


STANDARD OPERATING INSTRUCTION	SOI-GVW-316
Safe Operation of Hot Work Activities	

1.0 Purpose

To ensure the safety of employees and contractors engaged in carrying out Hot Work activities including:

- Burning of Vegetation;
- All forms of Welding and Gas Cutting;
- All forms of Grinding and Abrasive Cutting;
- Use of a flame or blow torch (for disinfection and other tasks);
- Use of an ignition source in high hazard areas;
- Use of portable and mobile plant and equipment.

This SOI applies during:

- a. The High Fire Danger Period,
- b. Total Fire Ban Days,
- c. The non Fire Danger Period.

2.0 References

- OH&S Act 1985.
- Australian Standard AS 1674.1, “Safety in welding and allied processes”.
- Country Fire Authority – “Can or I Can’t I” fire danger information.
- Australian Standard AS 1940, “The storage and handling of flammable and combustible liquids”.
- Australian Standard AS 2430 – “Classification of Hazardous Areas”.
- CFA, Section 40 Total Fire Ban Permit for Emergency Works

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 1 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

3.0 Definitions

High Fire Danger Period – Fire restrictions are usually in force from 1 November to 30 April (these may vary and extensions to seasons may occur due to weather conditions). The restrictions cover range of activities including: all forms of welding, grinding, lighting of fires, and use of some portable and mobile machinery in open areas.

Total Fire Ban Day – A Total fire ban may be declared on days when the danger of fires occurring is extremely high. Total Fire Ban days prohibit the lighting of any naked flame out in the open air as well as carrying out of welding, grinding, soldering or gas cutting without a special permit.

Non Fire Danger Period – this term is a GVW term for the season (usually 1 April – 1 November) outside the High Fire Danger Period. Total Fire Ban Days may be proclaimed at any time during the year where there is an extreme fire danger.

Hot Work Permit - A Hot Work Permit is a documented permit system which is completed by the works coordinator or site supervisor where prescribed Hot Works are undertaken (see Purpose above for general definition of Hot Works). The permit assists to ensure work is planned and takes into account potential hazards associated with hot work activities.

Firewatcher – A person assigned to be continuously alert of any fire outbreak and take immediate action to combat any outbreak that may occur. The firewatcher also has a responsibility to ensure works remain within the area specified on a Hot Work Permit immediately stop work and withdraw the Hot Work Permit if a hazardous condition is observed, monitor changes in wind direction and obtain fire extinguishers or other fire protection equipment

4.0 Responsibilities and Authorities

District Manager is responsible for the following:

- ensuring staff members adhere to this procedure
- ensure staff members have received appropriate training in these procedures and in the completion of Hot Work Permits
- Review to ensure Hot Work Permits are completed

Manager Operations is responsible for:

- Applying to the CFA for a permit for the carrying out of grinding, cutting, etc... during emergency works on Total Fire Ban Days
- Assist in undertaking a review of these procedures

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 2 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

Work Coordinator or site supervisor is responsible for the following:

- Monitoring to ensure Hot Work Permits are correctly completed;
- Ensuring Hot Work Permits are kept on file for 30 days;
- Monitoring staff members to ensure they follow these procedures
- Completing Hot Work Permits where required

Operators and Site Supervisor is responsible for the following:

- Completing Hot Work Permits where required
- Following this procedure
- Reporting faulty or damaged equipment.

OH&S Coordinator is responsible for:

- Coordinating Hot Works training
- Coordinating an audit against this procedure.

5.0 OHS Hazards and Controls

5.1 HAZARDS:

Physical, Plant and Equipment Hazards:	sparks, exhausts, high temperatures
Manual handling:	NIL
Hazardous Materials Hazards:	Flammable Liquids and gases, oxidising agents
Atmospheric Hazards:	NIL
Environmental Hazards:	Combustible materials, high winds, high ambient temperatures

5.2 CONTROLS TO CONSIDER:

Engineering controls:	Spark Arresters
Administrative controls:	Completion of Hot Work Permit
Personal Protective Equipment:	
Other Safety Equipment:	Fire Protection Equipment, Firewatcher

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 3 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

6.0 Preliminaries

6.1 Hot Work Permits – General Requirements

- A hot work permit may only be issued by the site supervisor or work coordinator and must be completed in full before works can commence.
- Each hot work permit may only be completed for a single shift. A new permit is required to be issued for shifts following or when new hot work activities occur or change.
- Records of Hot Work permits must be kept by each district on a local TRIM file for a minimum period of 30 days.

7.0 Specific Precautions

7.1 Carrying out Hot Work inside a Confined Space (All seasons)

- A confined spaces permit to work must be completed which includes the requirements for Hot Work.
- Refer to Confined Spaces procedures for further information.

