STANDARD
HOT WORK

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1 Purpose

This document describes the standards and procedures within Hunter Water Corporation (HWC) to effectively manage risks associated with hot work. It represents the HWC Workplace Health and Safety (WHS) Management System's commitment to compliance with the NSW WHS Act and WHS Regulation.

2 Objectives

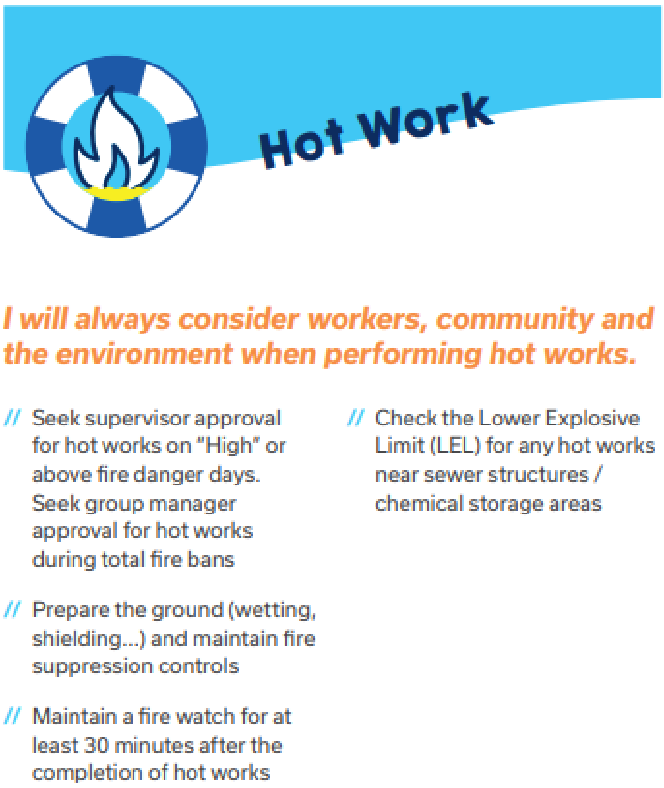
The objectives of this standard are to ensure that all areas, functions, and work processes that may have a Hot Work risk are effectively managed to ensure the health and safety of Hunter Water people, contractors, and the general public.

3 Scope

This Standard applies to all Hunter Water Business Units. This standard covers the requirements associated with Hot Work within HWC.

4 Lifesavers

The Hunter Water Lifesavers are a set of minimum behaviours related to high-risk activities.



5 Definitions

Term	Definition
Risk Observations (RO)	An RO tool is an observation checklist written for each Risk Standard. The RO process has leaders complete scheduled observations and reinforce the critical elements of the RS. The process provides positive reinforcement and correct feedback to the observed and builds the leader's capability to conduct the observation.
Designated Hot Work Area	Hunter Water may deem areas as “designated hot work areas,” where hot work risks are adequately controlled and there are no ignition sources in the vicinity (e.g., Tomago Workshop). Hot work permits are not necessary for these areas.
Risk Standards (RS)	The Risk Standards are a Water Services Association Australia (WSAA) initiative to collectively identify the industry fatality potential topics and identify the critical controls (i.e., “must do’s, golden rules, critical elements”) to provide clarity to workers and leaders on the controls that will prevent fatality.
Hazard	A situation that can harm a person and the environment and damage property.
Hierarchy of controls	Identify the risk control actions and responsibilities by identifying controls in the following specific order: ▪ Eliminate the hazards If elimination of the hazard is not reasonably practicable, minimise the risk so far as reasonably practicable by: ▪ Substituting (wholly or partly) the hazard giving rise to the risk with something that gives rise to a lesser risk ▪ Isolating the hazard from any person exposed to it ▪ Implementing engineering controls ▪ Administrative controls ▪ Personal protective equipment (PPE) The aim should be to apply controls as far up the hierarchy as practicable, recognising that the residual risk rating should be reduced to as low as reasonably practicable or to a tolerable level for work to proceed. Multiple controls should be considered, offering several layers of defence. Whenever there is a firm reliance on administrative and PPE over higher-order controls, there should be increased levels of supervision.
Hot Work	Hot work is any process that can be a source of ignition when flammable material is present or a fire hazard, regardless of the presence of combustible material in the workplace. Standard hot work processes are welding, soldering, cutting, and brazing. When flammable materials are present, industrial processes such as grinding and drilling become hot work processes.
Incident	An event or circumstance that could have or did lead to unintended and unnecessary harm to a person and loss or damage or adverse consequences. This definition of an incident includes near misses.
Manager	A person is responsible for managing a functional area of the business, including the workers within the relevant functional area.

Term	Definition
	This includes, but is not limited to, Group Managers, Business Unit Managers, Department Managers, and Project Managers. A manager is also considered a worker; however, managers may have additional responsibilities for implementing the WHS Management System and any other duties as an officer of the business.
Non-Designated Hot Work Area	All areas, excluding Designated Hot work areas. A hot work permit shall be completed before hot work activities go ahead.
Personal Protective Equipment (PPE)	Any clothing, equipment, or substance designed to protect a person from risks of injury or illness.
PCBU	A 'person conducting a business or undertaking' (PCBU) is a legal term under WHS laws for individuals, businesses or organisations conducting business. A person who performs work for a PCBU is considered a worker.
Reasonably practicable	The following criteria must be applied in determining what is reasonably practicable: ▪ What the person knows or ought to reasonably know about the hazard and ways of eliminating or minimising the hazard ▪ Availability and suitability of ways of eliminating or minimising the hazard The cost associated with the availability and suitability of ways of eliminating or minimising the hazard, considering the cost if it is grossly disproportionate to the risk.
Risk	Risk is the likelihood and consequence of injury or harm when exposed to a hazard.
Risk Control	This means acting to eliminate health and safety risks so far as is reasonably practicable and, if that is not possible, minimizing the risks so far as is reasonably practicable. Eliminating a hazard will also eliminate any risks associated with that hazard.

