2. Safety, Health, Environment and Quality Management System (SHEQ-MS)

2.1 Overview of the SHEQ-MS

The SHEQ-MS provides a framework for the system that will be used by Gunns to ensure the pulp mill project is designed in a way that minimises its environmental impacts and maximises worker and contractor safety and health. It is also a guideline for the development of specific SHEQ plans, standards and procedures (including EMPs) that will be required prior to the design, construction and operation phase of the project. References will be made to existing SHEQ procedures and standards where they are known, and to those that are to be developed.

The SHEQ-MS custodians are :-

◗ Safety, Health, Security Manager

  a) health and safety advisory and auditing role as part of the Construction Management Team,

  b) development and maintenance of Safety and Health Plans associated with all aspects of construction and the operating plant,

  c) development and maintenance of Safety, Health, Hygiene and Injury Management Systems and appropriate Security Systems.

◗ Environmental Manager

  a) environmental advisory and auditing role to the Construction Management Team and the Department Managers of the Operating Plant,

  b) development and maintenance of the EMP's associated with all aspects of construction and the operating plant,

  c) management and periodic review of the EMS which will be accredited to IS014001 standard.

◗ Quality Controller

  a) development, maintenance and integration of all Quality Systems that cover Environmental, Safety, Health and product Quality Systems to applicable accreditation standards.

The overall responsibility for the SHEQ-MS lies with the Alliance Leadership Team (ALT) for construction and the Gunns Managing Director for operations.

2.2 SHEQ-MS Structure and Process

The Gunns Health, Safety and Environmental Policies document the company's commitment to achieving safety, health and environment performance goals, and to achieving continuous improvement in its environmental and safety performance. The Gunns Environmental Policy is discussed in Volume 1, Chapter 2 of the Draft IIS.

The SHEQ-MS is based on a tiered structure of the following five levels.

Level 1: Policies

This contains the policies that document Gunns' environmental, health and safety commitments. The policies are regularly reviewed and approved by the Gunns Managing Director.

Level 2: SHEQ-MS

This includes requirements for specific management systems and performance standards for sites and/or facilities, e.g. Isolation Standards & Incident Reporting Systems.

Level 3: SHEQ Plans and Procedures

This contains implementation plans and specific procedures, e.g. this Strategic Management Plan, other SHEQ Management Plans, Emergency Response Plans and Incident Investigation Procedures.

Level 4: Reference Material

This includes reference material that is relevant to SHEQ management of the pulp mill project, e.g. project Draft IIS condition of approvals and applicable SHEQ legislation.

Level 5: Guidelines, Forms, Checklists

This contains specific details that support the SHEQ-MS and plans and procedures. These will be developed on an ongoing basis during detailed design, construction and operation.

Links will be provided from this SHEQ-MS to procedures, forms and checklists that will be developed later in the process, e.g. community complaint forms, environmental inspection checklists.

The SHEQ-MS reflects the basic management principles of:

◗ Planning (strategic and medium term outlook and rules);

◗ Organising (day to day management);

◗ Directing (guidelines and references); and

◗ Controlling (checks and balances to ensure implementation).

These principles and how their relationship to different components and levels of the SHEQ-MS are shown graphically in Figure 2-1.
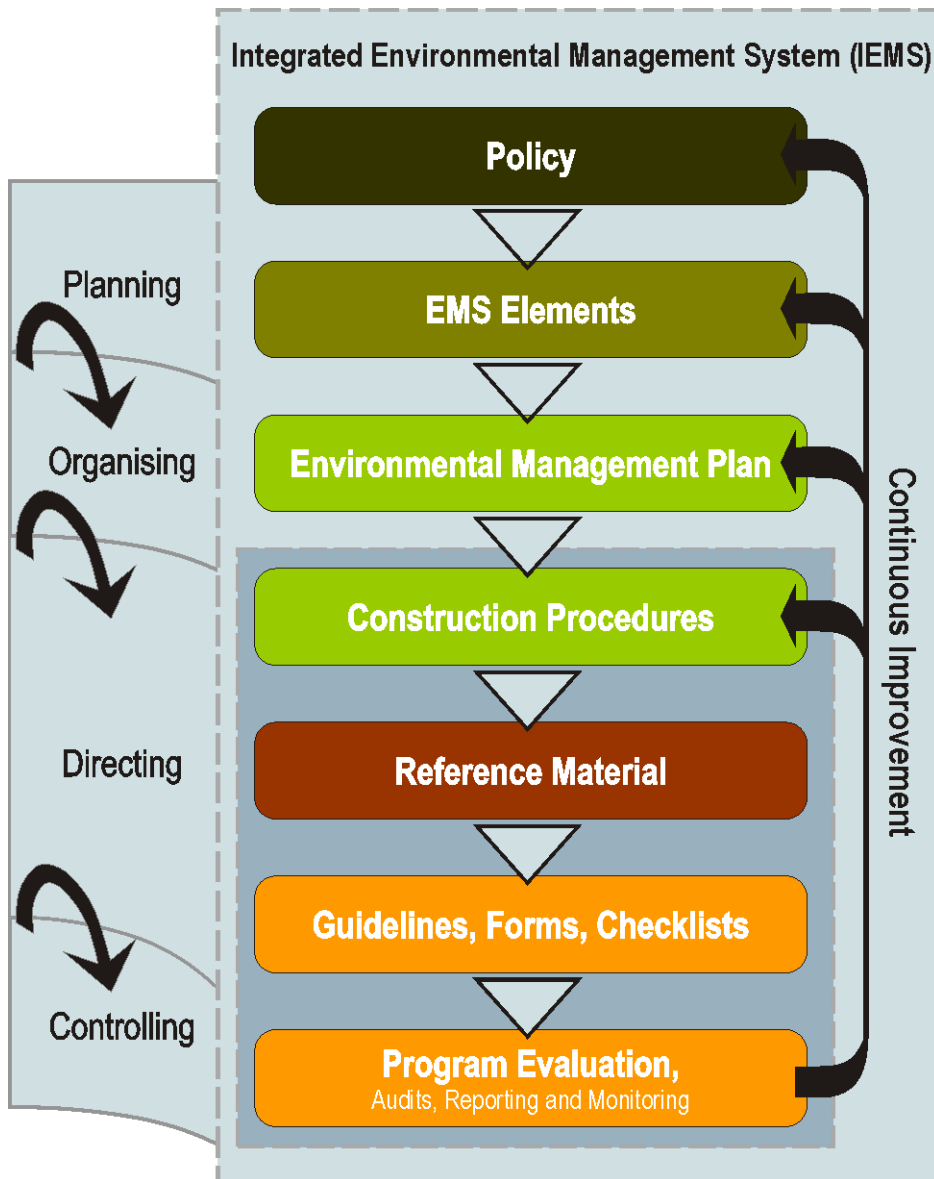
Figure 2-1   SHEQ Management System Process

The SHEQ-MS is based on 17 elements. Each of these elements is explained in more detail in the following sections.