7.2 Carrying out Hot Works and Introduction of Ignition Sources at High Rate Anaerobic Lagoon (HRAL) Sites Plants (All seasons)

- No person may carry out Hot Works or take an Ignition Source into these sites without a Hot Work Permit being issued (except trained GVW operators [or persons approved by GVW operators] working in Non Hazardous Areas)
- For the purposes of work carried out at HRAL sites an ignition source includes all Hot Work activities listed in the definition for Hot Works as well as the following items:
 - All battery operated devices
 - Watches
 - Hearing aids
 - Mobile Phones
 - Motor Vehicle (s)
 - Remote Control Car Key Devices
 - Cameras
- Only a trained operator who has completed Goulburn Valley Water's HRAL training may issue a Hot Work Permit for carrying out hot works and or introducing an ignition source at HRAL Sites.
- Operators will assess where the works are to take place and determine the relevant Hazardous Area.

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 4 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

- Power operated equipment, including that for welding and grinding, shall not be used in any HRAL hazardous area unless a hot work permit has been issued for that work to proceed. Where a hot work permit allows for the use of power-operated equipment, such equipment shall be suitable for use within the hazardous area (flameproof, intrinsically safe, non static generating - pneumatically driven).

7.3 Carrying out Hot Work in Restricted and Chemical Storage Areas All seasons)

- Before hot work activities are performed inside a chemical storage area a Hot Work Permit must be issued by the Site Supervisor or Work Coordinator who is responsible for the site and has relevant training in respect to chemical handling.
- Careful attention shall be paid to preparation of the work site and plant including:
 - Identifying, depressurizing and disconnection of plant and equipment;
 - Isolation of the plant and equipment from other equipment;
 - Purging of equipment;
 - Removal of nearby hazardous or combustible substances.

7.4 Using Motor Vehicles (All Seasons)

- Vehicle Stone Guards and Bash Plates – These must be regularly checked and cleared of grass and other combustible material which may cause a fire if they become hot.
- Travelling through long grass - Avoid travelling through long dry grass during the high fire danger period as the heat from an exhaust may start a fire. Modern cars with catalytic converters are particularly at risk. Parking in long grass is not permitted.

Where travelling through long dry grass a water knapsack or fire extinguisher with a minimum of 9 litres shall be provided. This must be safely secured and stored on the vehicle and may not be stored unsecured in the cabin area.

- Carting Hay – Diesel trucks carting hay must have a vertical exhaust(s) fitted higher than the cab. The load is required to either be covered or the exhaust fitted with a spark shield.

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 5 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

7.5 Using Mobile Plant (All seasons)

- **Mobile plant items including tractors, harvesters, backhoe / front end loaders** must be fitted with an approved knapsack or equivalent container (i.e. fire extinguisher) filled with at least 9 litres of water.
- **Slashers, Harvesters and Mowers - Operators** should check their equipment and the weather and wind conditions hourly to minimise the risk of starting a fire. Many fires are started when slashers or mowers hit rocks, stones or wire. Always observe any recently slashed area for signs of smouldering grass.
- **All Machinery** must have an Australian Standards approved spark arrestor and shall be free of mechanical defects that could start a fire.

Using Mobile Plant (High Fire Danger Period)

- Where possible avoid using tractors, harvesters, slashers and mowers when the fire risk is high.
- Pay special attention to checking bearing and moving parts for signs of excessive heat.

Using Mobile Plant (Total Fire Ban Days)

- Where possible the use of machinery such as tractors, slashers shall be postponed on Total Fire Ban days.

7.6 Using Chainsaws and Brush-cutters (All seasons)

- Refuelling – Extreme care must be taken to ensure fires are not caused when refuelling machinery including: chainsaws, brush-cutters, portable pumps, generators, etc. Where possible the equipment should be allowed to cool down before carrying out refuelling in an area free of combustible material.

Using Chainsaws and Brush Cutters (High Fire Danger Period)

- The use of portable equipment such as chainsaws and brush-cutters should be carried out with extreme caution.

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 6 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

Using Chainsaws and Brush Cutters (Total Fire Ban days)

- Complete Hot Work Permit
- Chainsaws should only be used for emergency works.
- Brush-cutters shall not be used on Total Fire Ban days

7.7 Carrying out Welding, Grinding, Cutting (and other flame / spark causing activities) inside a workshop (All Seasons)

- Where welding, grinding and other similar activities are carried out inside a workshop the following precautions shall be taken:
 - Identify and control fire hazards including: flammable liquids / gases. vapours or dusts within 15 metres from the welding / grinding.
 - Appropriate barriers or shields must be in placed to minimise welding flash to bystanders or persons entering the area and to reduce sparks.
 - Storage of combustible products (cardboard, paper, etc.) must be kept well away from the welding / grinding area or covered with a non-flammable cover.
 - Rubbish bins, oily rags etc. shall be removed from the area
 - The area shall be provided with adequate fire fighting equipment
 - Flashback arresters shall be fitted to all gas welding kits.

