



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

Mineral exploration: Drilling and other field activities audit – guide

Approved: 27 January 2016

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

Table of contents

Introduction	2
1 Site preparation	4
2 Safety controls	8
3 Rotating and moving parts	10
4 Compressed air systems	12
5 Hydraulic systems.....	16
6 Hazardous substances and dangerous goods	18
7 Electricity	22
8 Manual tasks.....	25
9 Working at height.....	28
10 Falling objects	30
11 Working in hot environments.....	32
12 Fatigue and mental wellbeing	34
13 Airborne contaminants and natural gases.....	34
14 Noise	38
15 Ionising radiation	41
16 Hot work.....	41
17 Extreme weather and bushfires	43
18 Light vehicle movement	45
19 Heavy vehicle movement.....	47
20 Remoteness of exploration	49
21 Housekeeping.....	49

Introduction

This document was reformatted in November 2015. At this time no material changes were made to the content of the guide, which was originally published in February 2014 under the title *Guide to mineral exploration high impact function (HIF) audit 2014 Part 3 – Drilling and other field activities*.

Note: The Safety Regulation System (SRS) has replaced the AXTAT system and all reporting is done online through SRS.

The scope of the mineral exploration audit documents cover the occupational safety and health standards associated with the management of mineral exploration, including drilling both remotely and on an existing mine site. It does not cover the environmental standards that also apply to exploration operations.

The three mineral exploration audit documents cover:

- overall safety and health management systems (Part 1),
- how these management systems are implemented on site and for operational activities in general (Part 2), and
- drilling and other field activities in particular (Part 3).

These are structured so that operators can select those aspects relevant to the size and complexity of their operations, and the activities undertaken, and tailor the audit accordingly. Not all standards may be applicable. Standards that are not applicable should be ignored as they will not influence audit outcomes. For example, an exploration company might conduct an audit using Parts 1 and 2 and some of Part 3, while its drilling contractors might audit against relevant sections of Part 2 and all of Part 3. Specific personnel may be assigned different sections to audit.

Some audit standards in Part 1 and 2 appear to be duplicated but the intent is that Part 1 covers the development of higher level management systems while Part 2 covers their implementation in the field. Where a Part 2 standard refers to the implementation of a system, a reference is included to the corresponding management standard in Part 1.

This part is primarily aimed at surface drilling operations during remote exploration, although many standards may be applicable to other exploration activities and near-mine drilling for ore delineation.

Where the term “verify” is used in the guideline intent, 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.

The audit should be read and used in conjunction with Resources Safety’s code of practice on mineral exploration drilling.

Exploration guidance material, including charts showing statutory appointments for exploration operations under the *Mines Safety and Inspection Act 1994* (MSIA) and Mines Safety and Inspection Regulations 1995 (MSIR), is available from the Department of Mines and Petroleum web site, www.dmp.wa.gov.au.

Other useful references include:

- Australian Emergency Management, em.gov.au
- Bureau of Meteorology, bom.gov.au
- Department of Health, health.wa.gov.au/services
- Department of Fire and Emergency Services (DFES, formerly FESA), dfes.wa.gov.au
- North Australian Fire Information, firenorth.org.au
- Royal Flying Doctor Service, flyingdoctor.org.au
- Safe Work Australia, safeworkaustralia.gov.au
- State Emergency Services, ses-wa.asn.au
- Western Australia Police, police.wa.gov.au

1 Site preparation

Site preparation

Point	Standard	Guideline
1.1	Tracks to the drill site are suitable for drilling, support and emergency vehicle access.	<p>Intent: To verify there is safe access to the drill site for vehicles and personnel.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>
1.2	There are designated escape routes.	<p>Intent: To verify there are safe escape routes from the drill site in case of an emergency.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>
1.3	Access routes to the drill site are clearly marked.	<p>Intent: To verify personnel do not get lost and emergency responders can locate the site.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>

1.4	A traffic management plan has been implemented, including the designation of parking areas.	<p>Intent: To verify vehicle and pedestrian movement, including parking, is managed to prevent injury or damage.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>
1.5	The prepared ground and/or constructed drill pad are level and stable.	<p>Intent: To verify the prepared ground and/or constructed pad are level and stable to minimise inadvertent vehicle movements.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>
1.6	The drill site is clear.	<p>Intent: To verify natural hazards are managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>
1.7	Overhead powerlines, overhanging vegetation, underground services and other obstructions have been clearly identified.	<p>Intent: To verify the hazards posed by overhead powerlines, underground services and other obstructions are managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation (e.g. plans, maps) showing powerlines, underground services and other hazards. Refer to MSIR r. 5.28.</p>

