

# Workplace Health and Safety Queensland

## Inspector guide – Mobile and operational plant – earthmoving equipment

The following guide has been prepared to assist Workplace Health and Safety Queensland construction inspectors in carrying out the Mobile and operational plant – earthmoving equipment audit. The information in this guide may also be useful to duty holders, principal contractors, site managers, supervisors and safety personnel who work with and around earthmoving equipment on civil construction sites.

Further information about the campaign can be found at [www.worksafe.qld.gov.au](http://www.worksafe.qld.gov.au).

### Assessment details

Detail	Guidance	
<b>Category of work</b> Select one: <ul style="list-style-type: none"><li>• Road and bridge construction</li><li>• Other heavy and civil engineering construction</li><li>• Site preparation services</li></ul>	This question records the category of work taking place on the project or site. Select the most appropriate category that applies to the specific activity being assessed. The categories and associated activities have been drawn from the Australian and New Zealand Industrial Classification (ANZSIC), which is used for activity, incident and injury reporting throughout Australia.	
<b>Activity</b>  Inspectors are required to identify one activity involving one item of earthmoving equipment to be assessed as part of the audit and to which the remaining questions will relate. Select the most appropriate category that applies to the activity in question or select 'Other' where a suitable description is not listed. The activities have been taken from the ANZSIC. The activity list will change based on the category of work selected in the previous field.		
Road and bridge construction: <ul style="list-style-type: none"><li>• Asphalt surfacing</li><li>• Road construction or sealing</li><li>• Repair or maintenance of roads or bridges</li><li>• Bridge construction</li><li>• Elevated highway construction</li><li>• Overpass construction</li><li>• Parking lot construction</li><li>• Aerodrome runway construction</li><li>• Other</li></ul>	Other heavy and civil engineering construction: <ul style="list-style-type: none"><li>• Breakwater, canal or dam construction</li><li>• Cable laying</li><li>• Distribution line, electricity or communication construction</li><li>• Dredging</li><li>• Harbour work construction</li><li>• Pile driving</li><li>• Pipeline construction</li><li>• Sewage or stormwater drainage system construction</li><li>• Tunnel construction</li><li>• Railway permanent way construction</li><li>• Other</li></ul>	Site preparation services: <ul style="list-style-type: none"><li>• Demolition of buildings or other structures</li><li>• Earthmoving</li><li>• Excavation</li><li>• Land clearing</li><li>• Levelling</li><li>• Removal of overburden</li><li>• Trench digging</li><li>• Other</li></ul>

Detail	Guidance
Principal contractor (where there is one) or person conducting a business or undertaking (PCBU) in control of the activity	A principal contractor will exist only when the work relates to a construction project (i.e. the total value of the work is \$250,000 or more). If a principal contractor has not been appointed for a construction project, then the client (i.e. the person that commissions the construction project) will be the principal contractor. If the work is not a construction project (i.e. no principal contractor) then record the PCBU that has management or control of the site.
PCBU that owns the item of plant being assessed	Issues of plant maintenance may result in enforcement action against the plant owner, rather than the principal contractor or PCBU with management or control of the site.
Plant operator employment status Select one: <ul style="list-style-type: none"> <li>• Employee of principal contractor</li> <li>• Employee of specialist subcontractor</li> <li>• Plant owner/operator</li> <li>• Labour hire</li> </ul>	Information gathering.
Item of earthmoving equipment Select one: <ul style="list-style-type: none"> <li>• Backhoe</li> <li>• Front end loader</li> <li>• Excavator</li> <li>• Skid steer loader (bobcat, drott, dingo)</li> <li>• Road roller</li> <li>• Grader</li> <li>• Scraper</li> <li>• Dozer</li> <li>• Heavy vehicle (dump truck)</li> <li>• Other</li> </ul>	
Make and model of earthmoving equipment	Include the manufacturer or brand.

## Documentation

Q#	Question	Reference	Guidance
1	Has a work health and safety (WHS) management plan been prepared for the construction project and is it readily available for inspection? <i>This question only applies to construction projects (i.e. total value of work is \$250,000 or more).</i>	<i>s309 Work Health and Safety Regulation 2011</i>	If the WHS management plan is not readily available then 'No' should be selected. The 'N/A' option should only be selected if the value of the work is less than \$250,000 (i.e. is not a construction project) and does not, therefore, require a WHS management plan.
2	Does the WHS management plan adequately address the following: <ul style="list-style-type: none"> <li>• WHS roles and responsibilities</li> <li>• Consultation, cooperation and coordination activities</li> <li>• Incident management arrangements</li> <li>• Site-specific health and safety rules</li> <li>• SWMS collection, assessment, monitoring and review arrangements</li> </ul> <i>This question only applies to construction projects (i.e. total value of work is \$250,000 or more).</i>	<i>s309 Work Health and Safety Regulation 2011</i>	A plan that has not been adequately reviewed and revised may also be in breach of s311 of the WHS Regulation.
3	Has a safe work method statement (SWMS) been developed for the high risk construction activity?	<i>s299(1) Work Health and Safety Regulation 2011</i>	<p>The <i>Work Health and Safety Regulation 2011</i> set out the requirements for SWMS. There is no prescribed format, however suggested formats and templates are available. Where a SWMS makes reference to another document (e.g. a job safety analysis) for detail, the referenced document must also be readily available for inspection or it cannot be included in the inspector's assessment of evidence. There is no option for 'N/A' as any work that is carried out in an area at a workplace where there is any movement of powered mobile plant is high risk construction work and must have a SWMS.</p> <p>The plant operation may be subject to multiple SWMS depending on how they have been prepared and what risks are involved. For example, excavation activity may be covered by one SWMS, while working near energised electrical services may be covered by another. If an activity has one or more SWMS but has not adequately addressed all of the risks, record 'Yes' on this question and address the quality in the proceeding questions.</p> <p>If the activity is taking place as part of a construction project and a SWMS has not been prepared, enforcement action may also be taken against the principal contractor under s312 of the WHS Regulation.</p>

