



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

## **Explosives: Surface storage and management audit – guide**

**Approved: 26 June 2017**

1 Adelaide Terrace, East Perth WA 6004  
Postal address: Mineral House, 100 Plain Street, East Perth WA 6004  
Telephone: (08) 9358 8002  
ResourcesSafety@dmirs.wa.gov.au  
[www.dmirs.wa.gov.au](http://www.dmirs.wa.gov.au)

# Table of contents

- Introduction ..... 2**
- 1 Administrative matters ..... 3**
- 2 Explosives management plan ..... 6**
- 3 Training ..... 10**
- 4 Magazine construction – surface magazines..... 13**
- 5 Magazine compound – surface magazines ..... 16**
- 6 Signage and emergency equipment – surface magazines ..... 19**
- 7 Stock control and security – surface magazines ..... 22**
- 8 Housekeeping – surface magazines..... 26**
- 9 Emergency procedures – surface magazines..... 29**

# Introduction

The scope of the two 'explosives' surface audits covers the safety and security standards associated with the management of explosives, including surface storage, transport, use and disposal.

Minor updates were made to points 3.7 and 3.8 in June 2017.

The two 'explosives' surface audit documents address overall management aspects as well as field operations at mine sites, and cover:

- Explosives: Surface storage and management
- Explosives: Surface transport, use and disposal

They are structured so that operators can select those aspects relevant to the size and complexity of their operations, and the activities undertaken.

Where the term "verify" is used in the guideline, it implies there is a regulatory requirement for compliance with the standard. Where the term "ensure" is used, there is no mandatory requirement for compliance but the standard sets out a recommended practice, which, if followed, should minimise the risk of incidents.

These audit documents do not cover the underground storage and use of explosives.

## List of abbreviations

AEC 3	Australian Code for the Transport of Explosives by Road and Rail - 3rd edition
AEIGS	Australian Explosives Industry Safety Group
AN	Ammonium nitrate
ANE	Ammonium nitrate emulsion
ANFO	Ammonium nitrate fuel oil
AS	Australian Standard
ER	Dangerous Goods Safety (Explosives) Regulations 2007
EMP	Explosives management plan
MSIA	<i>Mines Safety and Inspection Act 1994</i>
MSIR	Mines Safety and Inspection Regulations 1995
PIN	Personal identification number
Reg	Regulation (of the ER)
r.	Regulation (of the MSIR)
s.	Section (of the MSIA)
SDS	Safety data sheets

# 1 Administrative matters

## Administrative matters

Point	Standard	Guideline
1.1	A copy of each current explosive storage licence is kept on site.	<p><b>Intent:</b> To verify that all explosives storage areas are licenced and a copy of each explosives storage licence is kept at any place to which the licence relates.</p> <p><b>Personnel:</b> Responsible Person, Registered Manager Licence holder and/or other relevant employees.</p> <p><b>Method:</b> View documentation. Verify a copy of the licence details are available at each magazine and have not expired. Refer to Dangerous Goods Safety (Explosives) Regulations 2007 r. 93(1) and MSIR r. 8.1A.</p>
1.2	All details on the explosives storage licence are correct. Ensure all explosives storages are included on the licence.	<p><b>Intent:</b> To verify all storages and all details on the licence are correct. (Reg 179 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview manager and/or relevant employees. View documentation verifying details.</p>
1.3	The licence holder has nominated a qualified officer.	<p><b>Intent:</b> To verify the licence holder has nominated a qualified officer responsible for the safety and security of explosives at the site. (Reg 165 of ER).</p> <p><b>Personnel:</b> Registered Manager</p> <p><b>Method:</b> Interview Registered Manager. View documentation.</p>
1.4	A written record is kept of the qualified officer.	<p><b>Intent:</b> To verify that a written record is kept on site of the qualified officer. (Reg 165 of ER)</p> <p><b>Personnel:</b> Registered Manager</p> <p><b>Method:</b> Interview Registered Manager. View documentation.</p>

1.5	The written records of the qualified officer(s) are kept for at least two years.	<p><b>Intent:</b> To verify there is a system in place for keeping records for at least two years. (Reg 165 of ER)</p> <p><b>Personnel:</b> Registered Manager</p> <p><b>Method:</b> Interview Registered Manager. View documentation.</p>
1.6	The licence holder keeps a register of secure nominees.	<p><b>Intent:</b> To verify a register of all secure nominees for the site is kept. Certain information must be recorded in the register. (Reg 24 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview Registered Manager and/or relevant employees. View documentation verifying records.</p>
1.7	The secure nominees must acknowledge that they have read and understood the explosives management plan (EMP).	<p><b>Intent:</b> To verify that records are kept of secure nominees having declared that they have read and understood the EMP (Reg 24 of ER).</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview Registered Manager and/or relevant employees. View records of acknowledgement.</p>
1.8	The register of secure nominees must be current.	<p><b>Intent:</b> To verify that systems are in place to regularly update the register of secure nominees. Names of previously authorised secure nominees who are now no longer a secure nominee are to remain on the register but showing that their authorisation has been withdrawn. (Reg 24 of ER).</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview Registered Manager and/or relevant employees. Sight register of secure nominees for currency and completeness.</p>

1.9

Records of the secure nominee register are kept for at least two years.

