DEPARTMENT FOR ENERGY AND MINING

SELF-ASSESSMENT OF PROCESS SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEM MATURITY

12-1-2021

Purpose

The objective of this framework is to assist Licensees and operators to self-assess the effectiveness and maturity of their management systems in delivering acceptable Process Safety and Environmental (PSE) performance, specifically in the context of the *Petroleum and Geothermal Energy Act 2000* (the Act) and Regulation 16 – Operator Assessment Factors. It seeks to clarify regulatory expectations to industry for such systems and assist companies and contractors in identifying components of their management systems that may need to be improved to deliver greater overall system effectiveness. This assessment framework focuses on 3 tiers as shown here in Figure 1:

- Tier 1: The Regulation 16 requirements;
- Tier 2: Industry recognised process safety and environmental management elements; and
- Tier 3: Company specific systems, policies, procedures and guidelines used to deliver the Tier 1 and 2 requirements
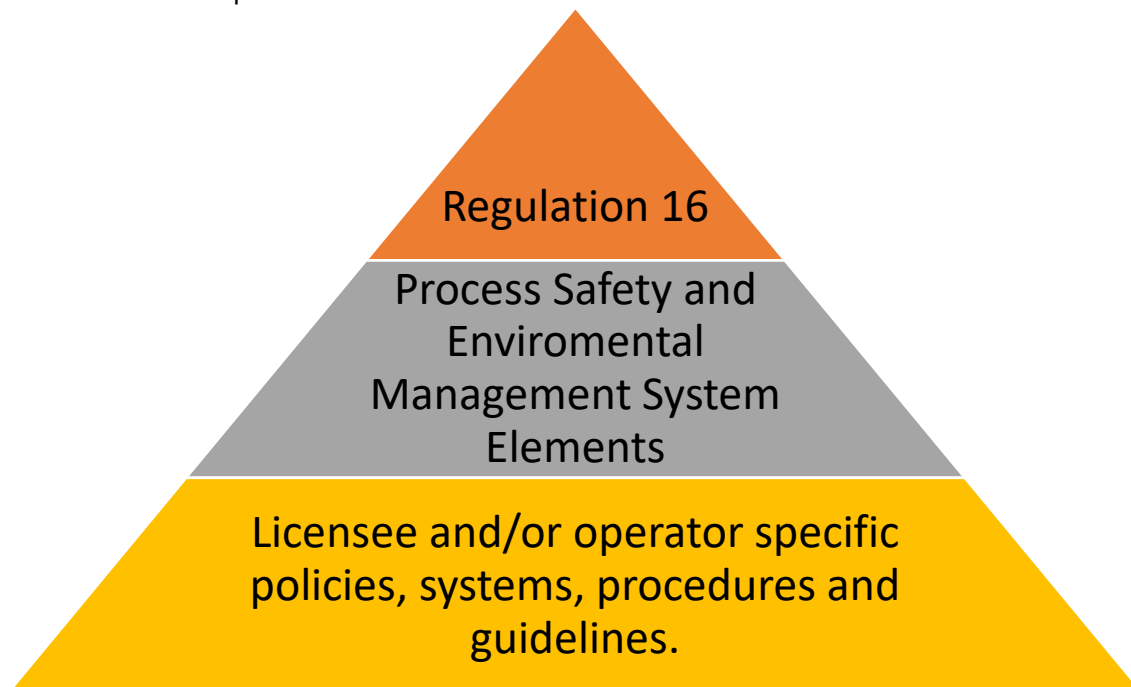

Figure 1: PSEMS assessment framework

This is not a mandatory tool, but is provided to assist companies in self-assessment and continuous improvement of their PSE management systems. ERD will encourage Licensees or operators to submit a completed self-assessment in alternate years. This information will not be used for enforcement action but instead will inform ongoing surveillance themes – both for the individual operator and for the industry as a whole.

The PSEMS Framework

The 15 Elements that make up this framework have been based on a selection of industry recognised process safety management frameworks, that were then mapped to the requirements of Regulation

16. In particular, ERD have focused on the Energy Institute [High Level Process Safety Management Framework (2010)](#).

Achieving regulatory objectives

As reflected in Regulation 16, the maturity of a licensee's management system is integral in achieving regulatory objectives – this includes the objectives of the Act, the Regulations and more specifically, the relevant Statement of Environmental Objectives (SEO).

In addition to the types of incidents that a typical process safety framework will address, ERD have expanded the scope of this self-assessment tool to reflect the regulatory objectives and the regulated activities that come under the Act.

For the purposes of this self-assessment tool, the following terminology is defined:

> **Major incident** – an incident which has, or very nearly has the potential to, result in failure to achieve regulatory objectives. This may include harm to the public, environmental damage, loss of natural gas supply, reasonable stakeholder complaints or other breaches of the relevant SEO.

> **Critical –** for ease of reading, the term "critical" is used throughout this tool. This encompasses any item deemed critical to the prevention a major incident.

How will it be used

Response from licensees and operators will be sought in alternate years.

This tool is not intended as a full audit but rather as a guide in high-level self-assessment of Process Safety and Environmental Management. ERD expects each organisation to have their own fit-for-purpose audit and verification program (see Element 13), but this tool provides a consistent platform for ERD to compare between Licensees and across the industry as a whole. This assessment will mainly focus at the Tier 2 level, assessing against the expectations detailed in the table in Attachment 1 utilising Tier 3 level documents as required to demonstrate the maturity level of implementation of the Tier 2 requirements and in turn the Regulation 16 requirements (Tier 1).

