of a spill.

Table 1: Spill Response Key Roles

ROLE	ACRONYM	DESCRIPTION
Response Team Leader (site)	RTL	Command & control of the onsite response (Site or Project Supervisor). Ensure appropriate resources and site personnel are available to support and manage spill.
Response Manager (site)	RM	Overall management of wider response for the site/field (Field Superintendent). RM controls the wider response including co-ordination and provision of additional support to resolve the issue. Activate field Response Team. Monitor the situation and assess potential impacts. Maintain communication with EMTL, RTL and RL.
Response Liaison (site)	RL	Senex Representative (OCR) or Project Supervisor onsite at contractor-managed site. RL is responsible for maintaining communication with Contractor representative, RM and EMTL.
Emergency Management Team Lead (Brisbane)	EMTL	Activation and overall management of the Emergency Management Team. Direct support to RM. Identify and assess the potential impacts of the situation and provide strategic support throughout the event. Ensure appropriate resources and personnel are available to support and manage event. Advises COO of the situation and maintains regular contact. Monitor the situation and initiate an escalation to crisis level if required.

6 PERSONNEL HEALTH AND SAFETY

A risk assessment shall be conducted to develop incident-specific HSE requirements for spill control and response operations when determined necessary by the Senex Site Supervisor / OCR, typically for Tier 2 and Tier 3 spills requiring mobilisation of off-site assistance.

In coordinating a spill response Senex will at all times work within the requirements and intent of the Senex HSE Management System. Senex considers that no spill incident is of such a serious or urgent nature that spill response personnel will be exposed to situations that risk their health and safety.