1.8	The drill rig, service vehicles and plant are positioned to minimise exposure to hazards.	<p>Intent: To verify the drill site is set-up to manage exposure to hazards.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>
1.9	Where required, edge protection is in place for the drill site.	<p>Intent: To verify edge protection, where required, is in place to prevent injury from inadvertent access to hazards.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas (e.g. accessibility to cliffs or break-aways). View documentation. Refer to MSIA ss. 9 and 13.</p>
1.10	Sumps have been constructed to contain all drilling fluids.	<p>Intent: To verify all drilling fluids in sumps are contained.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation.</p>
1.11	Sumps are barricaded.	<p>Intent: To verify sumps are barricaded to prevent inadvertent ingress.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation. Refer to MSIA ss. 9 and 13.</p>

1.12

Safety and warning signs are present, clear, legible and suitably located. [see Part 2, 6.5]

Intent:

To verify warning signs are displayed to notify employees of hazards at the drill site.

Personnel:

Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.

Method:

Interview relevant employees. Inspect work areas. View safety and warning signage and supporting documentation.

Refer to MSIR r. 4.10.

2 Safety controls

Safety controls

Point	Standard	Guideline
2.1	At least two emergency stops are installed for the drill rig, and there is a testing regime in place.	<p>Intent:</p> <p>To verify sufficient emergency stops are available to personnel.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. One emergency stop should be located at the rig control panel and at least one other at a location that is easily accessible during operation. Inspect equipment. View documentation. Refer to MSIR rr. 4.30 and 6.2(2).</p>
2.2	All sources of potential energy are identified and isolated when performing maintenance or repairs.	<p>Intent:</p> <p>To verify potential energy hazards (i.e. gravity) are identified and isolated when performing maintenance or repairs to prevent injury from uncontrolled release of energy.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. View documentation. Refer to MSIR r. 6.2(1).</p>
2.3	All sources of stored energy are identified and isolated when performing maintenance or repairs on pressurised systems.	<p>Intent:</p> <p>To verify pressurised systems are identified and isolated when performing maintenance or repairs to prevent injury from uncontrolled release of energy.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. View documentation. Refer to MSIR r. 6.2(1).</p>

2.4	Fire-fighting resources are readily accessible at work areas where there is a risk of fire.	<p>Intent: To verify fire-fighting resources are readily accessible at work areas where there is a risk of fire.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation. Refer to MSIR r. 4.30.</p>
2.5	Where practicable, an automatic fire suppression system is installed on each item of plant.	<p>Intent: To ensure automatic fire suppression systems are installed to prevent injury and loss of equipment.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation.</p>
2.6	All vehicles at the site are parked in a fundamentally safe way.	<p>Intent: To ensure there is no uncontrolled movement of vehicles.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. View documentation.</p>

3 Rotating and moving parts

Rotating and moving parts

Point	Standard	Guideline
3.1	A risk assessment has been conducted to identify any hazards associated with rotating and moving parts, and assess the risks of an employee being exposed to those hazards.	<p>Intent: To verify rotating and moving part hazards have been identified and the risks assessed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and audit records. Refer to MSIR r. 6.2(1).</p>
3.2	An audit has been conducted to ensure all practical measures have been taken to control risks associated with rotating and moving parts.	<p>Intent: To verify rotating and moving parts cannot be inadvertently accessed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and audit records. Refer to MSIR rr. 4.4(3), 6.2 and 6.17.</p>
3.3	Where required, an action plan with due dates and responsibilities has been developed for the installation, modification or replacement of guarding.	<p>Intent: To verify responsibilities and accountabilities for guarding have been assigned and the action plan is implemented.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation. Refer to MSIR r. 6.2(1).</p>

3.4

A competent person regularly reviews drilling operations to ensure the adequacy of guarding and systems of work for rotating and moving parts.

Intent:

To ensure a competent person conducts reviews of drilling operations.

Personnel:

Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.

Method:

Interview relevant employees. Interview Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or relevant employees. Inspect equipment and work areas. Sight review records.

4 Compressed air systems

Compressed air systems

Point	Standard	Guideline
4.1	Hoses, couplings, seals and air lines are appropriately rated for the compressed air system being used.	<p>Intent: To ensure the uncontrolled release of stored energy is managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
4.2	Where practicable, engineered systems with designated connection points are installed.	<p>Intent: To ensure the uncontrolled release of stored energy is managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
4.3	At least one emergency stop is installed for each auxiliary compressor unit, and there is a testing regime in place.	<p>Intent: To ensure sufficient emergency stops are available to personnel.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
4.4	An air pressure relief system is installed for each compressed air line.	<p>Intent: To ensure the shut-off or redirection of compressed air if there is a blockage or failure.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>