◗   Policies and Strategic Objectives;

◗   Leadership and Commitment;

◗   People, Resources and Documentation;

◗   Training, Awareness and Competence;

◗   Communication and Consultation;

◗   Regulatory Requirements and Standards;

◗   Hazard Management;

- Change Management;
- Operational and Maintenance Procedures;
- Activity Planning and Procedures;
- Emergency Prevention and Response;
- Incident and Hazard Reporting;
- Non-Conformance and Corrective and Preventative Action;
- Implementation;
- Monitoring and Reporting;
- Auditing; and

Performance Improvement and Learning.

2.3 Policies and Strategic Objectives

Gunns has existing environmental, health, and safety policies that are part of its corporate standards, which are reviewed annually and approved by the Managing Director. The Alliance and Pulp Mill Managers will be responsible for development of new policies and endorsement of appropriate existing policies as required.

The SHEQ policies will be implemented through developing new and existing management systems that specify detailed procedures and practices to govern pulp mill construction and operation. There are various standards and guidelines relevant to the preparation of these systems, and to which consideration has been made in developing this draft SHEQ-MS. The following standards are applicable for each component of this SHEQ-MS:

- Environment – Environmental Management System – Requirements with guidance for use, International Standards Organisation (ISO) 14001: 2004;
- Safety – Occupational Health and Safety Management Systems – Specifications with guidance for use, AS/NZS 4801:2001; and
- Quality – Quality Management System Requirements, ISO 9001: 2000.

This SHEQ-MS has broadly followed the requirements of the above standards. However, further development of the SHEQ-MS would be required if formal certification to each of the above standards is scheduled.

Gunns has implemented management systems that are formally certified to international standards. The key focus of the group to date has been certification to internationally recognised environmental standards, such as ISO14001 and The Australian Forestry Standard (AFS). In this regard, many business systems are already in place at other Gunns sites and are able to be expanded to meet the detailed requirements of the pulp mill project.

Gunns current health and safety systems are designed to meet all safety and health legal requirements in addition to the requirements of ISO14001:2004. A section of the Gunns group, "Gunns Forest Products Pty Ltd" (comprising Tasmanian forest operations for harvesting and reforestation activities and

existing chip mills) operates under a more prescriptive Safety and Health Management System based on the requirements of 'SafetyMAP - Initial Level' and 'InjuryMAP Level 1'.

SafetyMAP is an audit tool based on Victorian Workplace requirements, and has significant commonality with the requirements of AS4801: 2001. InjuryMAP is a similar assessment program for the management of workplace injuries including rehabilitation.

The current Safety and Health Management System used by Gunns Forest Product Pty Ltd can be expanded to include the pulp mill project and then further developed to meet the requirements of AS4801: 2001.

As further SHEQ procedures and EMPs are developed closer to the start-up of project operations, this SHEQ-MS will be updated to reflect the requirements of the environmental approvals for the pulp mill and the outcomes of the detailed design of the project.

Strategic objectives for the project in relation to ongoing SHEQ management will be developed prior to the operations phase. These objectives will then be used to develop specific targets for each work area.

Key Performance Indicators (KPIs) will be developed, to measure performance against strategic objectives and targets. KPIs will possess the following characteristics:

◗ Be easy to measure;

◗ Reflect positive efforts;

◗ Be consistent across the project where possible;

◗ Relate to a key risk or issue;

◗ Be based on industry-accepted criteria; and

◗ Be quantitative where possible.

2.4   Leadership and Commitment

SHEQ management is the responsibility of Line Managers – that is, people on site involved in the day-to-day running of the construction and operation of the pulp mill. Each individual is responsible for following the SHEQ policies, standards and procedures.

Senior management for the project will lead by example, and through their actions will show commitment to SHEQ. This in turn, will raise levels of awareness and performance within the project teams.

Demonstration of leadership and commitment can include:

◗ The principles of SHEQ given equal or prevailing status over other primary business objectives;

◗ Encouragement of work colleagues to perform in a manner consistent with good SHEQ practices;

◗ SHEQ is included in an individuals performance and promotion review;

◗ SHEQ objectives are included in job descriptions, annual work targets and Business Plans;

◗ Workforce involvement in the formulation of SHEQ plans;

◗ Completion of tasks in SHEQ plans;

◗ All people leading by example;

◗ Allocation of necessary resources to manage SHEQ; and

◗ Contractual requirements to follow project SHEQ policies and this SHEQ-MS.

2.5 People, Resources and Documentation

Line management is responsible for SHEQ implementation, and for ensuring that the work area has the following:

◗ SHEQ responsibilities defined;

◗ SHEQ critical activities defined for personnel;

◗ SHEQ tasks undertaken by qualified and competent personnel;

◗ Contractors are incorporated into the project SHEQ-MS;

◗ SHEQ issues communicated through the project;

◗ Regulatory requirements met;

◗ SHEQ decisions and processes adequately documented; and

◗ SHEQ decisions appropriate to the level of hazard / risk.

