

## ARTICLE 2 - SAFE PLANT

The Plant Safety Management Model identifies three key elements of a plant safety management system.

It has been designed to help owners, operators and industry safety professionals simplify plant safety systems and make these systems more effective.



### OBJECTIVE: Ensure plant is safe for use

- ✓ **Focus Area 1:** Detailed plant hazard assessment and review against:
  - OH&S legislation
  - Australian and International Standards
  - Leading industry practice
- ✓ **Focus Area 2:** Daily inspection and fault rectification process
- ✓ **Focus Area 3:** Proactive and robust maintenance regime
- ✓ **Focus Area 4:** Standard Safe Operating Procedure (SOP)



### OBJECTIVE: Ensure the operator is competent to operate the plant and perform the task required

- ✓ Plant knowledge and plant operation, understanding of SOP
- ✓ General hazard awareness & safety system knowledge
- ✓ Understanding of site requirements hazards and controls
- ✓ Understanding of task requirements, hazards and controls



### OBJECTIVE: Ensure site and task hazards are identified, assessed and controlled

- ✓ Is the plant fit for purpose?
- ✓ Site hazards – follow plant “life cycle”:
  - Delivery/Commissioning → Operation → Refuelling & on-site maintenance
  - Storage → Decommission& pickup
- ✓ Compliance with specific site safety procedures required by client/site manager
- ✓ Unique task hazards (outside of SOP): Task specific hazard identification and control

This second article of the series investigates how to manage the **SAFE PLANT** element of the Plant Safety Management Model.



**Ensuring safe plant is provided to a work team or project for use is a fundamental element of a plant safety management system.**

**There are four focus areas to ensure safe plant and these four areas are considered on the following pages.**

## Focus Area 1 Detailed Plant Hazard Assessment

	Summary	Detail						
<b>Why is this necessary?</b>	<p>This ensures provision of a safe plant to operators/work groups.</p> <p>It is specifically required by:</p> <ul style="list-style-type: none"> <li>Workplace Health &amp; Safety Legislation</li> <li>Workers compensation self-insurance</li> <li>AS4801 &amp; Federal Safety Commissioner Accreditation</li> </ul>	<p>Harmonised/Model Workplace Health &amp; Safety Act:</p> <ul style="list-style-type: none"> <li>Section 19 Primary duty of care, Section 21 Duty to ensure safe plant</li> </ul> <p>Harmonised/Model Workplace Health &amp; Safety Regulation:</p> <ul style="list-style-type: none"> <li>Follow the hazard identification (reg 34), elimination (reg 35), risk assessment and control process (regs 35-37)</li> <li>Periodically review risk assessment focusing on adequacy of controls (reg 38)</li> <li>Used for designed purpose, no unauthorised alterations, meet certain design criteria, specific controls mandated for certain plant types (regs 205-226)</li> </ul>						
<b>What is it?</b>	<p>A documented, detailed inspection and review of the plant item, against:</p> <ul style="list-style-type: none"> <li>Legislative requirements</li> <li>Australian &amp; Intl Standards</li> <li>Leading industry practice</li> </ul> <p>Identifies controls in place and how to maintain these effectively, based on risk.</p> <p>Document used for:</p> <ol style="list-style-type: none"> <li>Proof the machine has been assessed</li> <li>Machine induction</li> <li>Operator education</li> </ol>	<p>Traditional plant hazard assessments are undertaken using the following process:</p> <ol style="list-style-type: none"> <li>Identify hazards (eg. crush, pinch, exposure to dust/fumes/chemicals, pressurised materials, puncture, heat and cold etc.)</li> <li>Assess risks - most commonly using the "likelihood/consequence" matrix             <ol style="list-style-type: none"> <li>How likely is an incident involving the hazard?</li> <li>What is the potential consequence of such an incident</li> </ol> </li> <li>What control options are there – follow the hierarchy of controls:             <table border="0" style="width: 100%;"> <tr> <td>a. Eliminate</td> <td>d. Engineering</td> </tr> <tr> <td>b. Substitute</td> <td>e. Administrative</td> </tr> <tr> <td>c. Isolate</td> <td>f. PPE</td> </tr> </table> </li> </ol> <p>Consideration of control options should recognise both mandatory and leading practice control options.</p>	a. Eliminate	d. Engineering	b. Substitute	e. Administrative	c. Isolate	f. PPE
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<b>How to do it?</b>	<p>A regimented process which recognises the subjectivity of the traditional process and the difficulty in achieving, thoroughness and consistency in outcomes.</p>	<p>Use Plant Assessor or an equivalent plant hazard assessment process (traditional process outlined above) – key issues to manage:</p> <ul style="list-style-type: none"> <li>Type, make and model specific is preferable</li> <li>Aim for a consistent, thorough and usable process</li> <li>A structured process will deliver better consistency and thoroughness</li> </ul>						
<b>When to do it</b>	<ol style="list-style-type: none"> <li>Upon receipt from supplier (suppliers are obliged to provide this information)</li> <li>Periodic re-inspection based upon complexity of plant (Plant Hazard Assessment Plan)</li> </ol> <p><i>See overleaf for how to set up a Plant Hazard Assessment Plan.</i></p>	<p>Requiring Plant Hazard Assessments from Suppliers</p> <p>Plant suppliers have a positive obligation to follow the hazard identification risk assessment and control process, and provide the results of this process to their customers. Tender documents and supply terms and conditions should include a clause requiring suppliers to provide this information.</p> <p>Plant Assessor was developed to assist:</p> <ol style="list-style-type: none"> <li>Reduce the variability in information received by customers</li> <li>Customers receive hazard assessments electronically into their Plant Assessor membership</li> <li>The customer commission the plant item simply and quickly using Plant Assessor – without re-inventing the wheel</li> </ol>						