The way the results are interpreted depends on the method selected to complete the assessment – whether this is an assessment completed by an individual or a team, with reference to site documentation and/or interviews, or as a survey of a sample population within the organisation, followed by an assessment and interpretation of the results. This tool can provide a quick check as to the maturity of the PSEMS and reveal where gaps exist so that they can be addressed. The goal is system improvement – therefore honesty in the self-assessment is required. ERD will not use this tool as a basis for enforcement action, however results obtained may inform future inspections and surveillance activities. Any enforcement action undertaken by ERD will be in line with its [compliance policy](#), and this promotes working collaboratively with Licensees and operators at Step 1 to proactively achieve compliance with the Act and Regulations.

Completing the assessment

There is flexibility in the manner in which the tool may be utilised by the Licensee – whether it be audit-style by an individual or team; or as a survey completed by a specific work group or sample of representatives from different roles within the organisation, with the results interpreted to complete the assessment.

It is the operator's discretion to determine the scope of the assessment which will provide the most value. They may choose to audit the operation as a whole, survey discrete sites to compare or focus on one target demographic (i.e. operators or contractors).

The following steps are recommended in any case:

1. Define the operation (i.e. area, facility, activity) being assessed.
2. Define who is completing the self-assessment (i.e. individual, team, sample population) and the method which will be used
3. Assess against each element (Tier 2), using examples of site documentation (Tier 3) and/or interviews to demonstrate the scoring level achieved, as relevant.
4. Following completion of the assessment or collection of the surveys, the assessor and/or assessing team should be able to define the PSEMS gaps and the appropriate actions required to achieve the level desired. This may include plans already in progress

Scoring

Each element is scored on a scale of 1 to 5 utilising the criteria set out in Attachment 1. These criteria represent the level of maturity as described in table 1. The criteria serve as a guide and are not definitive – the examples provided may not match the way that each activity and operation is managed. While an effort has been made to cater for various types of activities regulated under the PGE Act, the tool was based on guidance which focused on processing facilities, and hence may not be an exact fit for other operations, such as drilling.

Table 1: PSEMS element maturity scoring matrix

Score/Level	Description	Maturity
1	Less than expected performance, urgent attention required	Requirements of the Act (Regulation 16) are met on paper, but oversight is required by the regulator to ensure implementation.
2	Improvement is required in this area	Element is implemented but generally at minimum levels, but improvement is required to meet the anticipated performance for a low-level official surveillance activity.
3	Ongoing improvement evident	Element is mostly implemented; plans are in place to improve performance.
4	Expected outcome and satisfactory	The element is implemented and fit-for-purpose. There is a commitment to continuous improvement.

5	Better than expected performance	Performance is beyond fit-for-purpose.

Abbreviations

AS 2885	Australian Standard: Pipelines – Gas and liquid petroleum
ERD	Energy Resources Division
JHA	Job hazard analysis
KPI	Key performance indicator
MOC	Management of change
PSE	Process safety and environment
PSEM	Process safety and environmental management
PSEMS	Process safety and environmental management system
PTW	Permit to work
SEO	Statement of Environmental Objectives
SWMS	Safe work method statement
The Act	Petroleum and Geothermal Energy Act 2000
The Regulations	Petroleum and Geothermal Energy Regulations 2013

Tier 1 Regulatory Requirements Regulation 16	Element number	Tier 2 Elements	Tier 2 Element Expectations	Tier 2 Element Score 1 to 5
Reg 16(2)(a) Reg 16(2)(j)	1	**Leadership and Awareness** To ensure that: • priorities and strategies for effective process safety and environmental risk management are established, championed and implemented. • sufficient resources for sustainable process safety and environmental risk management are provided and that sufficient capital investment is provided to maintain the integrity of the plant and process as well as the management systems. • business decisions are made in the light of the implications for process safety and environmental risk management and that stakeholders are informed and engaged on the performance of the business in relation to risk management. • there is adequate and effective process safety and environmental risk communication, bottom up and top down, and visibility of senior managers is maintained to support and deliver positive process safety and environment awareness.	There are policies at corporate level which address the objectives of the *Petroleum and Geothermal Energy Act 2000* – including public safety, environmental protection, security of natural gas supply (as relevant) and effective consultation. There is a documented strategy which sets out how each of the corporate policies is to be achieved and maintained at the site level. This includes clear objectives, performance targets and action plans. The strategies are clearly communicated at every level relevant the regulated activity, and to key stakeholders. Management engages employees and contractors in two-way communication regarding the strategies. Employees and contractors are actively engaged in the improvement of the environmental and process safety performance and understand the process safety and environmental hazards, their identification and management/control. Information on this performance is communicated regularly to senior management, including intelligence on good and sub-standard performance, to allow senior management to review and determine whether and where improvements are needed. Senior management provide sufficient, competent resources and funding necessary to deliver the policy and strategy. Systematic HSE and process safety promotion and engagement programs are in place to continually increase awareness of employees and contractors with regard to HSE and process safety issues and contribute to the promotion of a culture of openness, transparency, belief, motivation, individual responsibility, participation and commitment. There is a defined organisational structure which clearly shows the interrelationships within the business of individuals with specific responsibilities for process safety and the environment.	**Score 1 – Less than expected performance, urgent attention required** Policies exist on paper. Scope of policies may be limited and not cover public safety, environmental protection, security of supply and effective consultation. Approach to PSEM/HSE is reactive at both the management and field level. Minimal PSEM or HSE awareness has been developed. Resources are limited to specific objectives or projects. There are no specific mechanisms for communication and awareness of process safety or environmental concepts and issues from top-down and bottom-up, or those that exists are one-directional. **Score 2 – Acceptable but improvement is required in this area** Policies cover all expected outcomes of a PSEMS but may not specifically reference process safety or environmental concerns. There are documented strategies for how the outcomes of the policies will be achieved. Awareness of HSE concerns and prevention is established, and awareness of PSEM concepts is in development (e.g. through promotion and engagement programs), Management, employees and contractors are aware of key PSE risks of the activities which the licensee/operator is undertaking. Resources are generally made available for delivery of essential process safety activities. **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Policies clearly defined, consistent with the objectives of the Act. Good awareness of policies and strategies throughout the organisation. Strategies specifically address process safety. Managers and supervisors actively participate in PSEM processes and activities and develop and monitor both PSEM and HSE targets and measures with employees and contractors. PSEM awareness and ownership is present and is supported by proactive engagement programs. Adequate resources and an appropriate organisational structure allow for delivery of PSEM objectives. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose

