

Version number	7	Implementation date	June 2024
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Functional area	Health, Safety, Environment and Quality	Element	Hot Work

Purpose

To provide a safe system of work to manage risks associated with hot work at Company workplaces.

1 Carrying out hot work

Hot work must not commence until the site chosen to do this work is adequately prepared. Preparation is to be coordinated and supervised by the Operations Manager, Site Manager or Supervisor. Any hot work carried out in a confined space or work at height is subject to the Company's **Confined Spaces** and **Working at Height Model Protocol/Standards**. In summer months, regional or local bushfire restrictions (such as 'total fire ban days') are to be strictly adhered to. If hot work is to be conducted outside on total fire ban days, the appropriate permit/exemption from the fire authority must be in place before commencing the hot work activities. Where a Fire Watch Warden is required, they must be assigned to monitor for potential ignition hazards. An authorised **Hot Work Permit** is to be displayed at the hot work location, depending on your site requirement.

1.1 Hazardous areas

Areas where flammable or combustible liquids, solids or gases are situated, stored or used must be considered as hazardous areas. Designated hazardous areas are to be managed as per the **Chemicals and Dangerous Goods** Standard.

1.2 Ventilation

Adequate ventilation must be provided in all hot work areas. Exhaust ventilation systems must be installed in welding booths and designated hot work areas. A **Confined Spaces Risk Assessment** must be conducted when work is carried out in a confined space to determine adequate ventilation requirements.

1.3 Welding environments

Where the activity involves welding, work areas are to be assessed and classified for risk of electrical shock. AS 1674.2 Safety in Welding and Allied Processes – Electrical, classifies welding environments into three categories:

1.3.1 Category A – typical workshop situation

- small bench-top welding
- risk of an electrical incidents by electric arc welding is low
- normal work practice is used
- low risk of welder becoming part of the circuit.

1.3.2 Category B – typical field situation

- general fabrication activities – large work pieces and inside conductive confined spaces such as pressure vessels
- significant risk of welder contacting work piece or other parts of welding circuit
- movement is restricted (e.g. kneeling, sitting, lying) in physical contact with conductive parts; or
- there is a high risk of accidental or unavoidable contact by and/or with conductive elements

- the area is DRY and less than 32°C.

1.3.3 Category C – typical wet or confined space situation

- environments that involve trenches, mines and out in the elements (rain)
- risk of electrical incidents by arc welding greatly increased due to the presence of water, moisture or heat
- the area is HOT, HUMID, DAMP or WET and/or higher than 32°C.

1.4 Welding and cutting in confined spaces

Performing hot work in a confined space requires an assessment of potential risk and a **Confined Spaces Entry Permit and Rescue Plan**. All work carried out within a confined space is to be carried out in compliance with **Confined Spaces**.

1.5 Welding and cutting containers used to store hazardous substances

The welding and cutting of Class 3.1 and 3.2 flammable dangerous goods or hazardous chemicals containers is prohibited in all Company workplaces.

2 Conducting hot work activities

Hot work is an activity that generates flames, heat or spark.

Note: Heat processes used or conducted in asphalt paving, spray sealing or bitumen tanker applications are outside the scope of this Hot Work Standard and Protocol document

2.1 Designated hot work areas

A 'designated hot work area' is an area set aside at the workplace for the specific duty of conducting hot work. Designated hot work areas are essential to control the risks with hot work. Before a designated hot work area is authorised (by the Operations Manager, Site Manager or Supervisor), a risk assessment needs to be completed using the **Designated Hot Work Area Risk Assessment**.

Designated hot work areas must be maintained in a tidy state and any combustible material, fuel or gas is to be secured or stored to prevent ignition. All plant and equipment brought into a designated hot work area are to be cleaned and if necessary, decontaminated of flammable or combustible gas, fuel or materials.

Designated hot work areas must be inspected as part of the monthly safety site inspection using the site inspection checklist **General Workplace Safety Inspection Checklist**, and within a 3 year period using the **Hot Work Inspection Checklist**.

2.2 Permit requirements

Where possible, hot work must be performed in a designated hot work area, otherwise a hot work permit is required. The **Hot Work Permit** provides mandatory requirements to control the risks for performing hot work outside of a designated hot work area.

A **Hot Work Permit** is only valid for the total duration of a normal shift. If hot work exceeds a normal shift period or, if work ceases for longer than two hours in any shift, the permit is to be reviewed and reauthorised by the permit issuer and/or approver.

Note: Hot work carried out within a designated hot work area does not require a permit since the area has already been set aside for the purpose of hot work and has been risk assessed as per section 6.1.1 of this protocol.