## Assessment of Existing Plant Fleet – Developing Your Plant Hazard Assessment Plan

The legislative obligation to periodically reassess plant items gives rise to the need to develop a plant hazard assessment plan – not unlike a plant maintenance schedule.

In developing a plant hazard assessment plan, two key questions need to be considered:

1. Which plant items should I assess, and in what order?
2. How often do I need to reassess plant items?



The answers to these questions may be different for different users, and depends on the actual and perceived risk of the plant items. Determining the risk of plant items is partially subjective and requires consideration of a number of factors. Plant Assessor approaches this task as follows:

### Step 1: Risk Ranking of Plant

1. List all plant fleet (type/make/model/ identifier/workgroup etc.)
2. Sort list by plant type (e.g. excavators, backhoes, cranes, fixed plant etc.)
3. Consider the risk of each type of plant, including:
  - a. Complexity of plant item
  - b. Used for and in what environment(s)
  - c. Incident history
4. Rank plant types by risk (1=high risk, 2=medium risk, 3 = low risk, 4=negligible risk)
5. Consider workgroup experience and incident history and adjust type *or* individual machine risk rating accordingly.



### Step 2: Determining Initial Assessment Timing and Reassessment Periods

Deciding what needs to be assessed immediately and what can wait will be a function of the makeup of the fleet and the owner’s perception of the risk of plant items.

Based on experience with hundreds of plant hazard assessment plans, Plant Assessor uses the following rules of thumb in making these decisions:

Risk Ranking	Initial Assessment (1)	Reassessment Period	Machine Specific or Type Assessments (2)
1 High Risk	Immediate/Yr 1	Annually	Individual
2 Medium Risk	Year 2	Bi-Annually	Individual
3 Low Risk	Year 3&4	Every 3-5 years	Type or Individual
4 Negligible	Upon purchase	After incident only	Type or Individual

1. All plant should be assessed before commissioning - these timeframes relate to existing fleet that has not already been assessed.
2. High and medium risk plant should be individually assessed, as machines vary in design, specification and wear and tear. Type assessments are acceptable for low risk plant types. Care should be taken to make sure that all plant items in a type meet the same design criteria.



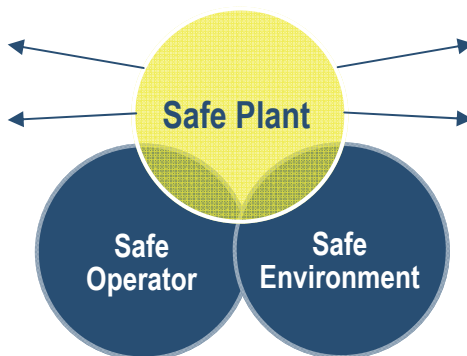
For help with your plant risk assessment plan please contact us.

## Focus Area 2 Daily Inspection and Fault Rectification Process

	Summary	Detail
<b>Why is this necessary?</b>	<p>Legislative obligation to provide safe machinery.</p> <p>Immediate identification of major and minor faults is critical.</p>	Machinery is maintained more thoroughly, operators see that the system works and take more pride in their equipment and safety generally.
<b>What is it?</b>	Daily pre-operational check, including basic mechanical checks and check that safety devices are in place and operational.	<p>Critical Aspects:</p> <ol style="list-style-type: none"> <li>1. Escalation of faults found to supervisor and maintenance personnel</li> <li>2. Faults identified are reviewed prior to operation and decision to stand down considered when faults are critical</li> <li>3. Repair of faults prioritised based upon risk and impact upon operations and efficiency</li> </ol>
<b>How to do it</b>	Paper or electronic system requiring operator to check and sign off on specific aspects of plant.	<p>Daily pre-operational checks should contain basic mechanical and fluid checks, and confirmation that key safety devices are in place and functional.</p> <p>A generally accepted “school of hard knocks” principal is that daily checks should contain as few line items as possible whilst covering key areas.</p> <p>As a workplace becomes more safety conscious, checks can be expanded with a lower risk of them being ignored as too hard.</p>
<b>When to do it</b>	Daily	Records of this process should be stored for a period of not less than 12 months to illustrate diligence on maintaining safe plant. Records of plant involved in incidents should be kept for longer.