Reg 16(2)(i)	2	**Identification and Compliance with Legislation and Industry Standards** To ensure that requirements of applicable legislation, regulations, licences, permits, codes, standards, practices and other governmental requirements are identified, kept current, understood and complied with.	Requirements of current and forthcoming, applicable legislation, regulations, licences, permits, codes, standards, practices and other governmental requirements are identified, documented and kept current. Systems are in place to track and assign responsibility for compliance with regulatory requirements. Internal standards and safe working practices meet or exceed legislative and industry standard requirements. Compliance with legislation and industry standards is systematically verified. Systems and arrangements are in place to ensure the retention of corporate knowledge relating to compliance. Design, inspection and maintenance standards are defined, which bring together legislative requirements, industry standards and the organisations good practices into a clear set of guidelines to be used when developing projects, inspections and maintenance plans. Deviation from internal standard is permitted only after assessment, review and approval by specific named competent individuals and after the rationale for the decision is documented.	**Score 1 – Less than expected performance, urgent attention required** Limited understanding of regulatory requirements at senior levels and poorly communicated and understood at employee and contractor levels. No dedicated compliance resource(s). Non-compliances with relevant legislation have been observed. Substantial intervention required by regulator to ensure compliance is achieved. Compliance with industry standards is declared on paper but verification is limited to regulator activities. **Score 2 – Acceptable but improvement is required in this area** General understanding of the requirements of the Act and other relevant legislation. Some guidance from the regulator is required for routine activities and/or minor resubmissions of reports may be required to ensure all requirements are addressed. Compliance system is in development, and/or knowledge is limited to a single individual. Compliance assurance and verification activities exist but are sporadic or not undertaken by independent parties. **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Applicable regulatory requirements are identified, understood and compliance achieved at the relevant levels of the organisation. Requirements are documented and tracked internally systematically by dedicated resource(s). Minimal to no assistance required from regulator to deliver compliance, except in non-routine situations. Requests for advice from the regulator are proactive and clear, and communication is open. Key industry standards are recognised, and internal standards defined where appropriate. A process exists for approving and managing deviation from standards. Any potential need to deviate from a standard is anticipated, allowing sufficient time for due diligence assessment and approvals. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose.

Reg 16(2)(b)	3	**Management of Change and Project Management** To ensure that new activities, modifications and alterations, whether temporary or permanent, are suitably assessed for process safety and environmental risks and consequences before changes are implemented. This includes physical, procedural and organisational changes.	Project management procedures are documented, well understood, readily available to those who need to use them and executed by qualified personnel. Safety in design and hierarchy of control concepts are incorporated into the design process, as are future integrity management and maintenance requirements. Key stages in the project development lifecycle are reviewed and approved by specified level of management with due consideration of PSM and Environmental practices. Criteria are established and procedures are in place for conducting and documenting risk assessments at specific project stages to confirm the integrity of new assets and existing assets which have been substantially modified. This includes the control of changes which may be initiated during the implementation of a project. A process is in place which systematically identifies, assesses and manages the risks arising from both temporary and permanent changes – physical, procedural and organisational. Changes are approved by specified named competent individuals commensurate with the risks associated with the proposed change. Information and procedures are updated, and suitable training provided where there is an impact on operation or maintenance. Pertinent records covering all changes are maintained. There is a systematic process for checking operational readiness and the integrity of systems before they are brought into service. Commissioning and start – up procedures have defined stages, hold/check points and progression criteria and review authorities. There are defined criteria for categorising and handling identified issues and outstanding work items.	**Score 1 – Less than expected performance, urgent attention required** There is a change management system/procedure, but its application is poorly or inconsistently executed, or scope is limited. No or minimal structured project/activity management processes. **Score 2 – Acceptable but improvement is required in this area** Management of change process exists and is implemented but may not cover all types of changes. Criteria for when a specific management of change procedure is required may not be established. Awareness of the process and training in its application is provided. Assessments are undertaken to identify, assess and manage risk for new projects or modifications to existing processes but may not be systematic in approach. When undertaking an activity, the required deliverables and hold points are documented but a system does not exist or is not fully implemented to ensure that these requirements are met. Basic pre-start up processes are in place to ensure that all equipment and systems are fit-for-purpose before being energised. A process for tracking and closing out actions relating to a project is only implemented at a basic level. **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Consideration for identification and elimination of hazards and minimisation of risk is incorporated from early planning stages. Change management system/procedures exist that clearly govern the level of evaluation of required for all physical, procedural or organisational changes, both temporary and permanent. Process addresses the inherent and introduced risk, approval requirements and the responsibilities and competencies of those involved. Key stages and steps in undertaking an activity or delivering a project are identified, including adequate risk assessment, and processes in place to ensure that all requirements are met before proceeding to the next stage (e.g. before disturbance, pre-construction, pre-commissioning, handover to operations). There is a systematic process for checking operational readiness and the integrity of systems before they are brought into service. All actions/issues arising from activities are registered, monitored and closed out in a timely manner. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose.

| Reg 16(2)(c) | 4 | **Hazard Identification and Risk Assessment**

To ensure that:
• all types of hazards which can give rise to a catastrophic failure or major incident are identified and consequences quantified
• controls ,both mitigative and preventative, reduce the likelihood of such an event and its potential consequences to an acceptable level are determined, implemented and effective | A structured process is applied to identify hazards and consequences and ensure that the risks arising from the organisation' assets and operations are systematically assessed.

