

# EXAMINATION PAPER

## Quarry manager of mines other than underground mines or coal mines certificate of competence

**Written examination 4 September 2019**

### Instructions to candidates

Unless otherwise stated all references to the Act, Regulations and Standards are to the:

- *Work Health and Safety Act 2011*
- Work Health and Safety Regulation 2017
- *Work Health and Safety (Mines and Petroleum Sites) Act 2013*
- Work Health and Safety (Mines and Petroleum Sites) Regulation 2014
- *Explosives Act 2003*
- Explosives Regulation 2013
- Explosives Australian Standard AS 2187

## QM1 – (Part A) – Legislation knowledge

**Question 1 – General duties relation to work health and safety**

A) The WHSA Section 19 (3) (a) states “a Person Conducting a Business or Undertaking (PCBU) must ensure, so far as is reasonably practicable: “the provision and maintenance of a work environment without risks to health and safety”.

List three (3) additional provisions from Section 19 (3) WHS Act 2011 (3 marks)

B) The meaning of ‘mining operations’

List three (3) activities that are defined in section 7 of the WHS(MPS)A 2013 as ‘mining operations’? (3 marks)

C) Statutory functions at mines other than underground mines or coal mines e.g. Quarries

Assuming a large complex quarry, list the four (4) statutory functions that are required to be nominated by the mine operator as set out in schedule 10 of the WHS(MPS)R 2014?

(4 marks)

## Question 2 – Managing high risk activities

**An extract of clause 66 WHSR 2017 is provided below;**

Clause 66 – “A person conducting a business or undertaking must manage, in accordance with Part 3.1, risks to health and safety associated with a confined space at a workplace including risks associated with entering, working in, on or in the vicinity of the confined space (including a risk of a person inadvertently entering the confined space)

As the quarry manager, how would you ensure that the risks associated with working in, or in the vicinity of a confined space are managed? (note clause 65 – 77 WHSR 2017 details these requirements) (dot points are acceptable)

A) Prior to entry? (5 marks)

B) Controls to be used during entry? (5 marks)

## Question 3 – Principal hazard management plans

A) What is the meaning of a principal hazard as per WHS(MPS)R 2014 clause 5? (2 marks)

B) Name four (4) principal hazards associated with mining operations where a principal hazard management plan may need to be prepared for a large open cut mine (not a coal mine). WHS(MPS)R 2014 clause 5 (4 marks)

C) In your own words outline the process that, as quarry manager, you would use to develop a PHMP for a new activity on-site? (4 marks) *(dot points are acceptable)*

## Question 4 – Movement of mobile plant

The WHS(MPS)R 2014 clause 28 requires the operator of a mine to manage risks to health and safety associated with the movement of mobile plant.

*(a copy of clause 28 is attached for your review)*

### Work Health and Safety (Mines and Petroleum Sites) Regulation 2014

Current version for 1 July 2019 to date (accessed 16 July 2019 at 12:03)  
Part 2 > Division 4 > Subdivision 1 > Clause 28

#### 28 Movement of mobile plant (cl 631 model WHS Regs)

- (1) In complying with clause 9, the operator of a mine or petroleum site must manage risks to health and safety associated with the movement of mobile plant at the mine or petroleum site.
- (2) In managing risks to health and safety associated with the movement of mobile plant at the mine or petroleum site, the operator must have regard to all relevant matters including the following:
  - (a) the design, layout, construction and maintenance of all roads and other areas at the mine or petroleum site used by mobile plant (including the drainage system for any such road or area),
  - (b) any risks associated with the terrain or nature of any land adjacent to any such road or area,
  - (c) interactions between mobile plant, especially between large and small mobile plant,
  - (d) interactions between mobile plant and fixed plant or structures,
  - (e) interactions between mobile plant and pedestrians (including the use of pre-movement warnings for mobile plant in mine or petroleum site workings),
  - (f) the operation of remotely controlled mobile plant,
  - (g) the maintenance, testing and inspection of brakes, steering, lights and other safety features of the mobile plant.

**Note.** Division 7 of Part 5.1 of the WHS Regulations includes requirements relating to mobile plant in all workplaces.