4.5	A competent person regularly inspects the compressed air system, and takes immediate corrective action where necessary.	<p>Intent: To ensure the integrity of pipework, hoses, couplings and fittings.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
4.6	Air receivers and pressure relief valves are regularly inspected, tested and certified by a competent person.	<p>Intent: To ensure air pressure relief systems operate as designed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
4.7	Fit-for-purpose restraining devices are installed on each compressed air hose.	<p>Intent: To verify restraining devices on compressed air lines are suitably designed to prevent injury resulting from uncontrolled movement.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation. Refer to MSIR r. 4.12.</p>
4.8	The anchor points for restraining devices are appropriately rated and fit-for-purpose.	<p>Intent: To verify restraining device anchor points are engineered to prevent injury resulting from uncontrolled movement.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation. Refer to MSIR r. 4.12.</p>

4.9	Blockages in compressed air systems are removed according to a safe system of work.	<p>Intent: To ensure blocked compressed air systems are managed safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
4.10	There is a preventative maintenance program in place for compressed air systems.	<p>Intent: To ensure compressed air equipment is maintained and operated in a safe condition.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Interview Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or relevant employees. Inspect equipment. View documentation.</p>
4.11	Access to high-risk areas associated with compressed air systems is restricted.	<p>Intent: To ensure access to high-risk areas is controlled to prevent injury.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Interview Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or relevant employees. Inspect equipment and work areas. View documentation.</p>

4.12	Compressed air is only used for appropriate purposes.	<p>Intent:</p> <p>To ensure the safe use of compressed air and eliminate the risk of air injection.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Interview Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or relevant employees. Inspect equipment and work areas. View documentation. Confirm that procedures prohibit the use of compressed air for cleaning the body and clothing of personnel. Refer to MSIR r. 4.12(4).</p>
------	---	---

5 Hydraulic systems

Hydraulic systems

Point	Standard	Guideline
5.1	Pipework, hoses, couplings, seals and hydraulic lines are appropriately rated for the hydraulic system in use.	<p>Intent: To ensure the release of stored energy is effectively controlled and managed, and the risk of fire is reduced.</p> <p>Personnel: : Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
5.2	Where practicable, non-flammable and non-toxic hydraulic fluids are used.	<p>Intent: To ensure personnel are not exposed to toxic substances and the risk of fire is reduced.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation.</p>
5.3	Where practicable, engineered systems are installed and hydraulic hoses and lines are shielded against wear.	<p>Intent: To ensure the release of stored energy is effectively controlled and managed, and the risk of fire is reduced.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation.</p>
5.4	Where practicable, screens are installed or hoses and lines configured to minimise interaction with hot components or electrical sources.	<p>Intent: To ensure the risk of fire from the ignition of hydraulic fluids is effectively controlled and managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation.</p>

5.5	A competent person regularly inspects the hydraulic system, and takes immediate corrective action where necessary.	<p>Intent:</p> <p>To ensure the integrity of hoses, couplings and fittings, including self-centring hydraulic levers.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. View documentation.</p>
5.6	There is a safe system of work to search for or confirm hydraulic leaks that does not involve the use of hands or fingers.	<p>Intent:</p> <p>To ensure personnel are not exposed to high-pressure oil injection hazards.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. View documentation.</p>
5.7	There is a preventative maintenance program in place for hydraulic systems.	<p>Intent:</p> <p>To ensure hydraulic systems are maintained and operated in a safe condition.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. View documentation.</p>
5.8	Access is restricted to high-risk areas associated with hydraulic systems.	<p>Intent:</p> <p>To ensure the site has adequate controls to restrict access to high-risk areas and prevent injury.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect work areas. View documentation.</p>

6 Hazardous substances and dangerous goods

Hazardous substances and dangerous goods

Point	Standard	Guideline
6.1	The hazardous substances and dangerous goods inventory is maintained and reviewed regularly, and reduced where practicable.	<p>Intent:</p> <p>To verify hazardous substances and dangerous goods are stored and handled safely.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect work areas. Review storage and handling systems. Sight documentation and inspection records. Refer to MSIR r. 7.25.</p>
6.2	Current material safety data sheets (MSDSs) are available for all products used on site.	<p>Intent:</p> <p>To verify critical information on hazardous substances and dangerous goods is readily available.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect work areas. View documentation. Refer to MSIR r. 7.21.</p>
6.3	Control and response measures are in place to manage the uncontrolled release of hazardous substances and dangerous goods.	<p>Intent:</p> <p>To verify uncontrolled releases of hazardous substances and dangerous goods can be managed safely.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect work areas. Review control measures. Sight documentation and inspection records. Refer to MSIR r. 7.28.</p>

