

# Environment, Health and Safety Management Guide

Version 3.0 November 2007

**Santos**



Cover photograph: *Fred Hewitt, Maintenance Operator, and Darren Maunder, Production Operator, Wallumbilla gas hub.*

Inside photographs:

Left panel: *Mark Bunker, Production Operator Maintainer, Scotia coal seam gas operations.*

Right panel: *section of Adelaide's River Torrens that has been rehabilitated by Santos volunteers through the Our Patch program.*

Santos Ltd ABN 80 007 550 923

# INTRODUCTION

## Message from the Managing Director

Santos continually strives to be among the world's best exploration and production companies. As a best practice organisation, we are committed to conducting our business activities in a manner that ensures we lighten the environmental footprint and that all employees and contractors go home from work without injury or illness.



The Santos Environment, Health and Safety Management System (EHSMS) outlines the structured approach necessary to ensure our worldwide operations are conducted in a consistent and systematic manner. The Santos EHSMS is the backbone of our EHS approach that will enable us to achieve our EHS and process safety objectives in our continual drive for excellence.

I encourage all employees and contractors working with Santos operations to continually strive to improve our company's EHS performance.

*John Elkington*



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## Overview

This guide was developed as a standalone document to assist with the understanding of the Santos Environment, Health and Safety Management System (EHSMS). The guide provides a description of the management system and a summary of the key requirements from each of the management and hazard standards making up the EHSMS.

Printed copies of this guide and printable copies downloaded from the website should be treated as “uncontrolled copies”.

Constructive comments about this guide are encouraged and welcomed. Comments should be directed to the document custodian:

John Sargaison  
Chief Health and Safety Advisor  
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## EHSMS Framework

The Santos Environment, Health and Safety Management System applies to all Santos operations.

The framework has been developed to ensure that Santos' system is compliant with Australian Standard 4801 2000 Occupational health and safety management systems – Specification with guidance for use, and AS/NZS ISO 14001:1996 Environmental management systems – Specification with guidance for use.

# ABOUT THIS DOCUMENT

The EHSMS framework consists of multiple layers, the key components being management and hazard standards as shown below in Figure 1.



Figure 1: EHSMS framework.

## What is the Santos EHSMS?

The Environment, Health and Safety Management System (EHSMS) is a company-wide system that describes the requirements for effective environmental and safety practice across all of Santos' activities and operations. The EHSMS requirements address the management of risk associated with high frequency / low consequence events (the focus of traditional EHS management systems) as well as low frequency / high consequence events which are typically dealt with by a Process Safety management system. The application of the EHSMS enables us to achieve the objectives detailed in Santos' Environment and Health and Safety policies.

The EHSMS standards can be broken down into two basic areas: Management Standards and Hazard Standards.

- > Management Standards are documents which define the requirements necessary to ensure that environmental, health and safety and process safety risk is systematically managed.
- > Hazard Standards are documents which detail the controls required to manage the risks of specific hazards to acceptable levels.

## Why do we have it?

To provide a clear set of environment, health and safety (EHS) expectations so that there is a consistent, efficient approach across the company.

## What should I do?

All Santos employees and contractors are responsible for contributing to a safe and environmentally responsible workplace. This means conducting our day-to-day activities according to the EHSMS standards which in part focus on the continual identification of hazards and implementing effective risk control measures. Everyone is encouraged to suggest ways Santos can improve its safety and environmental performance via toolbox meetings, EHS committee meetings or by contacting their Supervisor, their Health and Safety Representative, an EHS adviser or Santos' Corporate EHS&S Department (see back cover).



# SANTOS EHS POLICIES

## Evolution of the EHSMS


The EHSMS is a dynamic system which is continually being improved to ensure it is current and aligned with the changing nature and demands of our business such as our expanding interest in offshore developments. This revision of the EHSMS includes the integration of process safety requirements which now provides a consolidated framework for the management of process safety related risk. This initiative provides a systematic approach to process safety that will enable us to further improve on the reliability and integrity of our plant and equipment which in turn will support the ongoing improvement in our EHS performance.

## Where can I get a copy of a standard?

The EHSMS standards are document controlled. The controlled copy of the standards can be found in the EHSMS vault in TIMS. A link to the EHSMS vault in TIMS is located on the Santos intranet, "The Well", Home > Support Services > Environment Health Safety and Sustainability > Environment Health and Safety Management System.

The purpose of the Santos Environment, Health and Safety (EHS) policies is to provide the overall direction for the Santos Environment Health and Safety Management System (EHSMS). The policies demonstrate a commitment by Santos to strive for EHS performance improvement and provide a framework for setting the overall EHS and process safety objectives against which Santos's performance will ultimately be measured.

Health & Safety Vision  
& Policy



**Our Health and Safety Vision:**  
*"We all go home from work without injury or illness"*


**We believe that:**

- No business objective will take priority over health and safety.
- All injuries are preventable.
- No task is so important or urgent that it cannot be done safely.
- Without diminishing management's obligations, the responsibility and accountability for health and safety rests with every individual.

At Santos, we are committed to conducting our business in a manner that prevents injury or illness to employees, contractors, customers and the public who may be affected by our work activities. We will encourage best practice in health and safety management within this wider Santos community.

**To achieve this we will:**

- Proactively pursue the identification of all hazards and eliminate or, if not possible, manage the risk to as low as reasonably practicable.
- Consult with and promote active participation of employees in the management of their own and others' health and safety.
- Require that companies providing contract services to Santos manage their health and safety in line with this Policy.
- Provide resources to achieve a systematic approach to health and safety management to ensure continuous performance improvement.
- Identify performance measures, set improvement targets, measure and report performance at all levels.
- Comply with or exceed all relevant legislation and standards.
- Develop a culture where all employees and contractors are constantly aware of hazards around them and act accordingly at and away from work.
- Include health and safety performance in the appraisal of employees and contractors and recognise accordingly.



**John Ellis-Rust**  
 Managing Director  
 Santos Ltd 2004

SAFETY IS AN INVESTMENT
HEALTH POLICY 2011

# SANTOS EHS POLICIES

Environmental Policy

**Our Environmental Vision:**  
*"We will lighten the footprint of our activities"*

Santos is an Australian energy company producing oil and natural gas in both onshore and offshore localities throughout Australia and overseas.

At Santos, we are adopting the principles of sustainable development. We recognise our responsibility to meet community expectations and we are committed to the continuous improvement of our environmental performance. We believe that environmental stewardship is both a management obligation and the responsibility of every employee.

To achieve this we will:

- Maintain and continuously improve the Environment, Health and Safety Management System (EHSMS) across the organisation.
- Ensure that all personnel, contractors and consultants receive adequate training to fulfil their individual EHSMS responsibilities.
- Apply a systematic approach to identifying hazards and managing environmental risks, to reduce these to as low as reasonably practicable.
- Develop annual environmental objectives and targets and implement programs to achieve them.
- Comply with relevant legal and other requirements, and where opportunities exist, participate in the development and review of legislation and guidelines.
- Ensure that we have the resources and skills necessary to achieve our environmental commitments.
- Incorporate environmental performance in the annual appraisal of employees and contractors and recognise a accordingly.
- Implement strategies to reduce and prevent pollution, manage waste effectively, use water efficiently and address relevant cultural heritage and biodiversity issues.
- Formally monitor, audit, review and report annually on our environmental performance against defined objectives.
- Review the environmental impact of goods and services being provided by our suppliers.

As the Managing Director, I am committed to working with Santos' personnel to ensure that this policy is communicated, understood, accepted and successfully implemented by all employees and contractors.

**John Elliott-Ris**  
Managing Director  
September 2004

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Greenhouse Policy

**Consistent With Our Environmental Vision:**  
*"We will lighten the footprint of our activities"*

At Santos, we recognise one of our key environmental responsibilities is to pursue strategies that address the issue of Greenhouse emissions. We believe that as a global stakeholder in the energy business, we have a responsibility to constantly strive for improvements in our business, our overall contribution to greenhouse emission reduction, and energy efficiency.

We are committed to achieving effective emission reduction targets, to the pursuit of energy efficiency strategies and to the identification and implementation of opportunities to use either less Greenhouse emitting or renewable sources of energy.

To achieve these commitments, we will:

- Actively pursue an emission intensity reduction target (Greenhouse emissions/unit of production) of 20% in the period from 2002 to 2008 using a portfolio approach.
- Measure and report progress against this emission reduction goal.
- Require all operations to develop energy efficiency and greenhouse management plans with site-specific targets.
- Identify and promote opportunities for natural gas to replace higher Greenhouse gas emitting fuels.
- Carefully examine the forecast Greenhouse gas emission and energy use in planned new projects and acquisitions, to ensure emission intensity and energy efficiency levels are consistent with the Company's goals.
- Invest in energy and process research and development, and seek to work co-operatively with other parties.
- Inform and educate Santos employees about our commitment and, together with their input and actions, implement our plans.
- Participate in external voluntary greenhouse gas reduction programs.
- Regularly review our performance against our commitments and report openly on it.

To help our employees understand these commitments and underpin realisation of our targets we will maintain scorecards on our progress, and ensure our climate change initiatives are implemented across the organisation.

**John Elliott-Ris**  
Managing Director  
September 2004

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# MANAGEMENT STANDARDS

## EHSMS 01

### Environment, Health and Safety Policies

#### Purpose

*The policies outline overall EHS direction and objectives and demonstrates Santos' commitment to improving EHS performance.*

#### Summary of Key Requirements

- > Santos shall develop EHS policies in accordance with recognised standards
- > All activities conducted by Santos shall conform with the EHS policies.
- > All activities conducted by contractors or by other companies on Santos' behalf are to be carried out in accordance with policies that are equivalent in intent to the EHS policies and the EHSMS.
- > EHS policies shall be communicated to all employees and all contractors.
- > A review of the EHS policies shall be conducted on an annual basis.

## EHSMS 02

### Legal and Other Obligations

#### Purpose

*Understanding legal and other obligations allows management to ensure the activities of Santos and contractors comply with EHS and process safety legal requirements.*

#### Summary of Key Requirements

- > An EHS Legal Obligations Directory summarising EHS laws relevant to Santos' operations shall be developed and maintained at Corporate levels and will:
  - >> contain references to EHS licences, permits and other obligations
  - >> contain references to EHS industry codes, commitments and other obligations
  - >> be readily available to all employees.
- > Statutory compliance audits shall be conducted in accordance with requirements outlined in EHSMS16 Management System Audit and Assessment.
- > The Santos leadership team and the Board shall be informed of any material change in EHS legal requirements and of any significant non-compliance within the business.
- > Santos EHSMS standards shall take into consideration legislative requirements, relevant industry codes, practices and agreements.



# MANAGEMENT STANDARDS

## EHSMS2.1 Requirements of the SA Petroleum Act and Regulations

### Purpose

- > To outline management processes and accountabilities to achieve compliance with Environmental, Healthy, Safety and other requirements of the SA Petroleum Act & Regulations.

## EHSMS 03 Objectives and Targets

### Purpose

*Objectives and targets are set to measure and drive continuous improvement in EHS and process safety performance across that company.*

### Summary of Key Requirements

- > Corporate EHS and process safety objectives and targets shall be drafted in December for the following calendar year by Corporate EHS&S in consultation with relevant Functional Groups.
- > Functions/departments or site objectives and targets shall be established to measure performance and drive improvement in line with Corporate objectives and targets.
- > Objectives and targets shall be:
  - >> **Specific:** Set at an appropriate level and not too broad or too detailed

- >> **Measurable:** Assessable either quantitatively or qualitatively
- >> **Achievable:** Realistic based on resources and competencies
- >> **Relevant:** Effectively achieves desired result
- >> **Timely:** Realistic time to achieve the change.

- > Targets shall be set for a number of EHS and process safety measures including both proactive (lead) and reactive (lag) measures.
- > Objectives and targets shall be regularly reviewed and progress updated with consolidated reports being reviewed by Santos Leadership Team and the Board

## EHSMS 04 Improvement Plans

### Purpose

*EHS plans set out the specific initiatives, actions and milestones for achieving EHS and process safety performance objectives and targets.*

### Summary of Key Requirements

- > Strategic EHS and process safety Improvement Plans shall be developed and maintained in consultation with relevant functional groups.
- > The Strategic Plans shall include the key EHS and process safety issues (eg plant integrity, implementation of EHSMS

# MANAGEMENT STANDARDS

Standards, leadership and behaviour) and provide a broad framework for achievement of the Corporate EHS and process safety objectives and targets. The plan shall detail the following:

- >> a statement of the current status and desired long-term objective
  - >> annual major milestones to be achieved
  - >> responsibility for the completion of each milestone.
- > EHS Improvement Plans shall be developed annually on a calendar year basis for functional areas as determined by the relevant Functions.
  - > Improvement Plans shall detail the actions that will be undertaken to achieve the Strategic Plans and Functional EHS and process safety objectives and targets.
  - > Improvement Plans shall detail the key actions, responsibilities and timeframes to meet the Strategic Improvement Plans and Function/Department EHS and process safety objectives, targets and actions arising from assessments, audits and incidents.
  - > Improvement Plans shall be regularly monitored by line management to ensure that appropriate progress is being achieved and variances are addressed.

## EHSMS 05 Responsibility and Accountability

### Purpose

*Assignment of roles, responsibility and accountability ensures resources, including human, technical and financial, are appropriately used to implement, maintain and improve the EHSMS.*

### Summary of Key Requirements

- > EHS including process safety outcomes are a line management responsibility supported by EHS, engineering and other technical personnel and EHS committees.



*Inspection of solar powered air compressor, Cooper Basin.*





## MANAGEMENT STANDARDS

- > Organisational structures and position descriptions shall be documented to outline the hierarchy of EHSMS related responsibilities, accountabilities and reporting channels.
- > Personal EHS and process safety objectives shall be set as a component of the performance review process for relevant salaried personnel.
- > Committees shall be established within relevant Functions to help management oversee the implementation, monitoring and review of the Santos EHSMS.
- > Sufficient resources shall be provided by management to:
  - >> implement improvement plans to achieve EHS and process safety objectives and targets
  - >> develop, implement and maintain the operation's EHSMS
  - >> ensure compliance with relevant legal and other commitments.

### EHSMS 06 Training and Competency

#### Purpose

*Focused training ensures that everyone with responsibilities allocated under the EHSMS understands how to fulfil the responsibilities and has the necessary skills.*

#### Summary of Key Requirements

- > A training system shall be developed and maintained.

#### The training system shall:

- > be based on a training needs analysis of EHS statutory and EHSMS requirements;

- > provide for appropriate delivery methods to cater for varying work situations; and
- > include processes to validate training effectiveness.

Employees and contractors shall only be permitted to perform unsupervised tasks where they have the skills and experience or competency to perform such tasks without harm.