7 SPILL RESPONSE ACTIVATION PATHWAY

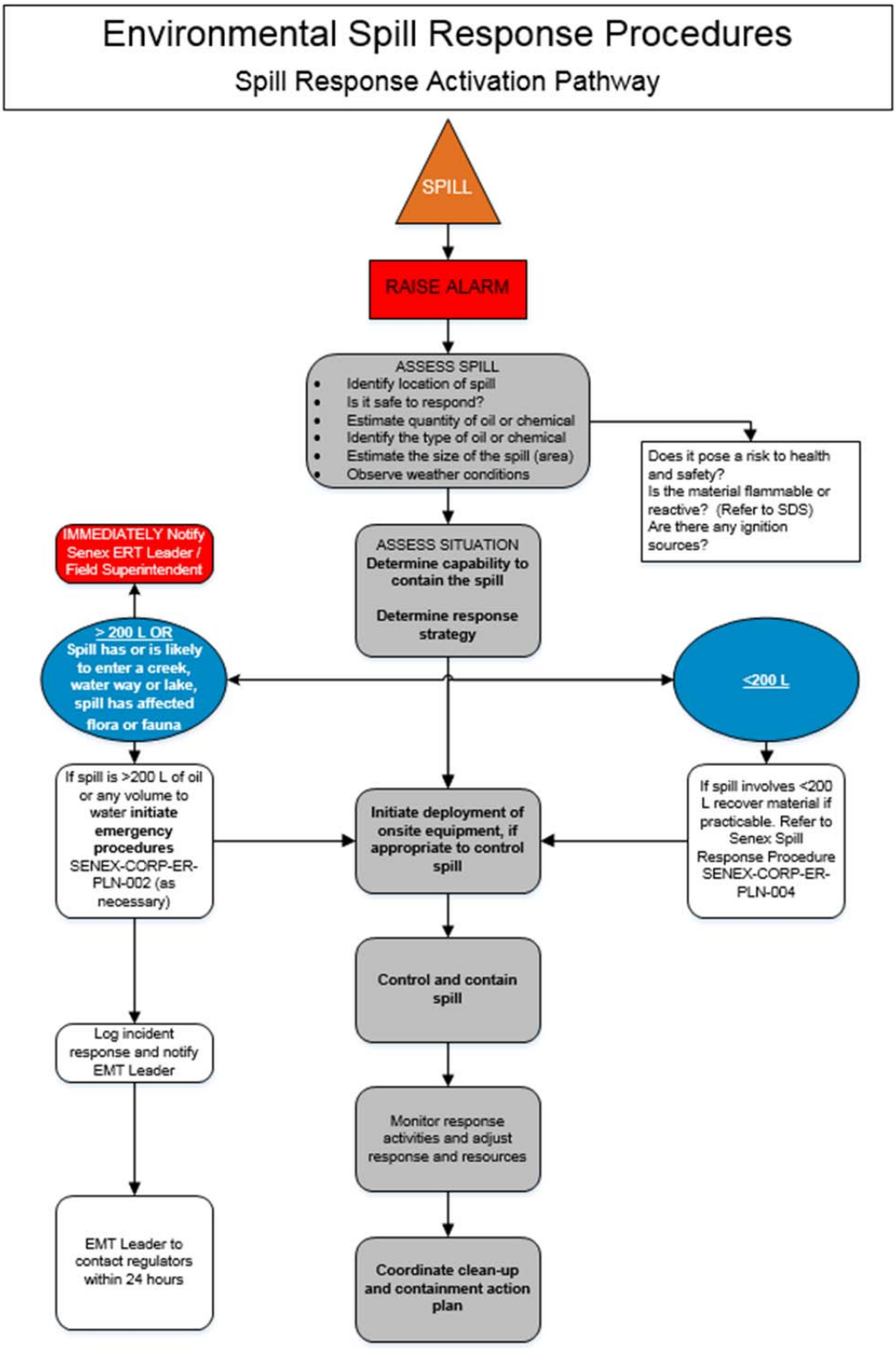


Figure 3: Senex Emergency Activation Pathway

8 SPILL CLEAN-UP AND TREATMENT OPTIONS

Implementation of the spill response clean-up and subsequent remedial action is to be undertaken in accordance with the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* amended in 2013 and any relevant State regulatory requirements or guidelines.

Dependent on the type, size and characteristics of any spill or leak, response actions and subsequent treatment options typically employ a combination of some or all of the following techniques:

- Isolation;
- Natural recovery;
- Absorbents;
- Manual clean-up;
- Mechanical clean-up; and
- Pumps and vacuums.

8.1 Isolation

Depending on the size, location and nature of the spill event it may be necessary to isolate the area including removing all personnel in the immediate vicinity of the spill or leak or personnel not required for spill response. It may also be necessary to divert all vehicles and pedestrian traffic away from the spill or leak area and where required install a barricade /exclusion zone around the spill area.

8.2 Hazards

In the event of a chemical spill the product Safety Data Sheet (SDS) must be consulted prior to commencement of any response action. Spill response will be conducted as per the recommendations of the SDS regarding: Accidental Release Measures, Handling and Storage and Exposure Controls / Personal Protective Equipment. During containment and clean-up phases it is important to ensure clean-up team are protected by wearing appropriate PPE at all times while handling spilt material.

8.3 Natural Recovery

Natural recovery uses the natural degradation and weathering processes to breakdown and remove hydrocarbons. Typically natural recovery will be employed where direct intervention may result in greater impacts to the environment than those caused by the presence of hydrocarbon, where there is no proven, effective method for clean-up or where the location is inaccessible and may pose a safety risk to the clean-up team. Effectively, this method means that no direct action is taken other than to monitor the rate of recovery. Natural recovery may not be appropriate in some areas or circumstances and advice should be sought from the Senex Environment Team.

8.4 Absorbents

Absorbents can be used to collect hydrocarbons and the effectiveness of this technique depends on the capacity of the particular absorbent material employed. Absorbents are designed for the clean-up of minor to moderate spills in a localised area.

Where practical, absorbents may be used as a secondary treatment method after bulk hydrocarbon removal techniques have been employed.

8.5 Manual Clean-up

Manual clean-up involves the removal of contaminated material (i.e. soil) ready for offsite treatment or disposal. This technique is suitable for small volume spills in a localised area where the contaminated material can be easily removed.

8.6 Mechanical Clean-up

Mechanical clean-up involves the removal of contaminated material (i.e. soil) using heavy machinery or equipment ready for offsite treatment or disposal. Contaminated material is removed using excavation equipment such as graders, bulldozers and backhoes. In the event of a large volume spill a staging area for disposal may be required prior to material being transported offsite.

Contaminated soil is only to be removed to the depth of hydrocarbon penetration and excessive soil removal is to be avoided. Heavy equipment is to be managed to minimise potential impacts to sensitive areas (e.g. dunes).

8.7 Pumps and Vacuums

Pumps and vacuums can be used to remove hydrocarbons pooled on the surface or in bunded areas. Equipment can range from small portable units to large vacuum trucks.