Q#	Question	Reference	Guidance
4	Have the hazards and risks been adequately identified and evaluated?	<i>s299(2)(b) Work Health and Safety Regulation 2011</i>	<p>The inspector is required to review the SWMS and make a judgement about whether or not the documentation adequately identifies and evaluates the hazards (e.g. likelihood and consequence). The inspector will consider:</p> <ul style="list-style-type: none"> <li>those hazards that are generally addressed by industry material (e.g. codes of practice, guidance material, etc.) and good practice</li> <li>those hazards that are known to represent a serious or immediate risk to workers or other persons</li> <li>whether risks have been poorly or under-evaluated.</li> </ul> <p>Common hazards expected to be identified and evaluated include:</p> <ul style="list-style-type: none"> <li>workers being hit or crushed</li> <li>reversing of plant</li> <li>refuelling of plant</li> <li>plant rollover</li> <li>falling objects hitting persons</li> <li>falls from height when accessing plant</li> <li>contact with energy sources, above and below ground.</li> </ul>
5	Have appropriate controls been identified?	<i>s297 Work Health and Safety Regulation 2011</i>	<p>The inspector is required to review the controls identified in the documentation and make a judgement about whether or not they are appropriate for the risks. An inappropriate control is one that does not eliminate or minimise the risk such that it provides for a safe working environment for workers.</p> <p>The inspector will consider information and controls that are generally available through:</p> <ul style="list-style-type: none"> <li>codes of practice</li> <li>guidance notes</li> <li>operation manuals/manufacturers specifications</li> <li>other controls that are considered to be good industry practice.</li> </ul>
6	Has the SWMS been amended following a review to accommodate changes in risks or controls?	<i>s302 Work Health and Safety Regulation 2011</i>	<p>A SWMS may be amended following a review of risks and controls, a site inspection or audit, or as an activity or project enters a new phase.</p>

Q#	Question	Reference	Guidance
7	<p>What is the predominant method of monitoring compliance with the SWMS?</p> <p>Select one:</p> <ul style="list-style-type: none"> <li>Constant monitoring by a supervisor/team leader/manager</li> <li>Periodic monitoring by a supervisor/team leader/manager</li> <li>Monitored by workers performing the activity</li> <li>No monitoring performed</li> </ul>	<p>s300(1) <i>Work Health and Safety Regulation 2011</i></p>	<p>Inspectors are required to determine the planned method of monitoring, either by viewing the WHS management plan or SWMS or by discussing the matter with a site or safety manager.</p> <ul style="list-style-type: none"> <li>Constant monitoring by a supervisor/team leader/manager – someone outside of the work crew that is providing constant supervision and monitoring the implementation of the SWMS (e.g. a supervisor, a site manager, a safety manager).</li> <li>Periodic monitoring by a supervisor/team leader/manager – someone outside of the work crew that only periodically (e.g. a few times a day or less frequently) monitors the implementation of the SWMS.</li> <li>Monitored by workers performing the activity – a nominated (i.e. named in person or by role) member of the work crew is providing constant monitoring of the implementation of the SWMS.</li> <li>No monitoring performed – no roles are nominated to monitor the implementation of the SWMS. If there is no SWMS, select this option.</li> </ul>
8	<p>How has the plant operator been determined to be competent to operate that item of plant performing this activity?</p> <p>Tick all that apply:</p> <ul style="list-style-type: none"> <li>Competency-based training</li> <li>Verification of competence by registered training organisation (RTO)/external assessor</li> <li>Review of previous experience</li> <li>Letters of reference from previous employers</li> <li>On site assessment</li> <li>Familiarisation training on the specific type and model of plant</li> <li>Documented skills maintenance activities</li> <li>Other (describe)</li> </ul>	<p>s19(3)(d) &amp; s19(3)(f) <i>Work Health and Safety Regulation 2011</i></p>	<p>When gathering evidence to determine competency, look for:</p> <ul style="list-style-type: none"> <li>a licence issued under the repealed <i>Workplace Health and Safety Regulation 2008</i> and evidence of recent use of plant</li> <li>statements of attainment in nationally recognised qualifications (see list below)</li> <li>training completed at an industry training school</li> <li>on-the-job training conducted by an experienced competent person</li> <li>current relevant experience evidenced by logbooks or previous employer references.</li> </ul> <p>Alternatively, a PCBU can provide structured in-house training to workers in the use of a particular plant if resources are available at a workplace.</p> <p>Employers should also keep evidence of a worker's competency on file as a record in the event of an incident.</p> <p>Refer to appendix C for a guide to units of competency.</p>

Q#	Question	Reference	Guidance
9	<p>What information, training and supervision do young workers (i.e. 25 years old and younger) and/or inexperienced or unskilled workers receive on the site?</p> <p>Tick all that apply:</p> <ul style="list-style-type: none"> <li>• Same as all other workers</li> <li>• Expanded site induction</li> <li>• Additional supervision during high risk activities</li> <li>• Training targeted to young/new workers</li> <li>• Peer buddy</li> <li>• Supervisor mentor</li> <li>• Other</li> </ul>	Information gathering	The purpose of this question is to gather information that can inform future projects or initiatives. Inspectors should validate claims as much as is possible by talking to workers and managers. However, it is not necessary for inspectors to view training records, documented procedures, etc. to validate the information.

