
Purpose This procedure describes the process for managing the risks associated with hot work.

Scope This procedure applies to all Line Managers and/or workers involved in planning, managing or undertaking hot work.

Process flow

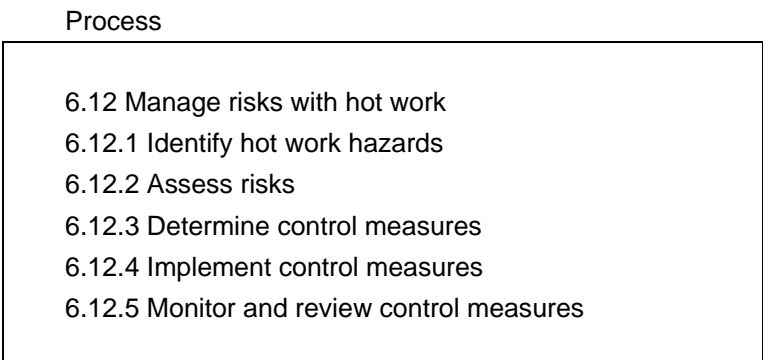


Figure 1 Process flow for managing risks with hot work

Procedure

6.12 Manage risks with hot work

Hot work is any work that may create an ignition source, including welding, thermal or oxygen cutting or heating, grinding, and other related heat or spark producing operations. Hot work can be undertaken as part of construction, maintenance or repair activities.

6.12.1: Identify hot work hazards

Line Managers must:

1. make sure that hazards associated with conducting hot work are identified before the commencement of any hot work;
2. consider the following:
 - the proximity to hazardous areas;
 - the proximity of flammable and combustible materials;
 - the potential presence of explosive atmospheres;
 - the type of hot work to be undertaken;
 - equipment to be used;
 - ventilation – natural and mechanical;
 - other work being carried out in the area;
 - the location of where the hot work is to be carried out;
 - weather conditions for when the hot work is scheduled (i.e. is there total fire ban in place); and
3. record the hazards identified using SHEM.



Note

A hazardous area is an area in which flammable liquids, vapours, gases, combustible liquids, dusts, fibres, or other flammable or explosive substances may be present.



Note

A hot work permit is a written authority issued by an authorised worker (not the worker performing the work). For locations at underground stations or in an underground network hot work permits are issued by a Sydney Trains Rail Emergency Response Team (RERT) Officer. For all other areas (excluding designated hot work areas) hot work permits are issued by a competent worker for their area of responsibility).

6.12.2: Assess risks

Line Managers must:

1. conduct the risk assessment before the commencement of any hot work using SHEM ;
2. refer to the identified hazards listed in SHEM (refer step 3 of 6.12.1); and
3. determine the risk ratings (A-D) by applying [SMS-06-GD-3143 Guide to Safety Risk Criteria](#) or using the assessment steps in SHEM for the hot work task with the existing controls in place. If control measures are considered effective and comply with legislative requirements, the controls can be implemented and no further assessment is required.

6.12.3: Determine control measures

Line Mangers must:

1. apply the hierarchy of risk controls from the highest level of protection and reliability to the lowest. Control measures include:
 - using hot work permits;
 - testing and monitoring for flammable atmospheres, gasses and dusts;
 - using designated hot work areas;
 - providing ventilation;
 - providing suitable fire-fighting equipment;
 - providing containment measurement to control sparks and flame;
 - controlling access and egress to the work area;
 - using correct tools, equipment and materials;
 - using workers who are experienced and competent in using this equipment; and
 - using and wearing the correct Personal Protective Equipment (PPE).
2. if flammable or explosive gases and dusts may be present where hot work is planned, the Line Manager must:
 - Arrange for a competent worker to carry out atmospheric testing and declare the atmosphere safe before any hot work starts;
 - make sure the testing is carried out no more than 2 hours prior to the hot work start time; and
3. enter the details of the proposed controls in SHEM. Administrative controls and Personal Protective Equipment PPE should only be used where there are no other practical control measures available, or as an interim measure until a more effective way of controlling the risk can be used or to supplement the higher levels of control measures.

6.12.4: Implement control measures

In addition to the controls determined in 6.12.3 the following controls must be implemented when carrying out hot work:

- suitable fire-fighting equipment (separate to those appliances provided as part of a sites local firefighting equipment) is to be available and located within 10 metres of the work area. As a minimum this will be a 9kg ABE Dry Chemical Powder (DCP) fire extinguisher or its equivalent, appropriate to the particular type of fire hazard.

