## **Procedure**



# Management of Hot Work

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## 1. Purpose

The purpose of this Procedure is to provide instruction and information to manage risks associated with hot work.

## 2. Scope

This Procedure applies to all workers, which includes contractors, business groups and work activities at Seqwater workplaces unless otherwise stated.

## 3. Procedure

### 3.1. Management of hot work

Hot work is a term used to describe heat and spark producing processes which include, but not limited to welding, flame cutting and grinding. The specific workplace hazards associated with hot work are:

- heat, open flames or flying sparks that are able to ignite any flammable materials, gases or vapors or combustible materials.
- the hot work activity producing toxic fumes and gases
- the hot work activity leading to physical burns.

The management of the risks associated with performing hot work are a critical element in maintaining a safe workplace.

#### 3.2. Identification of hot work

Hot work is defined as any process involving grinding, welding, thermal or oxygen cutting or heating, and other related heat-producing or use of potentially spark-producing equipment/operations.

For the purpose of this procedure the use of Bunsen burners in a laboratory environment or the use of a gas BBQ is not considered hot work. However, consideration must be given before the use of a BBQ during a fire ban.

## 3.3. Eliminating the need for hot work

Due to the elevated level of risk associated with performing hot work in an uncontrolled environment, alternate work methods should be considered to eliminate the requirement for a hot work permit.

The following are examples of alternate work methods that should be considered, where practical, to avoid the need for a hot work permit:

- removal of equipment to a designated hot work zone
- mechanical fixings / chemical bonding of materials in lieu of welding
- threaded pipe fittings in lieu of soldering
- cold metal cutting equipment.

Should an alternate work method not be practical, and the work cannot be undertaken in a designated hot work zone, a hot work permit is required.



## 3.4. Worker competencies for hot work activities

Workers participating in hot work activities must be competent in the relevant areas:

- the proper use, wearing, storage and maintenance of Personal Protective Equipment (PPE)
- the proper use of fire suppression equipment
- how to work safely in hazardous environments, such as confined spaces and Hazardous Areas etc.
- first aid procedures
- how to access and interpret Safety Data Sheets (SDS) for hazardous chemicals

In addition, the following competences may apply to specific hot work tasks:

- welders must hold the welding qualification commensurate with the welding task being performed
- grinders, thermal or oxygen cutting or heating equipment, or other related heat-producing or spark-producing equipment must only be operated by workers who are experienced and competent in using the equipment

### 3.5. Completing a hot work permit

The hot work permit is divided into four (4) sections:

- Section 1 details of hot work
- Section 2 risk controls to be implemented
- Section 3 verification of risk controls
- Section 4 completion of work

#### 3.5.1. Section 1 - Details of hot work

The permit recipient is responsible for documenting the specific details of the hot work to be undertaken. This includes information on the:

- site and exact location of where the work is to be completed
- work order number the work is related to
- type of hot work to be completed
- date and time of when the hot work is to be completed
- · permit recipient details

#### **Fire Bans**

There are two types of Fire Bans, Local and State of Fire Emergency. Both require the QFES to declare.

When fire bans are in place either as a local Fire Ban or during a State of Fire Emergency:

- The lighting of fires in the declared fire ban areas are prohibited subject to any special conditions or exemptions
- All open fires are prohibited
- All Permits to Light Fire issued in the designated area are cancelled (or suspended).

During a State of Fire Emergency activities which have the potential to cause a fire could be prohibited e.g. the use of any appliance, material or substance. The specifics are detailed in the declaration

The permit recipient must check that there are no fire bans in place and document the outcome on the hot work permit. This can be done by calling the Fire Ban Hotline on 1800 020 440. If a fire ban is in place the permit



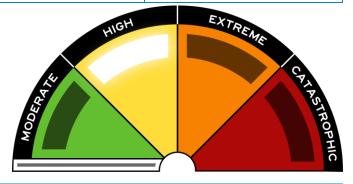
recipient must notify seek authorisation to determine whether the work can proceed, as per the below table. If approval for the hot work is given, the permit recipient must document on the hot work permit, who approved the work to proceed, and when approval was given.

