



Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

Petroleum safety – guide

Audits, review and continual improvement

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Guides

A guide is an explanatory document that provides more information on the requirements of legislation, details good practice and may explain means of compliance with standards prescribed in the legislation. The government, unions or employer groups may issue guidance material.

Compliance with guides is not mandatory. However, guides could have legal standing if it were demonstrated that the guide is the industry norm.

This Guide has an operations focus and is set out in the context of risk assessment and legislative requirements of all responsible persons. Consequently, each operation needs to understand its limitations and skills base.

The Guide is based on current experience and is not claimed to be complete.

Who should use this Guide?

You should use this Guide if you are responsible for auditing, management reviews and ongoing continual improvement of management systems.

Contents

- 1 Introduction..... 1**
 - 1.1 Scope and objective of this Guide..... 1
 - 1.2 Definitions and abbreviations 1
 - 1.3 Use of standards and approved codes of practice..... 1

- 2 Audits..... 2**
 - 2.1 Audit planning and scheduling 2
 - 2.2 Internal audits 4
 - 2.2.1 Conducting an internal audit 4
 - 2.2.2 Action plan and closing out internal audits 4
 - 2.3 Department site inspections 5
 - 2.3.1 Prohibition notices 5
 - 2.3.2 Improvement notices 5
 - 2.3.3 Action plan and closing out Department site inspections 6
 - 2.4 External audits 6

- 3 Reviews 7**

- 4 Continual improvement..... 8**

- Appendix 1 Legislative provisions 9**

- Appendix 2 References and acknowledgements 10**

- Appendix 3 Glossary..... 10**

- Appendix 4 Further information..... 11**

1 Introduction

This document has been developed to provide assistance and guidance to licensees and operators to meet the Western Australian petroleum safety legislation administered by the Department of Mines, Industry Regulation and Safety (the Department).

The legislation covered by this Guide is listed in Appendix 1.

1.1 Scope and objective of this Guide

This Guide has been developed to assist licensees and operators in the development and ongoing use of audit systems, management reviews and continual improvement.

The term “safety case” is used in this Guide to cover all safety documents required under the various regulations.

The term “facility” covers offshore and onshore facilities and pipelines, including above ground structures associated with onshore pipelines.

The intent is to provide clarity to both industry and Department personnel on areas of the legislation which may be ambiguous or open to interpretation.

The following appendices are included:

Appendix 1 Legislative provisions

Appendix 2 References and acknowledgements

Appendix 3 Glossary of terms

Appendix 4 Further information

1.2 Definitions and abbreviations

Definitions and abbreviations are included in Appendix 3 Glossary of terms.

1.3 Use of standards and approved codes of practice

The following standards may be useful to licensees and operators when developing procedures and processes on audits and continual improvement.

- AS/NZS 2885.3 *Pipelines – Gas and liquid petroleum – Part 3: Operation and maintenance*
- AS/NZS ISO 9001 *Quality management systems – Requirements*
- AS/NZS ISO 19011 *Guidelines for auditing management systems*
- AS/NZS ISO 45001 *Occupational health and safety management systems – Requirements with guidance for use*
- AS IEC 61511 *Functional safety – Safety instrumented systems for the process industry sector*
- AS/NZS ISO 31000 *Risk management – Guidelines*
- ISO 17776 *Petroleum and natural gas industries – Offshore production installations – Major accident hazard management during the design of new installations*

Licensees and operators should reference the current versions of these publications to support the requirements of the safety case and how audits, review and continual improvement are managed within their organisation.

2 Audits

An audit is a systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled. It should not be confused with normal site inspections conducted during routine inspection and maintenance of a facility.

An effective audit process and procedure are key elements in monitoring and measuring the implementation of the safety management system and providing a means of continual improvement to that system. Therefore licensees and operators should have an audit system in place that is clear, objective and evidence-based to show outsiders that they conform to the safety management system (SMS). It is one of the Department's main focus areas.

When establishing an audit program, licensees and operators may find *AS/NZS ISO 19011 Guidelines for auditing management systems* a useful reference document.

2.1 Audit planning and scheduling

Licensees and operators need to identify suitably qualified members of the workforce who can take on responsibility for auditing. If those members of the workforce are not already competent in conducting audits, then training should be organised. Suitable training would include an appropriate course in auditing with a recognised training organisation, followed by participation in an audit team to gain practical experience.