Fire protection measures must comply with the requirements of AS1674.1, Section 5 Fire Protection.

Issuing hot work permits

Hot work permits are required when conducting hot work in all areas except for designated hot work areas (such as welding bays). There are specific requirements for the issuing of hot work permits depending on where the hot work is to be performed.

Hot work permits are to be issued in the following circumstances:

- hot work performed in confined spaces;
- hot work performed in areas where there is a potential for flammable atmospheres;
- open flame used in enclosed spaces (except in designated hot work areas such as welding bays);
- hot work performed in underground stations;
- hot work performed in underground networks; and
- hot work performed in other areas.

Underground stations and networks (refer Note 3 below), unless the work is required for urgent repair to essential operational equipment, issuers will not authorise hot work during peak operating times (i.e. Monday to Friday: 06:00 – 09:30 and 14:00 – 20:00. Restrictions may also apply during special events.



Note

Underground networks and stations include:

Airport Line, Central and Sydney Terminal City Circle, Eastern Suburbs Line, Chatswood, Hurstville Kogarah, Olympic Park Line, North Sydney, Redfern (Platforms 11 and 12), and St Leonards.

Hot Work at Epping will be managed by the Sydney Metro and Sydney Trains.

6.12.4: Implement control measures (Continued)

Before commencing a hot work, Line Mangers must:

1. determine the location of the hot work, either at:
 - an underground station;
 - an underground network (excluding stations); and
 - any other area (excluding designated hot work areas).
2. for hot work performed at an underground station or in an underground network:
 - complete [SMS-06-FM-4899 Hot Work Permit/Fire Isolation Systems Request](#) form;
 - submit the form to Rail Emergency Response Team (RERT) for authorisation, at least 24 hours before the work is to be carried out; and
 - do not allow hot work to be carried out without authorisation from an RERT officer.
3. for hot work performed at all other locations (excluding designated hot work areas):
 - authorise a competent worker to issue the hot work permit.
 - the issuing officer must:
 - generate a local permit issue number;
 - complete [SMS-06-FM-4382 Hot Work Permit](#) and specify the required controls;
 - before issuing the permit, check the work for:
 - flammable atmosphere, gases and dusts;
 - flammable and combustible materials;
 - access and egress locations;
 - adequate ventilation; and
 - suitable fire-fighting equipment, making sure it is available.
 - once satisfied that the specified controls have been implemented, approve, sign and issue the permit to the supervisor of the work;
4. arrange for a firewatcher to be in attendance where a hot work permit has been issued;
 - Firewatchers are to continuously monitor the area during hot work and for 30 minutes after the completion of work.
5. make sure the correct fire-fighting equipment is at the site for the duration of the hot work, refer to Appendix A for the types of fire-fighting equipment that can be used; and
6. make sure the permits are retained for a minimum of 3 months after last action, then destroy (refer to [SMS-09-RG-3024 Safety Records](#))

Register).

6.12.4: Implement control measures (Continued)

Conducting the hot work during Total Fire Ban periods

Hot work in open areas during total fire ban periods cannot be carried out without prior notification to the local fire control officer, e.g. the Rural Fire Services or Fire and Rescue NSW.

Workers must not carry out burning off, hot work or use naked flames of any type in open areas during a Total Fire ban, other than where specifically exempted in [Sydney Trains Engineering Manual- Civil MN C 10501 Bushfire Hazard Management Manual](#).

Hot work may be carried out in areas at underground stations and underground networks during Total Fire Ban periods subject to the controls outlined in 6.12.4 above.

The Line Manager must:

1. contact the Local Fire Control Officer and advise of the location and nature of the hot work;
2. the Local Fire Control Officer will provide staff and equipment if required;
3. complete a Total Fire Ban – Hot Work Authority Form Appendix C [Sydney Trains Engineering Manual – Civil MN C 10501 Bushfire Hazard Management Manual](#))
4. forward the completed Total Fire Ban – Hot Work Authority Form to the Authorised Officer detailed in the Table 1 below. Please click on the relevant District for contact and “Boundary” details; and

Sydney Trains Maintenance District	Authorised Officer
Central	Civil Maintenance Engineer - Central
Illawarra	Civil Maintenance Engineer - Illawarra
West	Civil Maintenance Engineer – West
North	Civil Maintenance Engineer North

Table 1: Schedule of Authorised Officers

5. once the Total Fire Ban – Hot Work Authority has been issued, ensure all the controls stipulated in the Authority have been met before work commences.