8.8 Waste Management

Collected hydrocarbons, chemicals, contaminated waste materials generated during the spill clean-up are to be contained in appropriate receptacles at all times. The waste materials are to be securely transported, tracked and disposed of at appropriate facilities. For chemicals the SDS is to be referred to for information on appropriate handling and transport.

Spill response activities will adopt the waste hierarchy strategy by reducing, re-using, recycling, treating and recovery waste where practicable.

- Close off source of spill/leak;
- Containment;
- Collection;
- Treatment;
- Restoration / Rehabilitation.

9 SPILL RESPONSE RESOURCES

Senex will maintain sufficient equipment to ensure that the response strategies outlined in this procedure can be rapidly and effectively implemented in the event of a spill.

The following equipment items are to be on location at all times to assist with clean-up and containment operations that may be required:

- Basic Oil and Fuel Spill Kit (containing absorbent material and pads, cable ties, gloves, plastic bags)
- PPE and Self-contained breathing apparatus (SCBA)
- Shovels;
- Containers (e.g. empty IBC) for collection of soil
- Plastic pit liners;

In addition, identification of relevant equipment which may be required in a major containment operation and which could be mobilised to site within 8 hours is to be identified prior to operations commencing:

- Graders, bulldozers and/or scrapers;
- Water tankers, suction tankers and/or trucks;
- Portable storage tanks etc.

9.1 Spill Response Equipment

Emergency equipment shall be positioned in appropriate locations at each work site or be located in a position where it is readily available to the site and maintained in a serviceable condition. Appropriate emergency equipment is to be identified commensurate with the risk of the activity being conducted and could include, but is not limited to the following:

- Spill Response Trailer (if available);
- Emergency response instruction folders;
- First aid equipment;
- Fire extinguishers;
- Stretcher(s);
- Oil and chemical spill kits; and
- Safety Showers/eyewash stations.

Where applicable, sites are to be equipped with gas detection and fire extinguishing equipment in accordance with the relevant fire codes and legislation. Other portable equipment such as gas detectors and self-contained breathing apparatus are to be available as required.

9.2 Designation of Response Rooms

A designated room for managing Spill Response events in the field and Brisbane office may be required to be set up to provide a central point of contact.

The onsite room will be:

- In a safe location not endangered by the situation; and
- Contain all associated communication equipment and facilities, such as procedures, contact lists, phones, data points, event board, documentation, and other equipment

10 COMMUNICATIONS

In an emergency situation, communications should adhere to the following general guidelines:

- Be clear, brief and factual;
- Keep a log of all calls made concerning the emergency situation using the Senex Telephone Log Sheet (SENEX-CORP-ER-FRM-003_0);
- All office originated communications should be by telephone. Do not depend on email to transmit vital information. If email is used, follow up must be made by phone; and
- Telephone contacts lists can be found at: http://intranet.sen.local/Pages/staffdirectory.aspx?k=FirstName:A

11 REPORTING REQUIREMENTS – SA AND QLD

Senex requires that all incidents including spills are reported and fully investigated in accordance with their specific level of potential risk.

The Senex *Incident Reporting and Investigation Procedure* (SENEX-CORP-HS-PRC-004_3) and the Senex *Incident Classification and Reporting Requirements Chart* (SENEX-CORP-EN-CHA-001) defines the process for the investigation and reporting of incidents and ensures that Senex meets all regulatory notification requirements.

The Senex Environment Manager, in consultation with the Chief Operating Officer, is responsible for determining whether an incident is notifiable and for reporting incidents and accidents to the appropriate regulator.

12 END OF SPILL RESPONSE

12.1 Declaring End of Response

The Senex Response Manager or Emergency Management Team Leader, where activated, will declare the response is over when:

- Senex Operation and/or supporting facilities have been returned to a safe operational condition;
- All contaminated material and waste have been collected; and
- All authorities, organisations and/or support services contacted during the spill event have been advised the response is complete.