2.3 Permit closure

When a hot work task is completed, the area is to be inspected by the permit holder to ensure it is safe and free of any smouldering material or potential sources of ignition. The Fire Watch Risk Assessment Monitoring process is to be implemented as stated on the hot work permit.

Note: The hot work permit is to be signed off by the person responsible for the area and work.

3 Fire watch and monitoring for permit-controlled hot work

3.1 Fire watch during hot work

One or more Fire Watchers are to be assigned to watch for potential ignition hazards in and around the hot-work area. Assigned fire watchers must remain on the site for the duration of the hot work activity and be actively engaged in fire watch monitoring.

Note: Fire watch monitoring during hot work is a continual and thorough monitoring of the area and its vicinity by the assigned person. Particular attention must be given to any new developments that might increase risk to the hot work operation.

3.2 Fire watch after hot work is concluded

The risk of a fire re-igniting after the hot work is completed is as per the requirements in the Hot Work Permit. The following risk levels are to be considered for fire watch monitoring based on the Hot Work Permit.

Table 1: Fire Watch and Monitoring Requirements Risk Assessment

			Construction Factors					
			Non-combustible construction, or FM Approved Class 1 or Class A building materials		Combustible construction without concealed cavities		Combustible construction with non-sprinkler protected concealed cavities	
			Watch	Monitor	Watch	Monitor	Watch	Monitor
Occupancy Factors	1	Non-combustible area (e.g. metal, cement) on ground level or fully sealed floor to lower level, etc.	N/A	N/A	1 hour	3 hours	1 hour	5 hours
	2	Office, or manufacturing area with limited combustible loading such as quarry areas with rubber conveyors. No incidental storage.	5 mins	N/A	1 hour	3 hours	1 hour	5 hours
	3	Manufacturing with moderate to significant combustible loading like machine shops, wood working (see exceptions) electronic assembly, etc., except as noted below in Exceptions .	1 hour	2 hours	1 hour	3 hours	1 hour	5 hours
	4	Warehouse with moderate to significant combustible loading like mobile plant, hazardous materials stored.	1 hour	2 hours	1 hour	3 hours	1 hour	5 hours
	5	Exceptions: Areas with combustible materials capable of supporting slow- growing fires (paper, pulp, textiles, wood , sawdust , bark , coal or charcoal)	1 hour	3 hours	1 hour	3 hours	1 hour	5 hours

3.3 Monitoring after hot work is concluded

On sites as determined by Business requirements, a monitoring period must be completed after the conclusion of the Fire Watch Period, as determined by the Table 1: Fire Watch and Monitoring Requirements Risk Assessment:

- Varies from zero minutes to five hours, depending on the combination of occupancy and construction factors
- Occupancy factors description:

1. Non-combustible
Examples include quarry areas without hydraulic or lube oils and away from conveyors and rubber lined screens etc. No incidental storage.
2. Offices or manufacturing with limited combustible loading
Examples Include areas with light overall combustible loading with limited combustibles used in processes, or operations of low hazard. No incidental storage of plastics. This hazard category can have incidental amounts of ignitable liquids in FM Approved cabinets.
3. Manufacturing with moderate to significant combustible loading
Machine shops, wood working, areas with hydraulic and lube oils. Can include incidental storage of low-piled plastics
4. Warehousing
5. Exceptions
Includes areas capable of supporting slow-growing fires such as buildup of sawdust, bark, coal, etc.

Note: Monitoring of a hot work area after the Fire Watch has concluded can be conducted in a variety of ways.

In all cases, the permit remains active for this period and controls such as having fire extinguishers or hose reels laid out in the area stay in place in case of fire.

- *Periodic physical inspection approximately every 20 minutes*
- *Smoke detection in the immediate area, provided staff able to react instantly to an alarm*
- *Staff remain working in the area and are trained in manual firefighting.*

4 Initiating Emergency Response / Rescue Plan

All work being performed under an Authority to Work (ATW) and/or Permit/s must be immediately stopped if there is an emergency event or if the rescue plan needs to be initiated. All non-essential workers in the immediate area must move away to a safe location to enable the rescue team and/or emergency services to perform their duties.

The Authorised Works Controller must immediately notify the Authorised Plant Controller if there is an emergency and/or a rescue is required. The Authorised Plant Controller will immediately suspend the ATW and/or Permit/s to allow the rescue team and/or emergency services to perform their duties without the need to attach a Personal Red Lock.

After the emergency event has been managed, the Authorised Works Controller and the Authorised Plant Controller must:

- account for all persons that had been working under the ATW and/or Permit/s
- inspect the work area to determine if safe to proceed with the work
- identify any additional hazards, and review and update control measures so that the emergency event does not occur again
- communicate updated requirements to the work crew using the **On-the-Job Assessment & Discussion** form
- Re-issue ATW and/or Permit/s

If the event requires notification to the relevant regulator, work cannot re-commence until the regulator has released the scene (refer to the **Incident Reporting, Investigation and Action Management Protocol** for further guidance).