An audit plan taking into account the various systems and activities on a facility needs to be developed. This plan needs to take into account the types of audit to be conducted; for example, internal, external or third party. The plan also needs to include how the quality of the internal audit system will be checked and, where necessary, improved.

Once the audit plan has been completed, the next step is to develop a schedule to identify when systems and activities will be audited and by whom. The audit schedule should be risk-based, taking into account the level of risk for each system, performance standard or activity and ensure that those areas with a higher risk level are audited more frequently than those areas with a low risk level. For example, a performance standard for the management of loss of containment of hydrocarbons might be audited more frequently than the document control system.

Audit schedules should be regularly reviewed (at least quarterly) and updated with the current status. Where scheduled audits are re-scheduled, the reason for the re-schedule should be included. This is an important step in risk-based audit scheduling as it can be very easy for a high risk area audit to be re-scheduled several times and consequently not meet the criteria for the periodic audits of that area.

Regular reviews check scheduling of follow up or interim audits where issues have been raised during a scheduled audit that need to verify the corrective actions have been put in place as required, and that those actions will prevent a recurrence of the previously identified issue.

The audit plan should be updated at least annually to reflect any changes to the facility or operational requirements and include any new facilities or systems that will also need to be audited.

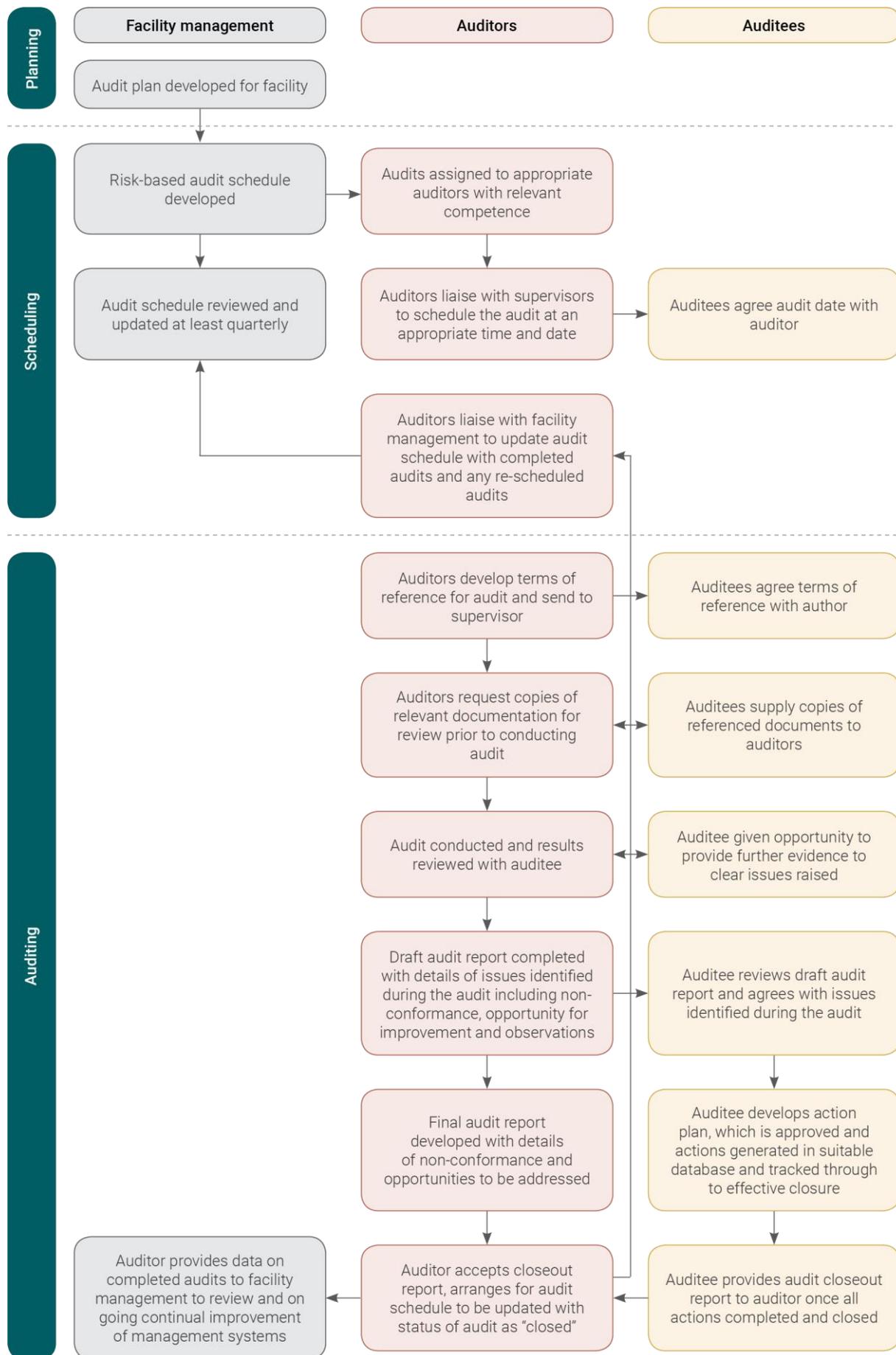


Figure 1 Planning, scheduling and conducting audits

2.2 Internal audits

Internal audits are conducted by members of the workforce against specific systems or activities on a facility and should be process-based, not just procedural. These include audits against the various performance standards developed, identifying the safety critical elements for major accident events (MAEs) controls are effective and are maintaining the risks at a level that is as low as reasonably practicable (ALARP).

The organisation should ensure that there are suitable audit protocols developed for each system, performance standard or activity that will be audited. This will provide the auditor with an understanding of the areas to be audited and allow for additional checks to be added as identified during the audit.

All completed audit protocol checklists must be legible and retained on file to support the audit findings and the audit report generated.

Department inspections will include a review of internal audits conducted with the expectation that the audits:

- are factual and evidence-based and can withstand third party scrutiny
- are aimed at verification and validation; that is, the audit not only checks compliance with the relevant safety case, it also checks that the safety case itself is correct
- scope is not just procedural, it is also at safety case level to verify compliance with the relevant regulations
- findings are interpreted across the entire operation, not just at the local level
- are aimed at detecting system issues, not just low level compliance
- are conducted taking into account the key focus points communicated by the Department from time to time; for example:
 - leadership and accountability
 - compliance assurance with the accepted, in force safety documentation
 - asset management and change management, especially around aging assets.

2.2.1 Conducting an internal audit