All staff and contractors working on the project must know and understand the boundaries of their jobs so that they can execute their work with minimal interference and supervision. The concepts of **responsibility**, **authority** and **accountability** are central to ensure that this occurs. These are defined:

◗ **Responsibility** – an individual assuming responsibility undertakes to perform activities according to agreed standards within a set timeframe and with appropriate resources. Responsibilities can be delegated;

◗ **Authority** – is formally granted and confers upon the person the right or power to take decisions that commit the Company or staff to a particular course of action. This may involve the deployment of resources, the incurring of expenditure, etc. Authority is linked to an organisational or contractual obligation to take particular actions (within prescribed limits); and

◗ **Accountability** – an individual accepting accountability becomes answerable for the outcomes, which can involve credit or consequences. Elements may be devolved but the overall accountability cannot be delegated.

2.5.1 People

A general list of responsibility, authorities and accountabilities with regard to SHEQ management for the proposal is shown below. This list will be refined after the project has received the requisite environmental approvals.

Gunns' CEO:

Has overall responsibility for establishing, implementing and reviewing an effective SHEQ-MS that demonstrates performance and compliance in order to assure due diligence. It is the CEO's responsibility to satisfy the Gunns Board of Directors that this is the case.

Gunns' Pulp Mill Manager and Alliance Manager:

Is responsible for ensuring that the pulp mill's SHEQ-MS is consistent with corporate systems, and responds to local and project-specific issues. Specific responsibilities include ensuring that:

◗   incidents, hazards or other SHEQ related deficiencies are reported, analysed and rectified;

◗   personnel are competent and have the necessary skills to carry out their SHEQ functions;

◗   activities comply with all legislative and company requirements;

◗   implementation of the project SHEQ-MS through Line Managers;

◗   reporting SHEQ performance to the ALT on a regular basis; and

◗   coordinating the development of SHEQ Plans for each project work area.

The Alliance and Pulpmill Managers are accountable for ensuring that SHEQ risks with in the scope of his responsibility have been identified, assessed and controlled to 'as low as reasonably practical' (ALARP).

Gunns' Environmental Manager, Health Safety Security Manager, Quality Controller:

Are responsible for providing:

◗   project assurance that SHEQ legislation, regulations and commitments are being followed;

◗   SHEQ standards and procedures consistent with Gunns' corporate standards;

◗   mechanism for recording and reporting SHEQ statistics on documented incidents and other key SHEQ outcomes;

◗   a SHEQ management training service;

◗   a service to analyse technical SHEQ risks;

◗   co-ordination of crisis and emergency response plans and practices;

◗   means to ensure the application of continuous improvement principles to the documentation, tools and other aspects that make up and support the SHEQ Management System;

◗   assistance to work areas with the implementation of SHEQ Plans; and

◗   an appropriate level of staffing (in the form of either permanent or contracted environmental, safety, health, security officers) to ensure that:

   –   compliance with the environmental and safety obligations under the Contract and Scope of Works and under Technical Criteria:

   –   compliance with obligations under the Draft IIS, the EMP, and other Safety Management Plans: and

   –   the environmental safeguards prescribed in government guidelines are implemented and tested before handover of the operating mill.

Project and Contract Design Engineers:

Are responsible for ensuring that environmental considerations are taken into account in all activities. Engineers will liaise closely with the Contractor Design Project Managers to ensure that the environmental controls and procedures contained in the Strategic Management Plan are implemented.

Individuals:

Are responsible for:

◗ assisting with the developing of SHEQ Plans for their particular work area;

◗ following SHEQ assigned tasks according to the SHEQ Plan;

◗ identification of hazards and risks and the reporting of incidents and 'near misses'; and

◗ ensuring that their actions are within the Health and Safety, Environmental and Quality Policies.

Individuals have the authority and responsibility to halt any part of an operation if they believe the action presents an unacceptable risk to themselves, to others or to the environment. Any such action must be reported to their direct supervisor as soon as possible.

Individuals are accountable for completing SHEQ tasks that are assigned to them.

Regulatory Authorities:

Agencies such as the Department of Primary Industries, Water and Environment, the local Council and Workcover Tasmania have regulatory responsibility to ensure that the construction and operation of the pulp mill is undertaken in accordance with relevant legislation, and with best practice guidelines.

Officers from these agencies can be expected to visit the site periodically to audit the activities for compliance and to provide advice on issues.

Contractors:

Are responsible for ensuring that all persons on the project including subcontractors and their employees, comply with the relevant safety, health and environmental requirements. As a minimum, subcontractors and their employees will be required to comply fully with the requirements of the strategic management plan as it applies to site safety, health and environmental management and control. The responsibility of subcontractors' personnel are identical to the responsibilities of Contractor's project personnel in all aspects of safety, health and environmental management and control.

Contractor's Environmental Representative (ER):

Reports directly to the Project or Construction Manager, and is responsible for ensuring that the Contractor delivers through its various design and construction business units all of the prescribed environmental outcomes. The Contractor's ER will ensure the implementation of the environmental safeguards, and liaise with relevant regulatory authorities.

2.5.2 Resources

All levels of management are responsible and accountable for ensuring that appropriate resources are available to enable SHEQ responsibilities and accountabilities to be met. Including:

◗ allocation to personnel of adequate time to manage SHEQ issues;

◗ appointment of competent and experienced personnel to manage SHEQ issues;

◗ provision of SHEQ training; and

- ◗ purchase of appropriate equipment.

2.5.3   Documentation

Documentation and record keeping is an important part of Gunns' duty of care, and provides an audit trail for problems and issues to be systemically identified, investigated and remedied. As part of Gunns' corporate document control system, the pulp mill project will have a compliant quality system. The control of documents aims to verify that correct procedures, standards, controls and actions are implemented. Generally, document control ensures that:

- ◗ information can be readily associated with the appropriate organisation, division, function or activity;
- ◗ documentation can, periodically and as necessary, be reviewed, revised and following approval by authorised personnel, reissued;
- ◗ current versions of documents are readily available for use; and
- ◗ obsolete versions are promptly removed from all points of issue and use.

Each work area of the project is expected to ensure that procedures are maintained for controlling SHEQ documents. Documentation must be dated with the document revision number visible.

There will be a central document control department to manage documents critical to the project. Procedures and responsibilities will be established to govern the modification of documents, and to ensure their availability to employees, contractors, Government agencies and the public.