**Intent:**

To verify there is a system in place to retain these records for at least two years.

**Personnel:**

Registered Manager and/or other relevant employees.

**Method:**

Interview Registered Manager and/or relevant employees. Sight procedural documentation and records.

## 2 Explosives management plan

### Explosives management plan

Point	Standard	Guideline
2.1	There is an Explosives Management Plan (EMP) in place that describes how explosives will be kept safe and secure at that site.	<p><b>Intent:</b> To verify an Explosives Management Plan (EMP) has been developed and authorised at the appropriate level of management. (Reg 157 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or Principal Employer.</p> <p><b>Method:</b> Interview relevant employees. View documentation verifying signatures.</p>
2.2	There is a review date for the Explosives Management Plan.	<p><b>Intent:</b> To verify the Explosives Management Plan reflects changing practices and operational parameters and is current. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. View documentation verifying progressive reviews.</p>
2.3	The Explosives Management Plan identifies the site and includes a site plan.	<p><b>Intent:</b> To verify EMP is relevant to the site and work carried out in Western Australia. (Reg 161 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. View documentation.</p>
2.4	The Explosives Management Plan contains a risk assessment regarding sabotage, theft, unexplained loss and access by unauthorised persons.	<p><b>Intent:</b> To verify the risks are identified and appropriate controls are clearly understood. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. View documentation.</p>

2.5	The Explosives Management Plan contains the measures to be taken to minimise those risks.	<p><b>Intent:</b> To verify that suitable controls are implemented to mitigate the risks. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. Ensure that suitable controls are proposed.</p>
2.6	The Explosives Management Plan contains the measures to be taken to ensure that no unauthorised individual has unsupervised access to any explosive.	<p><b>Intent:</b> To verify that systems are in place to prevent theft of explosives. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Authorised personnel.</p> <p><b>Method:</b> Interview relevant employees. View documentation verifying records.</p>
2.7	The Explosives Management Plan contains the measures to be taken to ensure a record is kept of the name and address of every individual who has supervised or unsupervised access to any explosive.	<p><b>Intent:</b> To verify that records are kept of personnel accessing the magazine. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. View magazine records.</p>
2.8	The Explosives Management Plan details security measures to be taken.	<p><b>Intent:</b> To verify there are appropriate standards for securing magazines and magazine enclosures against unlawful entry. (Reg 94 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. Sight procedural documentation and inspection reports.</p>
2.9	The Explosives Management Plan details how records will be kept of explosives received and despatched and reconciled.	<p><b>Intent:</b> To verify there is a system to receive, record, despatch and reconcile explosive movement and usage. (Reg 161 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. Sight procedural documentation and magazine records.</p>



2.10	The Explosives Management Plan details how records will be kept of authorised persons.	<p><b>Intent:</b> To verify that only authorised personnel have access to stored explosives. (Reg161 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> View Secure Nominee Register and the Mine Record Book.</p>
2.11	The Explosives Management Plan details the measures to ensure that explosives are only supplied to authorised persons.	<p><b>Intent:</b> To verify that explosives will only be moved and used by competent authorised personnel. (Reg 161 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> View records of who has accessed the magazine, stock registers, blast plans, key registers, etc.</p>
2.12	The Explosives Management Plan has measures to ensure that records are kept of the details of any person to whom explosives at the site are supplied to and the details of the explosives supplied.	<p><b>Intent:</b> To verify the competency of authorised persons and track explosives used. (Reg 161 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview relevant employees. View Explosive Management Plan and magazine records.</p>
2.13	There are systems in place to ensure any unlawful entry or attempted unlawful entry to the site, any theft or attempted theft or unexplained loss of any explosive is investigated and reported to the Chief Officer.	<p><b>Intent:</b> To verify that any missing explosive (or activities that could have led to the loss of explosives) is investigated and reported to the Chief Officer (Reg 161 of ER).</p> <p><b>Personnel:</b> Mine manager, magazine keeper.</p> <p><b>Method:</b> Check for procedures, investigation tools, policies, evidence from previous losses that supports there are mechanisms in place to investigate and report missing explosives.</p>