The lead auditor should liaise with the relevant supervisor to schedule the internal audit at a time that is suitable to all those involved and provide the terms of reference for the areas to be audited.

An opening meeting should be held with the auditor, supervisor and any other members of the workforce who will be involved in the audit, to discuss the terms of reference and clarify any issues raised in relation to the proposed audit.

The auditor should arrange to preview key documentation prior to the commencement of the audit to become familiar with the subject matter under review.

A closing meeting should be scheduled at the end of the audit to review the findings of the audit and discuss them with the relevant supervisor prior to completion of the draft audit report. This closing meeting enables the supervisor to clarify any issues raised and also possibly provide additional information that will clear some of the findings of the audit.

A draft audit report and action plan should then be prepared within a reasonable time frame (around 10 days) and submitted to the supervisor for review and comment before finalisation. Once finalised, the audit report is signed off by the relevant supervisor and the auditor.

2.2.2 Action plan and closing out internal audits

An action plan should be generated as part of the final audit report and the identified actions entered into a database where they can be assigned to an appropriate member of the workforce, and a close out date set for the work to be completed.

The relevant supervisor monitors these actions to ensure that all are completed within the required time. A status report on the actions should be generated to show the progress of their completion. Once all actions have been completed and closed out, then an audit close out report can be generated by the supervisor to verify completion of the audit.

This should be passed to the auditor who will then be able to close out the audit if they are satisfied that all corrective or preventive actions will fix the issues identified during the audit.

2.3 Department site inspections

Department inspectors will conduct their own site inspections against various areas of the safety case or against specific performance standards.

The licensee or operator will receive notification from the Department inspector who will arrange for the inspection to take place at a suitable time for both parties. The inspector will develop a terms of reference detailing the areas to be covered by the inspection and, if necessary, request copies of relevant documentation to be reviewed prior to the commencement of the inspection.

On the day of the inspection an opening meeting will be held with the inspector and the relevant members of management of the licensee or operator and any members of the workforce involved in the inspection. This meeting will cover the processes and procedures to be covered by the inspection and answer any queries raised by the licensee or operator.

Following the inspection, a closing meeting will be scheduled when initial findings will be presented to the licensee or operator and the perceived level of those findings by the inspector; for example, a non-conformance will be raised against any significant issues identified during the inspection, whereas more minor issues will be identified as opportunities for improvement.

The final inspection report will be developed by the inspector with details of the findings. This will be sent to the licensee or operator who will be required to prepare a suitable action plan to address the non-conformances or opportunities for improvement which will need to be sent to the inspector within a specified timeframe for their acceptance.

