



## Hot Work Procedure

### Power and Water Corporate Procedure

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### 1 Purpose

- 1.1 The purpose of this procedure is to ensure hazards are identified and appropriate controls are put in place prior to and during hot works being carried out.

### 2 Scope

- 2.1 This procedure shall apply to all Power and Water Corporation employees and contractors who carry out hot work on any plant or equipment or area that contains or has contained a flammable, combustible or explosive atmospheres including in a confined space, but excluding those works that are completed in the workshop.

### 3 References

- 3.1 Australia Standards AS 1674.1 – 1997 Safety in welding and allied processes Part 1: Fire precautions.
- 3.2 Northern Territory of Australia, 2003, *Work Health (Occupational Health and Safety) Regulation*, Government Printer, Darwin

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3.3 Job Safety and Environment Analysis Work Instruction

3.4 Low Voltage and Mechanical Isolation and Tagging Procedure

## 4 Roles and Responsibilities

<b>Role / Title</b>	<b>Responsibility</b>
Managing Director	<ul style="list-style-type: none"><li>• Authorises procedure.</li></ul>
Business Unit General Manager	<ul style="list-style-type: none"><li>• As a member of the EMC recommends approval by MD.</li><li>• Ensures the rollout of this procedure has occurred with the Business Unit.</li></ul>
Business Unit Manager	<ul style="list-style-type: none"><li>• Ensures that this procedure is accessible and complied with.</li></ul>
Coordinators, Team Leaders, Contract Supervisors	<ul style="list-style-type: none"><li>• Ensures all employees or contractors who require to undertake hot works in hazardous area's have been issued with a copy of this procedure.</li><li>• Ensure all employees or contractors comply with this procedure.</li><li>• Ensure all employees or contractors involved in Hot Work in hazardous area's have been instructed in the use of the Hot Work Permit.</li></ul>
Employees or Contractors	<ul style="list-style-type: none"><li>• All employees or contractors read and understand this procedure before carrying out hot works in hazardous area's.</li><li>• All employees or contractors shall use a HWP before carrying out any hot works in hazardous area's.</li></ul>
Permit Issuing Officer	<ul style="list-style-type: none"><li>• Issues the HWP to the Work Party.</li><li>• Ensures risk assessment carried out and controls in place.</li></ul>
Safety Observer	<ul style="list-style-type: none"><li>• Conducts continuous inspections in the vicinity of hot works in hazardous area's.</li></ul>

## 2 Definitions

Where terms or words are not included in the definitions section, refer to Power and Water's Glossary for clarification. The glossary is available on Power and Water's intranet.

**Word**

**Definition**

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Closed loop	In relation to pipe work, the internal enclosure is isolated from the outside atmosphere by either an isolation valve or capped.
Competent person	A person having acquired the means through training, qualification or experience, or a combination of these, the knowledge and skills enabling that person to competently perform the task required.
Fire Watch	A continuous and thorough inspection and presence in the area and vicinity of hot works by assigned personnel.
Flashback arrester	A device that prevents the flame or flash back to the regulators fitted to gas cylinders.
Gas Test	A test for the presence of flammable gas and flammable vapour.
Flammable Atmosphere	A mixture with air under atmospheric conditions, of flammable materials in the form of gas, vapour or mist which will ignite if in contact with an ignition source.
Hazardous Area	An area in which flammable liquids, vapours or gases, combustible liquids, dust or fibres, or other flammable or explosive substances may be present.
Hot Work	Grinding, welding, thermal or oxygen cutting or heating, and other related heat producing or spark producing operations.
Hot Work Permit (HWP)	The HWP is a formal written document that allows the work party identified on the HWP to carry out hot works in a safe manner in a flammable area.
Ignition Source	A source of energy sufficient to ignite a flammable atmosphere. Such sources include but not limited to flames, incandescent material, electrical spark, hot surfaces and mechanical sparks.
Job Safety Environment Analysis (JSEA)	A hazard identification and control process that breaks a task/activity into manageable steps, identifies the risk associated with each step and documents the control measures to be used whilst performing the task/activity
Lower Explosive Limit (LEL)	In relation to a flammable contaminant, the concentration of the contaminant in air below which the propagation of a flame does not occur on contact with an ignition source.
Permit Issuing Officer	See responsible officer
P Trap	A receptacle that uses water to maintain a seal to prevent odour escaping from the plumbing system or sewage system.

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Responsible officer	A person having satisfactory knowledge of the fire, explosion and toxicity hazards associated with hot work in hazardous areas and who is adequately trained and experienced in the testing procedures and precautions necessary for the elimination of any risk involved.
Work Party	Authorised and competent personnel carrying out hot work either PWC employee or a contractor

### **3 Records**

- 3.1 Completed Hot Work Permit
- 3.2 Completed Job Safety Analysis Form

### **4 Attachments**

- 4.1 Hot Work Permit.