All personnel working at or visiting a Santos site or facility shall undergo an appropriate EHS induction.

EHS competencies shall be specified in Position Descriptions.

Employees shall only be appointed to positions where they have the required EHS training, experience and competency requirements as defined for that position.

A system shall be developed and maintained to validate that contractors have relevant EHS competencies, including those required by statute.

EHS training records shall be maintained for 40 years.



# MANAGEMENT STANDARDS

## EHSMS 07

### Consultation and Communication

#### Purpose

*Appropriate consultation and communication processes enable employees, contractors and external stakeholders to understand and contribute to EHSMS requirements and decisions.*

#### Summary of Key Requirements

- > Consultative arrangements shall be in place to provide employees, contractors and external stakeholders with an opportunity to contribute to EHS and process safety decision-making.
- > Consultation with employees shall be via Environment Committees, Health and Safety Committees and Health and Safety Representatives.
- > Operations that have a significant impact on the local community shall establish consultation mechanisms for affected groups.
- > Consultation with government agencies, authorities and other organisations shall be maintained in order to contribute to the development of public policy, relevant legislation, improved industry performance and educational initiatives.
- > The Santos EHS Policies, EHSMS Standards, and relevant EHS issues and performance shall be communicated to employees and contractors. Where required, EHS information shall be provided in appropriate languages for non-English speaking personnel. Methods of communication include:
  - >> Environment Committees and Health and Safety Committees
  - >> toolbox meetings

- >> Santos EHS Toolbox
- >> presentation of EHS KPIs (eg on the intranet, 'The Well')
- >> EHS training
- >> EHS notice boards, bulletins and alerts
- >> management visits
- >> awareness programs and initiatives.



*Grace Fontanelli discussing the Cooper Basin Oil Project operations with a drilling contractor.*



## MANAGEMENT STANDARDS

- > Monthly workgroup meetings shall be held including communication and discussion of EHS matters at all Santos sites.
- > Santos sites shall have Environment and Health and Safety Committees to monitor the implementation of the Environment and Health and Safety Management, discuss EHS matters and recommend to management the means to resolve issues.
- > Functions/Departments shall hold regular EHS Management meetings to monitor the implementation of the EHS Management System. The purpose of the EHS Management Committee is to provide a linkage between the sites and the Corporate EHS and process safety objectives and targets.
- > Meetings, where appropriate, should start with a discussion of relevant EHS issues.
- > Daily toolbox meetings shall be held for workgroups including the relevant Supervisor, employees and relevant contract personnel.
- > Communication with external stakeholders on EHS matters shall be maintained, both proactively and upon request.
- > Regular reporting and notification of EHS incidents, where required by statute, shall be reported to the appropriate government agency.
- > EHS reporting shall be included in the Santos Annual Report and the Santos internet site, [www.santos.com](http://www.santos.com).

### EHSMS 08

#### Document and Record Management

##### Purpose

*Personnel need access to current, up-to-date versions of all EHSMS documents to perform their work. Records also demonstrate compliance with EHS Policy, Standards and attainment of objectives.*

##### Summary of Key Requirements

- > EHSMS documents shall have a nominated custodian responsible for the management of the document.
- > EHSMS documents shall have a nominated Technical Sponsor who shall be responsible for the technical content of the document.
- > Paper based versions of EHSMS documents shall be marked as “uncontrolled copy” and the user of a printed document is responsible to ensure that it is the latest version.
- > Documents shall be issued in appropriate languages to ensure personnel who require access to the information are able to read them.
- > Where applicable, work instructions and signs should be in the form of pictures, drawings, colours and other visual means, rather than text.
- > Documents shall be reviewed by the custodian at a minimum of every three years or when triggers for change occur.
- > Custodians shall ensure that links to external documents eg Acts, Regulations, industry codes, standards and guidelines, referenced in EHSMS documents are current.

# MANAGEMENT STANDARDS

- > Line managers shall ensure that EHSMS documents are readily accessible.
- > EHSMS related documents shall have document control features to enable users to determine that they are using current and complete documents.
- > Records shall be kept for defined periods to demonstrate conformance with requirements of the EHSMS.
- > The Asset Manager shall ensure a Plant Dossier is prepared and maintained. Plant Dossier documentation shall be accessible to potential users.
- > New significant process safety related information gained from external sources shall be documented and included in the relevant plant dossier/s.

## EHSMS 09

### Hazard Identification, Risk Assessment and Control

#### Purpose

*Processes are necessary to systematically identify hazards, assess their risk and adopt control strategies to reduce risk to as low as reasonably practicable (ALARP).*

#### Summary of Key Requirements

- > The overall risk management approach used by Santos shall, unless otherwise stated, be based on Australian Standard AS4360 'Risk Management'.

- > Appropriate hazard identification and risk management processes shall be used for all aspects of our business based on the following framework:
  - >> Projects
  - >> Acquisitions
  - >> Operations
  - >> Change
  - >> Tasks and Jobs
- > The Santos Incident Management System (IMS) shall be used to record and manage EHS and process safety hazards identified during daily activities.
- > The Significant Hazard Risk Register (SHRR) shall be used to record and aid the management of risk associated with potential significant unwanted events that could occur in the workplace.
- > Major Hazards (as defined) shall be managed in accordance with the requirements of relevant Major Hazard Facility (MHF) legislation for onshore facilities and with the relevant "Safety Case" legislative requirements for offshore activities.
- > Personnel participating in risk assessments, requiring formal risk acceptance, shall be competent to participate in the risk assessment process being used.
- > Operational risk assessments shall involve representation from personnel that are likely to be exposed to the hazard.





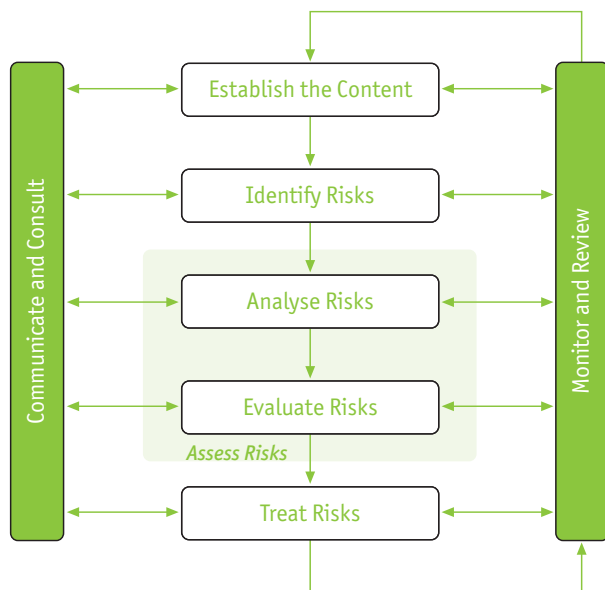
## MANAGEMENT STANDARDS

- > The risk matrix is the primary risk assessment tool and should be used as a risk ranking/screening tool to identify those unwanted events which may require a more rigorous risk assessment process in particular when conducting process safety related risk assessments.
- > A formal risk acceptance shall be used where:
  - >> the risk assessment relates to “ongoing” potential/actual unwanted events; and
  - >> the risk assessment identifies that the current residual risk is two or higher.
- > Where a risk assessment (that will require formal risk acceptance) results in a residual risk level of three or higher a review of the risk assessment shall be conducted by an appropriate “subject expert” to determine if the residual risk can be further reduced.
- > A residual risk of 5 shall be intolerable and levels 2 to 4 shall be tolerable provided that it has been determined that the risk is as low as reasonably practicable (ALARP).
- > Risk assessments and results shall be documented in a manner that enables the information to be kept as a retrievable record.
- > Where it is assessed that a residual risk is not ALARP a plan for improving existing and/or creating new risk controls shall be prepared and submitted for approval.
- > In assessing risk controls, consideration shall be given to both preventive controls (to prevent a breakdown event occurring) and mitigation controls (to minimise the consequences should the breakdown event occur).
- > Risk control measures shall be assessed using the ‘Hierarchy of Control’ approach. Elimination shall be the first (and preferred) control method to be considered. A number of control options may be considered and applied either individually or in combination.
- > A plan for improving or creating new risk controls (including any risk control studies or interim controls) shall be prepared within a defined period of time. Actions shall be recorded and managed using IMS.
- > Risk controls implemented shall be reviewed to ensure that that they have been effective, they have not introduced any new unintended hazards and that the risk has been reduced to an acceptable level.
- > A Significant Hazard Risk Register (SHRR) shall be developed and maintained for defined activities and sites and shall include all hazards with an inherent risk score of three or higher.
- > Selected operating facilities shall be subject to Process Hazard Analysis (PHA) every five years to identify possible unwanted process related events.
- > All hazards in the Significant Hazard Risk Register (SHRR) shall be reviewed on a periodic basis to ensure that the risk controls have achieved, and are continuing to achieve, the intended risk reduction.
- > A SHARR shall be prepared as a component of a project.



# MANAGEMENT STANDARDS

- > The Hazard Register shall be used to identify major hazards to be included in the induction of new employees and contractors hazards and in developing annual EHS improvement plans.
- > The SHRR shall undergo a review every 5 years.



- > A custodian shall be appointed to maintain the SHRR.
- > A generic office Significant Hazard Risk Register shall be developed.

Figure 2: Risk management process.

## EHSMS 09.1

### Job Hazard Analysis (JHA) and Stepback

#### Purpose

To define the requirements for identifying, assessing and controlling personal risks associated with work activities.

#### Summary of Key Requirements

- > All personnel who carry out work for or on behalf of Santos in field locations shall, where required, participate in developing a Job Hazard Analysis (JHA) prior to commencing work and shall complete their assigned actions in accordance with the JHA.
- > A JHA must be completed prior to performing any task where it is possible that a loss may result and if there is no pre-approved standard operating procedure or work instruction that identifies the hazards and controls the risks of the task.
- > A new JHA shall be developed by the work group or individual performing the task each time a task is conducted.
- > The JHA shall be approved by the permit holder or supervisor of the task prior to work commencing.
- > Stepback shall be conducted by each individual immediately before any job/task is commenced to ensure that it is safe to carry out the work and that no unacceptable environmental impact will result.



# MANAGEMENT STANDARDS

## EHSMS 09.2 Hazard Studies

### Purpose

To detail the requirements for the identification and risk management of EHS hazards during project development.

### Summary of Key Requirements

- > Relevant hazard studies shall be conducted at defined points during the life of all projects.
- > A hazard study shall be carried out for all facilities acquisitions/divestment where required.
- > Hazard studies shall be conducted during the operational life of a plant including cyclic Process Hazard Analyses for defined sites.
- > Hazard Study Leaders shall have appropriate training and experience and be authorised.
- > Copies of records, reports etc. generated through hazard studies shall be preserved for the life of the facility.

## EHSMS 09.3 Workplace Inspections

### Purpose

To ensure that all workplaces are inspected on a regular basis to ensure hazards are identified and controls are implemented to manage their risk.

### Summary of Key Requirements

- > Formal workplace inspections shall be scheduled and carried out for all areas.
- > Annual inspection schedules shall be developed for each work area.
- > A Workplace EHS Inspection Checklist shall be used when conducting an inspection(s).
- > Corrective action shall be taken to address hazards identified through workplace inspections.

## EHSMS 09.4 Behavioural Improvement

### Purpose

To define the requirements for managing the behavioural aspects of EHS performance improvement.

### Summary of Key Requirements

- > All personnel have a responsibility to:
- > carry out their work in a safe and environmentally responsible manner;
- > stop inappropriate behaviour when witnessed; and
- > stop any activity which they believe poses an unacceptable risk to their or others health, safety or the environment.
- > Appropriate behavioural improvement programs shall be developed and implemented.

# MANAGEMENT STANDARDS

- > Line Managers shall provide leadership in the use and conformance with the behaviour improvement program.
- > A formalised EHS awards program shall be developed and maintained to recognise EHS performance and innovation.
- > Line management shall recognise and reinforce positive behaviour on an ad-hoc basis.

## EHSMS 09.5 Environmental Impact Assessment and Approvals

### Purpose

*To ensure that processes are in place to systematically identify and manage potential environmental and social impacts associated with development activities and to obtain all relevant statutory approvals.*

### Summary of Key Requirements

- > The impact assessment processes shall be applied as early as possible in the design and decision making process and provide for the involvement and input of
- > key stakeholders relevant to the activity.
- > Internal and statutory requirements shall be identified through a review of the EHS Compliance Register(s).
- > The tenures of land and the rights of legitimate land users shall be considered and respected when planning any new

disturbance or releases prior to obtaining relevant internal and external approvals.

- > Internal approvals shall be obtained for a new disturbance or activity that releases emissions beyond the boundaries of Santos operational areas.
- > Site scouting documentation together with any required Environmental Management Plan shall be prepared and submitted for internal approval.
- > For all projects a Regulatory Approvals Plan (Plan) must be developed to ensure that all of the relevant approvals processes are mapped out in the project planning phase.
- > Initial advice documentation shall be submitted to the relevant authorities so that they can determine whether further environmental impact assessment and management information is required.
- > Environmental Impact Assessment documentation shall be prepared in close consultation with the relevant project team, be reviewed internally by appropriate managers, approved by the Chief Environmental and Cultural Heritage Adviser and submitted to the relevant authorities for approval.



## MANAGEMENT STANDARDS

### EHSMS 10 Contractor and Supplier Management

#### Purpose

*Contractors doing work on Santos' behalf and suppliers of equipment, materials and goods are required to have appropriate EHS management systems in place so as to prevent harm to Santos and Contractor personnel, the public, the environment and Santos' business interests.*

#### Summary of Key Requirements

- > Equipment, materials and goods assessed as being a potential significant business risk shall be recorded in a catalogue which shall be used to ensure that appropriate equipment, materials and goods are purchased.
- > Safety critical spare parts shall be identified as such in the catalogue and shall be fully specified and only sourced from the approved Supplier.
- > All catalogued equipment and materials shall be obtained in accordance with the catalogue specifications.
- > A quality control system shall be implemented for the procurement and supply of safety critical equipment and spares.
- > A risk assessment shall be conducted to determine the level of EHS assessment required for new Contractors / Suppliers.
- > Where the assessed risk is one and the value of the contract is below \$500K a capability assurance statement shall be completed.

- > Where the assessed risk is >1 or the value of the contact is >500K a major contract prequalification shall be completed.
- > EHS prequalification may be waived in defined scenarios if approved.
- > Where a major contract is awarded and the assessed risk is
  - >> 1 an EHS Management Plan shall be developed by the contractor, tailored to the scope of work, and be submitted for approval.
- > A Santos Site Representative shall be appointed for a major contract to ensure that work carried out by the contractor is in accordance with the approved EHS Management Plan.