Risk control measures are identified and implemented, using the hierarchy of control, to manage the identified risks to a tolerable level.

The tolerable level of risk is defined for all risks (to human health and safety, environmental impact, property and financial loss) and is consistently understood and applied throughout the organisation.

Risk assessments are carried out by competent personnel with appropriate independence, representing all relevant areas (such as environment, design disciplines, operations etc).

Actions and hazards raised through risk assessments or operations are handled systematically; this may include systems for recording, addressing, assigning responsibility for, prioritising, tracking and closing out.

The status of risk control measures, specifically for high risks, is reviewed at regular intervals by specified levels of management to ensure risk assessment recommendations are resolved in a timely manner.

Risk assessments are updated as changes occur and reviewed and updated at a defined appropriate frequency or following defined triggers (such as incidents at this or similar assets). | **Score 1 – Less than expected performance, urgent attention required**
PSE hazards and associated effects are only identified in a haphazard or reactive manner. Risk assessment process is not consistently applied. Triggers or frequencies for review and risk assessment are not defined or not implemented. Documentation of risk assessments and actions from such assessments is poor.

Score 2 – Acceptable but improvement is required in this area
PSE hazards are identified and risks assessed at defined intervals. Workshops are not always facilitated by independent personnel and/or attended by representatives from operations, design and environmental teams (as appropriate). Action tracking exists but is not systematic or centralised. The tolerable level of risk is defined for all types risks (to human health and safety, environmental impact, property and financial loss).

Score 3 - Ongoing improvement evident
Element is mostly implemented; plans are in place to improve performance.

Score 4 – Expected outcome and satisfactory
Risk assessments are undertaken against a defined risk matrix using a structured process and reviewed by competent persons with representation from relevant areas of design and operations. All major hazards are identified. The level of acceptable level of risk is defined and is consistently understood and applied throughout the organisation. A comprehensive inventory of PSEM hazards and effects and critical controls has been documented for all activities and key risks are visible to appropriate persons within the organisation. Critical controls are identified and implemented, and their effectiveness monitored to ensure the risk has been reduced so far as is reasonably practicable. Risk assessment review triggers are well defined and consistently implemented. An effective system is implemented for the tracking and close out of actions raised through risk assessments.

Score 5 – Better than expected performance
Evidence is to be provided that performance is beyond fit-for-purpose |

| Reg 16(2)(b) | 5 | **Asset and Integrity Management**

To ensure that the performance and integrity of assets (such as pipe and plant) is maintained as fit for purpose. | A systematic integrity inspection and maintenance program is in place.

The integrity and asset management program is based on recognised national and international codes and standards and adheres to the recommendations of equipment manufacturers and suppliers.

If the integrity management programs are risk-based, inspection protocols and maintenance frequencies are based on the expected failure modes and degradation intervals of plant and equipment and take account of ageing plant issues.

Information on the failure modes and degradation of plant, equipment and utilities which could give rise to a major incident are readily available.

Delivery of the integrity management program is monitored and reviewed by the facility management team. Overdue inspections or maintenance actions for critical plant and equipment, deviations from the maintenance program or interim controls are assessed to determine whether the plant and process can continue to be fit for purpose until such point as the outstanding item(s) is cleared. Any decision to continue to operate with overdue critical inspections and maintenance actions is recorded and endorsed by the facility management team.

There are procedures to ensure that critical inspection and maintenance programs are reviewed regularly commensurate with risk, using findings from the program, industry experience and incidents to identify and address and opportunities for improvement, so that they are kept up to date as a living system.

There are procedures to ensure that repairs or remedial actions from the integrity management program are appropriately prioritised and followed up. | **Score 1 – Less than expected performance, urgent attention required**
Asset integrity issues not fully evaluated or addressed. No or minimal proactive maintenance program in place. Operate to failure approach employed for most equipment.

Score 2 – Acceptable but improvement is required in this area
Basic asset integrity management plan in place for most equipment, based on industry standard and vendor requirements. Critical plant and associated inspection/remediation tasks are not specifically identified. KPIs/metrics are available to track work order completion and integrity management activities to some extent. Management and consideration of overdue/postponed critical integrity activities exists but may not have a formalised process.

Score 3 - Ongoing improvement evident
Element is mostly implemented; plans are in place to improve performance.

Score 4 – Expected outcome and satisfactory
Effective integrity management programs are in place, focused on critical requirements, which are clearly visible in the scheduling system. Industry standard requirements are identified and satisfied. Asset integrity is an integral part of existing facility and equipment, and of new development. Facilities and equipment are maintained as fit for purpose. Asset integrity issues related to facilities and equipment, such as failure modes and potential consequences, are clearly identified, understood and communicated to concerned parties. Effectiveness of integrity management program is tracked through KPIs and well communicated to appropriate levels within the organisation. Comprehensive and formalised procedure for deviations from integrity management program or overdue activities is in place. Procedure includes authorisations/ endorsement and where appropriate risk assessment for continuing operation.