12.2 End of Response Checklist

Table 2: End of Response Actions

End of Response Actions	
1. Ongoing resources for post spill recovery (if required) in place	
2. Final information release and/or notification to some, or all, of the following:	
a. All relevant response and support personnel	d. All relevant EMT and support personnel
b. Contractor organisations	e. Regulatory authorities (DSD, Safework)
c. Relevant Stakeholders (landholders)	f. Environmental agencies (DEHP, EPA)
3. Debrief of all personnel (including any personnel currently relieved or stood down)	
4. Ensure waste materials have been securely transported for disposal at appropriate facilities	
5. Ensure validation sampling has been completed	
6. Compile and file all documents relating to the response	
7. Arrange for full incident investigation and analysis	
8. Approve/comment on incident debriefing reports and recommended actions	

APPENDIX 1: SPILL RESPONSE ACTION PLANS

A.1 Initial Control Action Plan

Step	Assess the Spill
1	Identify the material that has leaked or been spilt: • Does it pose a risk to health and safety? Refer to the appropriate SDS • Is the material hydrocarbon or a chemical? • Is the material flammable or reactive?
2	Note details on site or location of the spill and assess: • If relevant, are there any ignition sources? • Does the spill pose a threat to personnel, people, or the environment?
3	Assess and determine action plan to contain and control the spill of safe to do so.
4	Notify all relevant Senex personnel (e.g. site supervisor, environmental manager)

A.2 Spill Response Action Plan

Step	Control the Spill	
1	**Control the Cause of the Leak:**	
	Potential source and scenario Container leak	Possible measure to stop or control the spill: • Turn the container over to prevent further leakage • Move the container to a bunded and safe location (if not already in bunded area) • Apply a temporary patch/plug if possible
	Pipe/flowline leak	• Shut down pipeline/flowline above and below failure point • Close pipe or other valves • Isolate flow of gas or liquids to the source • Refer to Pipeline Trunkline or Flowline Incident Checklist for detailed information (SENEX-CORP-ER-CHK-012) http://intranet.sen.local/dc/Documents/SENEX-CORP-ER-CHK-012.pdf
	Rupture of tank	• Transfer contents from damaged tank to undamaged tank • If not in bunded area, move, implement or construct bunding to contain spill • Apply a temporary patch / plug if possible
	Loss of Well Control	• Emergency shutdown • Regain control of the well through mechanical means as necessary • Follow Well Control Notification Pathway (SENEX-CORP-ER-FLO-004) http://intranet.sen.local/dc/Documents/SENEX-CORP-ER-FLO-004.pdf
2	**Clear the area around the spill** • Advise all personnel in the immediate vicinity of the spill or leak; remove any personnel not required for spill response. • Divert all vehicles and pedestrian traffic away from the spill or leak area.	

	• If required barricade /exclusion zone around the spill area
3	**Stop the spread of the spill** • Make sure spilled material does not enter waterways, drains, sensitive environmental areas or private land (off lease), public areas. • Use absorbent material to surround and control the spill. • Construct temporary or earthen bunds if practicable and where required

A.3 Clean-up Action Plan

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Use absorbent materials to absorb as much liquid as possible.</td></tr>
<tr><td>2</td><td>If it is a large volume spill, decide if additional equipment or resources is required e.g. vacuum truck, earthmoving equipment.</td></tr>
<tr><td>3</td><td>For large volume spills or hazardous materials notify Senex HS&E Team for advice on clean-up and any regulatory notification or approvals required</td></tr>
<tr><td>4</td><td>Remove all contaminated material (e.g. soil) to the depth of spill penetration</td></tr>
<tr><td>5</td><td>Dispose of recovered contaminated soil and waste materials via a licensed regulated waste transporter as outlined below:
<table>
<tr><th>Type of Chemical or Spill</th><th>Disposal Method</th></tr>
<tr><td>Fuel, hydrocarbons, chemicals, absorbent materials, contaminated soil</td><td>Place into IBCs or 205L drums, skip bins or lined and bunded storage area.
Refer to SDS for appropriate storage and disposal of chemicals.</td></tr>
<tr><td>Large volumes that have been recovered by vacuum truck</td><td>Hydrocarbon spill material is to be collected and held on site for transport</td></tr>
<tr><td>All containers that have been used to store contaminated waste</td><td>Temporary storage in a bunded area as approved by Site Supervisor until waste can be transported offsite for disposal</td></tr>
</table>
If unsure about appropriate disposal options contact the Senex HS&E Team</td></tr>
<tr><td>6</td><td>Validation sampling will be completed by the HS&E Team to determine that the site is no longer contaminated</td></tr>
</table>