Hot Work and Fire Management

Couple of takeaways

- Hot work refers to any work that has the potential to generate an ignition source such as heat, flame or sparks. This includes welding, cutting and grinding, amongst others
- Possible hazards associated with hot work include fire, explosion, burns, toxic fumes/gases or depleted oxygen.
- Outside designated areas, hot work needs to be planned. This includes issuing hot work permits and being aware of local fire authority and government restrictions or requirements and being prepared to respond to an emergency.
- Tools and equipment used for hot work must be inspected and in good condition prior to undertaking the work.

What is this procedure for?

This procedure describes how work activities that have the potential to create an ignition source are managed across the Hydro Tasmania group. Such activities include, but are not limited to:

- Oxy-acetylene cutting
- Arc welding, brazing or soldering
- Heat gun operation
- Grinding
- Planned burning and fires

While the use of engines and machines are not considered hot work, this procedure covers the controls for this work on total fire ban days and fire permit periods. This procedure is not applicable to the recreational use of land and facilities as this information is available on the Hydro Tasmania group internet site.

How do we plan for tasks involving hot work?

The first step in planning to perform tasks involving hot work is to identify the hazards and risks associated with the work. Hot work presents a number of risks including:

- Exposure to toxic fumes or gases
- Burns to people from contact
- Fire from ignition source
- Depletion of oxygen levels in the atmosphere
- Explosion.

Following identification of the hazards and risks, the next step is to work through the hierarchy of control, from the strongest tier to the least, to identify measures that may be implemented to reduce the risks related to the work. Examples of these controls include:

Elimination

Using pre-fabricated components that eliminate the need for welding or cutting

Substitution

Using threaded fittings instead of soldering or welding

Using hydraulic shears instead of torch cutting

Using cold metal cutting equipment

Isolation

Perform the work in a designated hot work area

Using flame proof sheeting or screens to isolate the hot work

Storing flammables/combustibles away from hot work areas

Engineering

Using ventilation systems to remove welding fumes

Using gas monitors to monitor for flammable atmospheres

Ensuring firefighting equipment is checked and available for use

Administration

Using hot work permits to ensure relevant controls are in place prior to conducting hot work

Checking equipment and gas cylinders for damage before use

Local fire authority and government requirements and permits

Monitoring weather conditions

Personal protective Equipment (PPE)

Using ventilated welding hoods and heat and spark resistant clothing during welding.

Where and when can hot work be done?

- Where possible, hot work should only be conducted within a designated hot work area. Designated hot work areas are work areas specifically identified and established for conducting hot work and approved by the Asset Owner, Project Manager or equivalent. As a minimum, the following must be in place within a designated hot work area:
  - Fire suppression equipment must be available
  - Fit for purpose furnishings e.g. no wooden or 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 area
  - Safe access and egress from the designated hot work area.
- Hot work performed outside of a designated hot work area requires a permit issued by a Permit Approver.

Hot Work Permits

- Hot work permits are to be issued for all work involving hot work conducted outside of a designated hot work area.
- Hot work permits should be completed by the person conducting the work and identify how each of the mandatory controls within the permit are being applied.
- Where a person conducting hot work is unfamiliar with the area the work is being conducted or the risks specific to that area, they should consult with a local subject matter expert when completing the hot work permit
- A hot work permit is to be issued for a specified period of time and identified on the permit. The duration of the permit should take into account the scope of work, location, forecast weather conditions and other risk based considerations. This should not exceed 1 week.

Where there is a higher risk, such as high fire danger or other conditions favouring a fire, the permit should not exceed more than 1 day.

- A **fire safety observer** must be appointed to monitor the hot work activity and for a minimum of 30 minutes on completion of the task. This time may be extended for areas with high fuel loads or where a deep-seated fire could develop. The person conducting the work may act in the role of **fire safety observer** where the hot work is assessed as low risk due to the nature and location of the work, and the area of impact of the hot work is easily monitored by one person. (e.g. use of a heat gun or minor soldering work within a control panel). When conducting hot work where sparks or other ignition sources are not able to be effectively monitored by the person conducting the work then a separate **fire safety observer** is required.

All hot work permits are to be authorised by a **Permit Approver**. The Permit Approver is any person with an understanding of the risks associated with the hot work and how to apply relevant controls to complete the work safely. The permit approver should not be the person who prepares the hot work permit for approval.