Specific quality control procedures will be incorporated from Gunns' corporate systems or developed for the project. These will include quality-management system components of IS0 9001: 2000 that may not be otherwise covered in this SHEQ-MS, for example:

- ◗ Contract review;
- ◗ Design control;
- ◗ Purchasing;
- ◗ Customer supplied product;
- ◗ Product identification and traceability;
- ◗ Process control;
- ◗ Handling, storage, packaging, presentation and delivery;
- ◗ Servicing;
- ◗ Statistical techniques;
- ◗ Inspection and testing;
- ◗ Control of inspection, measuring and test equipment;
- ◗ Control of quality records;
- ◗ Internal quality audits.

2.6 Training, Awareness and Competence

SHEQ training during the project will comprise the following:

◗ General Induction for new staff and contractors – introduction to the site and assigned tasks in regard to SHEQ;

◗ Site Specific – tailored to actual site and job description to allow personnel to complete assigned tasks in regard to SHEQ;

◗ Task Orientated Training – provided 'on the job' and focused on specific SHEQ critical activities e.g. emergency response, oil spill contingency;

◗ Company SHEQ Training – general SHEQ courses offered by Gunns; and

◗ External Training – particular courses attended that will benefit the employee, Gunns or contractor.

Training procedures will take into account the differing levels of risk, responsibility, ability and literacy of personnel.

Supervisors and/or contractor sponsors are responsible for ensuring that the SHEQ training provided to contractors working in critical SHEQ roles is fit for purpose and consistent with Gunns' corporate training standards.

Training courses will be developed for particular phases of the project (e.g. construction and operation) and locations. A training matrix to specify which personnel must attend what course will help track personnel development and competency. Standards for assessing competency will be included in training courses, contract award, job hires etc.

The project will establish and maintain procedures to ensure that employees and contractors working in SHEQ critical roles are aware of the:

◗ importance of compliance with the SHEQ policies and the requirements of the SHEQ-MS;

◗ consequences (potential or actual) of their job activities and the benefits of improved personal SHEQ performance;

◗ specific roles and responsibilities of individuals in achieving compliance with the SHEQ policies and procedures and SHEQ-MS; and

◗ potential consequences of not following specified operating procedures.

Specific information about training is included in the relevant SHEQ management plans and procedures.

2.7 Communication and Consultation

For effective SHEQ management of the project, policies, standards and general SHEQ information must be communicated efficiently between all parties who may influence the Project.

Government

Communication with Government agencies is a normal operating component of Gunns' business. Enquires on SHEQ issues will be directed to the person responsible for SHEQ issues or the Gunns SHEQ Department.

Employees and Contractors

Examples of important tools for SHEQ communication include (but are not limited to):

- ◗ SHEQ Committee meetings;
- ◗ Meeting minutes sent to SHEQ network;
- ◗ Pre startup 'Tool Box' meetings;
- ◗ SHEQ training;
- ◗ SHEQ Bulletins with hazard and incident information;
- ◗ Presentation of KPIs for SHEQ;
- ◗ Awareness programmes and campaigns; and
- ◗ SHEQ publications.

Any SHEQ issues or concerns raised by employees or contractors will be directed to their supervisors and/or SHEQ focal advisers. Suggestions for improvements to the SHEQ-MS will be directed to the person responsible for SHEQ issues or the Gunns SHEQ Department.

All project personnel employed in SHEQ critical roles are expected to attend periodic and minuted communication meetings. These may include:

Monthly Management SHEQ Meetings

Monthly meetings are a forum to discuss all SHEQ information relating to the project. Attendees will include Senior and Line Management and SHEQ Coordinators. Representatives from the Gunns Project SHEQ Department will also attend. The meetings will analyse incident statistics and reported hazards to identify trends that allow the project to channel resources to the appropriate areas.

Weekly Site SHEQ-MS Meetings

Weekly meetings are an informal forum to:

- ◗ review site hazard identification cards;
- ◗ review actions of previous minutes;
- ◗ present new SHEQ material; and
- ◗ facilitate general points for discussion.

Daily 'Tool Box' Talks

'Tool box' talks are generally conducted prior to the starting of a shift or of any unusual or hazardous task. A briefing includes the proposed operation and any associated hazards. Comments and suggestions are encouraged.

Alliance Partners

Alliance Partners will be informed regularly of SHEQ performance and will be included in updates during Operational or Technical Committee meetings.

General Public

Public enquires or complaints will be directed to the project Brand Manager (or equivalent). A specific environmental complaint procedure will be developed to ensure that each issue is recorded, followed up and where appropriate, dealt with to the satisfaction of the complainant.

2.8   Regulatory Requirements and Standards

Regulatory requirements and standards include the following:

◗   Australian laws and regulations;

◗   International conventions and agreements;

◗   Commitments by Gunns in the approval process; and

◗   Industry association standards.

To ensure compliance with laws and standards, it is critical that the project documents all applicable laws, regulations and standards. The project will develop a detailed 'SHEQ Law Guide' or 'Obligations Register' which will be made available to the project team. In addition, each work area or site will develop a specific 'Regulations and Commitments Register', to contain relevant health, safety or environmental regulations, requirements or commitments. The register will be updated periodically (annually), by a qualified professional and then will be used as an audit protocol for assessing compliance.

2.9   Hazard Management

The analysis of hazards is essential for the effective management of health, safety and environmental risks for the project. This section provides some basic guidelines to identify and manage hazards during the design, construction and operational phases.

A 'hazard' is described as "a source of potential harm, or a situation with a potential to cause loss or adverse impacts" (Australian Standards, HB 203:2000, p. 13). The following steps are the basis for managing hazards:

◗   Step 1: Systematically identify hazards and potential impacts and consequences;

◗   Step 2: Evaluate the risks from the identified hazards against screening criteria, taking into account the likelihood of occurrence and severity of the consequences. Compare these risks against SHEQ objectives and targets set for the project;

◗   Step 3: Implement management measures to eliminate the risk or reduce it to acceptable levels. Measures can include reducing the probability of occurrence and/or the consequences of the hazard. Management measures include steps to prevent escalation of the hazard and to reduce its effects; and

◗   Step 4: Establish recovery preparedness measures (including emergency procedures) as well as restoration and compensation procedures.