2.3.1 Prohibition notices

In order to remove an immediate threat to the safety and health of any person, and if they have reasonable grounds to do so, Department inspectors can issue prohibition notices during inspections. The prohibition notice must be issued in writing to the licensee or operator, or their representative.

The issue of a prohibition notice may result in the immediate cessation of a particular activity, or the closure of the facility until such time as the notice is closed out by the inspector following satisfactory rectification of the identified threat.

The notice must clearly specify the activity identified as a threat and direct the licensee or operator to ensure that the activity is not engaged in, or that the activity is not undertaken in a specified manner. It may also specify action that the inspector considers to be adequate to remove the threat.

A copy of the prohibition notice must be provided to the safety and health representative of each work group performing work affected by the notice. Licensees and operators or their representatives must display a copy of the notice in prominent areas at or near each workplace where the identified activity is performed.

Licensees and operators must comply with the prohibition notice issued against any activity and this notice will only be removed once the inspector is satisfied that appropriate action has been taken to remove the threat to safety and health.

Prohibition notices issued by an inspector must not be tampered with or removed until such time as the threat to safety and health has been rectified and the inspector is satisfied that the action taken will close out the notice.

Further information on the issue of prohibition notices is contained within the relevant legislation covering a facility.

2.3.2 Improvement notices

Department inspectors may issue improvement notices if they have reasonable grounds that an occupational safety and health (OSH) law or a provision within an OSH law has been contravened and is likely to be contravened again.

The improvement notice is issued to the responsible person in writing. If the responsible person is the licensee or operator, the improvement notice is issued to them or their representative.

If the responsible person is an employer (other than the licensee or operator) of members of the workforce, but it is not practicable to give the notice to that employer, then the inspector may issue the improvement notice to the licensee or operator or their representative. The inspector also provides a copy of the notice to the employer as soon as practicable afterwards.

A copy of the improvement notice is given to the safety and health representative of each work group performing work affected by the notice. Licensees and operators or their representatives then display a copy of the notice in prominent areas at or near each workplace where the identified activity is performed.

Improvement notices issued by an inspector are not to be tampered with or removed until such time as the contravention of the listed OSH laws has been rectified and the inspector is satisfied that the action taken will close out the notice.

Further information on the issue of improvement notices is contained in the relevant legislation pertaining to a facility.

2.3.3 Action plan and closing out Department site inspections

Department inspectors will require a detailed action plan covering all the non-compliances that have been identified in their inspection report.

Licensees and operators should have a system in place where the relevant action requirements can be generated, and provide details of who the action has been assigned to and the required closure date for the action. Sufficient detail should be included to provide the Department with a clear understanding of the work to be done by the licensee or operator to correct the issues raised, and reference any action number, work order or other identifying number covering each requirement. This inclusion will serve as an easy tracking mechanism providing an audit path for the individual actions raised.

Once the action plan has been completed, it is sent to the inspector for acceptance and to verify that the proposed actions will address the issues raised.

The accepted actions are then tracked through to effective closure by the licensee or operator. The work completed and status of each action should be submitted to the inspector on a monthly basis until all actions have been completed and closed out.

At this stage, a close out report for the action plan is sent to the inspector showing details of all completed actions. The inspector will then acknowledge receipt of the close out report and confirm that the inspection report is closed out, provided all actions have addressed the issues raised and have been satisfactorily completed.

In some instances, where the findings have been significant, the inspector may schedule a follow up inspection to verify satisfactory close out and monitor that the actions taken are effective.

2.4 External audits

Examples of when external or third party audits may be required are when:

- there is a certified management system in place that needs to be audited by a certifying body
- the organisation has been contracted by a third party to operate the facility on their behalf and they are required to confirm that work is being completed, and procedures and processes adhered to as contracted
- the Department requests that licensees or operators engage an independent third party to perform an audit of their facility.

Any external or third party audits that may be required on a facility should be managed in a similar way to the Department inspections with the relevant supervisor or other person responsible for the area to be audited managing this requirement through to completion.

3 Reviews

Licensees and operators should have a process in place for management reviews to be conducted. These reviews should be scheduled at regular intervals to enable senior management to receive information regarding various key aspects of the facility, which are critical to the safe levels of operation, maintaining risks at ALARP and meeting the objectives set by management from time to time.