5 Equipment signage and protection

Screens, barricades and signage are to be installed in areas where hot work is being carried out. A copy of the hot work permit is to be displayed and readily available to alert workers of potential hazards. It is to be accompanied by its corresponding Authority to Work Permit (if this is a requirement of the permit).

When welding is conducted outside a designated hot work area, an effective screen must be provided if the area cannot be isolated. The necessity for screens is specified in the Hot Work Permit or in the results of a risk assessment.

5.1 Personal protective equipment (PPE)

PPE required for hot work activities is to be determined by the risk assessment (designated hot work areas), or the hot work permit. Site PPE requirements must also be complied with, unless the PPE creates a risk to the safe completion of the hot work.

*Note: Refer to the **Personal Protective Equipment** Standard for further information.*

5.2 Equipment

All equipment used to perform hot work needs to be maintained, fit for purpose and stored correctly as per manufacturer's requirements.

Electric arc welders are to be fitted with a hazard-reducing device (HRD). A HRD can be a voltage-reducing device (VRD) or a trigger switch-operated feeder (as found on a MIG).

5.2.1 Flashback arrestors

Flashback arrestors are to be in place for gas welding and cutting equipment. At least every six months or after a flashback incident, a competent person must assess regulators, hose assemblies, blowpipes, mixers and attachments in accordance with regulated Australian Standards (AS 4603).

A record must be kept of each assessment and include any corrective actions or condition maintenance requirements.

5.3 Storage of welding gas cylinders

Welding gas cylinders are to be stored safely according to the Hazardous Chemicals and Dangerous Goods Standard/Model Protocol

6 Worker competencies

Any person conducting, assisting, fire watching/monitoring or supervising hot work must undertake specific 'hot work' training to be appropriately qualified to carry out this work out. They must have the appropriate training as well as authorisation to perform this type of work.

Any person performing fire watch monitoring or fire watch risk assessments are to have read and understood this Model Protocol.

Roles and responsibilities

Role	Responsibility
Operations Managers Site Managers	Ensure all appropriate permits are in place before hot work starts. Nominate the person responsible for authorising Hot Work Permits.
Fire Watcher / Spotter	Be present when hot work is carried out for the length of time identified by the Fire Watch and Monitoring Requirements Risk Assessment to ensure there is no ignition of surrounding materials / objects.

	Watch for uncontrolled sparks, slag and hot metal cut-offs. Ensure no hazardous situations arise in the hot work area. Can be the same person as the Fire Monitor
Fire Monitor	Carry out monitoring as identified by the Fire Watch and Monitoring Requirements Risk Assessment after the hot work has concluded to ensure there is no ignition of surrounding materials / objects. Can be the same person as the Fire Watcher.
Persons responsible for hot work area or work	Sign off hot work permits. Before hot work starts, inspect hot work areas and verify controls are in place as stated in the hot work permit. Ensure the site is suitable for hot work. Permits cannot be closed out until any identified fire monitoring activities have been concluded.
Employees and Other Workers	Have appropriate permits and authorisations to do hot work. Appropriately trained and fully qualified to carry out hot work. Permits cannot be closed out until any identified fire monitoring activities have been concluded.

HSEQ document definitions

Refer to HSEQ terms and definitions library on the HSE intranet site.

HSEQ document version history

This table documents the five most recent key HSEQ Document updates.

No.	Date of issue	Comments / Key changes	Next review
3.0	July 2015	Replaces GRP-OHS-030 Hot Work	
4.0	July 2019	Notable Change(s): All sections re-ordered to align with Global harmonisation of minimum standards.	
4.1	March 2022	New permit type required for specific sites noted by FM Global. Fire watch mandated during permitted hot work. Fire watch separated from monitoring as a role and times periods now defined by occupancy and construction factors Re-brand and update document numbers to align with new HSEQ MS	
5.1	March 2023	All items updated are as per current practice. Removal of reference to Fire Watch Permit. Inclusion of Fire Watch Risk Assessment from the Fire Watch Permit instead. Amended Fire Watcher / Fire Monitor training requirements as there is no training available for this, as well as added the roles and responsibilities of a Fire Watcher and a Fire Monitor. Rebrand to align to new branding.	
6.0	June 2024	Rebrand to align with new Policy and Procedure Hub	June 2026
7.0	December 2024	Added Section 4 – Initiating Emergency Response / Rescue Plan	December 2026