Score 5 – Better than expected performance
Evidence is to be provided that performance is beyond fit-for-purpose. |

Reg 16(2)(b)	6	**Critical Equipment Management** To ensure that the performance and effectiveness of critical equipment including but not limited to sensors, alarms, communications, utilities, and control system are maintained within the acceptable level remain fit for purpose.	A systematic inspection, testing and maintenance program is in place for critical equipment. The inspection, testing and maintenance program is based on recognised national and international codes and standards and adheres to the recommendations of equipment manufacturers and suppliers. If the critical equipment management programs are risk-based, inspection protocols and maintenance frequencies are based on the expected failure modes and degradation intervals of plant and equipment and account for ageing plant issues. All items of critical equipment are identified and distinguished from operational critical equipment. Prioritisation of inspection, testing and maintenance actions is based on the function and criticality of the equipment. Required performance criteria are derived for critical equipment to prevent a major incident. This is documented in the form of performance standards. Intelligence is collected on the function and fitness for purpose of equipment. This information is analysed to facilitate the delivery of an effective inspection, testing and maintenance program. Information on the failure modes, degradation in performance profiles of critical equipment which could give rise to a major incident are readily available to all staff who operated and maintain the plant. Delivery of the critical equipment management program is monitored and reviewed by the facility management team. Overdue testing and maintenance actions for critical equipment deviations from the maintenance program or bridged controls are assessed to determine whether the plant and process can continue to be fit for purpose until such point as the outstanding item(s) is cleared. Any decision to continue to operate with overdue/bridged critical inspections and maintenance actions is recorded and endorsed by the facility management team. There are procedures to ensure that critical testing, inspection and maintenance programs are reviewed regularly commensurate with risk, using findings from the program, industry experience and incidents to identify and address and opportunities for improvement, so that they are kept up to date as a living system. There are procedures to ensure that findings and recommendations from critical equipment testing, inspection and maintenance programs are appropriately prioritised and followed up.	**Score 1 – Less than expected performance, urgent attention required** Performance requirements for critical equipment not fully evaluated or addressed. No or minimal testing, inspection or proactive maintenance program in place. Operate to failure approach employed for most equipment. **Score 2 – Acceptable but improvement is required in this area** Basic inspection, testing and maintenance plans in place for most equipment, based on industry standard and vendor requirements. Basic maintenance management system is implemented. critical equipment/activities are not systematically identified. KPIs/metrics are available to track work order completion and to some extent. Management and consideration of overdue/postponed critical inspections and maintenance exists but may not have a formalised process. **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Critical equipment is identified, and performance requirements are clearly defined and documented. Industry standard requirements are identified and satisfied. Effective inspection, testing and maintenance programs in place, focused on critical requirements, which are clearly visible in the maintenance system. Failure modes and potential consequences for critical equipment that are not meeting their performance standard are clearly identified, understood and communicated to concerned parties. Deficiencies identified are risk assessed and addressed in line with defined timeframes, proportionate to the risk. Effectiveness of critical equipment maintenance program is tracked through KPIs and well communicated to appropriate levels within the organisation. Formalised bridging procedure for critical controls, deviations from maintenance program or overdue actions is in place. Procedure includes authorisations/endorsement and where appropriate risk assessment for continuing operation. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose

| Reg 16(2)(b) | 7 | **Planning, Manuals and Procedures**

To ensure that
• adequate information and instructions are provided to plant operators, maintenance staff and contractors to ensure that plant and processes can be operated within the established parameters/safe operating limits during normal and abnormal conditions.
• Construction, environment and operating plans, manuals and procedures achieve the objectives of the SEO. | Operational procedures cover start-up, operation, abnormal conditions, simultaneous operations, emergency scenarios, shutdown of plant and processes, and maintenance of the integrity of plant and processes. Operating procedures cover the actions and activities taken to maintain control when there is an unexpected process deviation.

The safe operating envelopes for all plant and processes which can give rise to a major incident are clearly designated and documented. The information about process parameters and the basis of safe operation is readily available, in an understandable format, including in manuals, to those who need access to this information to maintain control of the plant and equipment.

Sufficient information on the plant and process conditions is available to controller and operators to allow personnel to maintain the correct operational conditions.

For critical tasks within operational procedures, those involved are aware of their importance and the performance standards required.

Each procedure states how the work or actions in the procedure are to be performed, including performance criteria and the required sequence of actions (where relevant). Operational procedures take account the potential for human error and should stipulate which actions are process safety or environmentally critical.

Representatives of the workforce, supervisors and managers responsible for compliance with procedures are involved in their development and review. Employee representatives are consulted on new or revised procedures before they are issued.

When a new procedure is produced, or an existing procedure updated training and instruction on compliance is provided to those affected by a new or revised procedure.

Trends in variations from safety margins or beyond normal expectations, including process upsets are routinely reviewed by operational and maintenance managers on-site.

Handover arrangements are defined understood and implemented commensurate with risk, covering handovers such as; operational and maintenance shift handover, successive work groups and job positions (one to another)

Safe working practices and environmental are defined, which bring together legislative requirements and industry good practice into a clear set of guidelines to be used when developing construction, inspection and maintenance plans and method statements and for operational activities. | **Score 1 – Less than expected performance, urgent attention required**
Critical activities requiring written procedures or plans not identified. Procedures/instructions inconsistently used and enforced. Documents written with no or little employee input. No or inconsistent hold/gate stages in critical processes.

Score 2 – Acceptable but improvement is required in this area
Procedures exist for most critical activities, including appropriate hold/gate stages. Manuals exists for key equipment but may be limited to generic/vendor supplied documentation only. Assurance for completion of these procedures exists but is sporadic or limited to audits. Plans address the requirements of the SEO, but are not consistently implemented in all activities, or no system exists to demonstrate this. Reviews of plans, procedures and manuals are infrequent and may not be in line with periods defined in the operator's systems.

Score 3 - Ongoing improvement evident
Element is mostly implemented; plans are in place to improve performance.

Score 4 – Expected outcome and satisfactory
Critical processes and operating limits to prevent unwanted process safety or environmental events are understood and controlled. Plans, work practices, procedures and manuals address all PSEM risks for specific site. Critical tasks are clearly addressed in the work practices and procedures. Defined process exists for development and review of plans, work practices, manuals, procedures and standards involving all relevant workforce. Critical processes and procedures have appropriate hold and handover mechanisms, and these are consistently utilised. Verification is incorporated into the plans and procedures where required for critical tasks. Full understanding of the potential impact of simultaneous operations and handovers, and suitable controls in place. Frontline personnel are genuinely involved in document development and modifications.