2.14	The Explosives Management Plan contains the measures to be taken to ensure that structures and things used to keep explosives secure are inspected and regularly maintained.	<p><b>Intent:</b></p> <p>To verify that explosives magazines and compounds are regularly inspected (monthly) and well maintained. (Reg 161, Schedule 10 and Reg 92 of ER)</p> <p><b>Personnel:</b></p> <p>Registered Manager and/or other relevant employees.</p> <p><b>Method:</b></p> <p>Interview relevant employees. Sight procedural documentation, inspection documentation and maintenance records.</p>
2.15	The Explosives Management Plan contains the measures to be taken to deal with any dangerous goods incident involving explosives that might occur.	<p><b>Intent:</b></p> <p>To verify that appropriate emergency procedures are in place and the necessary resources and training are available. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b></p> <p>Registered Manager and/or other relevant employees.</p> <p><b>Method:</b></p> <p>Interview relevant employees. Sight procedural documentation, view Emergency Management Plan, resources available, training records and when exercises involving explosives were last conducted.</p>
2.16	The Explosives Management Plan contains the measures to be taken to ensure that personnel are trained in the requirements of the plan.	<p><b>Intent:</b></p> <p>To verify that authorised personnel are aware of the content of the Explosive Management Plan (Reg 194 of ER).</p> <p><b>Personnel:</b></p> <p>Registered Manager and/or other relevant employees.</p> <p><b>Method:</b></p> <p>Interview relevant employees. Sight documentation of when internal/ external audits of the EMP were last conducted.</p>
2.17	The Explosives Management Plan contains the measures to be taken to ensure compliance with the plan.	<p><b>Intent:</b></p> <p>To verify that the Explosive Management Plan is implemented in the field (Reg 194 of ER).</p> <p><b>Personnel:</b></p> <p>Registered Manager and/or other relevant employees.</p> <p><b>Method:</b></p> <p>View audits, maintenance records, magazine records, training records, etc.</p>

### 3 Training

#### Training

Point	Standard	Guideline
3.1	The licence holder keeps a training matrix or equivalent.	<p><b>Intent:</b> To verify the licence holder keeps a training matrix (or equivalent) of all personnel who access explosives. (Reg 23 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or relevant employees.</p> <p><b>Method:</b> Interview manager or relevant employees. View training matrix.</p>
3.2	Training matrix (or equivalent) to include details of explosives management plan (EMP) training.	<p><b>Intent:</b> To ensure that the training matrix includes a module on EMP training. (Reg 194 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview manager and/or relevant employees. View training matrix.</p>
3.3	Training matrix (or equivalent) to include details of emergency response training.	<p><b>Intent:</b> To ensure that the training matrix includes a module on emergency preparedness. (Reg 194 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview manager and/or relevant employees. View training matrix.</p>
3.4	Mock emergency training exercises involving explosives are conducted on an annual basis.	<p><b>Intent:</b> To ensure that a training exercise involving explosives, whether it be a table top or a mock exercise, was conducted within the last 12 months. (Reg 161 of ER)</p> <p><b>Personnel:</b> Registered Manager and/or other relevant employees.</p> <p><b>Method:</b> Interview manager and/or relevant employees. Determine nature and when the last exercise was conducted.</p>

3.5	Explosives awareness	<p><b>Intent:</b></p> <p>To verify that all personnel who handle explosives have undergone explosives awareness training. (Reg 23 of ER)</p> <p><b>Personnel:</b></p> <p>Registered Manager and/or other relevant employees.</p> <p><b>Method:</b></p> <p>Interview manager and/or relevant employees. View training matrix.</p>
3.6	There is a training program for the roles of blast guard and blast controller.	<p><b>Intent:</b></p> <p>To verify compliance with MSIR 8.25 and 8.26 and AEISG code on Blast guarding in an open cut mining environment.</p> <p><b>Personnel:</b></p> <p>Mine personnel in general.</p> <p><b>Method:</b></p> <p>Interview mine personnel. View training procedures and training matrix.</p>
3.7	Blast guards and blast controllers are adequately trained and competent in their roles.	<p><b>Intent:</b></p> <p>To verify compliance with MSIR 8.26 and AEISG code on Blast guarding in an open cut mining environment.</p> <p><b>Personnel:</b></p> <p>Mine personnel in general.</p> <p><b>Method:</b></p> <p>Interview mine personnel. View training procedures and training matrix.</p>
3.8	The shotfiring personnel have been trained and tested in writing for the initiation method used (e.g. signal tube firing, electric and/or electronic blasting).	<p><b>Intent:</b></p> <p>To ensure that shotfiring personnel are competent in the initiation methods being used on site.</p> <p><b>Personnel:</b></p> <p>Blast engineer and charging/firing personnel.</p> <p><b>Method:</b></p> <p>Interview personnel. View records.</p>
3.9	Those involved in disposing explosives are adequately trained.	<p><b>Intent:</b></p> <p>To verify that those involved in disposing explosives are adequately trained. (Regs 23 and 132 of ER)</p> <p><b>Personnel:</b></p> <p>Manager and shotfirer.</p> <p><b>Method:</b></p> <p>Obtain training records and interview relevant personnel.</p>

3.10	Training matrix (or equivalent) to include training details for the various tasks involving explosives personnel may undertake.	<p><b>Intent:</b></p> <p>To verify that all personnel who handle explosives have been appropriately trained in those tasks. (Reg 23 of ER)</p> <p><b>Personnel:</b></p> <p>Registered Manager and/or other relevant employees.</p> <p><b>Method:</b></p> <p>Interview manager and/or relevant employees. View training matrix.</p>
3.11	The training matrix is current and complete.	<p><b>Intent:</b></p> <p>To ensure that all personnel who handle explosives (both authorised and not) are appropriately trained and included in the matrix.</p> <p><b>Personnel:</b></p> <p>Registered Manager and/or other relevant employees.</p> <p><b>Method:</b></p> <p>Interview manager and/or relevant employees. View training matrix and compare with list of those who access the magazines.</p>