Fire Ban	Description	Authorisation to continue work
Local fire ban	Local Fire Bans are normally imposed over an entire local government area and prohibit the lighting of all or certain types of fires, depending on the severity of the emergency	Level 4 Seqwater Leader
State of Fire Emergency	State of Fire Emergency's may have effect throughout the entire state and will detail the restrictions of operations in the declaration.	Level 3 Seqwater Leader

#### **Fire Danger Rating**

Seqwater relies on the Australia Fire Danger Rating System (AFDRS) to determine the fire risk rating, this information is provided by Bureau of Meteorology.

The AFDRS has four levels, each with a distinct title, colour and key message:



Fire Risk Rating (Fire Behaviour Index)	Key Message	Alignment to Enterprise Risk Framework	Seqwater Leader Authorisation to continue work
Catastrophic (100-plus)	For your survival, leave bushfire risk areas If a fire starts to take hold, lives are likely to be lost	Extreme	GM Approval
Extreme (50-99)	<b>Take Action Now</b> to protect your life and property  Fires will spread quickly and be extremely dangerous	Very High	Level 3
High (24-49)	Be Ready to Act Fires can be dangerous	High	Level 4
Moderate (12-23) 0-11 has no Fire Danger Rating	Plan and Prepare  Most fires can be controlled	Medium	Line Supervisor

Note: If approval is given, the permit recipient must document on the hot work permit who approved the hot work to proceed, and when approval was given.

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#### 3.5.2. Section 2 - Risk controls to be implemented

#### Pre hot work risk controls

The permit recipient is responsible for specifying the risk controls that will be implemented to minimise risks associated with the hot work. The following compulsory risk controls must be implemented for all hot work:

- hot work permit is to be on site and be able to be produced adjacent to the area where work is being conducted
- remove all flammable liquids/substances within the hot work area
- remove, cover, shield or wet all combustible materials, including vegetation, within the hot work area
- maintain a fire watch for the duration of the hot work as per the risk assessment, Note: there must be a minimum of 30 minutes after the cessation of the hot work
- cover drains and other openings in the hot work area for the duration of the hot work
- provide at least one form of fire suppression equipment e.g., water hose with adequate supply and reach, fire blanket, fire extinguisher (Class ABE), fire sprinklers (a combination of suppression systems is preferred for hot work)

Additional risk controls must be implemented for the hot work based on the environmental hazards identified in the risk assessment/SWMS developed for the task. These environmental risk controls must also be documented.

Potential environmental hazards may include:

- fumes e.g., generated from galvanised pipes or coatings
- welding flash
- grinding
- chemicals
- noise
- fire and/or explosion
- electrical

#### Post hot work risk controls

The permit recipient must identify the specific risk controls that will be implemented after the hot work has been completed. These details must be recorded on the hot work permit.

#### **Communication of risk controls**

The permit recipient is responsible for communicating the risk controls to be implemented to the work team, ensuring they understand the details of the hot work and they understand their roles in implementing the required risk controls.

#### 3.5.3. Section 3 - Verification of risk controls

After the permit recipient has completed section 2 of the hot work permit, the proposed risk controls will be verified by a work coordinator. The second checker cannot be the permit recipient. The second checker must ensure that the proposed risk controls have been implemented and are appropriate for the hot work to be undertaken.



The second checker will complete section 3 of the permit, which includes:

- name
- position
- date / time
- contact number.

By completing and signing section 3 of the hot work permit, the second checker has activated the permit and the hot work can commence.

#### 3.5.4. Section 4 - Completion of work

The permit recipient is responsible for ensuring that the hot work has been completed in accordance with the hot work permit and that the work area and equipment have been left in a safe condition.

The permit recipient must not sign section 4 until they are satisfied that the nominated fire watch period (minimum 30 minutes unless otherwise stated on the hot work permit) has been completed and does not need to be extended or amended.

#### 3.6. Duration of hot work permit

A hot work permit is valid for a period of 8hours from when it is first activated (signed by the second checker). A permit may not be extended past this timeframe.

A new hot work permit and a review of the associated risk assessment/SWMS are required for each 8hours of work.

### 3.7. Designated hot work zone

A designated hot work zone may be established and authorised at a site by the relevant manager. A hot work permit is not required to undertake hot work in a designated hot work zone.