Gunns is committed to utilising a combination of the techniques described in Table 2-1. For example detailed HAZOP workshops, co-ordinated by a trained HAZOP facilitator shall identify environmental,

health and safety issues associated with all facets of the process from chipping to shipping of baled pulp. Once the issues are identified control measures shall be implemented to minimise risk.

Table 1:   Hazard Analysis Techniques

Technique	Description	When Use	Benefit
Hazard Identification Workshop (HAZID)	Systematic facilitation of process to identify potential hazards, using a cross-section of members from the project team.	Prior to each aspect of project e.g. design, construction and operation.	Early identification of hazards. Provides input for more cost-effective design options.
Hazard and Operability Study (HAZOP)	Multi-discipline team in one room reviewing engineering Process and Instrumentation Diagrams (P&IDs) in detail to identify hazards and management.	Stages of design process prior to sign off on process.	Detailed hazard analysis of process operation. Can help identify other issues with design.
Quantitative Risk Assessment (QRA)	Formal systematic way of estimating the likelihood and consequences to people, environment and assets of incidents occurring.	Calculate risk probability of an event occurring e.g. 1×10^{-6} chance of an event occurring.	Cross check of risk compared to other project components and/or other projects.
Hazard Register	Documented list of all known hazards.	Typical output from Hazard Identification workshop. First filtering tool, with focus on hazards with major potential risk.	Ensures employees are aware of the hazards and shows evidence that hazards are identified. All hazards shown in one place for future reference.
Site specific analysis / meetings	Job Safety/Environment Analysis, Pre-Start-up Meetings.	Prior to a job occurring, team to consider potential for incidents to occur. Develop practical ways to eliminate risk or reduce impacts/consequences.	Conducted 'on site' for instant benefit. Team considers risks together prior to starting job.
Site hazard / risk identification	Worker instigated system based on Du Pont 'STOP' cards.	Identifies potential hazards / risks in the workplace, and ways to eliminate or reduce the risk.	Driven by workers directly on site. Risks can be eliminated immediately or in the short term.

With any hazard analysis technique, the overall goal will be to either eliminate the risk or to reduce it to ALARP. This concept is shown in the 'hierarchy of risk' described below:

Most Preferred Option	1. **Eliminate the risk** –e.g. avoid the task or operation.
	2. **Reduce the likelihood of the occurrence** – e.g. reduce the number of times an operation is performed, increase preventative maintenance, add an additional 'barrier', increase quality assurance etc.
	3. **Reduce the consequences** – e.g. contingency planning, design features, engineering and structural barriers, public relations etc.
	4. **Transfer the risk** – e.g. to another organisation, or location. Overall level of risk not reduced but moved.
Least Preferred Option	5. **Retain the risk** – e.g. following reduction or transfer of risk there may be residual risk left that requires management.

The Hazard Management Process is a useful tool to explain how the risk of an event or incident can be reduced through the application of 'barriers'. This includes threat barriers (e.g. bunding of a fuel tank) that prevent an event occurring, and escalation barriers (e.g. oil spill cleanup kit) that prevent an event from becoming worse.
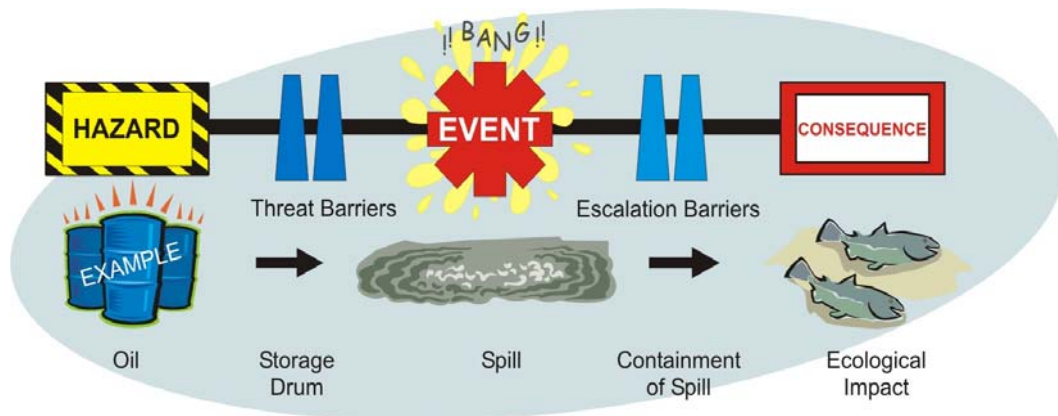
2.10   Change Management

Procedures will be developed to avoid adverse SHEQ consequences by controlling permanent or temporary change, in people, plant, processes and procedures. These procedures will include:

◗ documentation of proposed change with adequate time for assessment prior to change;

◗ review and recording of potential SHEQ hazards associated with the change;

◗ engineering design department to control any change to the design of equipment, facilities or processes;

◗ site / facility manager to manage any change to an existing operation procedure;

◗ design and review of change to consider SHEQ hazards associated with any change;

- risk management techniques to be incorporated into design;

- SHEQ hazards, control and monitoring methods to be documented; and

- equipment to be audited on site (by a third party where necessary)with signoff prior to recommencement of work.

2.11   Operational and Maintenance Procedures

Operational and maintenance procedures will be developed consistent with Gunns corporate standards closer to the start-up of full operations. This will incorporate a preventative maintenance program that includes SHEQ critical equipment identified from the risk assessment process.

2.12   Activity Planning and Procedures

By planning activities and utilising operational procedures, the project can reduce the risk of incidents occurring and limit SHEQ hazards. Activity planning in this SHEQ-MS refers to:

- task level planning;

- asset integrity planning; and

- emergency response planning.