## Environmental Factors

Q#	Question	Reference	Guidance
10	<p>Indicate any <b>uncontrolled environmental</b> risks that may impair operator's capability to operate the plant safely.</p> <p>Tick all that apply:</p> <ul style="list-style-type: none"> <li>• Night works</li> <li>• Daylight transition/glare</li> <li>• Inclement weather</li> <li>• Pot holes</li> <li>• Unstable ground</li> <li>• Shadows</li> <li>• Poorly positioned bright lights</li> <li>• Excessive dust</li> <li>• Sloping ground</li> <li>• Wet or slippery surface</li> <li>• None – the risks are controlled</li> </ul>	<i>s203 Work Health and Safety Regulation 2011</i>	Evaluate on the basis of the activities taking place and the risks present at the time of assessment.
11	<p>Are any of the following controls in place to manage the speed of plant operating on and moving about the site.</p> <p>Tick all that apply:</p> <ul style="list-style-type: none"> <li>• Traffic management plan</li> <li>• Haul roads</li> <li>• Signage (e.g. speed signs, directional signs)</li> <li>• Designated construction roadways/paths of travel</li> <li>• Other</li> </ul>	<i>s214 Work Health and Safety Regulation 2011</i>	
12	<p>Indicate any services that have not been clearly identified to the operator.</p> <p>Tick all that apply:</p> <ul style="list-style-type: none"> <li>• Overhead wires</li> <li>• Underground electrical cables</li> <li>• Underground telecommunication cables</li> <li>• Drainage or sewerage pipes</li> <li>• Gas pipeline</li> </ul>	<i>s304 Work Health and Safety Regulation 2011</i> <i>s62, s62A &amp; s62C Electrical Safety Regulation 2002</i>	Inspectors are required to conduct a visual inspection of the area and, using their knowledge and experience of service locations and making reference to site plans and documentation, assess the likely presence of services.

## Plant Interaction

Q#	Question	Reference	Guidance
13	<ul style="list-style-type: none"> <li>Are systems in place to ensure that the operator is aware of all people working in the vicinity of the plant?</li> </ul>	s214(d) Work Health and Safety Regulation 2011	<p>Controls could include:</p> <ul style="list-style-type: none"> <li>the use of spotters,</li> <li>pedestrian workers gaining the attention of the plant operator before entering the exclusion zone</li> <li>2 way radio communication.</li> <li>listed procedure in the WHS management plan</li> <li>information delivered as part of prestart tool box meeting</li> </ul> <p>Operator should be able to display knowledge of other work activities in the immediate area. Other workers in the area should be able to describe procedures for entering exclusion zone and/or working near powered mobile plant.</p>
14	<p>If the plant operator's vision of persons working within the vicinity of the plant is obstructed, indicate why. Tick all that apply:</p> <ul style="list-style-type: none"> <li>Plant blind spots</li> <li>Poor lighting</li> <li>Physical obstructions (e.g. trees, buildings)</li> <li>Obscured from view (e.g. in a hole, over a rise)</li> <li>Worker is camouflaged (e.g. not wearing high-visibility clothing)</li> <li>Other (please detail)</li> </ul>	<i>Information gathering</i>	
15	If there are workers inside the plant exclusion zone, are they required to be there?	S300 <i>Work Health and Safety Act 2011</i>	Refer to SWMS for information on exclusion zone and compliance. If the inspector has identified workers that are not required to be in the exclusion zone they should be directed to leave the area.



Q#	Question	Reference	Guidance
16	<p>Indicate the function of any worker that is required to work inside the exclusion zone. Tick all that apply (leave blank if you answered 'No' to Q16):</p> <ul style="list-style-type: none"> <li>• Spotter</li> <li>• Rigger/dogger</li> <li>• Traffic controller</li> <li>• Other work crew associated with the activity</li> <li>• Grade checker/surveyor</li> <li>• Site supervisor/manager</li> <li>• Other</li> </ul>	Information gathering	Identify the spotter's role i.e. power lines, underground services, collision with other plant, preventing unauthorised access to exclusion zone.
17	<p>For workers that are required to work inside the exclusion zone, could they perform their work in another way that would eliminate the risk? Tick all that apply (leave blank if you answered 'No' to Q16):</p> <ul style="list-style-type: none"> <li>• Perform their task while plant is inactive, then move away</li> <li>• Stand out of exclusion zone and communicate with operator</li> <li>• Perform their task at another time</li> <li>• Other</li> </ul>	<i>s214 Work Health and Safety Regulation 2011</i>	Discussions with the PC, relevant PCBU and workers.
18	<p>Are effective means of communication in place between the plant operator and:</p> <ul style="list-style-type: none"> <li>• Other plant operators within the area</li> <li>• Spotters</li> <li>• Pedestrian workers in the immediate area</li> <li>• Site management</li> </ul>	Information gathering	Forms of positive communication between the plant operator and others may include line of sight, hand signals, verbal conversation, radios, or automatic warning systems.
19	Have all of the controls identified on the SWMS been implemented?	<i>s300 Work Health and Safety Regulation 2011</i>	The SWMS should be <u>evaluated on the basis of the activities taking place and the risks present at the time of the assessment</u> . A SWMS may be broader in scope if it relates to multiple project phases, conditions (e.g. weather), etc.