*Murray Verco, Process Operator, with an Oil and Gas Solutions contractor conducting a safety audit at the Moomba gas plant.*



# MANAGEMENT STANDARDS

- > Prior to the commencement of work the contractor shall complete the Santos level 1 and appropriate level 2 induction inductions. The contractor shall then provide to their employees a level 3 induction based on their EHS Management Plan (where required).
- > Contractors shall ensure that where required the endorsed EHS Management Plan is fully implemented and maintained for the duration of the work activity.

## EHSMS 11 Operations Integrity

### Purpose

*Process safety management deals with the prevention of major hazards or catastrophic events that could lead to fatalities, serious injury, significant property damage or significant environmental harm. Systems and tools are required to manage process safety risks, as a subset of EHS management. The emphasis is on maintaining effective lines of defence to prevent the occurrence of and mitigate the consequences of major unwanted events. Process safety is addressed across the full lifecycle of assets, from development to operational integrity through to diligence in abandonment.*

### Summary of Key Requirements

- > Management accountability for process safety management requirements shall be clearly stated. Competent and adequate resources shall be in place to support each element and the overall system across all Santos operated assets.

- > Performance standards shall be in place to measure the process effectiveness of process safety management, and reviewed with the Board on an annual basis.
- > A process safety pyramid analogous to the personnel safety and health pyramid shall be used to structure the part of EHS reporting, escalation, investigation and safety statistical analysis related to process safety.
- > KPIs for process safety shall be reviewed on at least an annual basis by the Board and on a quarterly basis by the SLT.

## EHSMS11.1 Design Basis – Facility and Equipment

### Purpose

*A detailed description of the facility operating basis, the fluids and chemicals processed within the facility, and the design basis and operating limits of the equipment involved, along with processes to support consistent operation within design limits is required to provide a basis for all personnel associated with the operation, maintenance or design of a facility to identify, understand and manage EHS risks.*

*These supporting processes include alarm management, operating envelopes and control, systems.*

### Summary of Key Requirements

- > Each Facility Design Basis shall detail sufficient information at a facility and at equipment level to establish a clear basis for operation.





## MANAGEMENT STANDARDS

- > This information should be the basis for operating procedures, maintenance work, design modifications, training manuals, integrity management plans etc.
- > The information shall be made readily available to all personnel who design, operate and maintain the facility, and to those exposed on a temporary basis –
  - >> e.g. contractors working on parts of a facility that has specific hazards.
- > The Facility Design Basis shall list material safety information for all streams, process chemicals, and hazardous substances within a facility.
- > Changes to the operating envelope stated in a Facility Design Basis, requires management of change.
- > The equipment design record defines whether the equipment or any components are safety critical and shall include conditions for which the equipment has been designed along with key data.

### EHSMS11.2 Facilities Design and Construction

#### Purpose

*Facilities need to be designed and constructed (for new and modified facilities) so that they can be commissioned, started up and operated in compliance with applicable legislation and with as low as reasonably practicable risk of safety, health or environmental incidents.*

#### Summary of Key Requirements

- > A documented and formal project management system shall be developed and maintained so that process safety and EHS related risks are managed as an integral part of project management through the design, approval, procurement, construction, commissioning and handover phases.
- > All projects shall follow either the SQAD (Santos Quality Asset Development) Process or the Operations Engineering & Reliability Group Project Gating Procedure.
- > A Project Manager, a Commissioning Team Leader and, where appropriate, an Operations Representative shall be appointed for each project.
- > Appropriate hazard studies (at defined stages of project development), an Environmental Impact Assessment (where required) and any other EHS studies that are required by the regulatory authorities shall be carried out during a project.
- > A plant dossier shall be prepared or updated as required and handed over to the Asset Manager on completion of the project.
- > There shall be a formal process of asset handover from the Project Team to Operations.
- > Each handover process shall include the transfer of defined documentation such as

Significant Hazard Risk Register, Safety Case or equivalent (if required), Legislative

Compliance Statement and Plant Dossier or updated Plant Dossier.

## MANAGEMENT STANDARDS

- > Each handover process will also include confirmation that a pre-startup safety review has been conducted, operations integrity measures are in place, emergency, operating and maintenance procedures are provided, risk-management recommendations have been addressed, training of personnel has been accomplished and regulatory and statutory permit requirements are met.

### EHSMS11.3 Pre Start-up EHS Review

#### Purpose

*Prior to the startup of new facilities, modified facilities or facilities that have undergone intrusive maintenance a pre-startup EHS review is conducted to ensure that the facility can be started up and operated safely and without environmental harm.*

#### Summary of Key Requirements

- > A pre startup EHS review shall be conducted and documented prior to startup of new facilities, significantly modified facilities or facilities that have undergone intrusive maintenance.
  - > The pre-startup EHS review shall be conducted by a multidisciplinary team familiar with the operating, mechanical, technical, design and EHS requirements of the facility.
  - > A review meeting involving all members of the pre start-up EHS review team shall be conducted on site before start-up to assess whether the project is ready for safe start-up.
- > The review team shall determine whether work to date is sufficient to ensure safe start-up based upon review of existing documentary evidence (FIC packages, HAZOP reports, commissioning punch-lists etc) plus their own investigations and site inspection of the facility as necessary.
  - > The review team leader is responsible for ensuring that outstanding actions identified in the Pre-startup EHS Review Report are assigned, and the asset manager is accountable for ensuring completion before plant start-up.
  - > Start-up of new, modified or intrusively maintained equipment shall proceed only after a pre-startup EHS review has been completed and a Review Report has been issued, actions identified for completion before startup have been completed (unless exceptions have been otherwise endorsed), a Pre-startup EHS Clearance Report has been issued and the asset manager has approved startup.



# MANAGEMENT STANDARDS

## EHSMS11.4 Structural Integrity

### Purpose

*Management processes are required for developing, implementing and maintaining the structural integrity of onshore and offshore structures and equipment to ensure that they are structurally safe and meet relevant regulatory requirements.*

### Summary of Key Requirements

- > Integrity Management Plans (IMP's) for structures shall be developed as required and shall be periodically reviewed and updated as specified in the IMP.
- > The scope, method and frequency of structure inspections shall be established either through regulation, or risk based determination of structural elements.
- > Inspection plans shall identify the priority of locations to be inspected, inspection method and inspection schedule.

## EHSMS11.5 Mechanical Integrity

### Purpose

*Management processes are required for developing, implementing and maintaining the mechanical integrity of onshore and offshore assets so that the risk of failure is As Low As Reasonably Practicable (ALARP).*

### Summary of Key Requirements

- > Plant, equipment, pipelines and gathering systems shall undergo a periodic integrity assessment which shall be documented and audited.
- > Mechanical integrity shall be managed in a predictive rather than reactive manner over the life cycle of the equipment.
- > Maintenance, inspection and monitoring plans and procedures shall be tailored to specific integrity risks and programs shall be in place to address risks.
- > Equipment and integrity management processes shall meet or exceed statutory codes, regulations and standards.
- > Maintenance materials and spare parts for safety critical equipment shall be sourced from the Original Engineering Manufacturer (OEM) and any variations shall be managed through EHSMS12 Management of Change.
- > Equipment shall be operated within agreed, documented parameters which shall be based on original design premises.
- > A system shall be in place to:
  - >> provide an overview of the status of asset integrity;
  - >> manage inspection and monitoring programs; and
  - >> manage any defects identified during arising from the programs and undertake corrective actions.
- > An Asset Integrity Management System (AIMS) shall be developed for each operational area or facility and shall provide a structured framework for integrity management.



# MANAGEMENT STANDARDS

- > Integrity Management Plans (IMPs) shall be developed for defined assets, the IMP shall identify the operating surveillance, inspection and monitoring requirements and responsibilities required to support integrity.
- > Regular operational surveillance shall be carried out to detect deterioration so that remedial action, if required, can be initiated at an early stage.
- > Assets shall be periodically inspected and, where required, tested to support continued integrity, fitness for service and to meet statutory requirements.
- > A Safety And Operating Plan (SAOP) shall be prepared for pipelines.,
- > The Plant Dossier shall be used to capture records relating to equipment manufacture, testing, repair or modification, in-service inspection, maintenance, registrations, IMP's, SAOP's and operating history.

## EHSMS11.6 Ignition Control

### Purpose

*Ignition sources are a hazard at locations where explosive atmospheres may occur so processes are required to identify and eliminate or otherwise control such sources in order to reduce the risk of a fire and/or an explosion to As Low As Reasonably Practicable (ALARP).*

### Summary of Key Requirements

- > Ignition sources shall be identified and eliminated or otherwise controlled at locations where explosive atmospheres may occur.
- > Where ignition sources cannot be eliminated the hierarchy of controls shall be applied.
- > Such controls shall be considered during design, and applied during construction, routine operation, and maintenance activities.
- > The following potential ignition sources shall be managed:
  - >> Hot surfaces
  - >> Flames, hot gases and sparks
  - >> Spontaneous combustion
  - >> Lightning
  - >> Workshops, welding shops, portable and temporary huts
  - >> Vehicles
  - >> Mechanical equipment
  - >> Static electricity
  - >> Frictional heat
  - >> Fired equipment
  - >> Combustion engines and air compressors
  - >> Electrical equipment
  - >> Electromagnetic, ultrasonic and optical radiation
  - >> Thermit sparks
  - >> Welding
- > All hazardous area certified equipment shall be maintained to keep certification valid at all times.



# HAZARD STANDARDS

## EHSMS11.7 Critical Protection Systems

### Purpose

*Critical protection systems are a line of defence to prevent mechanical or electrical integrity being compromised or EHS incidents escalating so processes are required for the design, assessment, construction, operation, testing, reliability and maintenance of critical protection systems in new and existing facilities.*

### Summary of Key Requirements

- > Critical protection systems shall be designed, installed and maintained to meet functional design intent and Probability of Failure on Demand (PFD) requirements.
- > A testing program shall be implemented so that PFD requirements can be maintained throughout the life of the asset.
- > Process streams shall not be introduced to new plant before the critical protection systems have been proven and commissioned.
- > Persons operating, maintaining or testing Critical Protection Systems shall receive suitable training and be assessed as competent.
- > Registers of Critical Protection Systems shall be developed and maintained.
- > Proof testing of critical protection systems shall be carried out according to a defined schedule.

- > The integrity of critical protection systems shall be maintained by scheduling and carrying out appropriate routine maintenance and inspection.
- > Spare parts for critical protection systems shall be reviewed and any parts identified as safety critical spares shall be managed accordingly.
- > Records shall be kept by the asset manager of the observed operation of each critical protection system, including any plant conditions (demands) which cause the system to be called on to operate, together with each system's responses.
- > Details of any failure to operate as designed shall be reported through IMS as a process safety exception.

## EHSMS11.8 Operating Procedures and Safe Practices

### Purpose

*A controlled system of procedures and safe work practices are required to be developed and maintained to ensure the safety of personnel during operational and maintenance activities, to protect the environment and the safe operation of plant and equipment.*

### Summary of Key Requirements

- > Critical and Standard operating procedures shall be developed, implemented and maintained to address Operational Activities that have the potential to cause adverse impacts on the health or safety of personnel, the environment or damage to plant or equipment.

# HAZARD STANDARDS

- > Procedures shall be written in a manner that is easily understood by the end user and such procedures shall be readily accessible.
- > Where a critical or standard operating procedure exists, personnel shall conduct their work in strict accordance with the procedure.
- > Classification of a procedure shall be based on the potential risk should the procedure not be followed properly, and the complexity of the task.
- > A Procedure Custodian shall be nominated for each operational site to oversee the preparation of procedures, their approval and to facilitate appropriate revisions.
- > Personnel required to carry out tasks covered by standard or critical operating procedures shall be competent to complete the *task in accordance with the procedure*
- > Procedures shall be reviewed at defined periods and in the event of significant changes in process or equipment
- > Sites shall develop and maintain site related systems and work practices to ensure the safety of personnel during operational and maintenance activities including:
  - >> A Work Permit System shall be maintained (refer Santos Work Permit Procedures) for the planning, coordination, authorisation and control of specified work activities to ensure that work is conducted safely and that personnel, the environment and facilities are protected.
  - >> There shall be a handover process to facilitate the effective hand-over of control of ongoing operations and work activities between shifts and crew changeover to maintain EHS and business performance.

- >> standing orders
- >> a system for determining personnel present in an operating plant or production facility.
- > Critical operating procedures and safe work practices shall be audited on an annual basis to monitor the level of compliance with the requirements of this standard and effectiveness of training

## EHSMS11.9 Maintenance

### Purpose

*Maintenance specific systems and procedures are required to manage EHS risks encountered in maintenance operational activities.*

### Summary of Key Requirements

- > Santos shall develop, document and maintain a Reliability and Maintenance Management System that identifies and manages the execution of maintenance work to keep facilities fit for purpose and meeting regulatory requirements.
- > As part of the Maintenance Business Planning Process, EHS related objectives and targets shall be established each year.
- > Maintenance procedures shall be developed and maintained for the management of maintenance activities in relation to EHS, quality, administration, personnel, asset management and work management.



## HAZARD STANDARDS

- > Job Plans shall be developed for all recurring maintenance work including corrective work, preventative maintenance work and critical function tests.
- > Technical Instructions shall be provided where additional details associated with job plans or maintenance procedures are required.
- > A system for planning and scheduling and the management of maintenance work shall be implemented.
- > A processes and plan that identifies integrity and reliability management requirements based on the following shall be implemented.
- > Spares assessed with a risk level of 4 or greater shall be flagged as safety critical spares in the CAMS and a process for the management of those spares shall be implemented.
- > Employees and contractors shall only be directed or permitted to perform unsupervised maintenance tasks where they have the skills and experience or competency to perform such tasks.

### EHSMS11.10 Fire Risk Management

#### Purpose

*Processes need to be developed and maintained to ensure that fire and fire related risks in facilities and buildings are managed.*

#### Summary of Key Requirements

- > Each critical facility shall have a Fire Risk Management Plan commensurate with the nature of the facility.
- > All other facilities and buildings have documentation of the fire control and fire protection measures and emergency response procedures including compliance with regulatory requirements including regulations, national standards and codes of practice and Santos EHSMS and engineering standards.
- > Fire Risk Management Plans shall include or reference:
  - >> A listing of all hazardous materials within the boundaries of the plant under study, both permanent and temporary
  - >> A listing of known potential sources of ignition and their method of control
  - >> Identification of the basic fire hazards
  - >> Information on the fire prevention, detection and protection
  - >> Appropriate representative fire scenarios
  - >> Details of the statutory requirements
  - >> Arrangements for monitoring the performance of the plan and the condition of process plant and fire protection equipment

# HAZARD STANDARDS

- >> Emergency response training requirements
- >> Arrangements for liaison with external emergency response agencies and
- >> A fire risk management improvement action plan.
- >> Fire Risk Management plans shall be reviewed at least every five years and
- >> audited at least every three years.