Score 5 – Better than expected performance
Evidence is to be provided that performance is beyond fit-for-purpose |

Reg 16(2)(b) Reg 16(2)(d) Reg 16(2)(i)	8	**Document and Records Management** To ensure that accurate information is available to identify, assess and manage process safety and environmental risk when required.	There are procedures and systems in place to define, develop and maintain the required documentation and records necessary to support the delivery of regulatory objectives. This includes information pertaining to all elements of the PSEMS such as drawings and design information, datasheets, risk assessments, procedures, plans, regulatory compliance information, training and competency records, incident and investigation records, liaison records, maintenance, inspection and testing records. Document and records management protocols apply to both electronic and hard copies of information. All documents, procedures and systems are reviewed according to predetermined schedules and triggers. Documents, records, and other information is accurate, up-to-date and readily available to personnel when required. Documents, records, and information are retained in line with a defined policy.	**Score 1 – Less than expected performance, urgent attention required** No or very basic document control system in place. **Score 2 – Acceptable but improvement is required in this area** Document controls system exists. Training and access to the system may be limited. Review of documentation and records is identified but may not be completed within defined timeframes (such as a backlog of drawings to be updated, or plans and procedures past their review date). **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Critical documents are identified and reviewed according to predetermined schedules and/or triggers. Version control and review are managed through a dedicated system, and ownership and authority for review of all critical documents is clearly defined. Drawings and datasheets are kept up to date and regularly audited/as-built for currency to capture creep changes. Historic records are retained in a functionally accessible system. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose	
Reg 16(2)(b)	9	**Work Control and Task Risk Management e.g. PTW** To ensure that effective work control, PTW and task risk management arrangements are in place and followed to control process safety and environmental risks arising from work activities.	The scope of work or activities which require prior written authority is clearly defined, set out and communicated. The scope of the PTW system specifies what activities are covered by the PTW system and the different types of permit required according to the activity. Competent staff are designated for authorising a PTW request and for undertaking risk assessments. The designated person to authorise a PTW request is independent from a person who requests the permit. Work within scope of the work control system is only undertaken following an adequate and proportionate risk assessment to determine the safe system of work and that the controls measures to manage the identified risks are validated before work commences. Plant and equipment are isolated and locked off in accordance with a 'Lockout and Tag out' procedure in line with industry good practice. Completed task risk assessments are reviewed and approved by specified named competent individuals appropriate to the magnitude of the risk and any decisions are clearly documented.	**Score 1 – Less than expected performance, urgent attention required** Haphazard application of generic work control measures. Permit to Work (PTW) system not fully or consistently implemented or used. PTW records sporadic, incomplete or non-existent. Permitting system in place for environmental approvals (e.g. land clearances) only meets the minimum requirements of legislation. **Score 2 – Acceptable but improvement is required in this area** PTW system and other operational hazard assessments are implemented and generally understood by personnel. Appropriate internal processes in place for environmental clearances and permitting to ensure compliance with the SEO, however some instances of non-compliances have occurred. **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Risk associated with occupational, process and environmental safety hazards managed through proactive application of work control measures, e.g. PTW, JHA, SWSMs. PTW system in place for all critical operations and well understood by all and its application appropriately and well implemented. Personnel familiar with their roles in work control procedures. Systems developed/selected to be fit for the specific application and with input from frontline personnel. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose	

| Reg 16(2)(g) | 10 | **Competency Management**

To ensure that:

• personnel have the right training, experience, skills and capacity to undertake process safety or environmentally critical tasks to the desired standard of performance.
• there are sufficient personnel and staffing levels to undertake all critical operational and maintenance tasks required to maintain the integrity of the plant and the processes. | Process safety or environmentally critical positions are identified. A routine training-needs analysis matrix is in place to identify and record the training and experience needed for staff who perform critical roles.

The required HSE and process safety competencies, and fitness for work and health monitoring requirements are defined for all roles in the organisation

A training and development program is in place, including training in internal procedures and processes (such as PTW).

Training and development are formally reviewed to assess their effectiveness and identify issues which need to be addressed and improvement opportunities | **Score 1 – Less than expected performance, urgent attention required**
No active training schedule apart from general induction. Critical roles and competence requirements not defined. Not all employees have a training plan and records.

Score 2 – Acceptable but improvement is required in this area
Training needs analysis in place for frontline personnel but does not specifically identify PSE critical positions. Training programs are implemented for new operators, but refreshment training (including for new/update procedures) is inconsistent.

Score 3 - Ongoing improvement evident
Element is mostly implemented; plans are in place to improve performance.

Score 4 – Expected outcome and satisfactory
Competencies understood for all PSEM critical positions, both field and office based. All such positions are occupied with qualified staff. Training records in place and up to date. Employees training plan up to date and training is provided when procedural controls and critical systems (e.g. PTW, MOC) are updated.

Score 5 – Better than expected performance
Evidence is to be provided that performance is beyond fit-for-purpose. |
| Reg 16(2)(h) | 11 | **Communication with stakeholders**

To ensure that:
• stakeholder confidence and "licence to operate" is established and maintained through identifying key stakeholder groups, developing and maintaining good working relationships with them and identifying and addressing their issues and concerns.
• genuine and ongoing consultation with stakeholders is undertaken including government agencies, emergency services, media, customers, Regulatory consultation and notification processes, landowners and community liaison activities.
• AS 2885 requirements regarding external interference protection are met. | A defined communications system supports the organisation to identify develop and maintain a good working relationship with statutory and non-statutory stakeholders about its activities, including emergency response communications.

The organisation ensures and demonstrates that the consultation process with statutory and non-statutory stakeholders is appropriate and proportionate and follows a defined process.

System in place for logging complaints to ensure that issues are recorded, addressed as appropriate and resolved in a timely manner.