2.12.1   Task Level Planning

Task level SHEQ planning is used primarily on site prior to actually completing a task. It involves a high level of detail and plans only for the short term. The following tools are examples of this type of planning:

- *Permit to Work* – used to plan, coordinate, authorise and control tasks that are non-routine and/or potentially hazardous. The permit is completed prior to the beginning of the task, and specifies the responsibilities, scope of work and management measures. It is particularly useful for managing multiple tasks where concurrent performance increases the overall risk.

- *Job Hazard Analysis* – structured task review process involving supervisors and the workers who are to perform a task. The analysis involves noting the steps of the task, identifying SHEQ hazards, and developing controls to manage them. The results are documented, and can provide input to the Permit to Work, to the development of procedures, and to design reviews.

- *Toolbox Meetings* – meetings held regularly with workgroups (usually at the start of shift) to discuss the work plan for the day and to highlight specific SHEQ issues or precautions to be taken.

- *Personal Planning Techniques* – such as spending a short time prior to a job to review the SHEQ hazards and threats and how they can be controlled.

Traditionally in most industries, the above examples of task level planning have focussed on safety and health issues and have not considered environmental hazards. It is intended for this project that the above procedures also consider environmental issues.

2.12.2   Asset Integrity Planning

The Alliance and Pulp Mill Managers are responsible for ensuring that appropriate procedures are in place to ensure asset integrity by maintaining safe operating conditions and operating envelope. These procedures will be developed consistent with Gunns' corporate standards closer to the start-up of construction and operations and address the health and safety of personnel and potential impacts to the environment.

2.12.3   Emergency Response Planning

Detailed procedures for emergency response planning and crisis management will be developed prior to construction and commencement of operations. The response plans will address the health and safety of both personnel and the public, as well as environmental issues. The response hierarchy will concur with the SHEQ-MS five levels. Examples include:

1. Facility response e.g. pulp mill, boiler room.

2. Support to affected facility from a Local Emergency Centre where required;

3. Support to affected facility from a Regional Emergency Centre and an external response; and

4. Crisis management from Gunns Emergency Centre to protect the company reputation and that of its partners.

Project emergency plans must link back to and be consistent with the corporate Emergency Response Standard. Further discussion of emergency response is included in the following section.

2.13   Emergency Prevention and Response

2.13.1   Emergency Prevention

The techniques for and importance of preventing emergencies have been explained in previous sections. These include the use of barriers to prevent the event occurring, and escalation barriers to prevent the event from causing greater consequences. Specific management barriers and systems are also included in Section 3 of this document. Examples of systems (barriers) for reducing the risk of an emergency occurring or its consequences are outlined below.

Leak Detection and Minimisation

The plant and equipment will be designed to reduce the risk of a leak of hazardous or dangerous material. This may, where required, include contingency barriers, fault-monitored sensors to detect leaks, alarms, pressure valves and portable monitors. Particular attention will be given to areas storing or using hazardous material or waste, high-pressure vessels, underground tanks, and utilities that store and transport pressurised natural gas.

Emergency Shutdown Systems

Process and plant equipment will be designed for Emergency Shutdown Systems contingency where there is potential for a significant incident. These systems can be activated manually by workers at strategic points within the mill, or linked to sensors and alarms that are automatically activated when a calibrated threshold is reached.

In the event that normal power supply is lost (that is, from both turbines and grid), the system will be designed to have an automatic emergency power backup. This will be by fully independent generator/s that switches on following the loss of mains power. The generator will power emergency equipment such as lighting, fire fighting pumps, boiler feed pumps and a temporary refuge area. An emergency backup powered by battery will provide a third contingency in the event of a disaster occurring.

Fire / Explosions Prevention

The potential for explosions and fires exists because of the use of volatile materials and pressure vessels on site.

Process event tree analysis will be conducted for major accident events that could lead to explosions, with a focus on the potential for explosions that could escalate into a crisis. This detailed analysis of the potential for explosions will be completed prior to commencement of operations. The analysis will lead to determination of the 'safe distance' between dangerous equipment and the concentration of personnel, and may be completed using modelling of events to determine 'risk contours'.

Fire prevention will focus on an analysis of the following types of fires:

- Flash fire – ignition of flammable vapour cloud e.g. natural gas cloud (explosion can occur if within a pressurised vessel);
- Jet fire – flammable release with momentum effects e.g. vapour jet from fractured pipe;
- Pool fire – flammable or combustible volatile liquid is ignited following a spill. The pool of liquid burns to produce thermal radiation levels that relate to it's properties and size of the flammable source; and
- Material fire – ignition of flammable material e.g. oily rags within a waste skip.

Fire Protection

If a fire occurs within the pulp mill site, there will be adequate fire fighting resources available either to extinguish the fire or to slow its progress to allow personnel to escape danger. Activation of a fire alarm will be by call points placed in easily accessible locations throughout the facilities. An ascending audible alarm system will be designed to warn of potential emergency or fire and to give an evacuation notice.

Fire fighting equipment will, under international best practice, be designed to include contingency for damage or loss in a disaster situation e.g. firewater pumps with backup water and pump capacity. A study of fire fighting needs will be conducted during detailed design in order to best design an appropriate system for the site.

Toxic Releases

Event tree analysis during detailed design will be used to determine the potential for toxic releases. These could occur from:

- toxic gas release from ruptured vessel;
- volatile liquid evaporation producing vapour;
- flashing liquid producing vapour and aerosol;
- fire producing toxic gases; and
- toxic dusts or fumes.

Oil / Fuel Spill

The HAZID workshop during the design phase will assess potential scenarios for oil and/or fuel spills, particularly from the wharf facility or from external sources. The results of this workshop and further modelling will determine specific engineering design measures or management to reduce this risk to ALARP.

2.13.2   Emergency Response

The Alliance and Pulp Mill Managers are responsible for Emergency Management Planning with overall responsibility for the Emergency Response System. In the event of a crisis occurring the Alliance Manager and/or Pulp Mill Manager would assume overall responsibility.

The project SHEQ Department will act as advisers to maintain consistency of the plans and assist with regular emergency response exercises.

Table specifies the likely emergency plan/procedures that will be required. The system aspects are structured into five levels, the highest level being a broad description (Level 1), with increasing detail to procedures (Level 5). A description of these levels is included in Section 2.2.