Focus Area 1 Detailed Plant Hazard Assessment

Focus Area 2 Daily Inspection and Fault Rectification Process



Focus Area 3 Proactive and Robust Maintenance Regime

Focus Area 4 Standard Safe Operating Procedures for Plant Item



## Focus Area 3 Proactive and Robust Maintenance Regime

	Summary	Detail
<b>Why is this necessary?</b>	<p>Proactive maintenance is important because:</p> <ul style="list-style-type: none"> <li>• It is a legislative safety requirement</li> <li>• It delivers improved safety &amp; efficiency</li> <li>• It helps maximise uptime &amp; minimise breakdowns</li> </ul>	<p>Harmonised/Model Workplace Health &amp; Safety Regulation:</p> <p>Reg 213 - Maintenance and inspection of plant</p> <ol style="list-style-type: none"> <li>1) The person with management or control of plant at a workplace must ensure that the maintenance, inspection and, if necessary, testing of the plant is carried out by a competent person.</li> <li>2) The maintenance, inspection and testing must be carried out:             <ol style="list-style-type: none"> <li>a) in accordance with the manufacturer's recommendations, if any; or</li> <li>b) if there are no manufacturer's recommendations, in accordance with the recommendations of a competent person; or</li> <li>c) in relation to inspection, if it is not reasonably practicable to comply with paragraph (a) or (b), annually.</li> </ol> </li> </ol>
<b>What is it?</b>	<p>Scheduled maintenance program, based on OEM specifications.</p>	<p>A regimented process, actively managed to ensure OEM recommendations are understood, programmed and executed.</p> <p>The maintenance regime incorporates active collection of daily inspection reports containing faults, and repair of those faults.</p>
<b>How to do it</b>	<p>Reference to OEM maintenance schedules and recommendations is crucial.</p> <p>A systemised process is required as fleet grows.</p>	<p>Basic maintenance systems for smaller fleets may be paper based (eg. maintenance cards) or via spreadsheets.</p> <p>As fleets grow, specialised maintenance systems and fleet management systems with maintenance modules allow simpler and more effective maintenance and fleet management.</p> <p>Fleet management systems can be used to schedule all of the aspects of ensuring SAFE PLANT, such as scheduling work orders to each item of plant requiring hazard assessments and SOP development.</p>
<b>When to do it</b>	<p>An essential ongoing process.</p>	<p>A maintenance schedule for each machine should be setup after purchase and prior to commissioning, and incorporate plant hazard assessment and SOP development.</p>



## Focus Area 4 Standard Safe Operating Procedures for Plant Item

	Summary	Detail
<b>Why is this necessary?</b>	<p>Development, provision and training in machine Safe Operating Procedures is important because:</p> <ul style="list-style-type: none"> <li>• It is a legislative safety requirement</li> <li>• It delivers improved safety &amp; efficiency</li> </ul>	<p>Harmonised/Model Workplace Health &amp; Safety Act:</p> <ul style="list-style-type: none"> <li>• Section 19 (3) Without limiting subsections (1) and (2), a person conducting a business or undertaking must ensure, so far as is reasonably practicable: <ul style="list-style-type: none"> <li>d) the safe use, handling and storage of plant, structures and substances</li> <li>f) the provision of any information, training, instruction or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking</li> </ul> </li> </ul> <p>Harmonised/Model Workplace Health &amp; Safety Regulation:</p> <ul style="list-style-type: none"> <li>• Regulation 39 - Provision of information, training and instruction</li> </ul> <p>Plant Safe Operating Procedures are an important machine specific component of the key information and training used to ensure a safe operator and a safe environment.</p> <p>These two areas will be covered in more detail in subsequent articles, however in essence the key management tools used here include:</p> <ul style="list-style-type: none"> <li>• Plant SOPs</li> <li>• Task risk assessments and safe work methods statements</li> <li>• Site hazard assessments and site safety rules</li> <li>• WHS Management Plan for projects &gt;\$200,000</li> </ul>
<b>What is it?</b>	<p>Simple, readable guidance regarding dos and donts when using the plant, preferably limited to 1 page.</p>	<p>Plant SOPs should include, as a minimum:</p> <ul style="list-style-type: none"> <li>• PPE details</li> <li>• Operation</li> <li>• Refuelling, maintenance, isolation basics etc.</li> </ul> <p>It is important to recognise that this is NOT A TASK SOP, and therefore does not need to contain comprehensive task related instructions. It is a summary of key issues for a competent operator to remember, and abide by when using the plant.</p> <p>Plant SOPs are a component of, and referred to in task risk assessments and safe work methods statements for tasks that use plant items.</p>
<b>How to do it</b>	<p>Develop a template and follow consistent process in completing for plant items</p>	<p>Use Plant Assessor or develop these SOPs upon receipt and commissioning of plant with reference to OEM information.</p> <p>Review with operators periodically and after any incidents.</p>
<b>When to do it</b>	<p>Periodically</p>	<p>Upon receipt and commissioning of plant. Review when reassessing plant items.</p> <p>All operators to review and acknowledge periodically (preferably at time of reviewing plant hazard assessment).</p>

**The information contained in this article is designed to demystify the process of ensuring the objective of SAFE PLANT. The achievement of this goal is something which requires focus, diligence and resources.**



**Plant Assessor's mission is to assist plant users and suppliers achieve this goal as simply, thoroughly and painlessly as possible.**

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