The reviews should be conducted in a meeting environment with a prepared agenda and minutes documenting the areas covered, any actions generated and any new objectives set by management for continual improvement of the management systems.

The agenda for the meeting should include:

- review of the previous minutes and any actions generated to verify that these have been completed and closed out
- review of key performance indicators (KPIs) and positive performance indicators (PPIs) and whether or not these have met the objectives and targets previously set
- review of any significant accidents or dangerous occurrences that have occurred during the period under review and whether they have been effectively closed out
- any lessons learnt or safety alerts which could be relevant to the operations of the facility and had been issued during the period under review
- any external issues that may impact the operations of the facility; for example, changes to legislative requirements, or standards to which the organisation is required to comply
- any internal issues that may impact operations of the facility, for example roll out of new systems or processes
- identification of any new objectives for improvement of the management systems.

A copy of the minutes from the meeting should be retained through records management and any actions raised against any of these items should be generated within a suitable database and monitored through to effective closure. These completed actions should then be listed for verification of effectiveness at the next review meeting.

4 Continual improvement

The legislation uses the term “continual improvement” to encompass the results from audits and reviews, as well as corrective or preventive actions arising from root cause analysis of incident investigations and other relevant areas within the safety management systems.

Licensees and operators should therefore have a suitable procedure and process in place to be able to track and document all areas and actions that will result in an improvement to their management system.

Details of the data that has been supplied to show continual improvements from the sources identified should be included in the management reviews.

External contributions to continual improvement may also be derived from:

- findings and actions arising from the Department inspections
- review of internal and external audit findings by Department inspectors
- key focus points identified by the Department from time to time and communicated to licensees and operators for their attention
- quarterly liaison meetings with Department inspectors where any of the above may be discussed and further improvements suggested.

Figure 2 shows examples of the processes that can feed into continual improvement of the safety management systems.