6.4	Containers, hoses, couplings, seals and lines are rated for the substance in use.	<p>Intent:</p> <p>To verify the containers, hoses and connections are suitable for the substances in use.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. Sight documentation and inspection records. Refer to MSIR r. 7.22.</p>
6.5	Hazardous substances and dangerous goods are stored and handled safely.	<p>Intent:</p> <p>To verify the site reduces exposure to hazardous substances and prevent fire, explosion or fuming.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Review storage systems, review substance transfer and refilling systems, and sight documentation and inspection records; check labelling and fit-for-purpose equipment (i.e. suitable for dangerous goods). Refer to MSIR rr. 7.27 and 7.28.</p>
6.6	Screens are installed or hoses and lines configured to avoid interaction of flammable substances with hot components and ignition or electrical sources.	<p>Intent:</p> <p>To ensure the site has adequate controls to prevent the ignition of flammable and combustible substances.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Review screening, and sight documentation and inspection records.</p>

6.7	Where practicable, self-bunded containers, banded pallets or portable bunds are used for hazardous substances or dangerous goods.	<p>Intent: To ensure the containment of hazardous substances and dangerous goods.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Review containers and pallets, and sight documentation and inspection records.</p>
6.8	Appropriate fire-fighting equipment is available where flammable substances are used.	<p>Intent: To ensure fire-fighting equipment is available whenever flammable substances are used.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
6.9	There is a preventative maintenance program in place for all flammable substance systems.	<p>Intent: To ensure flammable substance systems are maintained and operated in a safe condition.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
6.10	Sufficient spill response equipment is available to deal with a complete failure of the largest container of hazardous substances or dangerous goods.	<p>Intent: To ensure spills of hazardous substances and dangerous goods can be managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>

6.11	All spills of hazardous substances or dangerous goods are cleaned up and cleaning aids disposed of appropriately.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce exposure to hazardous substances and prevent fire, explosion or fuming.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records</p>
6.12	Appropriate personal protective clothing and equipment (PPE) is provided to avoid contact when handling hazardous substances or dangerous goods.	<p>Intent:</p> <p>To verify suitable PPE is available for the hazardous substances and dangerous goods present.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. View documentation. Refer to MSIR r. 4.1.</p>

7 Electricity

Electricity

Point	Standard	Guideline
7.1	Electrical work is undertaken by licensed electricians.	<p>Intent: To verify electrical work is undertaken by suitably qualified persons.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 5.9.</p>
7.2	Electrical equipment and installations are correctly isolated before maintenance or repair work commences.	<p>Intent: To verify electrical maintenance or repair work is managed safely.</p> <p>Personnel: Drill Supervisor and/or drill crew, Maintenance Supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 5.29.</p>
7.3	Safety switches and residual current devices (RCDs) are used.	<p>Intent: To verify safety switches and RCDs are used to prevent electrical accidents.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. Sight documentation and inspection records. Refer to MSIR r. 5.24.</p>

7.4	Voltage reducing devices (VRDs) are used on welding equipment.	<p>Intent:</p> <p>To ensure VRDs are used to prevent electrical accidents.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. Sight documentation and inspection records. Refer to Welding Technology Institute's <i>Health and Safety in Welding technical note (TN07)</i> (approved code of practice under MSIA s. 93).</p>
7.5	There is an electrical inspection, testing and tagging program in place to ensure electrical equipment and safety devices are maintained in good working order by a competent person.	<p>Intent:</p> <p>To verify electrical equipment and safety devices are maintained and operated in good condition.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 5.27.</p>
7.6	Electrical equipment is rated for the expected working conditions.	<p>Intent:</p> <p>To verify the electrical equipment used is suitable for the conditions likely to be encountered.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. Sight documentation and inspection records. Refer to MSIR r. 5.3.</p>
7.7	The site plan allows for the appropriate placement of electrical equipment and cables.	<p>Intent:</p> <p>To ensure electrical components are not compromised.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>

7.8	<p>There is a safe system of work for using electrical equipment and systems under all conditions likely to be encountered.</p>	<p>Intent: To verify electrical work can be performed safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or and/or electrical supervisor and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 5.11.</p>
-----	---	--

8 Manual tasks

Manual tasks

Point	Standard	Guideline
8.1	Where practicable, hazardous manual tasks are eliminated or mitigated through the use of engineering controls.	<p>Intent:</p> <p>To ensure the site has adequate controls to eliminate hazardous manual tasks through the use of engineering controls.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment (e.g. automated drill-rod handling, break-out and sample systems) and work areas. Sight documentation and inspection records.</p>
8.2	There is a safe system of work to reduce the risk of injury to personnel from hazardous manual tasks associated with drilling activities.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce injuries associated with drilling activities.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
8.3	There is a safe system of work to reduce the risk of injury to personnel from hazardous manual tasks associated with handling loads.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce injuries when handling loads.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment (e.g. mechanical aids, assistive devices) and work area. Sight documentation and inspection records.</p>