Plans and procedures exist and are implemented to address the requirements of AS 2885 regarding liaison activities to minimise and manage external interference (where relevant).

Inductions or training exist to ensure that arrangements for communication with stakeholders are understood and followed; understanding of arrangements and compliance with them is regularly tested | **Score 1 – Less than expected performance, urgent attention required**
No, or haphazard at best, evidence of procedures or defined system for communications to stakeholders. Communication is limited to minimum requirements of the legislation with significant ERD oversight.

Score 2 – Acceptable but improvement is required in this area
High level communication protocols are defined, and relevant stakeholders are identified. Communication is not consistently documented and may be sporadic.

Score 3 - Ongoing improvement evident
Element is mostly implemented; plans are in place to improve performance.

Score 4 – Expected outcome and satisfactory
Systems are in place to identify relevant stakeholders and tracking communications. Organisation maintains good working relationships with statutory and non-statutory stakeholders about its activities, including emergency response communications and recording and responding to stakeholder issues. Communications system is well documented and defined and demonstrably reviewed and updated. Communication with stakeholders is proactive and transparent.

Score 5 – Better than expected performance
Evidence is to be provided that performance is beyond fit-for-purpose. |

| Reg 16(2)(g) | 12 | **Contractor and Vendor Management**

To ensure that:
• contractors and third parties who fulfil a process safety role or function, and vendors who provide critical components or equipment, have sufficient competence, supervision, expertise and information about process safety and environmental risks to undertake work or provide services safely and without degrading the integrity of the plant and process, or leading to a breach of the SEO. | There is a process to ensure that contractor, third party and vendor services are evaluated and selected against criteria that include an assessment of capabilities to perform work in a robust manner and meet the organisation's HSE and process safety performance expectations.

Contractor and third-party involvement are assessed and management arrangements of the interface proportional to the risk associated with failure of the interface are established.

All contractors are inducted and appropriately informed / trained on relevant organisation procedures and practices, and the specific hazards associated with any work they undertake.

There are effective organisational, communication and control arrangements between organisation personnel and contractor personnel to manage the risks effectively.

Third party performance (in particular against required performance criteria) is routinely monitored and assessed, feedback is provided, and non – conformities are corrected.

There is effective management of the procurement of critical equipment and parts to ensure that equipment is supplied as specified and fit for purpose. | **Score 1 – Less than expected performance, urgent attention required**
No prequalification system of contractors, subcontractors and vendors exists. Only high-level bridging documents exists for integration of HSEMS systems. Minimal supervision or oversight of contractor activities is provided. No or minimal assurance for vendor supplied equipment. Third party technical reports are accepted as supplied, and minimal assessment of competency is undertaken.

Score 2 – Acceptable but improvement is required in this area
Contractors are assessed and management system bridging documents are put in place, however assurance of the contractors' systems is limited. Only high-level oversight is provided to vendors providing critical equipment. Contractor inductions are undertaken. There are some processes in place for the review and acceptance of third-party technical work.

Score 3 - Ongoing improvement evident
Element is mostly implemented; plans are in place to improve performance.

Score 4 – Expected outcome and satisfactory
All major contractors and sub-contractors pre-qualified and audited. Contractors and sub-contractors' systems are integrated into the site PSEM systems. There is appropriate supervision of contractor activities including regular assurance by the licensee/operator. Responsibilities and communication protocols with respect to process safety and environmental controls and events are clearly defined. A process exists to ensure that third parties providing technical expertise are assessed for competency and reports are reviewed and accepted by defined approvers. QA/QC oversight and/or specification is in place for vendors providing critical parts. Contractors are fully aware of the PSEM risks and critical controls relating to the regulated activities which they are undertaking.

Score 5 – Better than expected performance
Evidence is to be provided that performance is beyond fit-for-purpose |
| Reg 16(2)(d)
Reg 16(2)(i) | 13 | **Monitoring, assurance, audit and review**

To ensure that:
• relevant information and intelligence is gathered to confirm that the process safety and environmental management system(s) are capable of providing the required level of risk reduction over the lifetime of the facility.
• feedback on deficiencies and deterioration in both preventative and mitigative control measures is provided in a timely manner to allow for problems to be addressed and lessons applied across the whole business.
• the results of appropriate monitoring and scrutiny are available to senior executives, the board and stakeholders (including regulators) to demonstrate that risks are being adequately controlled.
• strategic priorities and improvement programs are adequately informed. | There is a documented systematic approach to monitoring, measuring and reviewing the performance of the PSEMS against the objectives set out in this and/or the organisation's framework.

The findings from performance monitoring activities are analysed for trends and common cause failings.

The findings from performance monitoring activities are routinely communicated to the workforce, contractors and key stakeholders.

The findings from performance monitoring activities are regularly reviewed by specified levels of management.

There is a program of routine audits of the Process Safety and Environmental Management System(s), incorporating a combination of first party, independent internal and third-party audits, to ensure that all components are in place and functioning.

Where improvements are identified they are prioritised based on their significance, scheduled and tracked to completion.

Routine information about the performance of the Process Safety and Environmental Management System and all critical controls is gained from a balance of both leading and lagging KPIs. KPIs are set to measure the effectiveness of each element of the PSEMS, as well as critical controls specifically. | **Score 1 – Less than expected performance, urgent attention required**
Auditing program is minimal, and scope is not comprehensive. Limited first party audits may be undertaken. No formal process evident for incorporation of audit or review findings into existing processes or tracking of actions. No or minimal monitoring metrics are available for critical controls.

Score 2 – Acceptable but improvement is required in this area
There is an audit program in place to cover most management system elements, but reliance primarily on first party audits or independent internal audits only, rather than a combination of audit types. Performance indicators exist but may not be fully linked to critical controls or management system elements. Treatment of audit actions or response to KPI trends is reactive and/or limited to non-conformances. Some evidence of a holistic/formalised PSEM performance review which takes into account information from audits and KPIs.