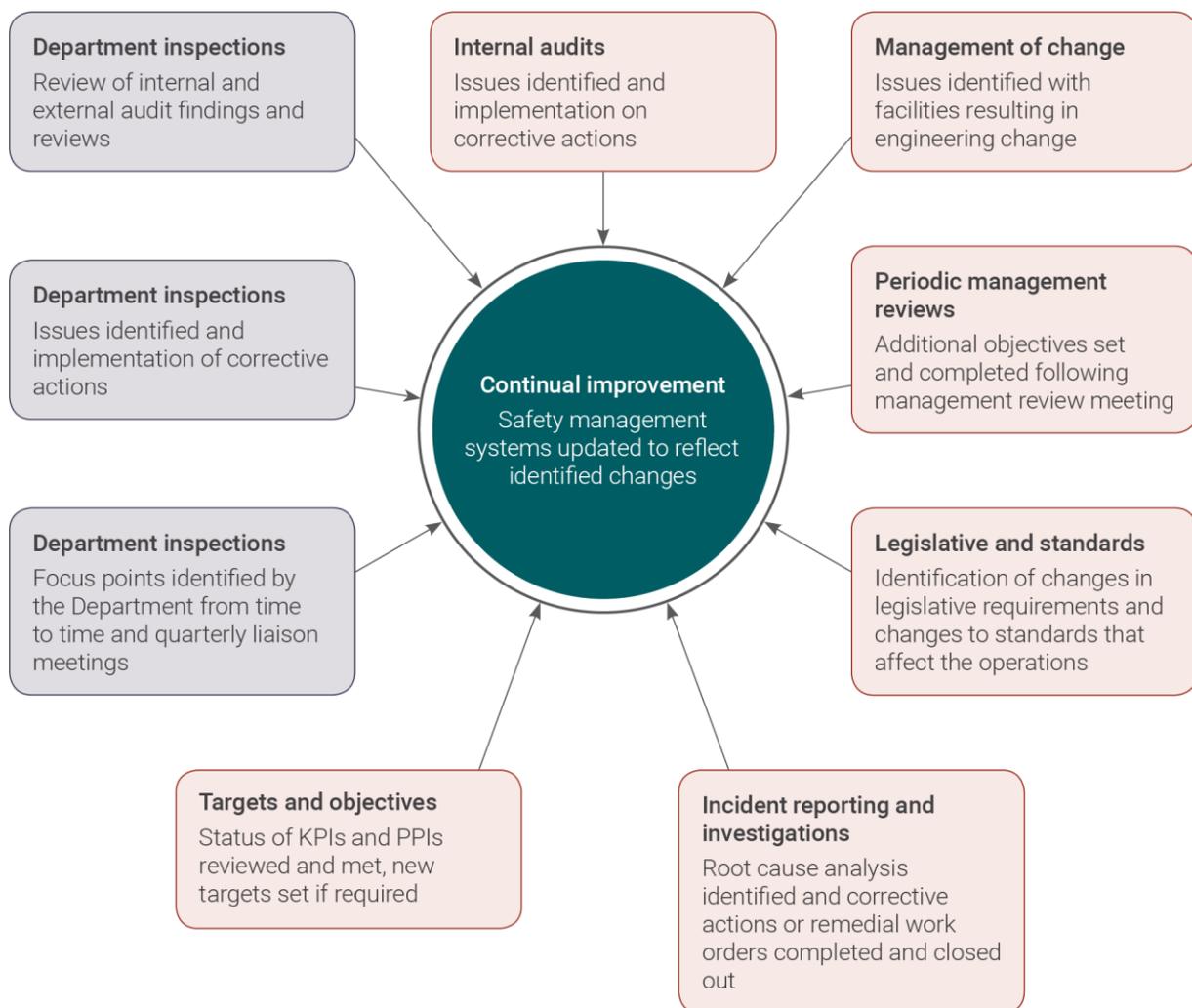


Figure 2 Examples of continual improvement processes

Appendix 1 Legislative provisions

Petroleum (Submerged Lands) (Management of Safety of Offshore Facilities) Regulations 2007

r. 17 Implementation and improvement of the safety management system

Petroleum (Submerged Lands) (Pipelines) Regulations 2007

r. 29(b)(iii) Description of pipeline management system

Petroleum (Submerged Lands) (Diving Safety) Regulations 2007

r. 7(2)(i) Contents of DSMS

Petroleum and Geothermal Energy Resources (Management of Safety) Regulations 2010

r. 13 Implementation and improvement of the safety management system

Petroleum Pipelines (Management of Safety of Pipeline Operations) Regulations 2010

r. 11 Implementation and improvement of the safety management system

Appendix 2 References and acknowledgements

Development of this Guide has used:

- AS/NZS 2885.3 *Pipelines – Gas and liquid petroleum – Part 3: Operation and maintenance*
- AS/NZS ISO 9001 *Quality management systems – Requirements*
- AS/NZS ISO 19011 *Guidelines for auditing management systems*
- AS/NZS ISO 45001 *Occupational health and safety management systems – Requirements with guidance for use*
- AS IEC 61511 *Functional safety – Safety instrumented systems for the process industry sector*
- AS/NZS ISO 31000 *Risk management – Guidelines*
- ISO 17776 *Petroleum and natural gas industries – Offshore production installations – Major accident hazard management during the design of new installations*

Appendix 3 Glossary

ALARP. As low as reasonably practicable.

Auditor. A person who has the relevant qualifications to perform audits (must have completed an internal auditor course and participated in at least two audits with an experienced auditor) and is independent from the area being audited.

KPI. Key performance indicator.

Lead auditor. A suitably qualified auditor designated to manage an audit (must have completed a lead auditor course and participated in an audit team on at least four audits).

MAE. Major accident event. An event connected with a facility, including a natural event, having the potential to cause multiple fatalities of persons at or near the facility.

OSH. Occupational safety and health.

Performance standard. A standard established by the operator defining the performance required for a safety critical element typically defining the functionality, availability, reliability, survivability and interdependency of the safety critical element.

PPI. Positive performance indicator.

Safety case. In this document, covers all safety management systems, plans and other safety related documents referred to in WA legislation.

Safety critical element. Any item of equipment, system, process, procedure or other control measure the failure of which can contribute to an MAE.

SMS. Safety management system.

SPAEE. Significant pipeline accident event. An event that:

- a) is connected (whether immediately or after delay) with work carried out on, or in relation to, a pipeline
- b) causes, or creates a significant risk of causing, human death (for example, because of hydrocarbon releases).

Appendix 4 Further information

Other guides available:

- *ALARP demonstration*
- *Bridging documents and simultaneous operations (SIMOPS)*
- *Diving safety management system*
- *Emergency planning*
- *Hazard identification*
- *Involvement of members of the workforce*
- *Major accident events, control measures and performance standards*
- *Management of change*
- *Offshore facility safety case*
- *Pipeline management plan*
- *Pipeline operation safety case*
- *Records management including document control*
- *Reporting of accidents, incidents and dangerous occurrences*
- *Risk assessment and management including operational risk assessment*
- *Safety management system*