Q#	Question	Reference	Guidance
20	Has the risk of unauthorised entry been adequately controlled?	<i>s298 Work Health and Safety Regulation 2011</i>	The level of control required to prevent unauthorised entry should be determined by a risk assessment that considers, for example: <ul style="list-style-type: none"> <li>the location of the workplace (e.g. close proximity to schools, parks, shopping precincts, or highly populated areas)</li> <li>the stage of the project, from the perspective of what activities, equipment, plant, or other materials might be present on site, and</li> <li>the hazards that are present on site (e.g. falls from heights, plant and equipment on site, uncovered excavations, scaffolding).</li> </ul>
21	Indicate what controls are in place to manage the risk of unauthorised entry. Tick all that apply: <ul style="list-style-type: none"> <li>General signs warning about construction site</li> <li>Signs warning about specific hazards (e.g. mobile plant)</li> <li>Visual barrier (e.g. para-webbing) at entry/exit points only</li> <li>Fence erected at entry/exit points only</li> <li>Visual barrier erected around entire site</li> </ul> Fence erected around entire site	<i>Information gathering</i>	

## Workers

Q#	Question	Reference	Guidance
22	Can the workers demonstrate an understanding of the SWMS contents as they relate to the activity (e.g. risks, controls, monitoring)?	s299(3)(b) <i>Work Health and Safety Regulation 2011</i>	The inspector is required to evaluate the relevant workers' understanding of the risks and controls identified by the documentation. The worker is not required to recount the contents of the documentation exactly. However, they must demonstrate knowledge of the relevant hazards and risks as well as an understanding of what controls are/should be in place and why they are important.
23	Do the workers report that the SWMS is: <ul style="list-style-type: none"> <li>• Suitable for the activity</li> <li>• Easy to understand</li> <li>• Enforced/checked by management</li> </ul>	s299(3)(b) <i>Work Health and Safety Regulation 2011</i>  s300(1) <i>Work Health and Safety Regulation 2011</i>	The SWMS must be set out and expressed in a way that is readily accessible and understandable to the workers who use it.
24	Have the workers been included / consulted in the formulation or review of the SWMS?	s47(1) <i>Work Health and Safety Act 2011</i>	This may not always be practicable depending on the scale of the job.

Q#	Question	Reference	Guidance
25	<p>Indicate any evidence observed of unsafe plant operation. Tick all that apply.</p> <ol style="list-style-type: none"> <li>1. Operator failing to comply with SWMS</li> <li>2. Operator failing to comply with site rules or signage</li> <li>3. Operator not wearing required personal protective equipment (PPE)</li> <li>4. Operator not wearing a seatbelt as part of a suitable combination of operator protective devices</li> <li>5. Unauthorised passengers observed</li> <li>6. Operator unable to answer questions about the capabilities of the plant according to the manufacturer's specifications</li> <li>7. Other</li> </ol>	<p>s19(3)(d) <i>Work Health and Safety Act 2011</i></p>	<p>Information gathered by this question can be used to assess the effectiveness of methods used to determine the competency of operators.</p> <p>Enforcement action associated with some of the risks and issues listed in this question have been addressed elsewhere (e.g. compliance with SWMS). Other issues may not warrant enforcement action as they can be rectified immediately (e.g. seatbelt).</p> <p>The following are legislation specific references to each point:</p> <ol style="list-style-type: none"> <li>1. s300(1) <i>Work Health and Safety Regulation 2011</i>, s28(d) <i>Work Health and Safety Act 2011</i>.</li> <li>2. s19(3)(c) <i>Work Health and Safety Act 2011</i>, s28(d) <i>Work Health and Safety Act 2011</i>.</li> <li>3. s46(2) <i>Work Health and Safety Regulation 2011</i></li> <li>4. s215(2) <i>Work Health and Safety Regulation 2011</i></li> <li>5. s215(3) <i>Work Health and Safety Regulation 2011</i></li> <li>6. s19(3)(f) <i>Work Health and Safety Act 2011</i></li> </ol>