8.4	There is a safe system of work to reduce the risk of injury to personnel from hazardous manual tasks associated with using hand tools, plant and equipment.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce injuries associated with the use of hand tools, plant and equipment.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work area. Sight documentation and inspection records.</p>
8.5	There is a safe system of work to reduce the risk of injury to personnel from hazardous manual tasks associated with tyre changing and repairs.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce injuries associated with tyre changing and repairs.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work area. Sight documentation and inspection records.</p>
8.6	There is a safe system of work to reduce the risk where personnel are likely to be exposed to repetitive tasks or vibration.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce injuries associated with repetitive tasks and exposure to vibration.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation on work practices (e.g. task rotation, regular work breaks, variation in work rates, spread of workloads to avoid peaks) and inspection records.</p>

8.7	Non-engineered, modified tooling is not used.	<p>Intent: To ensure personnel are not injured through the use of non-engineered, modified tools.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
8.8	There is a safe system of work to ensure work at night can be performed safely.	<p>Intent: To ensure work at night is conducted safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>

9 Working at height

Working at height

Point	Standard	Guideline
9.1	Where practicable, working at height hazards are eliminated through the use of engineering controls.	<p>Intent:</p> <p>To ensure the site has adequate controls to eliminate working at height hazards through the use of engineering controls.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment (e.g. automatic greasing system for mast lubrication points, ground-level fuel and oil refill points) and work areas. Sight documentation and inspection records.</p>
9.2	There is a safe system of work for working at height, including rescue plans.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce injuries associated with working at height.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work area. Sight documentation and inspection records.</p>
9.3	Where practicable, alternative means of access are provided rather than working at height.	<p>Intent:</p> <p>To ensure the site has adequate controls to provide alternative means of access to high work areas where practicable.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment (e.g. ladders, walkways) and work areas. Sight documentation and inspection records.</p>

9.4	Areas of fall risk are controlled with edge protection, handrails or other engineering controls.	<p>Intent: To verify engineering controls are used to prevent falls from height.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 4.4.</p>
9.5	There is a fall protection system in place for tasks that involve working at height.	<p>Intent: To verify fall protection systems are used for tasks that involve working at height.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 4.5.</p>

10 Falling objects

Falling objects

Point	Standard	Guideline
10.1	A competent person regularly inspects rig components, and takes immediate corrective action to eliminate the hazard of falling objects.	<p>Intent:</p> <p>To ensure a competent person is responsible for rig inspections to eliminate the hazard of falling objects.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
10.2	There is a preventative maintenance program in place for rig components.	<p>Intent:</p> <p>To ensure rig components are maintained and operated in a safe condition.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
10.3	Where practicable, components with high risk of falling are secured with a restraint.	<p>Intent:</p> <p>To ensure rig parts do not fall and injure personnel.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight high-risk components (e.g. tile boxes, sample hoses) and restraints (e.g. chains, wire slings). Sight documentation and inspection records. Refer to MSIR r. 4.12.</p>

10.4	There is a safe system of work for tasks that involve working at height.	<p>Intent: To ensure work at height is performed safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
10.5	Work tasks are planned and “working at height” toolkits used to minimise the requirement for tooling deployed at height.	<p>Intent: To ensure tooling requirements are minimised when working at height and control falling object hazards.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Determine that “Working at height” toolkits (e.g. lightweight, fit-for-purpose, lanyard attachment) are used. Sight documentation and inspection records. Sight toolkits</p>
10.6	Where practicable, attachment points are provided to secure tools with a lanyard.	<p>Intent: To ensure the site has adequate controls to prevent tools falling from height.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. Sight documentation and inspection records.</p>
10.7	Drop zones are adequately delineated to restrict access.	<p>Intent: To ensure the site has adequate controls to restrict access to high-risk areas and prevent injury.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation and inspection records.</p>

11 Working in hot environments

Working in hot environments

Point	Standard	Guideline
11.1	There is a system in place to prevent heat-related illness.	<p>Intent: To ensure the site has adequate controls to eliminate heat-related illnesses.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation (e.g. work–rest regimes, hydration regimes) and inspection records.</p>
11.2	All personnel are aware of the underlying causes of heat strain, recognise its symptoms and know how to respond.	<p>Intent: To ensure the site has adequate controls to reduce the effects of heat strain.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation and inspection records.</p>
11.3	Personnel at risk from heat stress are monitored for signs of heat strain.	<p>Intent: To ensure the site has adequate controls to monitor personnel at risk of heat strain.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation for work practices (e.g. monitoring of personnel with pre-existing medical conditions such as cardiovascular disease or febrile illnesses such as influenza, and personnel not acclimatised to site conditions). and inspection records.</p>