Score 3 - Ongoing improvement evident
Element is mostly implemented; plans are in place to improve performance.

Score 4 – Expected outcome and satisfactory
Audit process is clearly defined and implemented and is a combination of first party, independent internal and third-party reviews. Managers and Supervisors take ownership of the audit process. Audit recommendations are documented, prioritised on a risk basis, and tracked to closure within allocated time frame. Key performance indicators for each element of the PSEM framework are identified, monitored and communicated within the organisation. KPI collection and tracking focussing on leading rather than lagging indicators. Formalised PSEM performance review is consistently implemented, and information communicated throughout the organisation. Trends are observed and programs initiated to proactively improve performance.

Score 5 – Better than expected performance
Evidence is to be provided that performance is beyond fit-for-purpose |

Reg	No.	Element	Requirement	Scoring
Reg 16(2)(e)	14	**Incident Reporting and Investigation** To ensure that incidents and "near misses" are consistently reported and investigated, and that identified corrective actions and learnings are implemented on a timely basis	A system is in place for incident reporting, investigation, follow – up and capturing lessons learned incidents and near misses. Incidents and near misses, including all events where there has been an actual or potential major incident or the failure of a critical element, are classified and investigated on the basis of actual and potential outcome. The extent and nature of the investigation is proportionate to the actual or potential consequences, in line with a documented process, guide or similar. Investigations identify root causes, including human and organisational factors, and recommendations to address them are identified. There are processes in place to learn to from relevant incidents and near misses and good practices in other organisations and sectors, including appropriate systems to record and monitor trends in incidents. Recommendations are tracked to completion.	**Score 1 – Much less than expected performance, urgent attention required** Ad-hoc system in place for incident reporting, investigation, follow-up and lessons learned that only just meets the requirements of legislation. **Score 2 – Acceptable but improvement is required in this area** Documented system in place for incident reporting which covers both statutory requirements and internal incidents or near misses. Incident investigation is undertaken to determine the casual factor, but root cause assessment is inconsistently undertaken. Actions are identified and tracked to completion but are often limited to remediating that particular event/site. **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Incident reporting and classification well understood at all levels within the organisation. Reporting and investigation processes are well understood and applied, and clearly defines the type of investigation required for different classifications of incidents. The investigation adequately addresses root causes, including human and organisational factors, and identifies recommendations to address these. Supervisors trained in and direct incident investigations. Proactive employee involvement in reporting and assisting investigations. Lessons learnt are disseminated. Accountabilities for corrective and preventative actions assigned and tracked to closure. All reports entered in database to allow for monitoring of trends and accessibility of learnings. Proactive actions identified to address themes or trends identified through investigations. Actions tracked through an effective centralised database management system. Alerts issued and information proactively shared with key stakeholders. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose
Reg 16(2)(f)	15	**Emergency Arrangements** To ensure that: • in the case of a developing emergency, adequate procedures and competent personnel are available so the plant and processes can be safely shut down/controlled to mitigate escalating consequences • people are effectively evacuated from the facility or can reach a safe refuge in the event of an emergency. • on-site and external emergency responders have sufficient information, resources and capacity to deal with all foreseen emergency situations. • assets, neighbouring facilities and the surrounding environment are protected from detrimental harm from an emergency situation. • appropriate clean up, including spill response and recovery is effectively facilitated.	The Emergency Plan is based on the foreseeable emergencies which could arise, such as those identified through risk assessments and the EIR. The Emergency Plan includes the action required and the location where such scenarios are likely to occur. There is a documented spill management plan. There is a clear system in place to delineate any environmental damage and determine rehabilitation requirements. Repair and recovery are incorporated in the emergency management plan, in particular where there may be a threat to security of supply. The roles and responsibilities for the development of the Emergency Plan, and for the roles to be delivered during each emergency scenario are clearly established. Persons with designated roles should be trained and competent to undertake the role allocated to them. The arrangements for liaison with external Emergency Services are established and undertaken regularly. Liaison requirements with stakeholders in the event of an emergency are kept up-to-date and readily available. Emergency exercises and practice drills are held regularly for credible scenarios and involve stakeholders, including external Emergency Services, where possible. The findings and lessons learnt from the effectiveness of drills and exercises should be recorded and reviewed to identify improvements to the Emergency Plan and arrangements Equipment and facilities needed for emergency responses are defined, readily available and maintained.	**Score 1 – Less than expected performance, urgent attention required** Emergency Response Plans exist but do not comprehensively address all foreseeable PSEM emergencies, focus on HSE or medivac scenarios. No evidence of having been comprehensively tested or drilled beyond the minimum requirements of legislation. **Score 2 – Acceptable but improvement is required in this area** Emergency Response Plan addresses key credible scenarios and are drilled at frequencies exceeding the statutory requirements, however limited drills are undertaken for major incidents or include stakeholder involvement. Basic training and familiarisation is undertaken for critical roles. Required emergency equipment is available. **Score 3 - Ongoing improvement evident** Element is mostly implemented; plans are in place to improve performance. **Score 4 – Expected outcome and satisfactory** Emergency Response Plans in place addressing all foreseeable PSEM emergencies. Roles understood by responsible persons. Emergency drills and exercises undertaken at defined frequencies to test credible and challenging scenarios and lessons actively disseminated within company. External emergency contacts identified and contact details up to date. Liaison with external stakeholders (e.g. other operators, emergency services) is undertaken. Response plans include rehabilitation and recovery, specifically for emergency and security of supply impacts. Emergency response equipment is available and incorporated as required in the systematic management of critical equipment. **Score 5 – Better than expected performance** Evidence is to be provided that performance is beyond fit-for-purpose