## Electrical Exclusion Zones

Q#	Question	Reference	Guidance
26	Does the task require a need for the plant to be operated around underground or overhead powerlines?	Information gathering	This question is to determine whether on site workers require knowledge of electrical exclusion zones as required in Part 4 of the Electrical Safety Regulation 2002 or the Electrical Safety Code of Practice 2010 - Working Near Exposed Live Parts.
27	Can the plant operator demonstrate their understanding of exclusion zones when working near overhead powerlines?	S62(1) <i>Electrical Safety Regulation 2002</i>	<ul style="list-style-type: none"> <li>• If the line cannot be de-energised then exclusion zones apply.</li> <li>• Operator should be able to describe exclusion zones as specified in SWMS as a minimum level of knowledge.</li> <li>• The area of an exclusion zone may vary, but it will always exist. Before working or operating near a live electrical part, the plant operator needs to confirm the correct exclusion zone.</li> <li>• A person must not enter the exclusion zone.</li> </ul>
28	In relation to operating plant near overhead power lines, can the plant operator demonstrate their understanding of when a safety observer is required?	S62(1) <i>Electrical Safety Regulation 2002</i>	<p>A safety observer should be employed when a crane or operating plant is operating within the safety observer zone.</p> <p>Items of plant that may enter over head powerline exclusion zones include:</p> <ul style="list-style-type: none"> <li>• Loaders</li> <li>• Excavators</li> <li>• Tippers (both on and off road).</li> <li>• Articulated dump trucks.</li> </ul> <p>What is the safety observer zone? A crane or plant is considered to be in the safety observer zone when, by the position the crane or plant is located, it is possible that any of the following could enter the exclusion zone of live electric lines during operation:</p> <ul style="list-style-type: none"> <li>• any part of the crane or operating plant;</li> <li>• any person on or working on an EWP;</li> <li>• any hand tools or other equipment held by anyone involved with the operation; and</li> <li>• the load being moved.</li> </ul> <p>Refer to Appendix 4 for more information regarding safety observer zones or part 4.3.1 of the <i>Electrical Safety Code of Practice 2010 - Working Near Exposed Live Parts</i>.</p>

29	<p>If the plant operator indicates they have knowledge of electrical exclusion zones then ask further questions to determine level of understanding:-</p> <ol style="list-style-type: none"> <li>1. What is the exclusion zone around an exposed 11000 volt powerline for an untrained person operating plant?</li> <li>2. What are the requirements to consult with the person in control of the electrical part?</li> <li>3. What are some methods to reduce the size of exclusion zones?</li> </ol>	Information gathering	<p>The purpose of this question is to gauge the level of operator knowledge.</p> <p><i>Untrained person</i> means anyone who is not considered an Authorised or Instructed person under the <i>Electrical Safety Regulation 2002</i> with regards to exposed live electrical parts.</p> <p>Answers:</p> <ol style="list-style-type: none"> <li>1. 3000mm. Refer to schedule 2 of the <i>Electrical Safety Regulation 2002</i>, or Appendix B of the <i>Electrical Safety Code of Practice 2010 - Working Near Exposed Live Parts</i>.</li> <li>2. The employer or self employed person must give the person in control of the overhead line written notice of the employer or self employed person's intention to perform the work. If there is reasonable likelihood the performance of work could involve: <ul style="list-style-type: none"> <li>• A person coming into direct contact with an overhead electric line</li> <li>• Operating plant or vehicle coming into direct contact with overhead line</li> <li>• A person coming within an exclusion zone for an overhead line</li> <li>• Operating plant or a vehicle coming within the exclusion zone for the operating plant or vehicle for the overhead line.</li> </ul> <p>(s64(A) <i>Electrical Safety Regulation 2002</i>)</p> </li> <li>3. The exclusion zone can be reduced by: <ul style="list-style-type: none"> <li>• De-energising the line</li> <li>• Using an authorised person</li> <li>• Insulating the line.</li> </ul> </li> </ol>
30	<p>If there is a safety observer on site can the safety observer explain their role?</p>	S62(1) <i>Electrical Safety Regulation 2002</i>	<p>Refer to section 4.3.2 of the <i>Electrical Safety Code of practice 2010 – Working Near Exposed Live Parts</i>.</p>

Q#	Question	Reference	Guidance
31	Can the PC or employer/self employed person describe the obligations they have to meet before excavation work can commence on a construction site?	Information gathering	<p>Before carrying out any work near electrical risks in buildings and near underground electrical services, a person should identify any potential risks of the work. Sections 62A, 62C and 62D of the <i>Electrical Safety Regulation 2002</i> set down the requirements for a principal contractor at a construction site or an employer or self employed person whether at a construction site or not to find out from appropriate sources what underground electrical services could create a risk if contacted or damaged.</p> <p>This information must be taken into consideration when planning work.</p> <p>A written record of this information should be kept.</p>
32	Can the PC or employer/self employed person describe some suitable means of identifying whether electrical cables are present if the excavation work is occurring at the construction site?	Information gathering	<ol style="list-style-type: none"> <li>1. Call Dial Before You Dig, a free enquiry service for information on underground assets anywhere in Australia. This organisation will advise if electrical cables owned by one or more of its contributory members are located near your worksite. In addition, definite cable locations can be determined by special arrangement with the organisations. For further information, contact Dial Before You Dig by any of the following methods: <ul style="list-style-type: none"> <li>• phone 1100; or</li> <li>• submit an enquiry online at <a href="http://www.dialbeforeyoudig.com.au">www.dialbeforeyoudig.com.au</a>.</li> </ul> </li> <li>2. Contact relevant authorities about any cables they may have placed near the excavation. Authorities may include: <ul style="list-style-type: none"> <li>• electricity entities such as Energex or Ergon;</li> <li>• communication companies such as Optus and Telstra;</li> <li>• local government authorities; and</li> <li>• water authorities.</li> </ul> </li> <li>3. Use a spotter and shallow digs when excavating to ensure that the underground cable is not damaged.</li> </ol>