In order for an area to be designated a hot work zone, a risk assessment must be conducted using the Designated Hot Work Zone Assessment Checklist (<u>FRM-00705</u>) and the outcomes of the risk assessment documented and retained in REX to confirm a hot work zone has been designated. All designated hot work zones are recorded on the Designated Hot Work Zone Register (<u>REG-00616</u>)

In order for an area to be designated a hot work zone, the following risk control measures must be implemented:

- Fire suppression equipment must be available i.e., water hose with adequate supply and reach, fire blanket, appropriate fire extinguishers (Class ABE) or sprinklers.
- Fit for purpose furnishings e.g., no wooden / flammable furniture.
- Appropriate screens/barriers in place.
- No flammable liquids or substances stored within the hot work area.
- No combustible materials stored within the hot work area.
- No open drains or other openings within the hot work area.
- Signage that indicates the area is a designated hot work zone.
- Safe access and egress from the designated hot work zone.

Additional control measures, including ducted ventilation may be implemented depending on the outcome of the risk assessment.



#### 3.8. Hot work in hazardous areas

A hazardous area is an area in which a flammable atmosphere is or may be expected to be present. Hot work in hazardous areas requires special precautions to be implemented before it can be undertaken.

Examples of hazardous area that may be encountered at Seqwater sites include:

- confined spaces
- flammable liquid and gas storage tanks and associated equipment (e.g., release points such as vents, fill points, dip points, safety relief devices)
- flammable liquid and gas dispensing equipment (e.g., vehicle filling stations, depots, LP gas filling stations)
- storage areas for flammable liquids in packages (e.g., oil store, storerooms, workshops)
- storage areas for flammable gases in cylinders
- fume cupboards used for flammable liquids and gases
- laboratory areas where flammable liquids are used and stored
- painting booths used for flammable paints and lacquers
- application of flammable sealants and adhesives in enclosed areas
- areas around activities generating fine dusts of combustible material (lime, polymers, dry organic residues)
- containers such as drums, tanks and pipes that have not been properly decontaminated.

Before undertaking hot work in a hazardous area, a risk assessment/SWMS must be developed to specify how the work will be undertaken and the risk controls that will be implemented.

The risk assessment/SWMS must be developed in conjunction with the relevant operational procedure for the hazardous areas, for example the Confined Space Management Procedure (PRO-00443) to ensure all hazards are assessed and appropriate risk controls implemented.

Examples of risk control measures to be implemented when undertaking hot work in hazardous area are:

- controlling emissions of flammable vapours, gases and mists
- using ventilation systems to control vapours during both normal and abnormal conditions (e.g., leak or spill)
- installing systems to detect leaks of flammable gases or vapours and enable response actions to be taken
- purging all traces of flammable or combustible materials from drums, vessels and tanks which are to be cut/welded prior to cutting/welding, and preferably fill with an inert substance such as nitrogen gas or water
- reducing quantities of flammable and combustible materials, including items that contribute to the fire load but that are not hazardous chemicals themselves (e.g., wooden pallets, oil)
- ensuring equipment used in handling flammable hazardous chemicals is maintained in accordance with manufacturer's instructions
- checking work area is free from rubbish, paper or dust that could be potential fuel sources or produce dust explosions.

#### 3.9. Planned burns

The contents of this procedure do not apply to planned burns. Planned burns must be conducted in accordance with the fire management plan for the relevant built or natural asset. The Principal Fire Management Officer, Operations, Catchments and Raw Water should be consulted in relation to any planned burns.



## 3.10. Water sampling

Undertaking water sampling, in which the sample tap is flamed, does not require a hot work permit, provided the sample point is surrounded by an adequately cleared area to minimise fire risks. As a minimum, a risk assessment/SWMS must be completed prior to conducting the sampling activity.

Flaming of taps during fire ban periods is not permitted and an alternate method of disinfection must be used.