11.4	Where practicable, weather protection and cool rest and recovery areas are provided.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce exposure to heat and the effects of heat strain.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. Sight documentation and inspection records.</p>
11.5	There is a safe system of work for new employees and those returning to work after a break to acclimatise to working in hot environments.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce the effects of heat strain.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect work areas. Sight documentation (acclimatisation policy) and inspection records.</p>
11.6	Where practicable, hours of work are scheduled so that physically demanding work is done in cooler periods of the day.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce exposure to heat and the effects of heat strain.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect work areas. Sight documentation and inspection records.</p>
11.7	All personnel are provided with clothing suitable for the environment.	<p>Intent:</p> <p>To verify the site has adequate controls to reduce exposure to heat and the effects of heat strain.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. Sight documentation and inspection records. Refer to MSIR r. 4.1.</p>

12 Fatigue and mental wellbeing

Fatigue and mental wellbeing

Point	Standard	Guideline
12.1	There is a safe system of work to prevent fatigue and support mental wellbeing at the workplace.	<p>Intent: To ensure offsite activities (e.g. driving long distances to camp or between work areas) can be undertaken safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Sight documentation and inspection records.</p>
12.2	There is a fatigue management plan for exploration activities and all personnel are trained in its application.	<p>Intent: To ensure offsite activities (e.g. driving long distances to camp or between work areas) can be undertaken safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Sight documentation and inspection records.</p>
12.3	All personnel are aware of the underlying causes of fatigue and stress, can recognise the symptoms and know how to respond.	<p>Intent: To ensure personnel can recognise and respond appropriately to fatigue and stress.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>

13 Airborne contaminants and natural gases

Airborne contaminants and natural gases

Point	Standard	Guideline
-------	----------	-----------

13.1	There is a general dust management plan and all personnel are trained in its application.	<p>Intent: To verify dust is managed and exposures are controlled.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 9.17.</p>
13.2	Where fibrous, radioactive or toxic minerals may be present, the dust management plan incorporates a management plan for them.	<p>Intent: To ensure fibrous minerals are managed, exposures are controlled, and decontamination and disposal resources are available.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
13.3	There is a safe system of work for monitoring and managing hazardous gases released during drilling, and personnel are trained in its application.	<p>Intent: To verify natural gases released during drilling are monitored and managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight training needs analysis, and other documentation as available. Sight training records. Refer to MSIR r. 9.29.</p>

13.4	All personnel are aware of the likelihood of encountering fibrous, radioactive or toxic metal-bearing minerals, and hazardous gases and know how to respond.	<p>Intent:</p> <p>To verify personnel can recognise and respond appropriately when fibrous, radioactive or toxic metal-bearing minerals or natural gases are encountered.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Maps and other information are available on site.</p> <p>Refer to MSIR rr. 9.17, 9.33 and 16.16.</p>
13.5	Where practicable, wet drilling methods are used in areas identified as high-risk for fibrous minerals and other airborne contaminants.	<p>Intent:</p> <p>To ensure the site has adequate controls to reduce exposure to fibrous minerals and other airborne contaminants.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p>
13.6	Where practicable, dust produced by drilling is collected and contained.	<p>Intent:</p> <p>To verify the site has adequate controls to reduce exposure to airborne contaminants.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records.</p> <p>Refer to MSIR r. 9.17(2).</p>

13.7	Where dust collection and containment are not practicable, dust is directed away from areas where personnel may be present.	<p>Intent:</p> <p>To verify the site has adequate controls to reduce exposure to airborne contaminants.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 9.17.</p>
13.8	All personnel exposed to atmospheric contaminants are fit tested and trained in respirator use.	<p>Intent:</p> <p>To verify personnel are fit tested and trained in respirator use to reduce exposure to airborne contaminants.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. Sight documentation and inspection records. Refer to MSIR r. 4.1.</p>
13.9	Disposable respirators are replaced regularly to prevent build-up of dust.	<p>Intent:</p> <p>To verify disposable respirators are regularly replaced to reduce exposure to airborne contaminants.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment. Sight documentation and inspection records. Refer to MSIR r. 4.1.</p>

14 Noise

Noise

Point	Standard	Guideline
14.1	There is a noise control plan.	<p>Intent: To verify workplace noise is managed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR r. 7.11.</p>
14.2	New plant and equipment is engineered to maintain the lowest possible level of noise.	<p>Intent: To verify workplace noise is reduced as far as is practicable.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and inspection records. Refer to MSIR rr. 7.4 and 7.5.</p>
14.3	Noise suppression devices and techniques are used.	<p>Intent: To verify the site has adequate controls to reduce workplace noise as far as is practicable.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas (e.g. enclosures, screens, silencers). View documentation. Refer to MSIR rr. 7.4 and 7.5.</p>