### **5 Risk Assessment**

- 5.1 A risk assessment shall be undertaken by a competent person/s before any activity involving hot works is carried out. Performing a job safety analysis (JSEA) shall comply with the requirement of a risk assessment. The JSEA is used to identify, assess and analyse hazards and risks associated with work activities, and the subsequent implementation of control measure to prevent loss in the workplace. The Job Safety and Environment Analysis Work Instruction shall be used for this purpose.
- 5.2 The risk assessment shall be revised whenever there is evidence to indicate that the hazards associated with the hot works have changed.

### **6 Site set up**

- 6.1 An area of 15 metre radius from where the hot works are to be undertaken, including above and below shall be made safe, to ensure that any risk of fire or explosion from hot works is eliminated.
- 6.2 Ensure the site is properly ventilated and has a safe entry and exit area.
- 6.3 Any combustible material that cannot be removed must be covered with a non- flammable cover. Any spills or oily surfaces should be cleaned and covered over by sand.
- 6.4 Sewers, drain or pits should be covered with wet sandbags, to prevent any vapours from escaping. Ensure that sewers and drains fitted with p-traps that the baffle is below water level.
- 6.5 All persons associated with the hot works in a hazardous area shall be conversant with this procedure and all precautions to be taken on the HWP and with any special safety requirements on site.

### **7 Isolation**

- 7.1 Any isolation should be carried out in accordance with the Low Voltage and Mechanical Isolation and Tagging Procedure.
- 7.2 Any pipe - work, tanks, valves or associated equipment that may carry flammable vapours, gases or liquids in the hot work area should be positively isolated, to avoid inadvertent release into the hot work area.

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- 7.3 Ensure proper venting points are opened to the atmosphere to avoid trapped pressure explosion when working on closed loop pipe work.
- 7.4 Pipes, containers and enclosures should be sufficiently purged before any works are carried out.
- 7.5 The HWP will identify if fire protection systems require isolating from the fire panel.
- 7.6 For the Generation Business Unit any work carried out under a Power Station "permit to work" system will conduct isolation in accordance with their own procedures.

## 8 Gas Testing

- 8.1 A gas test is required when hot works are to be carried out in a hazardous area that contains or has contained a flammable gas, vapour, solid or liquid.
- 8.2 Testing for the presence of any flammable gas or vapours shall take place as late as practical before the commencement of hot works but no longer than 2 hours before. This includes continuous testing at all potential sources
- 8.3 The concentration of any flammable gas or vapours shall not be more than 5% of its lower explosion limit (LEL).
- 8.4 The test instrument shall have current calibration, which shall be displayed on the unit. The instrument type, serial number and date of calibration due shall be recorded on the HWP.
- 8.5 The manufactures instructions of use and maintenance shall be followed for the test equipment.
- 8.6 A person who is competent in the use of the equipment shall carry out the testing.

## 9 Safety Observer and Fire Protection

- 9.1 A fire watch and/or safety observer shall be appointed when determined in conjunction with the risk assessment on the on the HWP. The safety observer shall carry out a fire watch on site, which will be a continuous and thorough inspection of the hot work area; the observer shall not leave the job site unless a replacement is made.
- 9.2 Fire fighting equipment should be readily available and accessible in the hot work area. Personnel should be competent in the selection and use of equipment.
- 9.3 The safety observer is to immediately stop any works and withdraw the HWP if a hazardous condition is observed.

## 10 Equipment

- 10.1 All equipment shall be used in accordance with the manufacture's recommendations and maintained in good working order.
- 10.2 Any electrical equipment shall be intrinsically safe if used in an area that has contained flammable vapour, gas or substances.
- 10.3 Flash back arresters shall be fitted on gas cutting equipment.

## 11 Hot Work Permit

- 11.1 A HWP is issued when hot works is to be carried out in a hazardous area or confined space that contains or has contained a flammable gas, vapour, solid or liquid
- 11.2 The HWP is a formal written authorisation required by PWC that allows a person to carry out hot works in a hazardous area. The Work Party shall complete the HWP and the Operator shall

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endorse and issue the permit.

- 11.3 The HWP records all the identified hazards and also records the result of gas testing which has been conducted before any hot works are conducted.
- 11.4 Hot works shall only be conducted during the period stated on the permit and the HWP is only valid for a maximum of 8 hours.
- 11.5 The HWP shall be cancelled if conditions change or an incident occurs.
- 11.6 A new HWP shall be issued if work has ceased for more than 2 hours or the work extends past 8 hours.

## **12 Conducting Work**

- 12.1 All works shall be carried with the control measure in place as stated on the HWP.
- 12.2 Welders working in hazardous area's shall not work alone and shall be provided with any assistance necessary.

## **13 Completion of job**

- 13.1 On completion of hot works a thorough inspection of the job site and surrounds shall be carried out to ensure it is safe and free of any smouldering remains.
- 13.2 Ensure all control measures have been removed and any fire protection equipment that had been isolated has been restored to normal operating conditions and any fire fighting equipment returned to it's usual storage area in an operational condition.