## EHSMS11.11

### Decommissioning and Abandonment

#### Purpose

To ensure that EHS risks associated with the decommissioning and abandonment of plant, equipment and facilities are effectively managed.

#### Summary of Key Requirements

- > Prior to commencement of decommissioning or abandonment activities the scope of work for decommissioning or abandonment shall be developed and agreed with relevant stakeholders.
- > The following principles shall be considered in the development of the scope:
  - >> health and safety of future alternative uses of the area;
  - >> current environmental standards of the area;
  - >> cost effectiveness of remediation measures;
  - >> existing and future use of the area;
  - >> extent of decontamination and remediation of underground services;

- >> current and potential regulatory standards and legislation;
- >> monitoring system to assess effectiveness of decommissioning or abandonment; and
- >> contracts which are relevant to operating the site.
- > In relation to the safety of decommissioning of plant and equipment a management of change proposal shall be developed and submitted to the relevant Asset Manager for review and approval.
- > On completion of decommissioning, abandonment and remediation, an assessment of environmental and safety performance (including an assessment of any residual risk) shall be carried out by a competent person endorsed by the Manager EHS & S.
- > Where the operation of a pipeline is suspended (non flowing condition) for an extended period the ongoing suspension shall be subject to a risk assessment and annual review to determine if the pipeline should be abandoned.
- > Where a pipeline is to be abandoned, an abandonment plan, including an environmental rehabilitation plan shall be compiled, reviewed and approved.





# HAZARD STANDARDS

## EHSMS11.12 Operated by Others

### Purpose

*To detail the Santos requirements for stewarding the EHS performance of Joint Venture activities operated by others.*

### Summary of Key Requirements

- > The level of EHS stewardship applied to operators of Joint Venture activities shall be proportional to the significance of the EHS exposure.



*LNG tanker loading at Darwin LNG plant.*

- > For all Joint Venture Operations, the Santos Joint Venture Management Representative shall monitor the EHS performance of the Operator.
- > For Joint Venture Operations where the assessment of the EHS exposure has been determined to be “significant”, a 2 yearly demonstration shall be provided by the operator of their EHS system, their EHS risk profile and how they manage it, how they manage key process safety related issues and their emergency response preparedness.
- > EHS expectations shall be included in the JV Agreement.

## EHSMS12 Management of Change

### Purpose

*Processes are required to ensure that when changes are made that EHS risks and other impacts of changes are identified and appropriately managed.*

### Summary of Key Requirements

- > All changes within Santos shall be undertaken such that:
  - >> impacts of changes, including EHS risks, are identified and assessed with control measures appropriately
  - >> assigned, approved and complete as part of implementation
  - >> changes are reviewed, approved and communicated prior to implementation
  - >> implementation occurs as intended

# HAZARD STANDARDS

- >> changes are appropriately documented
- >> there is a consistent approach to the application of the management of change across Santos' business.
- > The Management of Change process shall include the following steps:
  - >> Development
  - >> Initiation & Documentation
  - >> Registration and Tracking
  - >> Risk Assessment & Nomination of Required Reviews
  - >> Endorsement
  - >> Technical/Specialist & Impact Reviews
  - >> Implementation Plan
  - >> Approval
  - >> Implementation
  - >> Completion Review
  - >> Closeout & Recording
- > When change needs to happen more quickly than might otherwise be anticipated, such as with sudden or unplanned change, then the change can proceed following an appropriate risk assessment and management. The retrospective application of this standard shall then be applied within 48 hours of making the change.
- > Key Performance Indicators (KPIs) shall be established to monitor the effectiveness and high-level performance of the Management of Change Standard and to drive continuous improvement. These KPIs shall be monitored on an annual basis and reported against annual targets as part of the Corporate EHS Improvement Plan.

## EHSMS 12.1

### Critical Drawings and Control System Change

#### Purpose

*To describe the requirement for the control and authorisation of changes to existing P&IDs and control systems.*

#### Summary of Key Requirements

- > This standard is subsidiary to the Management of Change Standard and the change process is managed in accordance with that outlined in EHMS12 Management of Change.
- > This standard applies to all changes to Critical Drawings including P&IDs and other Control System drawings e.g.:
  - >> Adjustment of PSV set pressure
  - >> Re-ranging and re-arrangement of instrumentation
  - >> Piping modifications or additions
  - >> P&ID re-drafting (for clean-up)
  - >> As-built drawing changes
  - >> Change of valve tag identification
  - >> Connection/disconnection of equipment to data recording systems
  - >> Changes to Hazardous Area Classifications
  - >> Control system logic changes
  - >> Additions or modifications to Underground Services
  - >> Change in a control valve size
  - >> Changes typically associated with tie-ins to existing process plant.



# HAZARD STANDARDS

## EHSMS 12.2 Operating and Maintenance Procedures

### Purpose

*To ensure there is a process to adequately address any risks associated with changes to operating and maintenance procedures.*



*Safety exercise simulating an offshore rig evacuation.*

### Summary of Key Requirements

- > This standard is subsidiary to the Management of Change Standard and the change process is managed in accordance with that outlined in EHMS12 Management of Change.
- > This standard applies to all changes to operating and maintenance procedures, for example:

- >> Emergency shutdown
- >> Abnormal operation
- >> Normal operation
- >> Temporary operations
- >> Maintenance preparation
- >> Operating philosophy
- >> Troubleshooting
- >> Optimisation.

## EHSMS 12.3 Disablement of Protective Devices (Bridging)

### Purpose

*To ensure the risks associated with temporarily disabling protective devices (bridging) are adequately managed such as the ongoing safety of personnel, environmental impact and the integrity of plant and equipment.*

### Summary of Key Requirements

- > This standard is subsidiary to the Management of Change Standard and the change process is managed in accordance with that outlined in EHMS12 Management of Change.
- > This standard applies to the disablement of protective devices which may involve the temporary overriding, bypassing or removal of a safety or control system to carry out abnormal operation, extended maintenance and testing, or construction and commissioning works.

# HAZARD STANDARDS

- > This standard does not apply to:-
  - >> Start up or Operational over rides as identified in Facilities Operating Procedures
  - >> Maintenance Overrides, including CFTs and TFTs, applied by software force, key switch or mechanical means of less than 4 hours applied under Work Permit to allow the testing or repair of equipment.

## EHSMS 12.4 Substitution of Materials and Equipment Components

### Purpose

*To ensure the risks associated with the substitution of materials or components in plant and equipment are adequately managed and the changes meet or exceed the performance criteria of the original plant and equipment.*

### Summary of Key Requirements

- > This standard is subsidiary to the Management of Change Standard and the change process is managed in accordance with that outlined in EHMS12 Management of Change.
- > This standard applies to changes when substituting alternative materials or components in the following situations:
  - >> Whenever an identical replacement for a process component cannot be sourced.

- >> To enable testing of alternative materials or components, either to overcome problems experienced with original items, or to achieve improved reliability, durability or operability, or other perceived benefits.
- >> To meet the needs of changed process or operating conditions.

## EHSMS 12.5 Acquisition and Divestment of Assets

### Purpose

*To ensure that EHS aspects of proposed acquisitions and divestments are fully understood before making a decision to acquire or divest land or assets being companies or other entities.*

### Summary of Key Requirements

- > An appropriate EHS, and where relevant process safety assessment shall form part of any proposal for acquisition or divestment of land, permit areas, operating plant, or any other asset in excess of \$A10 million or where the potential EHS or process safety risk level is assessed as two or higher to ensure that potential liabilities have been identified and addressed.
- > The EHS assessment analysis and recommendations should be included as part of the Development Committee and Board papers.



# HAZARD STANDARDS

## EHSMS12.6 Management of Personnel Change

### Purpose

*To identify and manage potential EHS risks associated with changes to organisation structure and personnel, and to ensure the adequate transfer of EHS knowledge during personnel change.*

### Summary of Key Requirements

- > An assessment shall be conducted to identify the EHS Critical positions within each department.
- > The Position Description (PD) shall note that the position is EHS critical and shall include the necessary skills criteria required for the successful performance of the assigned EHS responsibilities and accountabilities of that position.
- > Selection of personnel into EHS Critical Positions shall be subject to their ability to meet or achieve the skill, experience and competence criteria as detailed in the relevant position description, meeting relevant regulatory or licensing requirement and verification of credentials, appropriate security clearance and medical screening including alcohol and other drug testing.
- > The incumbent of an EHS Critical position shall ensure that their replacement during temporary coverage is equipped to manage EHS requirements of the position during the period of coverage.

- > A documented handover process shall be initiated by the incumbent of the EHS Critical position to ensure that all EHS requirements for the incoming employee are understood and effective

## EHSMS 13 Emergency Preparedness

### Purpose

*To ensure that relevant equipment and resources are available and personnel are able to effectively respond to any foreseeable emergencies so as to minimise any adverse impact on the safety or health of people or the environment.*

### Summary of Key Requirements

- > Document controlled Emergency Response Plans (ERPs) shall be developed and maintained for Santos operating sites premises and relevant functions to aid in the effective response to foreseeable emergency scenarios.
- > The relevant site/activity Significant Hazard Risk Register shall be used to assist with the validation of the scope of emergency scenarios covered in the ERP.
- > Emergency/Incident response plans shall be reviewed annually to validate the adequacy of scope (emergency scenarios) and currency/adequacy of content. In addition relevant plans shall be reviewed, where improvement opportunities have been identified by post emergency / incident exercise debriefs.



## HAZARD STANDARDS

- > A document controlled Santos Incident Management Plan (SIMP) shall be prepared, distributed and maintained by Manager EHS&S to provide additional support and resources in the event that an emergency is beyond the capabilities of a site.
- > Where a contractor will manage an emergency situation at a Santos asset the contractor shall provide an emergency response bridging document to ensure an effective and co-ordinated emergency response including when and how the SIMP shall be activated.
- > All operating sites, premises and relevant functions shall prepare and maintain an emergency operations centre (EOC) and identify an alternate should the EOC be affected by the emergency.
- > Emergency key contact lists shall be developed and regularly maintained.
- > At sites classified as a Major Hazard Facility, the ERP shall incorporate the relevant emergency regulatory requirements.
- > Personnel shall be competent in their roles defined in Emergency and Incident Response Plans
- > Emergency exercises shall be conducted regularly to test the effectiveness of plans, competency of personnel and resources.
- > Processing facilities shall maintain a system that enables timely identification of personnel who are in the facility and who are not accounted for following an emergency evacuation of the facility.

- > A risk management process shall be used to determine the type, quantity and location of emergency equipment required for an operational site.
- > A review as to the ongoing adequacy of emergency equipment shall be conducted at operational sites every five years.
- > Emergency equipment shall be readily accessible from the source of the hazard and have appropriate signage and lighting.
- > An emergency power supply shall be provided for critical equipment required in the event of an emergency and to instrumentation and control systems necessary for safe shut-down of plant.

### EHSMS 13.1

#### First-Aid and Medical Facilities

##### Purpose

*To define the requirements for first aid, the provision of first aid facilities and the availability of qualified first aid personnel to ensure effective treatment to employees, visitors and contractors.*

##### Summary of Key Requirements

- > All Santos workplaces shall have appropriate first aid facilities readily available for use which as a minimum shall meet relevant regulatory requirements.



## HAZARD STANDARDS

- > The scope of first aid facilities at a workplace shall be based on a risk assessment which shall consider:
  - >> nature of the work;
  - >> size and layout of the workplace;
  - >> location of the workplace;
  - >> number and distribution of workers.
- > Sufficient numbers of suitably trained first aid personnel shall be available to workers on all shifts consistent with the outcome of the risk assessment and relevant legislation.
- > Sufficient numbers of appropriately stocked and maintained first aid kits shall be provided at each workplace consistent with the findings from the risk assessment.
- > All Santos field vehicles shall be fitted with a first aid kit.
- > Where paracetamol is kept in first aid kits personnel who need to take such medication shall self dispense.

### EHSMS 14 Monitoring, Measurement and Reporting

#### Purpose

*Collection, analysis and reporting of EHS performance data is necessary to establish whether risks associated with Santos' operations are being managed, minimised and where reasonably practicable, eliminated.*

#### Summary of Key Requirements

- > EHS monitoring programs shall be established and maintained to regularly measure key aspects of Santos' activities that can have a significant EHS impact.
- > Monitoring programs shall include both direct monitoring of EHS impacts from business activity and monitoring of the EHS management system.
- > Personal health monitoring shall be conducted and records kept where appropriate (eg when identified by a risk assessment or when required by legislation).
- > EHS monitoring equipment shall be regularly calibrated and maintained to manufacturer's specifications and records retained for five years.
- > Each month, EHS data relating to key performance indicators shall be collected and collated for relevant functions/departments/work activity and consolidated for the whole Company.
- > To ensure appropriate stakeholders are adequately informed of relevant EHS performance a range of EHS reports shall be prepared including:
  - >> Board reports
  - >> annual Sustainability Report
  - >> management reports
  - >> industry (eg APPEA) reports
  - >> statutory reports
  - >> annual public report.
- > EHS data shall be analysed at least annually to identify issues and areas requiring improvement.
- > The Manager EHS&S shall ensure that EHS reports are readily accessible on 'The Well'.

# HAZARD STANDARDS

## EHSMS 15

### Incident and Non-Conformance Investigation, Corrective and Preventative Action

#### Purpose

*Reporting, investigation and management of corrective actions associated with incidents is required to identify the underlying system failures and implement appropriate corrective actions to prevent a recurrence.*

#### Summary of Key Requirements

- > Unwanted event including EHS and process safety incidents, hazards, near misses, property damage, non-conformance events and third party complaints shall be managed by using the Santos Incident Management System (IMS).
- > The normal sequence of events following an incident near miss shall be as follows:
  - >> immediate control of any hazards and impacts (eg injuries)
  - >> report the incident to line management
  - >> report the incident to authorities (where required)
  - >> notify other personnel using an IMS notification
  - >> conduct an appropriate investigation (basic or to identify root causes TapRoot investigation or equivalent shall be conducted)
  - >> assign recommended actions using IMS
  - >> ensure agreed actions are completed and update IMS
  - >> ensure the risk has been reduced to an acceptable level
  - >> where relevant update the site significant Hazard Risk Register

- >> share relevant learnings arising from the incident with others.
- >> key learning from process safety incidents/near misses should be added to relevant Plant Dossiers
- > Employees shall be trained in the use of IMS.
- > An annual assessment shall be conducted to determine the level of conformance with the close out of actions assigned in IMS
- > Incidents/near misses subject to a Tap root shall be reviewed by the relevant Management Committee to ensure the quality of process and that findings have been adequately addressed.