## 4 Magazine construction – surface magazines

### Magazine construction – surface magazines

Point	Standard	Guideline
4.1	Explosives magazine is of a suitable construction.	<p><b>Intent:</b> To verify that the design and construction of all explosives magazines comply with AS 2187.1. (Reg 90(1) ER)</p> <p><b>Personnel:</b> Manager superintendent, magazine keeper.</p> <p><b>Method:</b> Check for certification plate or inspect magazine in light of AS 2187.1 requirements.</p>
4.2	A shade roof is fitted to all portable and relocatable magazines.	<p><b>Intent:</b> To verify compliance with AS 2187.1 (Clause 2.1.7) by ensuring all portable and relocatable magazines located out in the open are fitted with a shade roof.</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect the magazine.</p>
4.3	Earthing of less than 10 Ohm (at diagonal corners for relocatable magazines) checked and recorded by an electrician.	<p><b>Intent:</b> To verify compliance with AS 2187.1 (Clause 2.1.5) and ensure that magazines are effectively earthed.</p> <p><b>Personnel:</b> Manager, electrical supervisor etc.</p> <p><b>Method:</b> Obtain records of earthing installation tests. (Records should not be more than 12 months old).</p>
4.4	Where required (when magazine is located in a vulnerable or an area susceptible to lightning strikes) that it is fitted with lightning finials.	<p><b>Intent:</b> To verify that lightning protection complies with AS 1768. (AS 2187.1 Clause 2.1.5)</p> <p><b>Personnel:</b> Manager</p> <p><b>Method:</b> Inspect the magazine. Consult BOM meteorological maps and AS1768 to determine if finials are required.</p>

4.5	Magazine keys can only be removed from the door when in the locked position.	<p><b>Intent:</b> To verify that the magazine keys can only be removed from the door when in the locked position (Clause 2.3.4.1 of AS 2187.1).</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect the magazine and try removing keys when the magazine door is unlocked.</p>
4.6	Door restraint is provided.	<p><b>Intent:</b> To verify that the door can be restrained when in a fully open position (Clause 2.1.11 of AS 2187.1).</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect the magazine and ensure a door restraint device is fitted to keep the door in the open position.</p>
4.7	Air vents in place with weather protection and suitable gauze covering the openings.	<p><b>Intent:</b> To verify that the magazine has air vents that are designed to provide protection from the weather and the gauze covering the openings (both internal and external) is not damaged. (Clause 2.3.3 of AS 2187.1)</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect the integrity of the air vents and gauze.</p>
4.8	Exterior surface of magazine is in a sound condition.	<p><b>Intent:</b> To ensure that the external surface of the magazine is in a good condition – no rust forming, paint is not flaking, etc. (Clause 2.1.9 of AS 2187.1)</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect the external surface of the magazine to check its condition.</p>

4.9	Inside of magazine is in a good condition.	<p><b>Intent:</b></p> <p>To ensure that the internal surface of the magazine is in a good condition – wood lining in good condition, no exposed steel, wooden batons alongside vents present and secure, etc. Clauses 2.1.8 and 2.3.2.3 of AS 2187.1)</p> <p><b>Personnel:</b></p> <p>Magazine keeper</p> <p><b>Method:</b></p> <p>Inspect the inside of the magazine to check its condition.</p>
4.10	Maintenance program for the magazines.	<p><b>Intent:</b></p> <p>To verify there is a maintenance program for the magazines. (Clause 4.4 of AS 2187.1)</p> <p><b>Personnel:</b></p> <p>Mine manager, magazine keeper.</p> <p><b>Method:</b></p> <p>Verify a maintenance program is in place (particularly for the moving parts).</p>
4.11	No maintenance work involving hot work is allowed unless the magazine is empty and sterilised of all explosives and a hot work permit has been issued. (Procedure should include that no explosives are to be returned to the magazine for at least 8 hours after the hot work has been completed).	<p><b>Intent:</b></p> <p>To verify that procedures exist for when hot work is done on a magazine. Procedures are to comply with Clause 4.4 of AS 2187.1.</p> <p><b>Personnel:</b></p> <p>Mine manager, magazine keeper.</p> <p><b>Method:</b></p> <p>Discuss with mine manager if there are procedures for conducting hot work on a magazine including issuing of hot work permits.</p>
4.12	Electrical wiring fit for purpose.	<p><b>Intent:</b></p> <p>To verify that only appropriate wiring complying with AS 3000 (Class 2 Division 2) is used.</p> <p><b>Personnel:</b></p> <p>Manager</p> <p><b>Method:</b></p> <p>Inspect the magazine for any electrical wiring, and where used that it is of an appropriate standard.</p>