Note

Where there is any risk of a flammable atmosphere arising during work, continuous atmospheric monitoring will be required during hot work. Work is to cease if a contaminant reaches a concentration of 5% of its lower explosion limit.

**6.12.5: Monitor
and review control
measures**

Once the controls have been implemented, Line Managers must:

1. periodically check the controls are working correctly and monitor their effectiveness;
2. review the control measures:
 - when the control measure is not effective in controlling the risk (e.g. following an incident);
 - before a change at the workplace that is likely to give rise to a new or different health and safety risk that the control measure may not effectively control;
 - if a new hazard or risk is identified;
 - if the results of consultation indicate that a review is necessary; and
3. maintain records in accordance to Information and Records Management Manual and [SMS-09-RG-3024 Safety Records Register](#).

References

[SMS-06-GD-3143 Guide to Safety Risk Criteria](#)

[SMS-06-FM-4382 Hot Work Permit](#)

[SMS-06-FM-4899 Hot Work Permit/Fire Isolation Systems Request form](#)






[SMS-09-RG-3024 Safety Records Register](#)


[Sydney Trains Engineering Manual – Civil MN C 10501 Bushfire Hazard Management Manual](#)

Version Control

Version	Change from previous	Date	Comment
1.2	<p>The proposed amendments include:</p> <ul style="list-style-type: none"> The reference to the Hazard Report form has been removed; Reference to AS1674.1 Safety in welding and allied processes, Part 1: Fire precautions and SafeWork NSW Code of Practice “Welding Processes” added; The requirements for “suitable firefighting equipment” has been clarified to – “suitable fire-fighting equipment (separate to those appliances provided as part of a sites local firefighting equipment) is to be available and located within 10 metres of the work area. As a minimum this will be a 9kg ABE Dry Chemical Powder (DCP) fire extinguisher or its equivalent, appropriate to the particular type of fire hazard”; and Fire protection measures must comply with the requirements of AS1674.1, Section 5 Fire Protection; Approver changed from Group Manager Safety to Group Manager Safety and Accreditation. 	16/05/2016	
1.3	<ul style="list-style-type: none"> Approver and Custodian changed to Group Manager, Safety & Standards and Senior Safety Specialist, System Safety; Procedure simplified concerning the issue of hot work permits; Procedure simplified concerning the steps required to conduct hot work during Total Fire Bans. 	31/10/2016	
1.4	<ul style="list-style-type: none"> Updated the title of document custodian and approver 	01/09/2017	
1.5	<p>As a result of the new Safety, Health, Environment Management (SHEM) module all the references to WHS Risk Register, WHS Risk Assessment Form, Guide to WHS Risk Register FP Requirements and other associated wording changed to reflect the new module.</p>	02/11/2018	
1.6	<p>Reference to ECRL removed and note added to include Sydney Metro to manage Hot Work at Epping.</p>	07/12/2018	

Appendix A – Fire Extinguisher Types

Type	Colour	Extinguishant	Class A	Class B	Class C	Class D	Class E	Class F	Remarks
			Wood, paper, plastics	Flammable/ combustible liquids	Flammable gas	Metal fires (seek expert advice)	Electrically energised equipment	Cooking oils and fats	
	Red cylinder, no band	Water	YES	NO	NO	NO	NO	NO	Dangerous if used on flammable liquid, live electrical equipment and cooking oils/fats
	Cream or oatmeal band	Wet chemical	YES	NO	NO	NO	NO	YES	Dangerous if used on electrical fires
	Blue band	Foam	YES	YES	NO	NO	NO	Limited	Dangerous if used on electrical fires
	White band	Powder	YES ABE	YES ABE	YES ABE	NO	YES ABE	NO ABE	Special powders are available for specific types of metal fires
			NO BE	YES BE	NO BE		YES BE	Limited BE	
	Black band	Carbon dioxide	Limited	Limited	NO	NO	YES	NO	Generally not suited for outdoor use. Only recommended for small fires

	Yellow band	Vaporising liquid	YES	Limited	Limited	NO	YES	NO	Check the characteristics of the specific extinguisher
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