## EHSMS 15.1

### Injury Management

#### Purpose

*To ensure that there is an effective and equitable injury management system in place for employees who sustain a work related injury or illness.*

#### Summary of Key Requirements

- > Not all injured employees will be required to enter into a formalised rehabilitation program or rehabilitation and return to work plan. The majority of those injured at work will be restored to full health through normal medical services.
- > In the following situations, rehabilitation will be discussed and a rehabilitation



## HAZARD STANDARDS

- >> program or rehabilitation and return to work plan developed:
  - a) where an employee requests;
  - b) where a medical expert requests;
  - c) where there is any restriction preventing an employee from performing normal duties.
- > Rehabilitation programs and rehabilitation and return to work plans will, in general, seek to achieve the return to full employment of the employee as soon as practicable following a work-related injury or illness.
- > Should the employee or the supervisor have any issue at any stage of the Rehabilitation/Return to Work Plan, the Rehabilitation Officer is to be notified immediately and appropriate action will be taken.

### EHSMS 16 Management System Audit and Assessment

#### Purpose

*Audit and assessment ensures that EHSMS Standards have been effectively implemented and are being complied with and that the system meets legislative requirements and defined EHS objectives and targets.*

#### Summary of Key Requirements

- > Relevant Santos functions and sites shall participate in the EHS audit/assessment program which includes:
  - >> Assessments of EHSMS implementation.

- >>> An annual assessment shall be conducted at defined Santos sites and for selected departments to determine the implementation status of EHSMS Standards.
- >>> An assessment report shall be prepared and provided to each participating site/department and the responsible line manager.
- >>> The assessment reports shall be used when developing the following year's site/department EHS Process Safety Improvement Plan.
- >> Internal EHSMS audits.
  - >>> An internal EHS and Process Safety audit plan prioritised on risk shall be developed and administered by Corporate EHS&S to provide verification of conformance and effectiveness with the EHSMS Standards.
  - >>> Audits should be conducted by independent auditors.
- >> Statutory compliance audits.
- >> appropriate audits shall be conducted to determine the status of statutory compliance.
- >> EHSMS self-audits.
  - >>> Functions/Departments are encouraged to self audit their conformance with the EHSMS using a risk-based approach.
- >> EHSMS audits of contractors and non-operated joint ventures.
- >> Other specialised audits eg issue-specific audits.
  - >>> In the event of a serious incident, non-compliance or other valid reason an unscheduled audit may be initiated.

# HAZARD STANDARDS

- > All audits and assessments shall be scheduled, recorded and managed using the Santos Audit and Inspection Manager (AIM).
- > Appropriate personnel shall be trained in the use of AIM.
- > Audits shall be conducted in accordance of assessments with detailed guidelines.



*Offshore seismic acquisition, Carnarvon Basin.*

## EHSMS 17 Management Review

### Purpose

*Periodic reviews of the overall effectiveness of the EHSMS by senior management ensure continual improvement, suitability and effectiveness.*

### Summary of Key Requirements

- > Personnel shall advise the Manager EHS&S either directly or through their Supervisor, of any suggestions to improve the system. Feedback shall be provided to personnel making suggestions.
- > An informal review of the effectiveness of the EHSMS shall be conducted at Operations Leadership Committee or similar meetings.
- > A formal review of the EHSMS shall be conducted annually by an appropriate senior Management team and the results communicated to the .
- > The formal annual review shall be documented including observations, conclusions, recommendations, actions and follow-up requirements. An action register shall be used to manage the effective close-out of actions



# HAZARD STANDARDS

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# HEALTH AND SAFETY HAZARD STANDARDS

## HSMS 01 Spare

## HSMS 02 Land Transportation

### Purpose

*To manage the risks associated with land transportation activities.*

### Summary of Key Requirements

- > All personnel driving vehicles for or on behalf of Santos must hold an appropriate current drivers licence.
  - > Personnel who drive on field roads must have undergone training and hold a current competency certificate.
  - > Santos sites and contractors shall develop and maintain a journey management plan which shall include a search and rescue plan.
  - > When driving all state/territory road rules shall apply with maximum speeds of 110km/h on sealed roads and 80km/h on unsealed roads.
  - > Additional rules must be followed when driving on field roads such as not driving through dust clouds, fitment of dune poles, rollover protection, lights on when driving.
  - > Detailed controls shall be followed when changing wheels and tyres in particular when dealing with split rims.
  - > Vehicle recovery procedures shall be developed at sites.
- > Vehicles shall be maintained to manufacturer's specifications and pre-start and regular inspections shall be carried out.
  - > Detailed controls for heavy vehicles shall be followed such as log books, limitations on carrying liquids in non baffled tankers.
  - > Quad bikes to only be used in limited and approved situations
  - > Vehicle incidents must be reported and undergo appropriate investigation



# HEALTH AND SAFETY HAZARD STANDARDS

## HSHS 03 Air Transportation

### Purpose

*To manage the risks associated with air transportation activities.*

### Summary of Key Requirements

- > Aviation activities shall be conducted with aircraft operators and aircraft types to standards as detailed in HSHS03.
- > In situations where air travel is required where operators cannot meet standards than a risk assessment is required which must be approved by the relevant Vice President.
- > Specialist aviation advisers shall be used in the selection and ongoing auditing of aircraft operators.
- > Santos personnel shall not travel in non-Santos chartered flights unless they meet defined requirements.
- > Santos personnel can travel in single engine planes provided they meet defined requirements.
- > Aeroplanes with nine or less passenger seats may be flown with one pilot provided they meet defined requirements
- > Limitations apply to the number and type of staff travelling in the same plane.
- > Hazardous substances can only be carried in accordance with IATA regulations
- > Fatigue must be considered in driving to or from airports



*National Jet at Ballera.*

- > International air travel shall be carried out in accordance with defined requirements including immunisations, security arrangements and emergency evacuation.
- > Personnel shall complete HUET training before flying to offshore facilities.
- > Suitable ground support facilities, services and procedures as defined shall be provided to ensure the safety of personnel.
- > Suitable facilities, services and procedures as defined shall be provided to ensure the safety of personnel where air charters are used to support offshore operations.

# HEALTH AND SAFETY HAZARD STANDARDS

## HSHS 04 Health and Wellbeing

### Purpose

*To create an environment where personnel are motivated to maintain a healthy lifestyle and to manage the risks associated with personnel who are not fit for work.*

### Summary of Key Requirements

- > Personnel are responsible for maintaining their fitness for work.
- > Education and awareness programs shall be provided to enable personnel to understand and manage their own health and fitness for work.
- > Employees shall be provided with access to fitness assessments and fitness programs.
- > An Employee Assistance Program shall be provided to enable employees access to professional assistance or treatment to maintain or recover their fitness for work.
- > Health assessments shall be provided to encourage employees to achieve or maintain a fit and healthy lifestyle.
- > Contractors are responsible for ensuring they have programs in place to maintain the health and fitness for work of their employees.
- > Drug and alcohol testing shall be conducted to monitor the effectiveness of the proactive fitness for work measures.
- > Employees who return a positive drug or alcohol test shall in general be supported in modifying their behaviour with the aim of returning them to their job.
- > Santos has a zero tolerance to the sale, possession or use of illegal drugs on Santos premises.
- > Personnel shall advise their Supervisor or Medic of any medication being used which may affect their safety or performance at work.
- > At sites where alcohol is available procedures shall be developed to encourage responsible consumption.
- > Protocols must be followed at authorised functions where alcohol is consumed.
- > All personnel shall be subject to random, pre-employment, for cause and post incident alcohol and drug testing.
- > Disciplinary action shall apply to personnel who return a confirmed positive alcohol or drug test.
- > Case Management Plans shall be developed for those seeking assistance in returning to work after being found unfit for work.
- > A drug and alcohol review committee shall monitor the effectiveness of the testing program
- > A comprehensive fatigue management program shall be developed based on employer and employee responsibilities.
- > Where food is provided at Santos sites a range of healthy food options shall be provided.
- > Santos shall support personnel who wish to quit smoking.



# HEALTH AND SAFETY HAZARD STANDARDS

## HSHS 05 Working in Hot Environments

### Purpose

To manage the risks associated with personnel working in hot environments.

### Summary of Key Requirements

- > In hot environments the risk of heat stress shall be considered when conducting Stepback and when developing JHA's and operating procedures.
- > Heat risk control measures shall include heat acclimatisation, provision of adequate cool drinking water and other control measures as deemed necessary.
- > Heat risk control measures shall be included in JHA's and operating procedures.
- > The risk of heat stress shall be considered when planning for confined space entry and controls shall be included in the risk assessment and appropriate controls listed on the work permit.
- > Personnel shall undergo competency based heat stress awareness training prior to conducting work in field environments.
- > Additional awareness training shall be provided to personnel during high risk periods of the year.
- > Records of heat awareness training shall be kept and made available when requested.

## HSHS 06 Electrical Safety

### Purpose

To manage the risks associated with personnel working on or in the vicinity of electrical equipment at Santos operated facilities.

### Summary of Key Requirements

- > Personnel shall be aware relevant standards, regulations, procedures, hazards and safety requirements prior to working on or in the immediate vicinity of electrical systems.
- > A Hazardous Area Management System (HAMS) shall be developed for Santos facilities to minimise the risk of electrical and related work from igniting potentially explosive atmospheres.
- > Earthing, static and lightning protection systems shall be installed, tested and inspected in compliance with relevant standards.
- > High voltage regulations shall be developed to manage the risks associated with work on high voltage equipment.
- > Work on electrical equipment should be carried out after it has been de-energised and isolated, where this is not possible such work shall only be undertaken by personnel accredited in live techniques and authorised by the site electrical Supervisor following a risk assessment.
- > Work in the vicinity on high voltage generation equipment shall only be carried out by personnel competent in high voltage equipment and working in accordance with the high voltage regulations



# HEALTH AND SAFETY HAZARD STANDARDS

- > Temporary electrical equipment shall be installed and maintained in full compliance with all relevant regulations and standards.
- > A site electrical register of all portable electrical equipment requiring inspection and testing shall be maintained at each site and following testing of electrical equipment a compliance tag shall be fitted.
- > Personnel shall be aware relevant standards, regulations, procedures, hazards and safety requirements prior to working on or in the immediate vicinity of electrical systems.
- > Electrical equipment without a compliance tag shall be withdrawn from service.
- > All mains powered portable electrical equipment shall when connected by a socket outlet be protected by a residual current device (RCD).
- > All electrical work on a Santos site shall be carried out by appropriately competent, qualified personnel.
- > All relevant electrical data shall be managed using the Technical Information Management System (TIMS).

## HSHS 07 Working at Heights

### Purpose

*To manage the risks associated with personnel when working at heights and the risks from objects falling.*

### Summary of Key Requirements

- > Where work is carried out where a person could fall 2 or more metres then appropriate controls shall be used to prevent people or objects from falling.
- > Prior to working at heights a JHA may be required.
- > Personnel working at heights shall be competent in the use of the fall prevention systems and equipment.
- > Specified requirements shall be followed to manage the risk of falling.
- > Specified requirements shall be followed to manage the risk of objects falling.
- > Specified requirements shall be followed when conducting routine and non routine work on tanks, towers and vessels.
- > Work conducted inside vessels shall be treated as non-routine and a JHA shall be conducted.
- > Work involving pipe racks as platforms or access ways shall be treated as non-routine, a JHA shall be conducted and specified requirements shall be followed.
- > Work conducted on roofs shall be treated as non-routine, a JHA shall be conducted and specified requirements shall be followed.





# HEALTH AND SAFETY HAZARD STANDARDS

- > Specified requirements shall be followed for work on fragile roofs.
- > Fixed scaffold shall be used when deemed appropriate and longer term work is anticipated.
- > Scaffolders shall hold the relevant certificate of competency for the class of scaffold being used.
- > Scaffolding shall be conducted in compliance with specified requirements including erection, usage, inspections and dismantling.
- > Ladders shall be inspected, used and maintained in accordance with specified requirements.
- > Elevated work platforms shall only be operated by personnel with a relevant certificate of competency.
- > Elevated work platforms shall be inspected, used and maintained in accordance with specified
- > Workboxes shall be used and maintained in accordance with specified requirements.
- > Fall arrest and fall prevention systems shall be used and maintained in accordance with specified requirements.

## HSHS 08

### Chemical Management and Dangerous Goods

#### Purpose

*To manage the risks associated with the handling, use and storage of chemicals.*

#### Summary of Key Requirements

- > Santos as a producer of chemicals shall prepare, maintain and distribute material substance data sheets (MSDS) for those substances which are assessed as a hazardous substance or dangerous good.
- > Santos as a producer of hazardous substances and dangerous goods shall ensure that they are appropriately contained, packaged and labelled as per regulatory requirements.
- > Prior to the purchase of a new hazardous substance or dangerous good a risk assessment shall be conducted (utilising the MSDS) and documented by the potential user and this shall be signed by their Manager and then forwarded to Manager EHS&S for review and approval.
- > On approval of a new hazardous substance or dangerous good the MSDS shall be added to Chemwatch and the respective site manifest, the MSDS and risk assessment added to the respective site register and relevant SOP's shall be updated with the required controls.
- > A risk assessment shall be conducted on the use of all hazardous substances and dangerous goods and these shall be recorded in the respective site chemical registers and relevant SOP's shall be updated with the required controls.

## HEALTH AND SAFETY HAZARD STANDARDS

- > A Chemical Management Co-ordinator shall be appointed for each site to fulfil the defined responsibilities.
  - > Copies of hazardous substance or dangerous goods MSDS and the risk assessments shall be readily available to employees
  - > A site chemical register shall be developed and maintained which shall include a hard copy of the MSDS for all chemicals on site, the identification of hazardous substances and dangerous goods and a hard copy of all associated risk assessments.
  - > All employees who handle or use chemical substances shall receive training in understanding and usage of material safety data sheets.
  - > All employees who may handle or use hazardous substances or dangerous goods shall receive relevant training in the hazards and controls.
  - > Contractors shall supply MSDS and risk assessments for all hazardous substances or dangerous goods to the respective site chemical co-ordinator prior to bringing the substances on site.
  - > Health surveillance and/or bio-monitoring shall be conducted for personnel exposed to hazardous substances that may cause serious health effects.
  - > Records of hazardous substances with their risk assessed as significant and associated monitoring data shall be stored for forty years.
  - > Dangerous goods shall be stored and placarded as per detailed and relevant regulatory requirements.
- > Dangerous goods shall be transported and stored in a manner that prevents the interaction of incompatible goods.
  - > Controls shall be developed to contain and clean up any spillage of a dangerous substance.
  - > All plant and equipment that may be contaminated with a hazardous substance or dangerous good shall be cleaned as far as practicable before it is sent off site or disposed of.
  - > A manifest of dangerous goods shall be developed and maintained at each site as per relevant regulatory requirements.