## 5 Magazine compound – surface magazines

### Magazine compound – surface magazines

Point	Standard	Guideline
5.1	Explosives compound is fenced.	<p><b>Intent:</b> To verify that magazines out in the open are appropriately fenced (Clause 2.1.1.5 of AS 2187.1).</p> <p><b>Personnel:</b> Magazine keeper.</p> <p><b>Method:</b> Check that fencing complies with Appendix C of AS 2187.1 (2450 mm high, 3 strands of barbed wire, fence touches ground, fence is at least 3 m from magazines, etc.).</p>
5.2	Integrity of fence is maintained.	<p><b>Intent:</b> To ensure that the integrity of the fence has not been compromised. (No holes, bottom of fence has not been raised, barbed wires are still in original position, etc.).</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect fence for any breaches.</p>
5.3	Monthly inspection program of the compound.	<p><b>Intent:</b> To verify the magazine storage and compound is inspected at least monthly (Reg 92(5) of ER).</p> <p><b>Personnel:</b> Mine manager, magazine keeper.</p> <p><b>Method:</b> Check records of magazine compound inspection. There should be an inspection checklist.</p>
5.4	The magazine is located at least the prescribed distance from any protected works or facility.	<p><b>Intent:</b> To verify that the magazine is located at the prescribed safety distances from all protected works (class A and class B) such as public roads, open pits, portals and buildings or facility. (Reg 90(3) of ER).</p> <p><b>Personnel:</b> Mine manager, magazine keeper.</p> <p><b>Method:</b> Prescribed distances are in AS 2187.1. Check if any protected works are within the safety distances and measure distance as required. Obtain a site plan showing the location of the magazines for the written report.</p>

5.5	The explosives magazine is a minimum of 10 m from any detonator magazine if no intervening mound exists.	<p><b>Intent:</b></p> <p>To verify that explosive and detonator magazines are segregated by a distance of at least 10 metres when no intervening mound exists. (Clause 3.2.3 of AS 2187.1)</p> <p><b>Personnel:</b></p> <p>Magazine keeper</p> <p><b>Method:</b></p> <p>Measure the separation distances between magazines as required.</p>
5.6	Separation to dangerous goods.	<p><b>Intent:</b></p> <p>To verify there are adequate separation distances to AN, ANE, diesel and other dangerous goods storage (Reg 90 (3) of ER).</p> <p><b>Personnel:</b></p> <p>Magazine keeper</p> <p><b>Method:</b></p> <p>Measure the separation distances to the various DG storages for compliance.</p>
5.7	Mounding	<p><b>Intent:</b></p> <p>To ensure that where mounding is used that it complies with AS 2187.1 Appendix B (Reg 90(1) of ER).</p> <p><b>Personnel:</b></p> <p>Magazine keeper</p> <p><b>Method:</b></p> <p>Inspect the mounding for compliance (height, extends 1 m forward of magazine, essentially free from stones, well maintained, etc.).</p>
5.8	There is no combustible or flammable material within 8 metres of the magazine.	<p><b>Intent:</b></p> <p>To verify that there is no combustible or flammable materials within 8 metres of the magazines. There should be no combustible materials within the compound and a fire break at least 5 metres wide surrounding the compound is required. (Clause 2.1.1.3 of AS 2187.1)</p> <p><b>Personnel:</b></p> <p>Magazine keeper</p> <p><b>Method:</b></p> <p>Inspect the area around the magazine.</p>

5.9	Vehicles within the compound.	<p><b>Intent:</b></p> <p>To ensure that where vehicles are parked within the compound, they are parked at least 8 m from any magazine. (Clauses 4.1.1 and 4.5.2 of AS 2187.1)</p> <p><b>Personnel:</b></p> <p>Magazine keeper</p> <p><b>Method:</b></p> <p>Have designated areas where vehicles are parked within the compound.</p>
5.10	Restricted activities within the compound.	<p><b>Intent:</b></p> <p>To verify that no prohibited activities occur within the magazine compound. (Clauses 4.1.1 and 4.3.1 of AS 2187.1)</p> <p><b>Personnel:</b></p> <p>Magazine keeper.</p> <p><b>Method:</b></p> <p>Check for evidence such as cigarette butts, etc. of prohibited activities occurring inside the compound.</p>
5.11	Metal fences are electrically bonded.	<p><b>Intent:</b></p> <p>To ensure that the magazine compound fences are electrically bonded and bonded to the earthing points of the magazines to prevent flashovers in the event of a lightning strike.</p> <p><b>Personnel:</b></p> <p>Magazine keeper, electrical supervisor</p> <p><b>Method:</b></p> <p>Verify bonding of fences and magazines.</p>

## 6 Signage and emergency equipment – surface magazines

### Signage and emergency equipment – surface magazines

Point	Standard	Guideline
6.1	'HAZCHEM' signs displayed at the main entrances to the premises.	<p><b>Intent:</b> To verify there are complying 'HAZCHEM' signs at the entrances to the site. (Reg 34(1) of ER).</p> <p><b>Personnel:</b> Mine manager, shotfirer.</p> <p><b>Method:</b> Inspect entrances to the site for appropriate signage.</p>
6.2	A prominent 'EXPLOSIVES' or 'DETONATORS' sign (as appropriate) is displayed on the magazine door.	<p><b>Intent:</b> To verify that magazine signage complies with AS 2187.1 (Reg 34(3) of ER and MSIR 4.10).</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect the magazine and ensure the sign is appropriate for contents stored, at least 100 mm high red capital lettering and it is not faded.</p>
6.3	A class 1 diamond is displayed on the magazine door.	<p><b>Intent:</b> To verify that magazine signage complies with AS 2187.1 (Reg 34(3) of ER and MSIR 4.10).</p> <p><b>Personnel:</b> Magazine keeper</p> <p><b>Method:</b> Inspect the magazine and ensure a class 1 diamond, at least 250 mm square which is not faded is displayed at the front of the magazine.</p>
6.4	A magazine identification number is prominently displayed.	<p><b>Intent:</b> To verify that magazine signage complies with MSIR 4.10.</p> <p><b>Personnel:</b> Mine manager, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>