## Plant Inspection

Q#	Question	Reference	Guidance
33	Can the plant operator safely access and exit the plant and work area?	<i>s40, s78 and s203 Work Health and Safety Regulation 2011</i>	<ul style="list-style-type: none"> <li>Slip, trip and fall at level incidents are a significant cause of musculoskeletal injuries.</li> <li>Risks of falls from one level to another which are reasonably likely to cause injury must be managed.</li> </ul> <p>Inspectors are required to identify hazards that might prevent the safe access to and exit from the plant and assess whether they have been adequately controlled. Both the immediate work area (e.g. the path to the item of plant) and the actual plant access should be assessed.</p> <p>Question 34 lists some common hazards.</p>
34	<p>If the plant operator is unable to safely access and exit the plant and work area, indicate why.</p> <p>Tick all that apply:</p> <ul style="list-style-type: none"> <li>Slippery plant surfaces (e.g. dirty, worn smooth)</li> <li>Slippery or unstable ground</li> <li>Untidy storage of materials</li> <li>Piles of debris (rocks, spoil)</li> <li>Restricted space</li> <li>Uncontrolled risk of falls</li> <li>Other</li> </ul>	Information gathering	
35	Are access rails, steps and handholds clean and in good condition?	<i>s203 Work Health and Safety Regulation 2011</i>	Inspectors to check for mud or other substances on rails, steps and handholds that might affect an operator's ability to safely access and exit the plant.
36	Does the equipment show any signs of excessive wear, damage or cracks to structural components such as excavator dipper arms, plant attachment points, etc.?	<i>s19(3)(b) and s21(2) Work Health and Safety Act 2011</i>	



Q#	Question	Reference	Guidance
37	<p>If excessive wear, damage or cracks has been identified, indicate where. Tick all that apply.</p> <ul style="list-style-type: none"> <li>• Attachments</li> <li>• Attachment points</li> <li>• Hydraulic components</li> <li>• Welds</li> <li>• Boom/Dipper arm</li> <li>• Other</li> </ul>	Information gathering	
38	Is the attachment appropriately secured according to the manufacturer's requirements (e.g. quick hitch, lifting points)?	<p><i>s21(2) Work Health and Safety Act 2011</i></p> <p><i>s219 Work Health and Safety Regulation 2011</i></p>	Inspectors should refer to the plant manual or manufacturer's specifications for guidance on the attachment features.

Q#	Question	Reference	Guidance
39	Does the plant have a rollover protective structure (ROPS) fitted as part of a suitable combination of operator protective devices, where a risk of the plant overturning is identified?	s214(a), s215(b) <i>Work Health and Safety Regulation 2011</i>	<p><b>Operator protective device</b> includes a roll-over protective structure, falling object protective structure, operator restraining device and seat belt. (<i>Work Health and Safety Regulation 2011</i>).</p> <p>Machines which are designed to travel slowly on relatively flat, stable supporting surfaces may not require ROPS if conditions of use prevent the risk of a rollover. These may include:</p> <ul style="list-style-type: none"> <li>• Paving machines</li> <li>• Profilers</li> <li>• Stabilisers</li> <li>• Material transfer vehicles</li> <li>• Stand up loaders</li> </ul> <p>It may not be reasonably practicable to install ROPS on some classes of earthmoving machinery, due to the size of the machine or the difficulty of retrofitting an effective ROPS without creating additional risks. These include:</p> <ul style="list-style-type: none"> <li>• Machines having a weight less than 700 kg</li> <li>• Hydraulic excavators if; <ul style="list-style-type: none"> <li>• The weight is less than 1000 kg, or</li> <li>• The weight is between 1000 kg and 6000 kg, and fitted with Tip Over Protective Structures (TOPS), or</li> <li>• Manufactured after 1 January 2012 and has a mass over 50 tonnes</li> </ul> </li> </ul> <p>Compact excavators with a mass between 1000kg and 6000kg fall under ISO standard 12117 and are fitted with TOPS (turn over protective structure) rather than ROPS.</p> <p>ROPS for excavators manufactured before 1 January 2010, or for excavators over 50 tonnes manufactured after 1 January 2010, may not comply with any published technical standard. The relevant technical standard specific for ROPS for excavators (ISO 12117-2) was published in 2008 but the scope of this standard is limited to machines having a weight between 6 t and 50 t.</p> <p>Frames of some existing excavators may not be capable of accommodating ROPS, without having an adverse impact on the host machine. Therefore, seek guidance from the original designer or manufacturer of the excavator before retrofitting ROPS on an existing machine.</p> <p>Refer to appendix B for relevant technical standards.</p>