# HEALTH AND SAFETY HAZARD STANDARDS

## HSHS 08.1 Asbestos

### Purpose

*To manage the risks associated with occupational exposure to asbestos.*

### Summary of Key Requirements

- > The Production/Process Manager shall ensure that a systematic assessment is conducted to identify the presence or otherwise of asbestos materials at sites under their control.
- > At sites where asbestos has been a person shall be appointed to ensure that the requirements of this standard, relative to the site, are met.
- > An asbestos file shall be maintained at sites where asbestos has been identified.
- > The Asbestos Register shall be readily available to personnel.
- > All asbestos materials shall be suitably labelled.
- > Asbestos material detailed in Asbestos Registers shall be inspected annually.
- > Personnel working with or using items containing asbestos shall be provided with suitable training.
- > The removal and disposal of asbestos materials shall only be conducted by a suitably approved licensed contractor.
- > New plant and equipment shall not contain asbestos based materials.



*Asbestos in drums awaiting disposal.*

## HSHS 08.2 Synthetic Mineral Fibres

### Purpose

*To manage the risks associated with occupational exposure to asbestos.*

### Summary of Key Requirements

- > The use of synthetic mineral fibres shall be minimised.
- > Work involving SMF materials shall be in accordance with the NOHSC Code of Practice for the Safe use of Synthetic Mineral Fibres or equivalent.

# HEALTH AND SAFETY HAZARD STANDARDS

- > With new products, modifications or installations requiring the use of SMF preference shall be given to glass, mineral or rockwool over ceramic fibre.
- > All work associated with SMF must be subject to workplace hazardous substance's risk assessments.
- > Personnel working with SMF shall, prior to work being conducted, be provided with suitable training.
- > Where monitoring of SMF exposure is conducted records of the findings shall be kept.

## HSHS 08.3 Benzene

### Purpose

*To manage the risks associated with occupational exposure to benzene.*

### Summary of Key Requirements

- > Benzene risk status shall be determined at sites by the use of atmospheric monitoring in locations where benzene vapour could potentially exist.
- > At sites where a benzene risk has been established the Plant Manager / Superintendent shall maintain a documented assessment of their site.
- > At sites where a Benzene risk has been established the Plant Manager / Superintendent shall maintain a plan to manage benzene exposure, with the objective of having no exposure

levels above the current NOHSC occupational atmospheric exposure standard or equivalent for benzene.

- > A benzene monitoring program shall be developed and maintained at locations where a benzene risk has been identified.
- > An area where benzene risk status has been found shall be demarcated by appropriate warning signs
- > Records of personal and area monitoring and biological monitoring shall be kept.
- > All personnel who may be exposed to benzene shall receive basic training at the task/job (level 3) induction or job transfer in the relevant occupational hygiene principles, applicable exposure limits and the relevant control measures.

## HSHS 08.4 Mercury

### Purpose

*To manage the risks associated with occupational exposure to mercury.*

### Summary of Key Requirements

- > Testing shall be conducted on all new wells to determine the presence or otherwise of mercury.
- > The site mercury risk level shall be determined by monitoring and assessment.







# HEALTH AND SAFETY HAZARD STANDARDS

- > Each Site with a mercury risk shall have a current Mercury Management Plan to manage mercury exposure
- > A risk assessment shall be conducted for each operation, maintenance or inspection activity where personnel have the potential to be exposed to mercury.
- > The preventative and mitigation controls developed from the risk assessment shall be integrated into relevant standard operating procedures and/or relevant JHA's.
- > A mercury monitoring program shall be developed and maintained at locations where mercury contamination has been confirmed
- > Special precautions shall be taken when conducting any type of heating operation>
- > Areas where mercury has been found shall be demarcated by signs.
- > Special precautions shall be taken when conducting work in confined spaces where mercury could be present
- > Pregnant or breast feeding employee shall not work in a mercury risk job.
- > A bio-monitoring program shall be established for personnel routinely exposed to mercury or for personnel potentially exposed.
- > Personnel who may be exposed to mercury shall receive basic training in relevant occupational hygiene principles, applicable exposure limits and control measures at the Level 2 site induction and refresher training as necessary.

## HSHS 08.5 Vanadium

### Purpose

*To manage the risks associated with occupational exposure to vanadium.*

### Summary of Key Requirements

- > As vanadium is classed as a hazardous substance a risk assessment shall be conducted and recorded for all work activities where personnel may be exposed to the substance.
- > The risk control measures identified by the risk assessments shall be incorporated into relevant Standing Operating Procedures (SOP's) and Job Hazard Analyses (JHA's).
- > Personnel who may be exposed to vanadium shall receive training at the task/job (level 3) induction or job transfer in the relevant occupational hygiene principles, applicable exposure limits and the relevant control measures.

## HSHS 08.6 Nitrogen

### Purpose

*To manage the risks associated with occupational exposure to nitrogen.*

### Summary of Key Requirements

- > A risk assessment shall be conducted for each operation, maintenance or inspection activity where personnel have the potential to be exposed to nitrogen.

# HEALTH AND SAFETY HAZARD STANDARDS

- > Risk controls identified by the risk assessment shall be incorporated into relevant standard operating procedures or JHA's.
- > Entry into an oxygen deficient or inert atmosphere shall not be permitted unless written approval has been obtained.
- > Personnel shall not work in an atmosphere where the oxygen level is below 19.5% unless they are wearing and are competent in the use of appropriate air supplied breathing apparatus.
- > A restricted area shall be established around areas where nitrogen is being used and atmospheric testing shall be performed to identify the extent and boundaries of the restricted area.
- > Permanent and or temporary nitrogen connections to process equipment shall be disconnected or blinded when not in use.
- > Warning signs shall be placed at all access points to areas where nitrogen is used.
- > Liquid nitrogen or cold nitrogen is heavier than air and so may present additional dangers such as asphyxiation.
- > Personnel should protect themselves from accidental contact with liquid nitrogen, and where nitrogen is vaporising, and where vaporising equipment is in use.
- > All personnel who may be exposed to nitrogen shall receive training at induction or job transfer in the hazards of nitrogen

## HSMS 08.7 Hydrogen Sulphide

### Purpose

*To manage the risks associated with occupational exposure to hydrogen sulphide.*

### Summary of Key Requirements

- > A risk assessment shall be conducted and recorded for all work activities where personnel may be exposed to hydrogen sulphide.
- > The risk assessment shall consider both health and safety hazards due to the toxic and flammable characteristics of hydrogen sulphide.
- > The risk control measures identified by risk assessment shall be incorporated into relevant Standard Operating Procedures (SOP's) and Job Hazard Analyses (JHA's).
- > Hydrogen sulphide is also produced by the anaerobic decay of organic matter such as sewage or oil and since it is heavier than air can reach high concentrations in poorly ventilated spaces, depressions and wells – risk assessments shall consider these issues.
- > Where there is the potential for H<sub>2</sub>S to be present where work is to be conducted air monitoring shall be conducted prior to the commencement of the work.



## HEALTH AND SAFETY HAZARD STANDARDS

- > Where there is the potential for exposure and respiratory protection is not in use, personal H2S warning devices shall be worn or the atmosphere shall be monitored by competent personnel.
- > All personnel who may be exposed to hydrogen sulphide shall receive basic training at the task/job induction or job transfer in the relevant occupational hygiene principles, applicable exposure limits and the relevant control measures.

### HSHS 09 Radiation

#### Purpose

*To minimise the risks associated with the handling, use and storage of radioactive substances or use of irradiating equipment.*

#### Summary of Key Requirements

- > The use or storage of radioactive substances on Santos sites shall be carried out in accordance with applicable regulations.
- > Where contractors use radioactive substances Santos shall ensure that the contractors are in compliance with applicable regulations.
- > Santos shall appoint a Radiation Safety Officer (RSO) to provide sites with guidance on matters in relation to radioactive substances.

- > At sites where Santos has radioactive substances or where contractors regularly use radioactive substances a Site Radiation Safety officer shall be appointed.
- > All new uses of radioactive substances shall be assessed and subject to a documented risk assessment which shall be approved by the Santos RSO and the respective site manager.
- > Radioactive substances shall stored, used, handled and transported in accordance with applicable regulations.
- > Radioactive substances shall be stored in a locked steel container with suitable radiation warning placards and emergency contact numbers.
- > Radioactive substances shall be transported in a lockable steel restraint container with radiation warning placards fitted to the vehicle.
- > Radiation waste/disposal procedures, in accordance with applicable regulations, shall be included in the Radiation Safety Manual.
- > A radiation emergency response plan shall be included in the Radiation Safety Manual.

# HEALTH AND SAFETY HAZARD STANDARDS

## HSHS 10 Food Safety

### Purpose

*To minimise the risk of detrimental health effects from food supplied to personnel by Santos.*

### Summary of Key Requirements

- > Remote site catering operations and remote site contractor catering operations shall be conducted in accordance with respective food safety plans based on a Hazard Analysis and Critical Control Points (HACCP) process.
- > At remote sites where Santos provides the catering the Camp Manager is responsible for meeting the requirements of the food safety plan.
- > At remote sites where a contractor provides the catering the Contractor's senior site representative is responsible for meeting the requirements of the food safety plan.
- > Office catering shall be conducted in accordance with defined requirements.

## HSHS 11 Manual Handling and Ergonomics

### Purpose

*To minimise the risk of injury associated with manual handling tasks and poor ergonomics.*

### Summary of Key Requirements

- > Manual handling hazards shall be considered as part of the design of new or modified plant and equipment.
- > Manual handling hazards shall be considered as part of the development of standard operating procedures and daily work planning processes such as JHA and Stepback.
- > A manual handling task assessment shall be conducted where a SOP or JHA does not adequately manage the risk of manual handling.
- > An ergonomic risk assessment shall be conducted when an employee relocates to a new work station or where concerns or problems arise for the layout of an existing workstation.
- > Employees shall receive relevant training in manual handling and ergonomics.
- > Contractors shall establish comparable risk control measures for manual handling and ergonomics related hazards.



# HEALTH AND SAFETY HAZARD STANDARDS

## HSHS 12 Occupational Noise

### Purpose

*To minimise the risk of noise induced hearing loss associated with exposure to excessive occupational noise.*

### Summary of Key Requirements

- > Controls shall be effectively implemented to ensure personnel are not exposed to noise exceeding statutory limits.
- > An assessment of noise exposure shall be conducted during the design of or modification to plant, prior to purchase of new equipment and at existing facilities where levels may be excessive.
- > Results of noise assessments shall be available to employees and records shall be kept for 30 years.
- > Where a noise assessment shows that personnel will be exposed to excessive noise a risk assessment shall be conducted and controls identified to ensure that personnel are exposed to levels at or below statutory levels.
- > Hearing protection devices (HPD's) shall be supplied and used where higher order risk control measures are not available.
- > Signage shall be erected to identify areas of excessive noise where the wearing of HPD's is required.
- > Training shall be provided to personnel who may be exposed to excessive occupational noise.

- > Audiometric testing shall be provided to employees who may be exposed to excessive occupational noise.
- > Results of audiometric testing shall be provided to employees and aggregated results shall be reviewed to assess the adequacy of existing control measures.



*Hearing protection in use.*



# HEALTH AND SAFETY HAZARD STANDARDS

## HSHS 13

### Working Alone in Remote Locations

#### Purpose

*To minimise the risk to personnel when working alone in remote locations or when working lone in areas for extended periods of time where a significant hazard exists.*

#### Summary of Key Requirements

- > Where lone or isolated work is required a documented risk assessment shall be conducted to identify the hazards and controls required to manage the risk.
- > The results of the risk shall form the basis of a JHA or for routine tasks a standard operating procedure.
- > An isolated worker shall have ready access to first aid equipment.
- > Monitoring and communication protocols shall be included in the risk assessment which shall include defined requirements and redundancy where communication is reliant on a radio or phone fixed in a vehicle.
- > Where isolated work is required a search and rescue plan shall be developed, relevant personnel trained in the requirements of the plan and copies of the plan to be kept in vehicles used by isolated workers.

## HSHS 14

### Legionella

#### Purpose

*To minimise the risk of personnel contracting Legionnaires' disease.*

#### Summary of Key Requirements

- > Each site shall identify and document the presence or otherwise of cooling tower systems.
- > Where present a documented risk assessment shall be conducted, including specific assessments of all risk factors, for each cooling tower system on the site.
- > A documented risk management plan shall be developed and implemented for each cooling tower system based on the risk assessment.
- > The risk management plans shall include inspection, maintenance and audit programs and the controlled copy kept shall be kept in the relevant Plant Dossier.
- > Should there be a high Heterotrophic Colony Count result or if Legionella is detected key stakeholders shall be advised as soon as practicable of the result and actions that will be taken.
- > New cooling towers shall be constructed and installed to meet relevant regulatory/community standards (in Australia AS/NZS3666).



# ENVIRONMENT HAZARD STANDARDS

## HSHS 15 Personnel Security

### Purpose

*To manage the security of personnel to ensure their safety and for the protection of assets.*

### Summary of Key Requirements

- > Each facility shall undergo a security risk assessment with consideration of defined scenarios every two years.
- > A site security manual shall be prepared for each defined critical facility.
- > Basic defined safeguards shall be included in site security manuals.
- > Defined security considerations shall be included in the design process for operational facilities.
- > Security breaches, concerns and incidents shall be recorded in IMS.

## HSHS 16 Lifting Equipment and Operations

### Purpose

*To ensure the safety of personnel during lifting operations.*

### Summary of Key Requirements

- > The management of lifting operations, including planning, siting, erection, dismantling, operation, maintenance, inspection and repair of cranes and other lifting equipment, registration of plant, certification of equipment users and operators shall be in accordance with the requirements of relative regulations & applicable standards.
- > Offshore lifting equipment specifications and activities shall be carried out in accordance with specific requirements due to dynamic loading requiring increased safety factors.
- > Operators of lifting equipment and riggers shall have relevant certificates of competency
- > A site register of lifting related certificates of competency shall be maintained.
- > A system shall be in place to manage defined aspects of lifting operations.
- > Contractors conducting lifting operations shall meet the requirements of this standard.
- > An assessment shall be conducted by competent personnel prior to the procurement, hire use of or modified of lifting equipment to ensure fitness for purpose and compliance with relevant regulatory requirements.

# ENVIRONMENT HAZARD STANDARDS

- > An inspection shall be conducted for compliance with specification and relevant certification prior to the acceptance of lifting equipment.
- > Details of all lifting equipment shall be entered into a site lifting equipment register.
- > Lifting equipment shall be marked with a unique ID and with its safe working load.
- > An inspection, against defined criteria, shall be conducted prior to the use of lifting equipment.
- > A preventative maintenance program shall be developed for lifting equipment.
- > Each site shall develop a formal inspection and testing program for lifting equipment.
- > Each piece of lifting equipment shall have its own inspection check sheet and inspections and tests shall be conducted by competent personnel.
- > All lifting operations shall be classified based on risk and defined criteria.
- > A detailed lift plan shall be developed for all heavy and complex lifts.
- > Fork lifts shall be operated in accordance with relevant regulatory and specified requirements.