6.5	A 'NO SMOKING' sign is prominently displayed on the compound fence.	<p><b>Intent:</b> To verify that magazine signage complies with AS 2187.1 and MSIR 4.10.</p> <p><b>Personnel:</b> Mine manager, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
6.6	Magazine rules are posted inside the magazine	<p><b>Intent:</b> To verify that magazine rules are displayed in a prominent location inside the magazine (Clause 4.6.1 of AS 2187.1 and MSIR 4.10).</p> <p><b>Personnel:</b> Shotfirer</p> <p><b>Method:</b> Inspect the magazine.</p>
6.7	A notice stating what kinds and quantities of explosives may be stored in the magazine.	<p><b>Intent:</b> To verify that a notice displaying what kind and quantity of explosives may be stored inside the magazine (Reg 93(2) of ER).</p> <p><b>Personnel:</b> Shotfirer</p> <p><b>Method:</b> Inspect the magazine.</p>
6.8	Safety Data Sheets (SDS)	<p><b>Intent:</b> To verify that a SDS for every explosive stored is readily available on site (Reg 93(3) of ER).</p> <p><b>Personnel:</b> Shotfirer.</p> <p><b>Method:</b> Check where the SDSs are kept and that they are readily available.</p>
6.9	Fire Extinguishers are available inside the magazine compound (optional).	<p><b>Intent:</b> To ensure that firefighting equipment is available where considered appropriate.</p> <p><b>Personnel:</b> Shotfirer.</p> <p><b>Method:</b> Observe location and check the service tag of the extinguisher to ensure that it has been serviced within the past 6 months.</p>

6.10	Manufacturers name and date of manufacture is displayed on relocatable magazines (optional).	<b>Intent:</b> To ensure that magazine signage complies with AS 2187.1. <b>Personnel:</b> Shotfirer. <b>Method:</b> Inspect the magazine.
------	--	--

## 7 Stock control and security – surface magazines

### Stock control and security – surface magazines

Point	Standard	Guideline
7.1	A current security risk assessment.	<p><b>Intent:</b> To verify that a security risk assessment has been conducted/reviewed within the past 12 months. (Schedule 10 Clause 4(2) of ER)</p> <p><b>Personnel:</b> Mine manager.</p> <p><b>Method:</b> Verify when a risk assessment was last conducted and that there are measures in place to ensure there is an ongoing assessment of those risks. Sight relevant documentation.</p>
7.2	A magazine keeper(s) has/have been appointed to control the magazine.	<p><b>Intent:</b> To verify magazine keeper(s) have been appointed. (Clause 4.2 of AS 2187.1).</p> <p><b>Personnel:</b> Mine manager.</p> <p><b>Method:</b> Interview the manager and appointee in regard to the appointment. Appointee shall be a secure nominee, be at least 18 years of age and appropriately trained. Sight relevant documentation.</p>
7.3	The appointment (of magazine keeper) is documented.	<p><b>Intent:</b> To verify compliance with clause 4.2 of AS 2187.1.</p> <p><b>Personnel:</b> Mine manager.</p> <p><b>Method:</b> Check documentation for appointment.</p>
7.4	The measures that will be taken to control and monitor people's access to explosives.	<p><b>Intent:</b> To verify adequate controls are in place to restrict access to secure nominees and a register is kept of who has accessed the explosives compound and magazines. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager.</p> <p><b>Method:</b> Check documentation/ procedures for controls.</p>

7.5	Magazine keys are locked in a safe when not in use.	<p><b>Intent:</b></p> <p>To ensure magazine keys are locked in a safe when not in use (or that adequate controls are in place to keep the keys safe).</p> <p><b>Personnel:</b></p> <p>Mine manager.</p> <p><b>Method:</b></p> <p>Check there is a safe (or other adequate provisions) and a key register recording when keys are taken and returned and by whom.</p>
7.6	The number of magazine keys are known and recorded.	<p><b>Intent:</b></p> <p>To ensure that the number of keys on site is known and where they are located at all times. The keys must be of a restricted type that cannot be duplicated (without the consent of mine manager).</p> <p><b>Personnel:</b></p> <p>Mine manager.</p> <p><b>Method:</b></p> <p>Check number and location of keys.</p>
7.7	Security controls for the safe.	<p><b>Intent:</b></p> <p>To ensure there are adequate security controls for the safe.</p> <p><b>Personnel:</b></p> <p>Mine manager.</p> <p><b>Method:</b></p> <p>Check there are procedures for periodically changing the PIN numbers on the safe or when there has been a change of personnel (who have access to the safe), to change the PIN numbers for keeping the safe/ keys secure.</p>
7.8	A key register is kept in the safe.	<p><b>Intent:</b></p> <p>To ensure there are adequate security controls for the magazine keys inside the safe.</p> <p><b>Personnel:</b></p> <p>Mine manager, magazine keeper.</p> <p><b>Method:</b></p> <p>Check that a key register is kept of when keys are taken and returned to the safe. Each transaction is to be dated and signed by the person obtaining the keys.</p>