## 4. Definitions

**Table 1 Example of table caption** 

Term		Definitions		
Leader		Means any Level 1, 2, 3 and 4 Leader with responsibility for managing a functional area of the business, including people management responsibilities within their functional area.		
Worker(s)		<ul> <li>Includes all permanent, temporary, and casual employees of Seqwater, and:</li> <li>vocational and work experience placements</li> <li>volunteers</li> <li>contractors and consultants employed by another entity but temporarily assigned to do work for or on behalf of Seqwater.</li> </ul>		
Competent pers	son	A person who has, through a combination of training, education and experience, acquired knowledge and skills enabling that person to perform a specific task correctly.		
Designated hot work zone		An area specifically configured and provisioned for the safe undertaking of hot work e.g., workshops or a temporary facility that meets the requirements of section 4.4 of this procedure.		
Fire ban		A ban imposed during a period when conditions are such that fires would ignite easier, be difficult to control and pose a danger to communities.  Fire bans are issued by Queensland Fire and Emergency Service (QFES) and can be determined by calling the Fire Ban Information Line on 1800 020 440.		
Australia Fire Danger Rating System (AFDRS)		<ul> <li>For your survival, leave bushfire risk areas</li> <li>If a fire starts to take hold, lives are likely to be lost</li> <li>These are the most dangerous conditions for a fire.</li> <li>Your life may depend on the decisions you make, even before there is a fire.</li> <li>For your survival, do not be in bushfire risk areas.</li> <li>Stay safe by going to a safer location early in the morning or the night before.</li> </ul>		
		<ul> <li>If a fire starts and takes hold, lives and properties are likely to be lost.</li> <li>Homes cannot withstand fires in these conditions. You may not be able to leave, and help may not be available.</li> </ul>		



Term		Definitions		
	Extreme	<b>Take Action Now</b> to protect your life and property  Fires will spread quickly and be extremely dangerous		
		<ul> <li>These are dangerous fire conditions.</li> </ul>		
		<ul> <li>Check your bushfire plan and make sure your property is fire ready.</li> </ul>		
		<ul> <li>If a fire starts, take immediate action.</li> </ul>		
		<ul> <li>If you and your property are not prepared to the highest level, go to a safer location well before the fire impacts.</li> </ul>		
		Reconsider travel through bushfire risk areas.		
	High	Be Ready to Act		
	J	Fires can be dangerous		
		Decide what you will do if a fire starts.		
		There's a heightened risk. Be alert for fires in your area.		
		If a fire starts, your life and property may be at risk. The safest option is to avoid bushfire risk areas.		
	Moderate	Plan and Prepare		
		Most fires can be controlled		
		Stay up to date and be ready to act if there is a fire.		
Fire watch		A person who is designated to watch the work area for the duration of the hot work activities and maintain a watch on the area for a minimum of 30 minutes after the cessation of the hot work activities.		
Hazard		A situation that has the potential to harm a person and/or the environment and/or damage property.		
Hazardous area	a	A location in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions e.g., presence of vapours or gases, combustible liquids, dusts or fibres, or other flammable or explosive materials.		
Hot work		Any process involving grinding, welding, brazing, oxy cutting, heat treatment or any other similar process that generates heat or continuous streams of sparks (uncontrolled heat).		
		Note: the use of Bunsen burners in a laboratory environment, tap flaming for water sampling or use of gas BBQ (controlled heat) is not considered hot work.		
Hot work area		The area within a radius of 15m from the point where the hot work is to be undertaken, including the space above and below that area should be made safe by various techniques, preparation and testing, to ensure that any risk of fire or explosion resulting from the hot work is controlled.		
Hot work perm	it	A document that defines the details of the hot work to be undertaken, the fire rating in place at the time of the hot work and defines the controls implemented to undertake the hot work in a safe manner.		

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Term	Definitions	
Ignition source	A source of energy sufficient to ignite a flammable atmosphere.  Includes, but not limited to naked flames, smoking, exposed incandescent material, electrical welding arcs and electrical or mechanical equipment not certified for use in the hazardous area zone, build-up of static electricity, spark generating equipment.	
Safe Work Method Statement	A method of identifying hazards, risks, implementing control measures and providing a safe system of work.	
Line supervisor	A line supervisor is a person with day-to-day supervisory responsibilities for workers within a functional area of the business. A line supervisor includes, but is not limited to, team leaders, coordinators and level 4 or 5 supervisors. line supervisor is also considered a worker but has additional responsibilitie for the implementation of the HSW management system as identified in the HSW management system and/or position description.	
Manager	A person with the responsibilities for managing a functional area of the business including the workers within the relevant functional area. This includes, but is not limited to, Level 3 managers, general managers and project managers. A manager is also considered a worker; however, managers may have additional responsibilities for implementation of the HSW management system as well as any additional responsibilities as an officer of the business.	
Permit recipient	The person who is responsible for the hot work and completes the relevant sections of the hot work permit. They must be a competent person to undertake hot work.	
Planned burn	Reduces the amount of ground vegetation to decrease risk of bushfires.	
Risk	Risk is the likelihood and consequence of injury or harm occurring when exposed to a hazard.	
Risk control	Means taking action to eliminate health and safety risks so far as is reasonably practicable, and if that is not possible, minimising the risks so far as is reasonably practicable. Eliminating a hazard will also eliminate any risks associated with that hazard.	
Work Coordinator	The competent person who reviews section 2 of the hot work permit and verifies that the documented controls are in place and appropriate for controlling the hazards of hot work.	