## HSMS 17 Personal Protective Equipment

### Purpose

*To minimise the risk of injury or illness by defining requirements for the selection, maintenance and management of personal protective equipment (PPE).*

### Summary of Key Requirements

- > PPE shall be used when other control measures are not reasonably practicable to apply.
- > PPE shall meet regulatory and Australian or equivalent standards.



*Hard hat, safety glasses and hearing and sun protection in use.*



## HAZARD STANDARDS

- > Specified minimum PPE shall be worn at Santos field sites.
- > Contractors shall provide their own PPE in accordance with the requirements of this standard.
- > Employees with a current optical prescription shall be supplied with safety glasses made to their optical requirements.
- > Where hearing protection is required a Santos safety adviser shall identify the options to be worn.
- > Where respiratory protection is required a Santos safety adviser shall identify the options to be worn.
- > Where escape or self contained respiratory protection is required personnel shall undergo appropriate training prior to wearing such equipment.
- > Appropriate PPE shall be identified when conducting a Job Hazard Analysis and shall be detailed in standard operating procedures.
- > Areas where PPE is mandatory shall be clearly signposted.
- > Personnel required to use PPE shall be provided with training in its usage, maintenance and storage.
- > Each site shall maintain a maintenance program for PPE.

### HSHS 18 Entry to Confined Space

#### Purpose

*To ensure the health and safety of personnel required to enter a confined space.*

#### Summary of Key Requirements

- > Work in confined space shall be minimised by, where possible, eliminating the need for such work during the design of new plant and equipment.
- > A confined space risk assessment including emergency response requirements shall be completed by a competent person prior to the issuing of a confined space work permit.
- > The risk of heat stress shall be considered in the risk assessment and special controls adopted where required.
- > Atmospheric testing for oxygen and flammable gas shall be carried out prior to and during confined space work.
- > Personnel shall complete defined criteria to obtain a Santos Confined Space/Stand-by Person card.
- > A stand-by person shall be provided to observe confined space work when defined criteria are met.
- > Personnel working in confined spaces shall have completed a nationally accredited confined space course and hold a Santos Confined Space/Stand-by Person card.

# HAZARD STANDARDS

## HSHS 19 Excavations

### Purpose

*To ensure the safety of personnel involved in the construction or working near the vicinity of excavations.*

### Summary of Key Requirements

- > A risk assessment, including addressing defined criteria, shall be completed prior to trenching or excavation activities.
- > A competent person shall be appointed to manage excavation work.
- > Site specific instructions shall be developed, incorporating defined requirements, to manage excavation activities including locating existing services, daily integrity inspections, access and egress from excavations, barricading and requirements for entry to excavations.
- > Where mobile equipment is used in close proximity to an excavation and observer shall be used to monitor for signs of instability.
- > Petrol or diesel powered equipment shall be located outside and downwind of an excavation.
- > Additional defined requirements shall be met where excavations exceed 1.5 metres in depth.
- > Trenching operations shall cease during the delivery of fuel, gas or chemicals within 20 metres of an excavation.
- > Work shall cease and defined criteria followed in the event that contamination is located during trenching activities.







# ENVIRONMENT HAZARD STANDARDS

## EHS 01 Land Disturbance

### Purpose

*To detail the requirements for planning and conducting operations in a way which avoids or minimises disturbances to land and allows affected areas to be restored within reasonable time frames.*

### Summary of Key Requirements

- > Prior to any new activity which will result in land disturbance an environmental impact assessment shall be completed, unless there is already an approved assessment for this activity and land system. Many activities are covered by licences and therefore subject to specified regulatory conditions.
- > Land disturbances shall be carried out in a manner that minimises environmental impact.
- > Land disturbance shall be undertaken in accordance with the relevant environmental procedures.
- > All nominated land disturbances shall be reported and recorded on the appropriate disturbance inspection form.
- > Rehabilitation should occur within agreed timeframes, as soon as practicable following completion of activities.
- > Fences should be designed and installed to be stock proof and in compliance with the Santos stock-proof fencing standard.

## EHS 02 Underground Storage Tanks and Bunds

### Purpose

*To define the requirements for underground storage tanks (USTs) and secondary containment of substances handled and stored. To minimise the potential for spillage or leakage of chemicals, hydrocarbons or wastewater that could cause significant environmental harm.*

### Summary of Key Requirements

- > All activities and actions carried out by employees and contractors shall be conducted in a manner that minimises the environmental impact of construction, operation and decommissioning/rehabilitating USTs and bunds.
- > Planning, design and construction of new USTs and bunds shall be undertaken in accordance with the requirements listed in this standard and in accordance with EHSMS12 Management of Change. Principles for design of USTs and bunds should be established as part of the initial project hazard study.
- > The relevant Project Manager shall ensure that new USTs and bunds are included in the relevant site significant hazard risk register (SHRR). The Project Manager shall ensure that new USTs and bunds are referenced in the relevant plant dossier.
- > Where USTs are essential and environmentally hazardous substances are involved the Project Manager shall ensure that they are protected from corrosion. A Corrosion Engineer shall be consulted when determining corrosion protection requirements.

## ENVIRONMENT HAZARD STANDARDS

- > Stormwater systems for new USTs and bunds shall be designed in accordance with the requirements of this standard, EHSMS12 Management of Change and relevant Santos Engineering design standards and shall ensure that the potential for pollution from accidental or intentional upsets to the stormwater or trade waste systems is minimised.
  - > The relevant site superintendent shall ensure that operating and maintenance procedures are developed and available for: draining of stormwater from USTs and bunds; emergency collection / clean up of hazardous area spills into USTs and bunds; and inspection, testing and maintenance of system integrity and corrosion protection systems.
  - > The relevant activity or asset manager shall ensure that bunds are used in accordance with the requirements outlined in this standard.
  - > The relevant site superintendent shall ensure that existing USTs and bunds are included in the SHRR. The relevant activity or asset manager shall ensure existing USTs or bunds shall also be referenced in the plant dossier.
  - > If it is determined that permeable bunds will be retained, a risk assessment shall be undertaken to determine the environmental risk associated with continuing to use permeable bunds (refer to EHSMS09 Hazard Identification, Risk Assessment and Control). Acceptance of this risk shall be formally signed off by the relevant activity or asset manager.
- > The relevant site superintendent shall ensure that the integrity of these systems are tested and a risk assessment undertaken to assess whether failure could lead to significant environmental harm. Improvements to an UST or bund shall be included in a sites' EHS Improvement Plan if existing installations do not comply with current design and operating standards; or the inherent risk level has been found to be 2 or greater
  - > Inspection of drip trays shall be carried out at regular intervals. Levels in drip trays shall be maintained at their minimum, to remove the possibility of overflow during wash down and rain periods.
  - > For sites with minor storage, e.g. less than 1000L in total, it is generally satisfactory to provide alternatives to a bund.
  - > When the bund needs to be emptied it must be pumped or baled out and disposed of in a way that does not cause environmental harm. After rainfall, all bunds shall be emptied as soon as possible to maintain full capacity. Treatment and disposal of any bund water, including spilled process liquids, stormwater, wash water and fire water, should be determined on a site-specific basis, in consultation with the Chief Environmental and Cultural Heritage Adviser.
  - > If soil within a bund has become contaminated by a spill, the relevant activity or asset manager shall ensure that a contaminated site review and/or contaminated site risk assessment is undertaken.





## ENVIRONMENT HAZARD STANDARDS

- > The Manager Maintenance shall ensure that maintenance procedures are prepared and available for the inspection, testing and maintenance of bund integrity.
- > All bunds, tanks and pipework shall be included in operation checklists and should be inspected regularly for signs of damage. To ensure the bund retains its integrity, any defects in the bund wall or lining should be repaired promptly using the appropriate technique. Damage to the tank or pipe work should be dealt with immediately.
- > Incidents, hazards and near misses involving tank overflows and high-level alarms, vegetation on bund walls, bund liners exposed, bund walls eroded or leaks or spills inside and outside bunds shall be reported to the IMS:
- > The relevant activity or asset manager shall ensure that response procedures for leaks or spills of environmentally hazardous substances from USTs and bunds are included in the relevant site emergency response plans.
- > The relevant Project Manager shall ensure that abandonment and rehabilitation of USTs and bunds is undertaken in accordance with EHSMS11.11 Decommissioning and Abandonment.
- > The Project Manager shall ensure that the Chief Environmental and Cultural Heritage Adviser (or nominee) is consulted prior to undertaking site rehabilitation and has final review, approval and sign off that rehabilitation meets environmental requirements.

### EHS 03

#### Produced Water Management

##### Purpose

*To define the requirements for minimising environmental impacts associated with produced water (PW) produced during the extraction, production or processing of oil and gas.*

##### Summary of Key Requirements

- > All new PW management/disposal facilities require internal and regulatory approval prior to operation. Changes to existing facilities (including but not limited to significant changes to flowrate, operating conditions, monitoring programs or new equipment) also require regulatory approval.
- > During the planning phase, prior to undertaking any design of a PW management/disposal facility (new or modifications to existing), an assessment is required of the options for PW management/disposal.
- > An initial scout of the proposed site for a PW management/disposal facility is required during the planning phase to assess environmental impacts.
- > A PW Management Appraisal & Approval Form is required to be completed and approved prior to construction of any PW management/disposal facility. The relevant Environmental Adviser shall review the form, prior to endorsement by the Chief Environmental and Cultural Heritage Adviser. New or modifications to existing evaporation pond facilities also require approval by the General Manager – Production Operations.

## ENVIRONMENT HAZARD STANDARDS



*One of the freeform evaporation ponds at Limestone Creek satellite in the Cooper Basin.*

- > The relevant Environmental Adviser shall undertake an inspection of any new PW management/disposal facilities after construction is complete and forward this information to the relevant site superintendent.
  - > Details of any new or modifications to existing PW management/disposal facilities shall be entered in the PW Management and Disposal Facilities Register.
  - > The relevant site Superintendent shall ensure that each PW management/disposal facility has operating and maintenance procedures in place to ensure that requirements outlined in this standard are achieved. Where facilities are not in compliance with the requirements of this standard, a risk assessment shall be undertaken and improvement actions raised in AIM via the EHS Toolbox.
- > The relevant site Superintendent shall ensure that sampling and analysis of PW during operation and prior to disposal is undertaken in accordance with the requirements specified by the Chief Environmental and Cultural Heritage Adviser. These requirements may include: location, methodology, frequency and analytes.
  - > If free phase hydrocarbon cover is detected on any evaporation pond, the relevant superintendent shall ensure that an environmental incident management report is raised in IMS via the EHS Toolbox. Free phase hydrocarbon shall be recovered or removed. The relevant site Superintendent shall ensure any beneficial use is ceased until the issue is rectified.
  - > The responsible manager shall ensure that PW management/disposal facilities are decommissioned, abandoned and rehabilitated following a decision for final abandonment of the facility. Details shall be entered in the PW Management and Disposal Facilities Register.



# HAZARD STANDARDS

## EHS 04 Waste Management

### Purpose

*To define the minimum acceptable standards for waste management activities.*

- > The relevant Environmental Adviser shall identify legislative and other requirements and incorporate these into the EHS Legal Obligations Directory.
- > The relevant Environmental Adviser shall liaise with the relevant regulatory authorities on waste management issues.
- > The relevant Superintendent shall ensure that waste streams identified, quantified, characterised, registered and details recorded in a waste inventory on site for each Santos operation.
- > The relevant Superintendent shall ensure that each Santos operation undertakes a waste audit of its activities. The waste audit shall form the basis of the waste inventory of all major solid, liquid and gaseous waste streams and all regulated waste streams generated by the operation and its contractors. A waste audit shall be undertaken at least once every five years or when a change to the activity occurs, whichever comes sooner.
- > The relevant Superintendent shall ensure that procedures are clearly documented for all waste management activities and that activities are undertaken in accordance with these procedures.

- > Landfills shall be operated to achieve effective segregation, recycling, disposal and covering of waste.
- > Design and construction of new landfills shall be undertaken in accordance with EHSMS11.2 Facilities Design and Construction in order to achieve the relevant environmental performance objectives.



*Segregation of wastes before disposal to assist in recycling.*

- > New landfills shall only be constructed following preparation of a waste inventory and an assessment of need using the waste hierarchy. The relevant Superintendent shall ensure that a Landfill Appraisal and Approval Form is completed and approved before development of a new landfill or implementation of changes to existing facilities. The relevant Environmental Adviser shall review the form prior to endorsement by the Chief Environmental and Cultural Heritage Adviser.



# ENVIRONMENT HAZARD STANDARDS

- > All sites that have a landfill shall have a landfill environmental management plan (LEMP).
- > All other sites that create, manage, receive or dispose of waste, other than to a landfill, shall have a waste management plan (WMP). In addition, WMPs may be required to be prepared to fulfil requirements under legislation, operating licences or as a requirement of the applicable regulatory authority (e.g. state EPA).
- > The relevant Superintendent shall ensure that a WMP or LEMP is created and implemented. The relevant Environmental Adviser shall prepare WMPs and LEMPs.
- > The relevant Environmental Adviser shall ensure that the relevant regulatory authorities are advised of changes to WMPs or LEMPs.
- > Practices and procedures to fulfil the requirements of the LEMP shall be developed by the waste management contractor and approved by relevant Environmental Adviser.
- > The relevant site superintendent shall ensure that waste tracking and transport from waste management depots is undertaken in accordance with the relevant WMP or LEMP.
- > Copies of completed waste transfer forms and waste transfer certificates shall be included in the Waste Transfer Register on The Well.
- > The licensed operator shall ensure that documented and controlled procedures, for the transport and handling of regulated waste and landfill operation, are developed and implemented in consultation with the relevant Environmental Adviser.

- > The relevant Superintendent shall ensure that waste facilities are inspected every six weeks. Inspections shall be undertaken using the Waste Facility Inspection Form.

## EHS 05 Air Emissions

### Purpose

*To achieve compliance with applicable air quality guidelines thereby minimising adverse impacts on the communities in which we operate and on the environment.*

### Summary of Key Requirements

- > All new projects and modifications to existing facilities shall be assessed during the design phase for any potential air quality impacts.
- > Assessment against ambient air quality guidelines may require atmospheric dispersion modelling by appropriately qualified personnel using accepted modelling techniques.
- > Measures to minimise potential impacts shall be incorporated into design and operating controls.
- > The final design criteria shall be approved by the environmental adviser for the area.
- > Exceedences of criteria will require authority notification and actions to minimise environmental harm.
- > Facilities will be operated to maintain acceptable levels of pollutants



## HAZARD STANDARDS

- > Santos facilities that trigger thresholds must report their emissions of NPI substances annually.
- > Odour emissions should be managed to avoid environmental nuisance.