14.4	Where the noise exposure standard could be exceeded, hearing protection is provided to enable effective communication	<p>Intent: To ensure the site has adequate controls to reduce noise exposure.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect devices in use and work area. View documentation.</p>
14.5	Prominent signage delineates areas where hearing protection is required.	<p>Intent: To verify safety and/or warning signs are displayed to notify personnel of noise hazards.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work area. Review signage and sight documentation and records. Refer to MSIR rr. 4.10 and 7.6(b).</p>
14.6	Noise labels are attached to items of fixed plant, where appropriate.	<p>Intent: To verify warning signs requiring the use of hearing protection are clearly displayed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Review signage and sight documentation and records. Refer to MSIR r. 7.6(b).</p>
14.7	There is a hearing protection program in place and all personnel know when and where hearing protection is required and comply with the program.	<p>Intent: To verify personnel are informed of measures to protect hearing.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect devices in use and work areas. View documentation and review hearing protection program. Refer to MSIR r. 7.7.</p>

14.8

All exposed personnel are fit tested and trained in hearing protection use.

Intent:

To ensure personnel are fit tested and trained in hearing protection use to reduce exposure to noise.

Personnel:

Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.

Method:

Interview relevant employees. Inspect work areas. View documents.

15 Ionising radiation

Ionising radiation

Point	Standard	Guideline
15.1	A radiation management plan approved by the State Mining Engineer and Radiological Council is in place for uranium, thorium or mineral sands exploration, or where a nuclear borehole logger is used.	<p>Intent: To verify radiation exposure is managed and controlled.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect devices in use and work areas. Sight documentation and records. Refer to MSIR r. 16.7.</p>

16 Hot work

Hot work

Point	Standard	Guideline
16.1	There is a safe system of work for hot work.	<p>Intent: To verify hot work can be undertaken safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation and records. Refer to MSIR r. 4.3, AS 1674 and Welding Technology Institute's <i>Health and Safety in Welding technical note (TN07)</i> (approved code of practice under MSIA s. 93).</p>
16.2	Hot work is not undertaken when total fire ban conditions exist.	<p>Intent: To verify hot work is not carried out when conditions are likely to be dangerous.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation and records. Refer to MSIR r. 4.3.</p>

16.3	Hot work is restricted to specially designated areas that, where practicable, are within the line of sight of other crew members.	<p>Intent: To verify hot work is carried out in specially designated areas to reduce risk of fire or injury.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation and records. Refer to MSIR r. 4.3.</p>
16.4	Fuel and ignition sources are minimised at the work area.	<p>Intent: To ensure fire hazards are controlled.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation and records.</p>

17 Extreme weather and bushfires

Extreme weather and bushfires

Point	Standard	Guideline
17.1	Incident management and emergency response plans are in place to deal with severe weather events and bushfires, and all personnel know how to respond.	<p>Intent: To verify there are response plans for severe weather, and bushfires and personnel know how to respond</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records. Refer to MSIR r. 4.30.</p>
17.2	Severe weather events and bushfires are tracked and monitored.	<p>Intent: To verify severe weather and bushfires are tracked and monitored so potential hazards are identified.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records. Refer to MSIR r. 4.30.</p>
17.3	All personnel are aware of the likelihood of flooding or flash flooding, and know how to respond.	<p>Intent: To verify personnel recognise the potential for flooding or flash flooding and know how to respond.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect work areas. Sight documentation and records. Refer to MSIR rr. 4.11 and 4.30.</p>

17.4	There is a safe system of work so personnel are not exposed to lightning strikes.	<p>Intent: To verify personnel are not exposed to lightning strikes.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment (e.g. portable lightning detector) and work areas. Sight documentation and records. Refer to MSIR rr. 4.30 and 5.26.</p>
17.5	If there are signs of suspected lightning strike, plant and equipment are checked for damage before use.	<p>Intent: To ensure vehicles struck by lightning are safe to be used.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records (e.g. tyres are checked for pyrolysis).</p>
17.6	There is a safe system of work for crossing of watercourses.	<p>Intent: To verify watercourses are crossed safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records. Refer to MSIA s. 13.</p>
17.7	There is a safe system of work to ensure loose objects are appropriately anchored or secured and do not become projectiles in high winds.	<p>Intent: To ensure loose objects do not cause injury during extreme weather.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records.</p>

18 Light vehicle movement

Light vehicle movement

Point	Standard	Guideline
18.1	The original equipment manufacturer (OEM) recommendations for light vehicle inspection and maintenance are followed.	<p>Intent: To ensure vehicles are maintained and operated in a safe condition.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records.</p>
18.2	Light vehicle modifications and load configurations are assessed to determine their likely effect on stability and profile, and address risks.	<p>Intent: To verify vehicle modifications and load configurations are assessed by a competent person and risks addressed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation and details of modification assessment. Refer to MSIR rr. 6.2, 6.22 and 6.23.</p>
18.3	There is a safe system of work to manage the ground, road and weather conditions likely to be encountered by light vehicles.	<p>Intent: To ensure vehicles are operated with regard to the conditions encountered.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation (e.g. procedures for the terrain and conditions likely to be encountered in transit).</p>

18.4

Changes to ground, road and weather conditions that may affect light vehicle movement are monitored.