7.8 Carrying out Hot Work on Equipment that has held flammable Substances (All Seasons)

- No Hot Work shall be carried out without first completing a Hot Work Permit after the equipment has been thoroughly cleaned.
- Extreme caution must be taken where carrying out welding, grinding or other hot works on equipment, packages and containers that have held flammable or explosive substances.
- Equipment and Substances which may give rise to a flammable or explosive atmosphere may include:
 - Equipment or Container which contains rotting vegetation or sludge that may form flammable gases or mixtures.
 - Container or Equipment which has contained petroleum products (petrol, diesel)
 - Container or Equipment which has held other flammable liquids or gases (solvents, white spirit, solvent based paints and varnishes, etc...);

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 7 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

- Metal equipment which has contained an acid or alkaline (base) material and hydrogen has been generated;
 - Container or equipment which has deposits of sludge or scale, or traces of resin, gum, varnish, bitumen or similar;
 - Container or equipment which has held a product which at normal atmospheric temperature or pressure does not release vapours but may produce flammable vapours or explosive gases when exposed to heat.
 - Container or equipment that has held finely divided materials which can form an explosive mixture with air (coal dust or wheat dust).
 - Container or equipment has been coated internally and has filled with explosive vapours after being heated
- Before cleaning is carried out the following precautions should be taken:
 - Sources of ignition should be removed or isolated from the vicinity of the container or equipment (includes flames, electric lights, other equipment that may not be approved for use in a hazardous area);
 - Where possible the substance previously held in the container or equipment should be identified to identify the contents and assess its hazardous nature;
 - An appropriate method of cleaning should be chosen (contact OH&S Coordinator for further advice);
 - Where possible the container or equipment should be moved outdoors or to a well ventilated and drained area for cleaning.

7.9 Carrying out welding, abrasive cutting, grinding (and other flame / spark causing activities) out in the open air (All Seasons)

- Where possible a fire-resistant shield is erected to stop sparks etc, and a fire-proof container is used for cut-offs and butts.
- Sufficient water is on hand in case of fire either from a tap and hose or a knapsack spray or fire extinguisher (with a capacity of at least 9 litres of water).

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 8 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

Carrying out welding, abrasive cutting, grinding (and other flame / spark causing activities) out in the open air (During High Fire Danger Period)

- A Hot Work permit must be issued for any welding, grinding or other similar cutting activity carried out in the open air during High Fire Danger Period.
- Consideration must be given to providing a water tanker with a fire fighting pump where mains water at pressure is not available. In no case is work to commence unless an adequate supply of fire fighting water is available, and the surrounding area has been thoroughly wetted down.

Carrying out welding, abrasive cutting, grinding (and other flame / spark causing activities) out in the open air (During Total Fire Ban Days)

- Use of welding abrasive cutting tools and grinders should only be used for emergency works.
- Always check with the relevant manager to ensure the conditions of any permit issued by the CFA for emergency works on Total Fire Ban Days is being followed. These may include the following:
 - A copy of the permit is provided on site where the works are being carried out;
 - The ground has been cleared of all combustible material for 10 metres or maintained in a wetted down condition around the site of the works;
 - Adequate water is supplied in the form of a permanent supply or a tanker unit of not less than 1000 litres fitted with a power pump and equipped with a hose and fittings;
 - There are at least three persons on site one of whom shall act solely as a fire watcher.
 - Shields or guards are erected around the work area to prevent sparks being emitted away from the work site.
 - All cut off pieces are placed in a fire resistant container.
 - Means of direct communication is provided to alert the CFA.
 - Vehicles access is maintained to the site at all times
 - Notification of the local CFA Officer of the works
- As permit conditions may vary from year to year the most current permit conditions should be identified before proceeding with any works.

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 9 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

7.10 Burning Vegetation

- A Hot Work permit must be issued for the burning off of any vegetation carried out within the fire danger period.
- During high fire danger period a permit from the CFA may be required for the burning of vegetation.
- No burning of vegetation is permitted during a Total Fire Ban day.

7.11 Use of Blow or Flame Torches (disinfection of water sample points)

- Before using of any blow / flame torch an operator must carry out a visual inspection of the area for fire hazards including: vegetation, combustibles, and flammable liquids.
- To minimise the risk of fire any combustible material or vegetation around the sampling point shall be thoroughly wetted down and a 10 litre bucket filled and placed nearby.
- After the blow torch has been used it shall be placed in a container to avoid contact with flammable materials.
- On Total Fire Ban Days blow torches must not be used.