7.9	The magazine keys are kept by the magazine keeper when removed from the safe (or secure place).	<p><b>Intent:</b></p> <p>To ensure that when the keys to the magazine facilities are taken, they are kept secure and remain in possession of the magazine keeper.</p> <p><b>Personnel:</b></p> <p>Manager, magazine keeper, shotfirer, charge crew, etc.</p> <p><b>Method:</b></p> <p>Interview mine personnel.</p>
7.10	A record is kept of every individual who has access to any such explosive.	<p><b>Intent:</b></p> <p>To verify that a record is kept of every individual who has supervised or unsupervised access to any such explosive. (Schedule 10 Clause 4(2) of ER)</p> <p><b>Personnel:</b></p> <p>Mine manager, shotfirer, charge crew, etc.</p> <p><b>Method:</b></p> <p>Check that a record is kept and contains information in compliance with the legislation.</p>
7.11	The magazine keeper maintains records of incoming and outgoing stocks.	<p><b>Intent:</b></p> <p>To verify there is a stock register that records all explosive stock movements in and out of the magazine. (Reg 92(1) of ER).</p> <p><b>Personnel:</b></p> <p>Magazine keeper, shotfirer etc.</p> <p><b>Method:</b></p> <p>Check stock register and ensure that it is current, accurate, maintains records of every different type of explosive and contains the information required by Reg 92(2) of ER.</p>
7.12	There is a system in place where records in the stock register is kept for at least 2 years.	<p><b>Intent:</b></p> <p>To verify that records in stock registers are kept for at least 2 years (Reg 92(2) of ER).</p> <p><b>Personnel:</b></p> <p>Mine manager, magazine keeper, shotfirer etc.</p> <p><b>Method:</b></p> <p>Check procedures, policies or evidence of older stock registers.</p>

7.13	There is a system in place where a stocktake is conducted at least monthly.	<p><b>Intent:</b> To verify that records are kept of all stocktakes and explosives are accounted for (Reg 92(3) of ER).</p> <p><b>Personnel:</b> Mine manager, magazine keeper, shotfirer etc.</p> <p><b>Method:</b> Check stock register for evidence of regular (at least monthly) stocktakes.</p>
7.14	There is a system in place that deals with discrepancies found during stocktakes.	<p><b>Intent:</b> To verify there is a procedure for dealing with discrepancies and reporting them to the Chief Officer as required (Reg 92(4) of ER).</p> <p><b>Personnel:</b> Mine manager, magazine keeper, shotfirer etc.</p> <p><b>Method:</b> Check there is a procedure, investigation tools and a reporting mechanism to the Chief Officer.</p>
7.15	There is a system in place for delivery of explosives and stock is promptly secured in the magazine.	<p><b>Intent:</b> To ensure there are procedures for receiving explosives and that they are promptly placed into magazines and secured.</p> <p><b>Personnel:</b> Magazine keeper, stores personnel, shotfirer.</p> <p><b>Method:</b> Interview personnel involved in explosive deliveries, if possible inspect the procedure upon a delivery.</p>
7.16	The magazine is kept locked except when stock movement or other authorised activities are occurring.	<p><b>Intent:</b> To verify that the magazines are kept locked and secure when unattended (Reg 94 of ER).</p> <p><b>Personnel:</b> Personnel who use explosives.</p> <p><b>Method:</b> Inspect magazine and check that it is locked, interview personnel.</p>

## 8 Housekeeping – surface magazines

### Housekeeping – surface magazines

Point	Standard	Guideline
8.1	A broom and doormat is provided in the magazines to keep magazines clean.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.3.2) and Magazine Rules.</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
8.2	No spilt material is left in the magazine.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.3.2) and Magazine Rules.</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
8.3	The magazine floor is clean and dry.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.3.2) and Magazine Rules.</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
8.4	All empty packaging and other rubbish is removed from the magazine and magazine compound.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.3.1) and Magazine Rules.</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine and magazine compound for any rubbish lying around.</p>
8.5	There are systems in place for concealing/ obliterating any “Explosives” markings on the packaging (word “EXPLOSIVES”, class 1 diamond) and the packaging is free from explosives before it is sent for disposal.	<p><b>Intent:</b> o verify that disposal of empty explosives packaging is managed in accordance with AS 2187.1 and AEC 3.</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the empty packaging before it is sent away for disposal to ensure that it is free from explosives and all markings relating to explosives are concealed.</p>