Table 2:   Emergency Response Planning Structure

Structure Level		Aspect	Description	Scope
1		HSE Polices	General statement of company commitment to emergency response	Pulp Mill project
2		Emergency Response Management System	System within QHSE-MS	Pulp Mill project
3		Project Emergency Response Plan (ERP)	Overall plan for project detailing resources, contacts and responsibilities	All facilities of project
3		Crisis Management Team (CMT)	Crisis management to safeguard long term reputation of Gunns in the event of an incident with potential to escalate	Pulp Mill project
3		Site Specific Emergency Response Plan	Plans linking to project ERP and this QHSE-MS. Site specific details for each facility	Pulp Mill, Port Facility and Landfill.
3		Oil Spill Contingency Plan	Plan for potential oil, fuel, chemical or hazardous material spill event offshore impacting coastline	Sea port and immediate coastline of project

Structure Level		Aspect	Description	Scope
4		External Affairs Procedures	Management of all information external to the project during an emergency i.e. media, Government, non-Government organizations, staff and the public liaison	Pulp Mill project
4		Incident Specific Procedures	Procedures addressing incidents that are more likely at each facility. Can be included in site specific ERP	Potential major incident risks
5		Exercises and Training Procedures	Procedures for how to conduct emergency exercises at facilities and appropriate training	Potential major incident risks

Levels of Emergency Response

Code Blue

Where an emergency occurs at a site and can be managed initially without external assistance, the Person in Charge (PIC) will initiate an increase in status if:

◗ no information is forthcoming from the site of incident;

◗ the situation is escalating or control has not been established immediately;

◗ in the PICs, opinion the incident requires additional resources; and

◗ there is a possible impact to Gunns' reputation.

Code Yellow

Where an emergency may require external assistance initially and can be controlled by resources on site over time, the PIC may contact the Alliance or Pulp Mill Managers. The PIC will initiate an increase in status if:

◗ resources committed are insufficient;

◗ the situation is escalating or control has not been established immediately; and

◗ there is possible impact on Gunns' reputation, assets, customers, or continuity of supply.

Code Orange

Where, in an emergency, the site's asset resources have been fully committed; or where the time to bring the incident under control is excessive; or where significant resources are required to control the incident, the appropriate emergency centre and either the Alliance or Pulp Mill Manager will be contacted and the Brand Manager will be involved. Other characteristics of this emergency include:

◗ a significant risk to facililty and/or to asset and/or to surrounding area;

◗ a significant risk to life, to property, and to the environment; and

◗ likely impact on Gunns' reputation, assets, customers or continuity of supply.

Code Red

Where, in an emergency, all available resources have been committed and the incident is still not under control and the emergency presents a risk to on-going operations, commerce or reputation the CMT Manager will mobilise the CMT and communicate with any established Alliance Partners. The Brand Manager will join the CMT.

Other Components of Emergency Response System

The following components of a typical emergency response system may also require development:

◗ Emergency centres and personnel responsibilities;

◗ Simplified emergency flow chart (to be placed on site wall for quick reference);

◗ Detailed list of contact names and numbers;

◗ Specific facility and site Emergency Response Plans;

◗ External affairs team procedures/protocol;

◗ Crisis Management Team procedures;

◗ Training and exercise procedures and schedule; and

◗ Auditing procedure and schedule.

2.14 Incident and Hazard Reporting

All incidents and hazards that relate to the Project 'Duty of Care' will be reported and analysed. Details of how each are to be assessed will be included in a specific procedure for investigating and reporting incidents and hazards. It is the responsibility of the contract sponsor to ensure that contractors working on the project are following the procedure. This procedure will include:

◗ clear definitions of what constitutes an incident;

◗ the level of reporting and investigation that is required for the seriousness of the incident;

◗ KPIs to be used, and the most appropriate methodology for tracking incident trends over time;

◗ a requirement that serious incidents which involve a fatality, significant environmental impact, lost time or high potential incident must be reported to Senior Management as soon as possible. The SHEQ Department of the project must be informed as soon as practicable;

◗ provision for the SHEQ Department to assign a unique incident number to be referenced in the Incident Report and all associated documentation;

◗ a requirement that the investigation Line Manager be responsible for completing an initial Incident Notification Report to the SHEQ Department no later than 24 hours after the event, and that the:

◗ Line Manager will be responsible for the investigation and internal reporting of an incident;

◗ provision for the SHEQ Department to resource the investigation using appropriate personnel from the site management team;

◗ a requirement that all recommendations in the Investigation Report have clear responsibilities allocated and time periods set for implementation; and

◗ all incidents requiring external reporting will be via the Alliance or Pulp Mill Managers.

2.14.1   Incident Investigation and Reporting

If an investigation is required for a significant incident, it will include the following basic elements:

◗ identification the root cause and, extent of the incident;

◗ identification and implementation of the necessary corrective action;

◗ identification of the personnel responsible for carrying out the corrective action;

◗ recording of any changes in written procedures required;

◗ advising the relevant authority (if applicable); and

◗ implementation or modification of controls necessary to avoid repetition.

2.15   Non-Conformance and Corrective and Preventative Action

Line Managers are responsible for conducting reviews and audits to determine potential non-conformance with legislation, regulations, SHEQ polices and management system, procedures and standards. Identification of the root cause of non-conformance will result in actions to eliminate or reduce the risk to the project, or to mitigate consequences.

Corrective and preventative actions will be applied that are:

◗ **Appropriate** – relevant to the magnitude of the SHEQ risks;

◗ **Actionable** – the action is worded in a clear, concise and easily understandable manner;

◗ **Achievable** - the person designated can complete the action(s) within the timeframe given; and

◗ **Auditable** – completion of the action produces evidence that can be verified at a later date.

2.16   Implementation

The SHEQ-MS is produced as a guideline at the design stage of the project. It will be updated closer to the beginning of construction and incorporated within Gunns' existing company management systems.

Managers and Supervisors are responsible for providing assurance that their work areas follow the SHEQ-MS. This can be achieved by including actions in the work area SHEQ Plans, and conducting regular audits of the management system compliance. A documented auditable trail will be established for assurance purposes.