### EHS06 Greenhouse Gas Management

#### Purpose

*To outline the requirements for the accounting, reporting and management of greenhouse gas (GHG) emissions from Santos operated facilities and Santos' joint venture interests, and to meet the goals outlined in the Santos Greenhouse Policy.*

*Santos emits 3 GHGs as defined by the United Nations Framework Convention on Climate Change these include carbon dioxide CO<sub>2</sub> (CO<sub>2</sub> equivalent = 1 Global Warming Potential (GWP)); methane CH<sub>4</sub> (CO<sub>2</sub>eq = 21); and nitrous oxide N<sub>2</sub>O (CO<sub>2</sub>eq = 210).*

#### Summary of Key Requirements

- > Production data (fuel use, flaring and venting losses) shall be measured by operations and reported at least annually to EHS & S for greenhouse emissions calculations.
- > An annual greenhouse emission profile will be developed on an operated and equity share basis.
- > An annual 15 year emissions forecast will be developed.
- > Santos will where practicable participate in external voluntary greenhouse gas reduction programs.

- > Santos will identify and promote opportunities for natural gas to replace higher greenhouse gas emitting fuels and invest in energy and process research and development.
- > Santos will actively pursue an emission intensity reduction target (greenhouse emissions/unit of production) of 20% in the period from 2002 to 2008 using a portfolio approach and report progress against this target.
- > Santos will carefully examine the forecast greenhouse gas emissions and energy use in planned new projects and acquisitions, to ensure emission intensity and energy efficiency levels are consistent with the Company's Greenhouse Policy goals.
- > Performance against these commitments will be review and reported via annual Sustainability Report.

### EHS 07 Energy Efficiency

#### Purpose

*To define the requirements for managing energy use at Santos operated facilities.*

#### Summary of Key Requirements

- > The quantity of energy used (fuel use, flaring and venting losses) to operate Santos facilities will be measured, recorded and reported on a routine basis.

# HAZARD STANDARDS

- > Santos operations will develop energy efficiency plans with site specific targets for all major assets and maintain a list with details of potential and current energy efficiency projects.
- > Progress against these energy management plans is to be assessed and reported to EHS & S on annual basis.
- > In accordance with DITR's EEO legislation Santos is required to undertake an energy assessment of its operations every 5 years, this assessment must include quantitative energy use and an energy balance. The scope of the assessment must include at least 80% of energy use and all sites using over 0.1PJ. The assessment must identify energy efficiency projects with a financial payback of up to 4 years and detail Santos' plan to implement these projects.
- > Santos is required to report publicly on the outcomes of its energy assessments, which is to be published via the Sustainability Report. Public reporting must outline the period to which the report relates, a brief description of the coverage of the assessments, a summary of the opportunities identified and the business response to those opportunities, and a statement by the CEO.
- > Facilities management are required to monitor and report energy use for office buildings over 2,000m<sup>2</sup>.

## EHS 08 Contaminated Site Management

### Purpose

*To define the requirements for the protection of health and the environment, where contamination has or may have occurred at Santos operated sites.*

### Summary of Key Requirements

- > Clean-up of minor spills shall be undertaken in accordance with Appendix B Guidelines for Minor Oil Spill Clean-up
- > Where a potentially contaminated site has not had a Contaminated Site Assessment conducted, it is a requirement that a Contaminated Site Review be performed. The review should investigate and record information relating to past and present activities which have released hazardous substances potentially impacting health and/or environment based soil or groundwater contamination levels.
- > A Contaminated Site Assessment must be conducted if the Contaminated Site Review finds information which indicates that the soil and/or groundwater may have been contaminated; the nature and extent of the suspected contamination may pose a significant risk to human health or the environment; the contamination has resulted from activities controlled by the company and may extend to groundwater and/or into an area which is not owned by the company; the area is subject to acquisition, divestment or acceptance or termination of a lease; and/or the relevant



## HAZARD STANDARDS

statutory authority has validly directed that a quantitative assessment be performed.

- > The Contaminated Site Assessment will determine Investigation Levels (ILs) for the site.
- > If contamination is in excess of ILs then a risk assessment shall be undertaken to assess whether the site contamination identified in a Contaminated Site Assessment poses an actual or potential risk to human health and/or the environment (on or off site).
- > Where the outcome of the risk assessment indicates an unacceptable level of risk a contaminated site management plan shall be developed, which shall include at a minimum: details of reporting requirements and a stakeholder communications plan; and planned remediation activities.
- > Contaminated materials are to be disposed of in accordance with the site Waste Management Plan.

### EHS 09 Weed and Pest Animal Control

#### Purpose

To detail the requirements for avoiding weed and pest animal spread through Santos activities and how suitable control mechanisms can be identified and implemented.

#### Summary of Key Requirements

- > The weed/pest animal status (including the potential for introduction and spread of declared/prescribed/prohibited

and important weeds) of existing and proposed operational areas should be established in consultation with the Chief Environmental and Cultural Heritage Advisor and contact with the relevant authority.

- > For each existing or proposed operational area, the need for a Weed and Pest Animal Management Plan shall be determined.



*Bathurst burr (Xanthium spinosum). Bathurst burr is a proclaimed weed in the Northern Territory, South Australia and Victoria and control is recommended in Queensland.*

- > Where required a Weed and Pest Animal Management Plan shall be developed in consultation with the Chief Environmental and Cultural Heritage Advisor.
- > Where there is a significant risk of introducing or spreading declared/prescribed/prohibited or important weeds through

# HAZARD STANDARDS

the movement of vehicles and machinery, all vehicles and machinery shall be cleaned at an appropriate washdown facility and cleaned in accordance with appropriate washdown procedures.

## EHS 10 Water Resource Management

### Purpose

*To ensure the protection from degradation and the sustainable use of watercourse, lakes, springs, overland flows, undergroundwater, and other natural ecosystems associated with these water resources.*

### Summary of Key Requirements

- > Surface and ground water resources and the associated natural environment shall be included in planning of new or amended disturbances to enable the protection and sustainable use of the resource.
- > Legislation, government regulations, and local/regional water resource planning shall be considered prior to undertaking development, new or modified operational activities, or harvesting surface or ground water.
- > All necessary approvals, licences, permits and certificates required by statutory authorities and other regulatory bodies shall be obtained prior to extracting or interfering with surface water or groundwater.
- > The quantity of water extracted shall be minimised where

practical, and the quality and quantity monitored.

- > Disposal of all potentially contaminated wastewater should consider the waste management hierarchy and shall be conducted in a manner in which prevents the degradation of waters and land.
- > For new operational and facility areas a Stormwater Management Plan shall be prepared.
- > For existing operational and facility areas a risk assessment shall be undertaken to determine the requirement for a Stormwater Management Plan.

## EHS 11 Indigenous Cultural Heritage Management (for Australian Operations)

### Purpose

*To ensure that processes are developed, implemented, and assessed to prevent impact to indigenous cultural heritage from Santos operations within Australia and to ensure that all relevant statutory cultural heritage requirements are complied with.*

### Summary of Key Requirements

- > All activities carried out by employees and contractors should be conducted in a manner that avoids any possible damage or disturbance to cultural heritage sites (eg. confine vehicle traffic to established tracks and roads).







## HAZARD STANDARDS

- > Prior to the commencement of new activities and specifically prior to the commencement of new 'earth breaking activities' the relevant internal and statutory requirements shall be identified.
- > If an Agreement or Cultural Heritage Management Plan (CHMP) is not required, clearance must be obtained from the Chief Environmental and Cultural Heritage Advisor and/or Principal Adviser Indigenous Affairs prior to proceeding.
- > Where Agreements and CHMPs are required, negotiations shall be conducted, where possible, with those indigenous peoples with registered native title claims.
- > A CHMP Field Operations Document shall be prepared for areas/activities based on the requirements of the Agreement or CHMP.
- > The Chief Environmental and Cultural Heritage Adviser shall ensure that a CHMP Field Operations Document is prepared for areas/activities based on the requirements of the Agreement or CHMP and that the CHMP Field Operations Document is made available to field staff and site-based cultural heritage monitors and officers.
- > Selection of cultural heritage monitors undertaking cultural heritage site clearances is to be managed through the Cultural Heritage Support Officer.
- > Once on site the cultural heritage monitors and officers shall undergo location and site specific EHS inductions.
- > The relevant Project Manager shall ensure that cultural heritage clearance of the area of proposed new exploration,

development or operations shall be conducted prior to any works occurring through the completion of a Request for Cultural Heritage Clearance Form via the Santos Cultural Heritage teamsite on The Well.

- > The relevant project manager shall ensure that all identified cultural heritage sites are reported internally.
- > The relevant project manager shall ensure that completed forms are forwarded to the Chief Environmental and Cultural Heritage Adviser.
- > Where required by law, the Chief Environment and Cultural Heritage Adviser or delegate shall report cultural heritage sites to the relevant government body/ies.

### EHS 12 Noise Emissions

#### Purpose

*To define the requirements for managing noise emissions from Santos operations that may result in adverse impacts on the surrounding environment.*

#### Summary of Key Requirements

- > All operations are required to identify major sources of noise generated during all stages of the operation including exploration, construction, development, production and decommissioning and consider the potential for noise levels to impact on external stakeholders, including stock and wildlife.

## HAZARD STANDARDS

- > A Noise Management Strategy must be developed where it has been identified that noise levels associated with Santos' operations have the potential to affect external stakeholders or exceed regulatory requirements.
- > Baseline surveys, including background level monitoring, shall be undertaken in order to establish acceptable limits in accordance with legislative requirements.
- > The potential for offshore seismic and drilling noise to adversely impact on marine species, particularly cetaceans, must be reviewed prior to any proposed activity.
- > Complaints shall be registered in the Santos Complaints Register.



*Roadwork activities can be a source of noise.*



## GLOSSARY

This glossary defines the key terms and abbreviations used throughout this summary of the Santos Environment, Health and Safety Management System.

Accountability	Answerable for the outcomes and therefore takes the credit or consequences. Accountability cannot be delegated.
Assessment	As Low as Reasonably Practicable (ALARP)
Conformance	Meeting applicable requirements of the EHSMS.
Compliance	Meeting the requirements of applicable legislation.
Contractor	An individual, company or other legal entity contracted to carry out work for, and on behalf of, Santos including self-employed persons and sub-contractors.
Control Measure	A process, policy, system, device, practice or other action that either acts to minimise the risk of an unwanted event occurring or reduces the consequence of the unwanted event should it occur. EHS Environment, health and safety.
Improvement Plan	A document used to detail and monitor actions required to achieve defined objectives and targets.
EHS Objective	A description of a performance goal aimed at meeting EHS policy requirements.
EHS Policies	Written statements by the organisation of its commitment, intentions and principles in relation to its overall EHS performance which provide a framework for the setting and execution of its EHS objectives.
EHS Targets	A quantified outcome of an EHS or process safety objective.
EHSMS	Environment, Health and Safety Management System.
EHSMS Assessment	A documented, independent, systematic assessment conducted to gauge implementation status of relevant EHSMS Standards.
EHSMS Audit	A systematic and documented verification process of objectively obtaining and evaluating evidence to determine whether an organisation's EHSMS conforms to the EHSMS audit criteria set by the organisation, and for communication of the results of this process to management.
EHSMS Performance	Measurable results of the EHSMS, related to an organisation's control of its EHS aspects, based on its EHS policy and objectives and targets.
Emergency Response	Actions taken at the site of a major incident to preserve lives, the environment and property.



## GLOSSARY

Environmentally Hazardous Substance	Substance that has the potential to cause environmental harm e.g. oil, diesel, chemicals, condensate, biocide, corrosion inhibitor, contaminated waste water.
Environmentally Sensitive Area	Areas where the environment may be adversely impacted easily e.g. surface or groundwaters, marine environment, wetlands, gibber plains.
Hazard	A source of potential harm or a situation with a potential to cause loss.
Health Monitoring	The monitoring (including biological monitoring and health assessment) of a person to identify changes in the person's health because of exposure to a hazard.
Incident	Any unplanned event resulting in or having a potential for injury, ill-health, environmental damage or other form of loss.
Interested Parties	Individual or group concerned with or affected by the safety or environmental performance of Santos operations.
Legal Requirements	All laws, regulations, conditions of permits, licences, approvals and rules of conduct established by national, state or local government authorities.
Line Management	Management with direct responsibility and accountability for all aspects of activities, operations, products and services, including Environment, Health and Safety.
Lost Time Injury	Work-related injury resulting in one or more complete shift away from work.
Major Hazard	A source of potential harm or a situation with a potential to cause two or more fatalities.
Medical Treatment Injury	Work-related injury requiring specified treatment from a medical practitioner.
Near Miss	An unplanned event that did not result in injury or property damage but which, when formally assessed, had the potential to have done so.
Process Safety	The identification and elimination of hazards associated with facility operations, that could otherwise lead to a major catastrophic event following loss of containment and ignition.
Produced Water (PW)	Water produced in conjunction with oil and gas extraction (produced formation water – PFW) and/or water produced during processing.
Property Damage	The actual damage or loss of property or other resources during the normal activities associated with the operation of a Santos site, including damage/loss sustained to property owned or operated by third parties such as contractors, sub-contractors or visitors, etc.



## GLOSSARY

Record	EHSMS related documents stating results achieved or providing evidence of activities performed eg training records, equipment inspection record.
Responsibility	An undertaking to see that activities are carried out. Responsibilities can be delegated.
Risk	The chance of something happening that will have an impact upon Environment, Health and Safety. It is measured in terms of consequences and likelihood.
Risk Assessment	The process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria.
Risk Management	The systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk.
Shall	Used in the EHSMS where a requirement in a standard is mandatory and is a minimum requirement.
Should	Used in the EHSMS where a requirement in a standard is preferred or recommended
Significant Hazard Risk Register	A consolidated site/activity register of significant potential unwanted events with their assessed inherent risk, risk control measures and residual risk level.
Stepback	An informal (non-documented) process of thinking about and mentally planning the steps involved and managing the hazards that may be faced in doing a job by “engaging the mind before the hands”.
Strategic EHS	A strategic document used to detail critical issues that Santos is planning to achieve typically within a three to five year Improvement Plan period.
Target	Detailed performance requirement, quantified where practicable, applicable to the organisation, that arises from the EHS objectives and that needs to be set and met in order to achieve those objectives.
Work Permit	Sets out the work to be done, the precautions to be taken, and specifies all work conditions.
UST	Underground Storage Tank
Workplace Assessor	Person holding a current recognised certificate of competency to conduct workplace competency assessments.





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Visit the EHSMS section of The Well.  
[Home > Environment, Health, Safety & Sustainability > EHSMS](#)



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