Q#	Question	Reference	Guidance
40	Does the plant have falling objects protective structure (FOPS) fitted as part of a suitable combination of operator protective devices, where a risk of things falling on the operator of the plant is identified?	s214(b), s215(b) <i>Work Health and Safety Regulation 2011</i>	FOPS are generally only required for demolition and forestry related work.
41	Are all glass and mirrored surfaces whole, clean and maintained for good visibility?	s214 and s215 <i>Work Health and Safety Regulation 2011</i>	
42	Are all required safety devices in place and functioning: <ul style="list-style-type: none"> <li>• Burst protection</li> <li>• Emergency stops</li> <li>• Reversing alarms</li> <li>• Swivel lights</li> <li>• Seat belts / operator restraints</li> <li>• Other</li> </ul>	s214 and s215 <i>Work Health and Safety Regulation 2011</i>	Burst protection is to be fitted on all earthmoving plant used as a crane, where the manufacturer's rated capacity exceeds 1 tonne. The burst protection is to be fitted to both the boom and dipper arm of the plant. Burst protection is to comply with the performance requirements of <i>ISO 8643: Earthmoving machinery – Hydraulic excavator and backhoe loader boom-lowering control device – Requirements and tests</i> . Refer to the mobile crane code of practice 2006, part 15 for further information.
43	Is the maintenance log book kept in the plant?	Information gathering	Log books containing daily prestart inspections and service records are generally kept with the plant.
44	Does the maintenance log book record: <ul style="list-style-type: none"> <li>• Daily pre-start checks</li> <li>• Regular maintenance</li> <li>• Scheduled services in accordance with manufacturer's requirements</li> </ul>	s19(3)(b) and s21(2) <i>Work Health and Safety Act 2011</i>  s213 <i>Work Health and Safety Regulation 2011</i>	If the answer to Q35 is recorded as 'No', this question should be recorded as 'N/A'.  Maintenance and service schedules should be set out in the manufacturer's specifications.

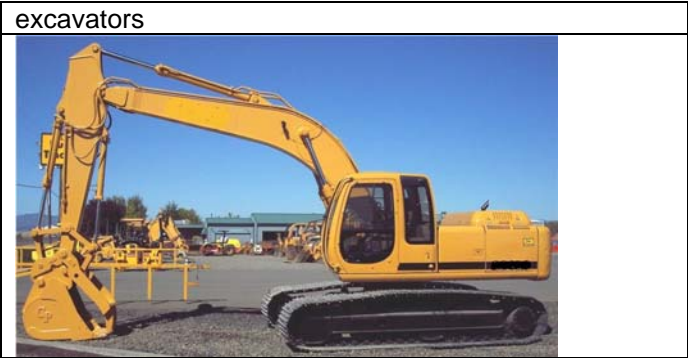
Q#	Question	Reference	Guidance
45	Is the operator's seat in good condition and properly adjusted?	s19(3)(b) <i>Work Health and Safety Act 2011</i>	
46	Are the operators controls: <ul style="list-style-type: none"> <li>• Marked correctly, and</li> <li>• Functioning as intended</li> </ul>	s210(1)(a) <i>Work Health and Safety Regulation</i> s19(3)(b) <i>Work Health and Safety Act 2011</i>	Visual inspection of controls and operator demonstration.

## Appendix A

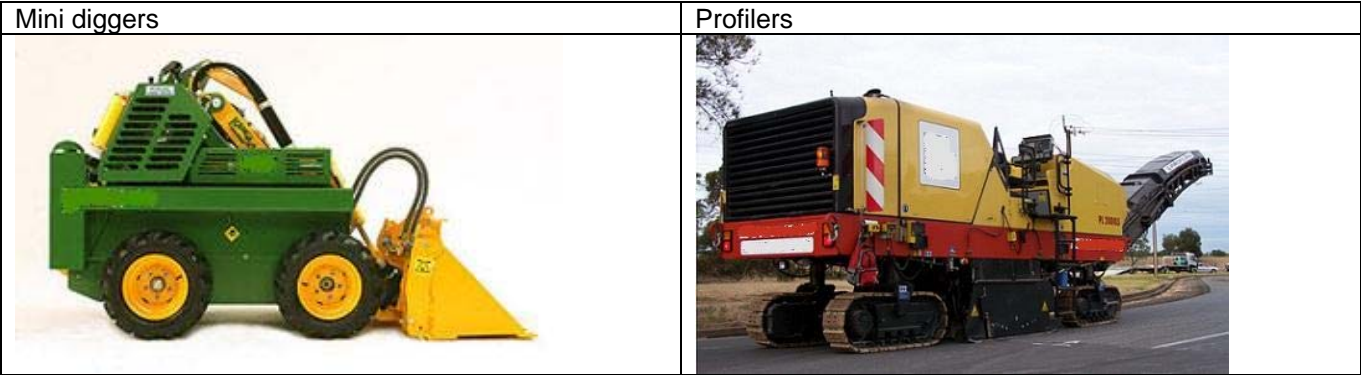
### 1. Items of earthmoving and associated plant that are generally provided with ROPS.

Road rollers – fixed and articulated	Multi tyre rollers	Sheepsfoot rollers
		
Bulldozers	Graders	Skid steer
		
Backhoes	Front end loaders	Mini excavators (under 6 ton, fitted with TOPS)
		

2. Excavators greater than 6 ton have historically not been manufactured with ROPS, but newer models generally have ROPS incorporated into the cab.



3. Items of earthmoving and associated plant which are generally not provided with ROPS



## Appendix B

### Relevant technical standards

The following technical standards are relevant for protective structures on earthmoving machinery.