Subclause (2), details relevant matters that the mine operator must have regard to when managing the risks.

List 3 controls that you would consider relevant for each subclause (a - g). (0.5 marks each to max 10 marks)

- a) the design, layout, construction and maintenance of all roads and other areas used by mobile plant
- b) any risks associated with the terrain or nature of any land adjacent to any such road or area
- c) interactions between mobile plant, especially between large and small mobile plant
- d) interactions between mobile plant and fixed plant or structures
- e) interactions between mobile plant and pedestrians
- f) the operation of remotely controlled mobile plant
- g) maintenance and testing of brakes, steering, lights and other safety features of the mobile plant

## Question 5 – Survey plans and mine plans

A) The WHS(MPS)R 2014 clause 122 (6) requires certain things to be shown on a survey plan (if present on-site). List 5 items that must be shown on the plan. (5 marks)

B) You are the Quarry Manager of a site that is mining above known old workings. There is a history of potential intersections with the workings (photo below).



List the types of controls that you would implement to manage mining in and around these workings. (5 marks) (dot points are acceptable)

## Question 6 – Contractors

Your mine is embarking on a major cut back of the quarry. The work is going to be performed by a contractor (XXX).

As the quarry manager (and on behalf of the mine operator) you are required to ensure that certain legislative requirements are satisfied to manage the risks associated with contractor work.

List the following requirements:

A) The contents of your safety management system (SMS) for the control of risks associated with contractors? WHS(MPS)R 2014 clause 14 (1)(f) (5 marks) *(dot points are acceptable)*

B) Contractors obligations before carrying out mining operations.

WHS(MPS)R 2014 clause 22 (5 marks) *(dot points are acceptable)*

## Question 7 – Mine records and notices

A) The operator of a mine site must keep a record for the mine site. List 4 things the record must contain. WHS(MPS)R 2014 clause 133 (4 marks)

B) WHSA 2011 s 195 gives power to an Inspector to issue a prohibition notice. What must the Inspector reasonably believe to issue the notice? (2 marks)

C) When a notice is issued by an Inspector pursuant to Part 10 of the WHSA 2011 (e.g. s 191, s 195, s 198) the legislation requires it to be displayed and for certain things not to occur. (2 marks)

i) How should it be displayed? (WHS 2011 s 210(1)) (1 mark)

ii) What must not occur to the notice? (WHS 2011 s 210(2)) (1 mark)

D) WHSA 2011 s 194 allows for the extension of time for compliance with an improvement notice issued under s 191.

This extension of time can only occur if? (2 marks)

## QM2 – (Part B) – Legislation application

### Question 1 – Determination of blasting exclusion zone

An extract of AS 2187.2-2006 Appendix L (exclusion zones) is supplied below

AS 2187.2—2006	124
<b>APPENDIX L</b> <b>EXCLUSION ZONES</b> (Normative)	
<b>L1 GENERAL</b>	
All blasts require the establishment of an exclusion or evacuation zone prior to firing the shot. Depending on the industry, the zone can be the area, below, at and above ground level, from which all unauthorized persons are excluded to protect them from injury or harm.	
The size of the exclusion zone shall be such that all fly and associated debris is contained within the zone, as well as consideration on impacts of blast environmental limits on humans and where required, animals.	

A) Explain in your own words how you would go about designing and implementing an exclusion zone for a development blast in a new quarry. *(dot points are acceptable)* (7 marks)

Consider the following in your answer:

Planning

Criteria that may affect the size of the exclusion zone

Considerations for establishing and disestablishing the zone

B) The Explosives Regulation 2013 clause 102 includes notification requirements for lost, stolen and attempted theft of explosives.

As the quarry manager, you are notified of a booster miscount after charging is completed.

You are required to ensure that the licence holder notifies three external authorities, who are they? (3 marks)

## Question 2 – Dust exceedance

Personal dust sampling results have been received by your company for a monitoring program that was conducted one month prior. The results have identified three (3) crystalline silica exceedances of the *Workplace Exposure Standards for Airborne Contaminants*.

The exceedances were recorded on workers who were performing inspection activities on the fixed crushing and screening plant.