Intent:

To ensure vehicles can be operated with regard to the conditions encountered.

Personnel:

Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.

Method:

Interview relevant employees. Inspect equipment and work areas. View documentation.

19 Heavy vehicle movement

Heavy vehicle movement

Point	Standard	Guideline
19.1	The OEM recommendations for rig movement are followed.	<p>Intent: To ensure rigs are moved safely in accordance with OEM recommendations.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. Sight documentation and records.</p>
19.2	Rig modifications are assessed to determine their likely effect on stability, design specifications and profile, and address risks.	<p>Intent: To verify rig modifications are assessed are assessed by a competent person and risks addressed.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation and modification assessment. Refer to MSIR rr. 6.2, 6.22 and 6.23.</p>
19.3	There is a safe system of work to manage the ground, road and weather conditions likely to be encountered by heavy vehicles.	<p>Intent: To ensure vehicles are operated with regard to the conditions encountered.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation (e.g. procedures for the terrain and conditions likely to be encountered in transit, including powerlines).</p>

19.4	Changes to ground, road and weather conditions that may affect heavy vehicle movement are monitored.	<p>Intent: To ensure vehicles can be operated with regard to the conditions encountered.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation.</p>
19.5	There is a safe system of work for manoeuvring drill rigs and equipment, including identifying the roles and responsibilities of designated spotters.	<p>Intent: To ensure drill rigs and equipment are moved safely.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation (e.g. details of roles and responsibilities).</p>
19.6	There is a preventative maintenance program in place to avoid in-transit damage to heavy vehicles.	<p>Intent: To ensure the site has adequate controls to avoid vehicle damage during transit.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. View documentation and details of preventative maintenance program.</p>
19.7	After rig movements, a pre-start check of the rig and its components is undertaken by a competent person.	<p>Intent: To ensure the drill rig and its components are checked prior to use.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment. View documentation and details of pre-start check.</p>

20 Remoteness of exploration

Remoteness of exploration

Point	Standard	Guideline
20.1	There is a safe system of work to plan and monitor travel to and from work in remote locations.	<p>Intent: To ensure safe travel to and from remote locations.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records.</p>
20.2	Communication, emergency response and incident management plans are in place that reflect the remote conditions and address operational needs, and ensure personnel are trained in their application and how to use the equipment.	<p>Intent: To verify communication, emergency response and incident management plans match the conditions and operational needs.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records. Refer to MSIR r. 4.30.</p>
20.3	There is a safe system of work for selecting fit-for-purpose modes of transport.	<p>Intent: To ensure the modes of transport used are fit-for-purpose.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect equipment and work areas. Sight documentation and records.</p>

21 Housekeeping

Housekeeping

Point	Standard	Guideline
-------	----------	-----------

21.1	The site plan allows for the orderly movement of personnel, equipment and materials.	<p>Intent:</p> <p>To ensure the site is managed to prevent injury or damage.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect equipment and work areas. View documentation.</p>
21.2	Tools and equipment are properly stored after use.	<p>Intent:</p> <p>To ensure tools and equipment are stored to prevent injury or damage.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect storage facilities.</p>
21.3	Daily inspections and clean-ups are undertaken.	<p>Intent:</p> <p>To ensure the workplace is inspected daily and hazards are rectified.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect work areas. Sight documentation and inspection records. Refer to MSIR r. 3.22.</p>
21.4	There are designated areas for storage and rubbish disposal.	<p>Intent:</p> <p>To ensure the site has adequate controls to prevent cross-contamination and unhygienic conditions.</p> <p>Personnel:</p> <p>Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method:</p> <p>Interview relevant employees. Inspect facilities. View documentation.</p>

21.5	There are designated areas for eating and ablutions.	<p>Intent: To verify workplaces are hygienic.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect facilities. View documentation if available. Refer to MSIR rr. 7.12 7.13, 7.17 and 7.19.</p>
21.6	At the completion of drilling, drill holes are plugged and rehabilitated and sumps filled.	<p>Intent: To verify the drill site is remediated.</p> <p>Personnel: Registered Manager and/or Exploration Manager and/or person in charge of site and/or drilling supervisor and/or other relevant employees.</p> <p>Method: Interview relevant employees. Inspect drill site. View documentation. Refer to MSIR r. 3.5.</p>