When issuing the permit, the **Permit Approver** is responsible for ensuring that:

- The hot work will not impact on other work on site
- The workers performing the work have the required competencies for the task
- Risks associated with the work have been adequately controlled
- Workers performing the work sign on and off the hot work permit
- Hot Work in open air areas is not permitted on days of a Total Fire Ban
- **The area coordinator** has approved any planned burning

Persons conducting work under a hot work permit must:

- Ensure all workers are familiar with the fire evacuation plan for the area
- Communicate with other work parties that may be affected by the hot work
- Ensure all controls identified in the permit are in place and effective
- Ensure appropriate fire-fighting resources are available, serviced and in date.
- Ensure a fire safety observer has been appointed.

High Fire Danger and Total Fire Bans

In addition to the requirements outlined within this procedure, directions and notices issued by local fire services must be followed at all times.

At times of high fire danger, all open air hot work and the operation of chainsaws, brush cutters and mobile plant operating in close proximity to dry vegetation, shall only occur if urgently required and a detailed risk assessment has been completed.

On days of a total fire ban, all Hot Work Permits issued for open air locations will be cancelled and hot work shall only occur within enclosed areas or designated hot work areas. The operation of machinery, vehicles, engines and heat producing equipment shall follow local fire service directions.

Emergency hot work can only occur on total fire ban days with authority from the local fire service.

If using engines, vehicles, equipment or machinery near dry vegetation or combustible materials, the Tasmania Fire Service recommends monitoring temperature, humidity and wind speed to determine when operations should cease.

What are the additional requirements for equipment?

General Requirements

- All equipment to be inspected prior to use to ensure it is fit for purpose and free from defects.
- Appropriate PPE for the task to be worn.
- Keep area clean and free of grease, oil and any flammable materials

Welding Equipment

- All welders are to have a voltage reduction device (VRD) or manual trigger switch fitted.
- DC welders are preferred over AC welders.
- Welding screens should be used to protect other workers from welding flash.

Oxyacetylene Equipment

- All Oxyacetylene units are to be fitted with working flashback arresters.
- Flashback arresters are to be tested or replaced at least every 12 months or in the event of a flashback occurring.
- Avoid using Oxyacetylene units in confined spaces. Where unavoidable the gas bottles should remain outside of the confined space.
- Ensure work area is well ventilated and use fume extraction where available.

Grinding Equipment

- Angle grinders larger than 7 inches are to be used for grinding only and are not to be used for cutting.
- Guarding and other safety features must be in place and in good working condition.
- Ensure grinding and cutting disks are in good condition and use the correct disk for the task.
- Double eye protection (high impact face protection and medium impact eye protection) to be worn when grinding or cutting.
- Grinders with a soft start and "dead-man" switch are preferred
- Ensure electrical leads are removed from the power outlet or battery is removed prior to changing discs

What are the requirements for fires, BBQs and heaters?

Open Fires (campfire or drum)

Open fires are not to be lit across Hydro Tasmania group work sites unless all the conditions of a hot work permit, including a full time fire safety observer, can be met.

Planned Burning *(Tasmania only – other jurisdictions should consult with their local fire authority for specific requirements)*

Planned burning for the purposes of vegetation management must be done in accordance with the requirements of the Tasmanian Fire Service (TFS). Burns larger than two hectares require a burn plan, approval from the TFS Permit Officer and communication via the Hydro Tasmania Global Communication. Burns smaller than two hectares will still be required to register the burn with the TFS. All planned vegetation burning will require a SWMS and hot work permit with additional approval from the relevant Hydro Production Area Coordinator.

BBQ's and Gas Heaters

BBQ's and Gas Heaters do not require a hot work permit, however operators should ensure they are used in a well ventilated area and that their use is in line with local fire authority requirements. BBQ's must be clean and in good condition, operated in an area clear of combustibles and have fire-fighting resources available, serviced and in date.

What training is required?

- Persons conducting hot works should have the relevant skills, knowledge and/or experience for the task being performed.
- A fire safety observer should have an understanding of the fire risks associated with the task and know how to select and operate fire-fighting equipment.

How do we manage emergencies or incidents?

Emergency considerations should be identified prior to the hot work occurring. This may form part of the site hazard register for designated hot work zones, or the Hot Work permit for all other hot work.

Where an emergency or incident occurs, the site incident response plan should be activated.

Fire response should include calling 000 and, if safe to do so, extinguishing the fire and minimising spread.