As the quarry manager:

- A) What action are you required to take as soon as reasonably practicable? (3 marks)
- B) What are the eight-hour time-weighted average (TWA) atmospheric concentrations of the following airborne dust types that persons at the mine must not be exposed to? (3 marks)
- i) Respirable dust (mg/m<sup>3</sup>) (1 mark)
  - ii) Inhalable dust (mg/m<sup>3</sup>) (1 mark)
  - iii) Crystalline Silica (mg/m<sup>3</sup>) (1 mark)
- C) You are required to undertake a review of control measures.  
WHS(MPS)R 2014 cl 10 (9 marks)
- i) List four (4) process steps you will use to review the controls. (4 marks)
  - ii) Assuming no budgetary restrictions and using the hierarchy of controls, list the typical controls that could be implemented to mitigate dust hazards in and around a fixed crushing and screening plant. (5 marks)

## Question 3 – Incident management

This question relates to the incident outlined in the attached Safety Bulletin extract – March 2019)

For the purposes of this question, the contract welder has received an electric shock and is not able to make his way out of the grizzly, however, he is conscious and talking.

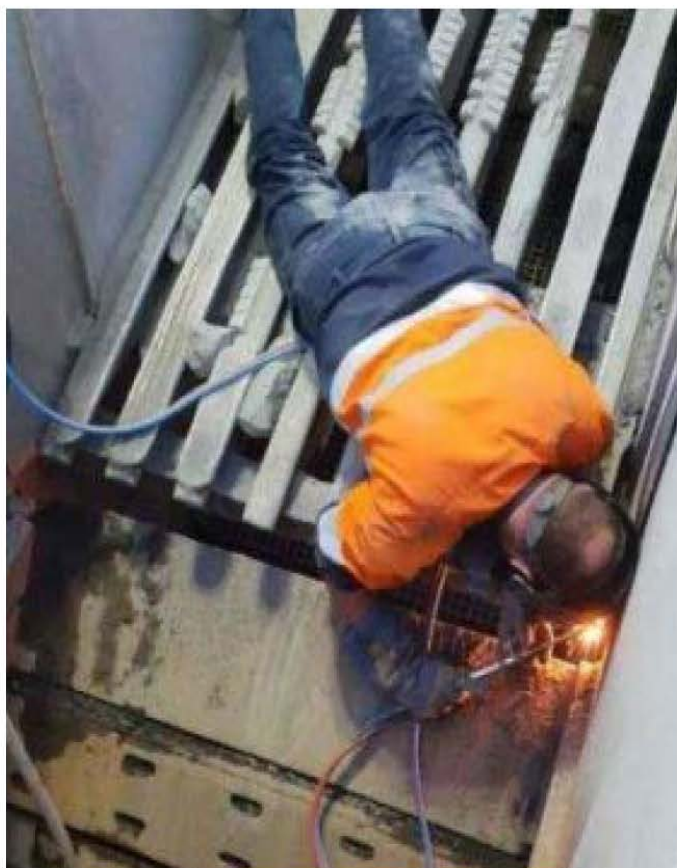
- A) List the three types of notifiable incidents that are defined in WHS(MPS)A 2013 section 14 (3 marks)
- B) After notifying the NSW Resource Regulator, the site of a notifiable incident remains preserved until either one of two things occurs. What are they?  
WHS(MPS)A 2013 section 17 (2 marks)
- C) As the quarry manager, detail the following:

## SAFETY BULLETIN

NSW  
Resources  
Regulator**Incident 3:**

A contractor boilermaker was welding on grizzly panel in a quarry. The earth had been positioned on the opposite side of the grizzly to the area being worked on. The boilermaker was lying on the grizzly. When a programmable logic controller (PLC) code was loaded, a spray bar over the grizzly activated. The arc had already been struck, and welding was underway when the boilermaker suffered the shock.

*Figure 3: The photograph was taken earlier in the day of the incident when the worker was in the same position at the time of the incident*





i) List the immediate action you would take when you were told of the incident?

(dot points are acceptable) (5 marks)

ii) List the controls that may be identified in your investigation to prevent a similar incident occurring.  
(ensure specific reference to the events outlined in the safety bulletin)

(dot points are acceptable) (5 marks)

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