Falling object protective structures:

- ISO 3449, *Earth-moving – Falling-object protective structures – Laboratory tests and performance requirements*
- ISO 10262, *Earth-moving machinery – hydraulic excavators – laboratory test and performance requirements for operator protective guards*

Tip Over protective Structures:

- ISO 12117, *Earth-moving machinery – Tip-over protection structure (TOPS) for compact excavators-Laboratory tests and performance requirements.*

Roll Over protective structures:

- ISO 3471, *Earth-moving machinery – Roll-over protective structures – Laboratory tests and performance requirements*

Roll Over protective structures for hydraulic excavators having a weight between 6 and 50 tonnes:

- ISO 12117-2, *Earth-moving machinery – laboratory tests and performance requirements for protective structures of excavators, Part 2: Roll-over protective structures (ROPS) for excavators of over 6 t*



## Appendix C

### Units of competency.

**Course: 30496QLD - Course in operating load shifting equipment.(superseded)**

### Units of competency

- OHSCER210A Operate a Bridge or Gantry Crane (remote operation only)
- OHSCER203A Operate a front end loader
- OHSCER202A Operate a front end loader/backhoe
- OHSCER217A Operate a grader
- OHSCER215A Operate a roller
- OHSCER204A Operate a front end loader skid steer type
- OHSCER216A Operate a scraper

### Civil construction excavator operations

RIIMPO320A Conduct civil construction excavator operations (superseded)

RIIMPO320B Conduct civil construction excavator operations (current)

RIIMPO323A Conduct civil construction dozer operations

RIIMPO318A Conduct civil construction skid steer loader operations (superseded)

RIIMPO318B Conduct civil construction skid steer loader operations (current)

RIIMPO324A Conduct civil construction grader operations

RIIMPO321B Conduct civil construction wheeled front end loader operations

RIIMPO322A Conduct civil construction tracked front end loader operations

RIIMPO317A Conduct roller operations



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RIIMPO319A Conduct backhoe/loader operations

RIIMPO315A Conduct tractor operations

**Note:** superseded units may still provide evidence of competency when combined with other supporting evidence.

## Appendix D

The safety observer zone for electric lines on poles and on towers is illustrated in Figure 1. Please note that, while this figure illustrates a crane operating, the example applies to all operating plant.

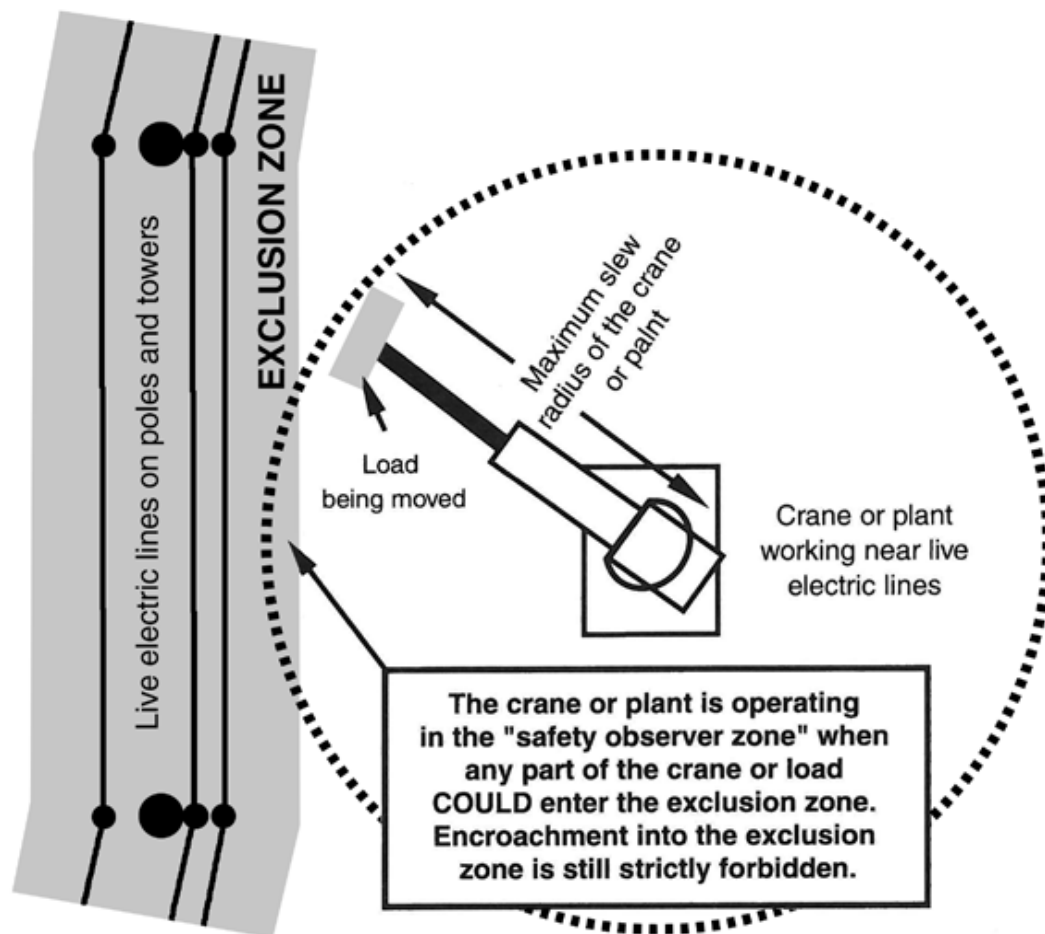


Figure 1: Safety observer zone for overhead electric lines on poles and towers