8.0 Where a Fire Occurs

- Assist any person in immediate danger (only if safe to do so);
- Call the fire brigade on “000”;
- Alert persons nearby and request assistance;
- Extinguish the fire (only if safe to do so);
- If a threat to life exists evacuate the area immediately and move to a safe assembly area;
- Maintain control of all persons at the safe assembly area.

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 10 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

9.0 After a Fire Incident

- After a fire has occurred the site supervisor shall arrange for the following actions to take place:
 - A watch is maintained in the vicinity of the location of the fire;
 - The site is revisited some time after it has been considered that re-ignition is not possible. This is to double check that there is no further chance of a fire re-occurring;
 - No further hot work shall be carried out until such time as the fire equipment is serviced and available for use.
 - The circumstances contributing to the fire should be identified using GVW Incident Reporting and Investigation procedure.

SAFE OPERATION OF HOT WORK		Document: SOI – GVW - 316
Prepared: Luke Haines	November 2004	Page 11 of 14
Approved: Director Technical Services	November 2004	Draft/Final: 0.1
Modified By: NIL	NIL	Issue Date: 11 November 2004

Hot Work Activity	All Seasons	High Fire Danger Period (usually Nov – Apr)	Declared Total fire Ban Days
Carrying out hot work on equipment that has held Flammable Substances	Follow Specific Precautions (Section 7.8) <ul style="list-style-type: none"> ▪ Container cleaned free of Flammable / Combustible Substance ▪ Hot Work Permit issued before cutting grinding, etc... 		<ul style="list-style-type: none"> ▪ Postpone works, or ▪ For Emergencies Follow CFA Permit Requirements
Burning Vegetation	<ul style="list-style-type: none"> ▪ Follow Specific Precautions. 	<ul style="list-style-type: none"> ▪ Hot Work Permit issued ▪ Follow Specific Precautions on CFA Permit. 	<ul style="list-style-type: none"> ▪ No Burning of Vegetation without permit from CFA
Use of Blow Torch for Disinfection of water sample points	<ul style="list-style-type: none"> ▪ Visual inspection of area ▪ Area wetted down ▪ Full bucket (10 litre) water on hand ▪ Place blowtorch into non combustible container 		<ul style="list-style-type: none"> ▪ Do not use blow torch

APPENDIX B – Hot work Permit

Hot Work Permit



Site Location: _____

Date: _____ Type of Hot Work: _____

Location of Hot Work: _____

Equipment to be used for Hot Work: _____

List Fire Fighting Equipment to be on Site: _____

Assess the following:

	Yes	N/A	Comment
1. Drains, Pits Depressions have been Isolated and sealed.	<input type="checkbox"/>	<input type="checkbox"/>	_____
2. Tanks, vents, pipelines have been blanked off (closed) or effectively isolated.	<input type="checkbox"/>	<input type="checkbox"/>	_____
3. Leaks from valves and glands are able to be controlled	<input type="checkbox"/>	<input type="checkbox"/>	_____
4. Pressure Relief valves have been vented to safe areas			
5. Combustible material has been removed from the work area (min 5 metres)	<input type="checkbox"/>	<input type="checkbox"/>	_____
6. Combustible Material has been covered with a non flammable covering	<input type="checkbox"/>	<input type="checkbox"/>	_____
7. Combustible material has been thoroughly wetted down.	<input type="checkbox"/>	<input type="checkbox"/>	_____
8. Natural or mechanical ventilation is adequate for the works	<input type="checkbox"/>	<input type="checkbox"/>	_____
9. Spark or flash screens are in place when working adjacent to hazardous areas or other areas of high risk	<input type="checkbox"/>	<input type="checkbox"/>	_____
10. Fire equipment has been assessed as suitable for the task	<input type="checkbox"/>	<input type="checkbox"/>	_____
11. Fire equipment has been laid out or in place	<input type="checkbox"/>	<input type="checkbox"/>	_____
12. The wind direction is OK for Hot Work to proceed	<input type="checkbox"/>	<input type="checkbox"/>	_____
13. A Firewatcher has been provided	<input type="checkbox"/>	<input type="checkbox"/>	_____
14. Total Fire Ban Permit Conditions have been complied with	<input type="checkbox"/>	<input type="checkbox"/>	_____
15. Has the site of the hot work been satisfactory isolated	<input type="checkbox"/>	<input type="checkbox"/>	_____

Gas Testing (where required)

Date of test: _____ Time of Test: _____

Percentage L.E.L. _____ Is hot-work safe to proceed: Yes / No

Name: Site Supervisor / Work Coordinator: _____ Signature: _____