6 Roles and Responsibilities

Roles and Responsibilities can be located in the WHSMA Manual.

Individual guidance booklets are in the Responsibility, Accountability, and Authority Manual HW2021-534.

7 General Requirements

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

- Heat, open flames or flying sparks that ignite flammable materials, gases, vapours, or combustible materials
- The hot work activity produces toxic fumes and gases
- The hot work activity leads to physical burns
- Hot work activity leading to an explosion or fire

Managing the risks associated with hot work is critical in maintaining a safe workplace.

7.1 Duration of Hot Work Zone

The duration of a hot work permit must not exceed one shift (or 12 hours maximum). If the hot work extends past 12 hours, the work environment, equipment, and conditions must be reviewed, and a new permit must be issued.

7.2 Designated hot work zone

Some work areas may be deemed as designated work areas. This means that the area has been risk assessed, is designed specifically for hot work, has permanent controls in place, and a manager has signed off/approved the area as a designated hot work area.

Designated hot work areas must have the following controls in place:

- Fire suppression equipment must be available, i.e., water hose and supply, fire blanket, appropriate fire extinguishers or sprinklers
- Fit-for-purpose furnishings, e.g. no wooden/flammable furniture
- Appropriate screens/barricades 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 area
- Safe access and egress from the designated hot work area

7.3 Hot work in hazardous areas

An explosive atmosphere may be expected in a hazardous hot work area. Hot work in dangerous areas requires special precautions before it can be undertaken.

Examples of hazardous hot work areas include:

- Confined spaces
- Flammable liquid and gas storage tanks and associated equipment (e.g., release points such as vents, fill points, dip points, and 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, store rooms, 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 adequately decontaminated

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

The SWMS must be developed with the relevant operational procedure for the hazardous area, for example, the Confined Space Management Procedure, to ensure all hazards are assessed and appropriate risk controls implemented.

8 Key Elements – Managing the Risks Associated with Hot Work

8.1 Eliminating the task or reducing the risk of the task

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

Hot work can be avoided or the risk reduced by considering the following:

- Relocating the task to a designated hot work area
- Cold metal cutting equipment
- Threaded pipe fittings instead of soldering
- Mechanical fixings/chemical bonding of materials instead of welding
- Postponing the job until conditions are safer, e.g., when no fire bans are in place

8.2 Identification of Hot Work

Hot work is any process that can be a source of ignition when flammable material is present or a fire hazard, regardless of the presence of combustible material in the workplace. Standard hot work processes are welding, soldering, cutting, and brazing when flammable materials are present (such as dry grass, gas, paper, etc.), and industrial processes such as grinding and drilling become hot work processes.

For this standard, planned burns, Bunsen burners in laboratories, and using a gas BBQ are not considered Hot Work.

8.3 Controlling Hot Work risks

A permit shall be completed before all hot work tasks and available at the site during the task. A fire watcher must be in place for the duration of the hot work and a minimum of 30 minutes after the cessation of the hot work. Where appropriate (i.e., clear line of sight), the fire watcher may be the person conducting the task. At least one form of proper fire suppression equipment must be available.

Risk reduction controls that should also be considered are:

- Removing all flammable liquids/substances within the hot work area
- Remove, cover, shield, or wet all combustible materials, including vegetation within the hot work area
- Cover drains and other openings in the hot work area for the duration of the hot work

Examples of risk control measures to be implemented when undertaking hot work in hazardous areas 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 before cutting/welding, and preferably filled 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 manufacturer's instructions maintain equipment used in handling flammable hazardous chemicals
- Checking that the work area is free from rubbish, paper, or dust that could be potential fuel sources or produce dust explosions.

9 Training

Workers participating in hot work activities must be competent in:

- 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
- First aid standards
- How to access and interpret Safety Data Sheets (SDS) for hazardous chemicals

In addition, the following competencies 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.

10 Monitoring and Review

Monitoring processes for this topic include:

- High Risk Audits
- Critical Element Focussed Observations
- Safet Behaviour Observations
- Field Interactions

Review processes for this topic include:

- Review of applicable injury and incident reports
- Review of hazard reports in Integrum
- Review of this standard and associated documents, Risk Register, Bow Tie diagrams following a high potential incident
- Engagement with the Field Safety Committee and any relevant sub-committees.

11 Related Documents

Document ID	Document Title
Assessment	Pre-Task Risk Assessment PTRA
Standard	Consultation, Cooperation, Participation and Coordination
SWMS	Hunter Water SWMS – Hot Work
SWMS	Hunter Water SWMS – Confined Space
Standard	Confined Space

12 Associated Regulations and Standards

Document ID	Document Title
Act	WHS Act 2011 (NSW)
Regulation	WHS Regulation 2017
Code of Practice	Code of Practice – Work Health and Safety Consultation, Cooperation and Coordination
Code of Practice	How to manage work health and safety risks
Code of Practice	Confined Spaces
Code of Practice	Welding Processes
Guidelines	AS 1674.1: Safety in welding and allied processes – Fire precautions
Guidelines	AS 1940: The storage and handling of flammable and combustible liquids
Guidelines	AS/NZS 2865: Safe working in a confined space