## 5. Roles and Responsibilities

Role	Responsibility
General Manager	<ul> <li>Review risk controls to ensure work is safe to proceed when Australia Fire Danger Rating System (AFDRS) is Catastrophic, and work must proceed</li> </ul>
Level 3 Manager	<ul> <li>Review risk controls to ensure work is safe to proceed when Australia Fire Danger Rating System (AFDRS) is Extreme, and work must proceed</li> </ul>
Level 4 Leader	<ul> <li>Approve designated hot work areas.</li> <li>Liaise with appropriate authorities to determine if hot work can be conducted during a fire ban in emergency situations.</li> <li>Review risk controls to ensure work is safe to proceed when Australia Fire Danger Rating System (AFDRS) is High, and work must proceed</li> </ul>
Line Supervisors	<ul> <li>Review risk controls to ensure work is safe to proceed when Australia Fire Danger Rating System (AFDRS) is Moderate, and work must proceed</li> <li>Ensure workers and contractors are aware of this procedure.</li> <li>Check that workers and contractors are complying with this procedure via routine inspections.</li> <li>Identify permit recipients and assess their competency for hot work.</li> </ul>
Permit Recipient	<ul> <li>Complete relevant sections of the hot work permit.</li> <li>Check if any fire bans are in place to determine if manager approval is required to undertake hot work.</li> <li>Check the fire danger rating index to determine if line supervisor approval is required to undertake hot work.</li> <li>Select, document and implement appropriate risk controls prior to commencing hot work.</li> <li>Ensure all workers undertaking the task have read and understand the conditions of the hot work permit (and any associated SWMS or Take 5).</li> <li>Ensure that hot work has been completed in accordance with the requirements of the hot work permit and that the work area and equipment has been left in a safe condition.</li> <li>Ensure appropriate risk controls are selected, documented and implemented for post hot work monitoring.</li> </ul>
Work Coordinator	<ul> <li>Verify that the risk control measures defined in section 2 of the hot work permit are implemented prior to commencing hot work.</li> <li>Verify that the post hot work risk control measures are appropriate for the work being undertaken.</li> <li>Complete the hold point for hot work in section 3 of the hot work permit.</li> </ul>
Worker	<ul> <li>Comply with the requirements of the hot work procedure.</li> <li>Comply with the requirements of any hot work permits and the SWMS / Take5 associated with the activity.</li> </ul>

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## 6. Training and Competency

Requirement	Description	Refresher Timeframe	Target Audience
Competency in the use of welding equipment	Trade certificate	Nil	Employees interacting with welding

## 7. References and Related Materials

## 7.1. Legal and other requirements

Description	Location
Work Health and Safety Act 2011	Internet
Work Health and Safety Regulation 2011 (Qld)	Internet
Fire and Emergency Services Act 1990	Internet
How to Manage Work Health and Safety Risks Code of Practice 2011 (Qld)	Internet
Confined Spaces Code of Practice 2021	Internet
Welding Processes Code of Practice 2013	Internet
AS 1940: The storage and handling of flammable and combustible liquids	Internet
AS/NZS 2865: Safe working in confined space	Internet
AS 1674.1: Safety in welding and allied processes – Fire precautions	Internet



## 7.2. Seqwater procedures and supporting documents

HSW Procedures	HSW Other documents	Other documents
PRO-00443 Confined Space Management Procedure PRO-00657 Hazard Identification and Risk Management Procedure	HSW - Take5 GDE-00317 WHS Site Hazard Register Template TEM-00023 Critical Control Handbook MAN-00313 Designated Hot Work Zone Assessment Checklist FRM-00705 Designated Hot Work Zone Register REG-00616 Combined Generic SWMS RSK-00481 Hot Work Permit Form FRM-00040 PRO-00002 Management System Audit and Assurance Procedure Safe Work Method Statement (SWMS) Template TEM-00013	PRO-00002 Management System Audit and Assurance Procedure PRO-01574 Training and Competency Management Procedure