8.6	Ensure all explosives are kept in their original packaging or other suitable containers.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.3.3) and Magazine Rules.</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
8.7	Explosives are safely stacked to a height which prevents damage to the packaging from compression (generally no greater than 2 metres).	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.6.4).</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
8.8	Explosives are safely stacked so there is a gap of at least 300 mm between the top of the stack and the ceiling.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.6.4).</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
8.9	No additional unauthorised materials are stored in the magazine.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.3.1).</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine.</p>
8.10	There are systems in place that no prohibited items such as two-way radios, mobile phones, etc. are brought inside the magazine.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.3.1).</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine for such items. (Solar powered calculators are allowed).</p>

8.11	Incompatible explosive products are not stored adjacent to each other.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 3.1.2).</p> <p><b>Personnel:</b> Magazine keeper, shotfirer.</p> <p><b>Method:</b> Inspect the magazine to ensure detonators are segregated from detonating cord and other high explosives.</p>
8.12	There is a system in place to rotate stocks and all stock is within its shelf life.	<p><b>Intent:</b> To ensure that stocks are rotated in the magazines and are within date.</p> <p><b>Personnel:</b> Magazine keeper, Shotfirer, stores personnel etc.</p> <p><b>Method:</b> Check magazine records and stocks. Check date of manufacture. Interview persons involved with delivery and handling.</p>
8.13	Stock levels are within the licence limits.	<p><b>Intent:</b> To verify that the magazine stock levels are within the licence limits. (Reg 76 of ER)</p> <p><b>Personnel:</b> Magazine keeper etc.</p> <p><b>Method:</b> Perform a stock check and cross reference with the licence limit. Check stock register for exceedances.</p>
8.14	No powered vehicles allowed inside a magazine unless they have been appropriately modified.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187.1 (Clause 4.5.2).</p> <p><b>Personnel:</b> Magazine keeper, etc.</p> <p><b>Method:</b> Discuss with magazine keeper if powered vehicles or equipment is used inside the magazine.</p>

## 9 Emergency procedures – surface magazines

### Emergency procedures – surface magazines

Point	Standard	Guideline
9.1	There is a procedure in place to secure and evacuate the magazine during lightning storms.	<p><b>Intent:</b> To verify that there is a written procedure to secure and evacuate the magazines during a lightning storm. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, shotfirer etc.</p> <p><b>Method:</b> Obtain copies of procedures and interview personnel who access the magazine compound.</p>
9.2	There is an emergency procedure in place to deal with a fire near the magazine.	<p><b>Intent:</b> To verify there is a written procedure on what action is to be taken when there is a fire near an explosives magazine. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, shotfirer etc.</p> <p><b>Method:</b> Obtain copies of procedures and interview personnel who access the magazine compound area.</p>
9.3	There is an emergency procedure in place to deal with a fire inside the magazine.	<p><b>Intent:</b> To verify there is a written procedure on what action is to be taken when there is a fire inside an explosives magazine. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, shotfirer etc.</p> <p><b>Method:</b> Obtain copies of procedures and interview personnel who access the magazine compound area.</p>
9.4	There is an emergency procedure in place to deal with an explosives vehicle involved in an incident where explosives are spilled (no fire).	<p><b>Intent:</b> To verify there is a written procedure on what action is to be taken when an explosives vehicle is involved in an incident that causes explosives to spill. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, shotfirer etc.</p> <p><b>Method:</b> Obtain copies of procedures and interview personnel who transport explosives.</p>

9.5	There is an emergency procedure in place to deal with an explosives vehicle involved in a fire.	<p><b>Intent:</b> To verify there is a written procedure on what action is to be taken when an explosives vehicle is involved in a fire. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, shotfirer etc.</p> <p><b>Method:</b> Obtain copies of procedures and interview personnel who transport explosives.</p>
9.6	The licence holder has an emergency management plan that deals with likely scenarios.	<p><b>Intent:</b> To verify an emergency management system exists and covers likely scenarios that could be encountered. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, shotfirer etc.</p> <p><b>Method:</b> Obtain a copy of the emergency management plan and check when it was last revised.</p>
9.7	There is a list of equipment and facilities available to deal with emergencies.	<p><b>Intent:</b> To verify this is a list of equipment and facilities available to deal with emergencies. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, shotfirer etc.</p> <p><b>Method:</b> Obtain a copy of the list and check when it was last revised.</p>
9.8	There are details of the measures taken to train people to execute the emergency management plan.	<p><b>Intent:</b> To verify there are details on training individuals in emergency response. (Reg 161, Schedule 10 of ER)</p> <p><b>Personnel:</b> Mine manager, mines rescues team manager.</p> <p><b>Method:</b> Check when the last emergency training exercise involving explosives was conducted and the type of drill conducted (desk top or mock exercise). Check the frequency of exercises.</p>

9.9	There are details of the measures taken to investigate any incident and report it to the department.	<p><b>Intent:</b> To verify there are procedures for investigating incidents and they will be reported to the department. (Reg 161, Schedule 10 and Reg 44 of ER)</p> <p><b>Personnel:</b> Mine manager.</p> <p><b>Method:</b> Obtain a copy of the procedures for investigating incidents. Check that it includes root cause techniques for determining the cause of the incident.</p>
-----	--	---