2.17   Monitoring and Reporting

Monitoring and reporting provides a direct measure of the project's impacts, the consequences of its operations and the efficiency of the SHEQ-MS. This includes:

◗ monitoring of the implementation of SHEQ Plans;

◗ regular inspection of facilities, plant and equipment against performance criteria;

◗ environmental monitoring of ecological impacts over time;

◗ reporting and analysis of discharges, emissions and waste disposal; and

◗ annual reporting of results to Gunns management and to other stakeholders as required.

It is the responsibility of the Line Managers to conduct regular monitoring and reporting of the SHEQ-MS and the impacts on SHEQ performance within their line of authority.

SHEQ performance monitoring provides a baseline record for assessing the potential impact of SHEQ activities. Specific details of the monitoring will be included in the operational SHEQ Plans. Examples of performance monitoring KPIs include:

◗ environmental monitoring of receiving areas (ecological systems);

◗ air emissions;

◗ oil and chemicals in water discharge;

◗ oil spilt and recovered (onshore and offshore);

◗ water use, discharge and reuse;

◗ waste generated and recycled; and

◗ greenhouse gas emissions.

2.18   Auditing

The audit and review process will be used to verify that the project is managing SHEQ risks to ALARP, and is able to provide effective systematic process of due diligence.

Detailed audit programs will be developed during the detailed design phase prior to construction. As a guideline the program will include:

◗ SHEQ-MS audit of the project prior to start-up of construction and operations and at regular periods during operations (e.g. annually);

◗ environmental and safety field audit prior to construction and at 6 monthly intervals during construction, once at operation start-up, again at 6 months after start-up and annually during operations;

◗ environmental and safety audit of major contractors prior to their start-up and regularly during their operations;

◗ audits by an independent team external to the facility; and

◗ SHEQ self-audits can be conducted by the facility (or work area) and comprise a daily checklist or inspection, or the performance of elements of the SHEQ-MS regularly over time.

Most of the audits outlined above can be conducted by qualified professionals from the Gunns Project who have relevant auditing experience, and knowledge of the audit topic. Independent audits will also be conducted (that is, by people external to the project) to gain an independent assessment. Representatives from external agencies, such as DPIW, will also be invited for audits.

Contractors will be audited to ensure compliance with the projects' SHEQ-MS and relevant standards. The right of the Gunns project to conduct SHEQ audits of its contractors will be included in contracts.

An audit team will, at a minimum, comprise a Lead Auditor, an engineer (or person with appropriate knowledge) familiar with the plant/equipment and/or process, and a person with experience in the relevant field e.g. environmental management.

During operations each work area is responsible for controlling the frequency of audits for its facility or area of management. Line Managers must be satisfied that appropriate due diligence is being achieved, and that the audits are conducted in a professional manner.

Audit results will be documented to indicate the deficiencies found and the corrective actions required. Before being closed out, corrective action requests will be followed up to ensure that non-conformance has been corrected.

Similarly, the quality system will also be corrected, if necessary, to prevent recurrence of issues.

Table 3 includes a recommended audit schedule for the detailed design, construction and operation phases of the project. It is expected this schedule will be updated according to project needs.

Table 3:   SHEQ Audit Schedule

Description	Type	When	Reference Protocol
Pulp Mill Design	Internal	Completion of detailed design	EMP (Design)
Management System	Internal and External	Prior to start of construction Prior to start of operation Annually during operations	Gunns Project SHEQ-MS EMP, ERP and SMP for Construction and Operation, ISO14001: 2004, AS4801: 2001 or similar.
Site Risks / Impacts (Environmental and Safety)	Internal and External	During construction (two per year) Prior to start of operation One and six months after start of operation Annually during operations	Gunns Project SHEQ-MS EMP, ERP and SMP for Construction, Operation
Major Contractors SHEQ-MS	Internal	Prior to start of contract Regularly during life of contract if need is identified	Gunns Project SHEQ-MS
Facility (or work area) Environmental and Safety	Internal	Regularly during operations	Facility SHEQ Plan

2.19   Performance Improvement and Learning

A key concept of any management system is being able to improve performance over time. The first stage is to benchmark the current performance of the facility or work area. This can be achieved through the KPI reporting and SHEQ audits. When a benchmark level is achieved performance improvement can then be measured against this.

The EMPs in Section 3 includes benchmark performance standards and criteria. Management actions will be improved through constant assessment and learning from past performance. As identified, new management actions will be added over time. Through this process, continual improvement in performance may be achieved.

The following are practical examples of how the project will improve SHEQ performance:

◗   Conduct of regular audits with reference documents as protocols e.g. the management actions of the EMP;

◗   Review of Gunns' SHEQ Strategic Objectives and the setting project objectives to concur with these objectives;

◗   Periodic review of SHEQ policies;

◗   Audit of SHEQ actions – included on 'Action Tracking System' to ensure completion;

- Conduct of SHEQ incident investigation actions;
- Incorporation of changes into Gunns' SHEQ standards and/or procedures;
- Benchmarking within the international forestry/pulp mill industry;
- SHEQ KPI trends analysis; and
- Update of SHEQ Plans regularly.

2.20   Summary of Key SHEQ Requirements

In order of priority:

1. Develop a culture where safety, good housekeeping, caring for our environment is second nature.

2. Develop an organisational structure for construction phase and later operations identifying roles, responsibilities and key performance objectives which must include safety, health and environmental measures.

3. Systematically identify hazards and potential impacts and consequences;

4. Evaluate the risks from the identified hazards against screening criteria, taking into account the likelihood of occurrence and severity of the consequences. Compare these risks against SHE objectives and targets set for the project;

5. Implement management measures to eliminate the risk or reduce it to acceptable levels. Measures can include reducing the probability of occurrence and/or the consequences of the hazard. Management measures include steps to prevent escalation of the aspect and to reduce the effects; and

6. Establish recovery preparedness measures (including emergency procedures) as well as restoration and compensation procedures.

7. Develop a comprehensive training system.

8. Carry out auditing to confirm "that we are doing what we say" and ensure any deficiencies are closed in a timely manner