RESOURCES

JER-8000-MGT-PRO-0031 Hot Work

(ISO 45001:2018, Clause 8.1.2)

2 SCOPE

The procedure applies to all KGL Resources Workers and details the process for workers to implement by uniformly identifying the hazards of Hot Work and assessing the risks and developing suitable control measures.

3 PURPOSE OF DOCUMENT

The purpose of this procedure is to provide a framework for working with high temperatures, ignition sources or other hazards that pose a risk of fire or explosion.

4 RELEVANT LEGAL & OTHER REQUIREMENTS

- Work Health and Safety Act 2011 (NT)
- Work Health and Safety Regulation 2011 (NT)
- Code of Practice- Welding Processes 2019 (NSW)
- Model Code of Practice- Welding Processes 2020 (Safe Work Australia)

5 DEFINITIONS

Competent Person	Person who has acquired through training, qualification or experience the knowledge and skills to carry out the task. In the context of this procedure: • Trade Certificate or TAFE Qualification with a welding component with a demonstrable syllabus which includes, Hot work or Fire and Explosion risks; • Welders Certificate to AS1796 - Certification of Welders; and • Welding Supervisor to AS1796 or AS2214 or equivalent Is experienced in supervising Hot Work in hazardous work environments.
Construction Work	Has the same meaning under the WHS Regulation, namely any work carried out in connection with the construction, alteration, conversion, fitting-out, commissioning, renovation, repair, maintenance, refurbishment, demolition, decommissioning or dismantling of a structure. However, it does not include testing, maintenance or repair work of a minor nature carried out in connection with a structure,
Fire Watch	A competently trained person who is allocated to a Hot Work task to observe work in progress and the surrounding area and/or structures for signs of a fire resulting from the Hot Work task.
High Risk Construction Work	Has the same meaning under the WHS Regulation, namely Construction Work involving: a. a risk of a person falling more than 2 metres; b. demolition of an element of a structure that is load-bearing or otherwise related to the physical integrity of the structure; c. or is likely to involve, the disturbance of asbestos;

	d. structural alterations or repairs that require temporary support to prevent collapse; e. work that is carried out in or near a confined space' f. work that is carried out in or near: i. a shaft or trench with an excavated depth greater than 1.5 metres, or ii. a tunnel; g. the use of explosives; h. work that is carried out on or near pressurised gas distribution mains or piping; i. work that is carried out on or near chemical, fuel or refrigerant lines; j. work that is carried out on or near energised electrical installations or services; k. work that is carried out in an area that may have a contaminated or flammable atmosphere; l. tilt-up or precast concrete; m. work that is carried out on, in or adjacent to a road, railway, shipping lane or other traffic corridor that is in use by traffic other than pedestrians; n. work that is carried out in an area at a workplace in which there is any movement of powered mobile plant; o. work that is carried out in an area in which there are artificial extremes of temperature; p. work that is carried out in or near water or other liquid that involves a risk of drowning; or q. diving work.
Hot Work	Any work that involves high temperatures or an ignition source and could pose a fire or explosion risk, including but not limited to: • welding both oxy and electric; • oxy cutting or flame Straightening; • grinding or cutting with dry disks; and • naked flames or any other spark producing source that could cause fire or explosion.
Hot Work Designated Area	Area and/or plant or equipment item designated by the site manager on the advice of a Competent Person which poses no significant health or safety risk resulting from Hot Work being performed. Section 7 of this procedure sets out the general requirements for Hot Work Designated Area. Hot Work Designated Areas may be used by workers without the requirement for a PTW to be issued as they are risk assessed and approved by the site manager.
Hot Work Hazardous area	A hazardous area is any area that cannot be clearly defined as a "Hot Work Designated Area".

	A Hazardous Area is a work site that contains sources of fuel when exposed to an ignition source present a significant risk of fire or explosion and health and safety of workers. Fuels could include: • flammable and combustible materials such as flammable gases (for example, acetylene, hydrogen, methane-natural gas); • flammable liquids (for example, barbeque gas); • flammable liquids (for example, mineral turpentine and petrol); and • combustible liquids (for example oils) materials such as wood, leaves, dried grass, cardboard boxes and flammable metal or self-burning dusts.
Hot Work Permit Holder	A competent person holding a Hot Work PTW.
Hot Work Permit Issuer	A person authorised to issue a Hot Work PTW.
Hot Work Permit to Work (**Hot Work PTW**)	A Hot Work PTW is a permit that records and tracks the authorisation of Hot Work. A Hot Work PTW is required for Hot Work conducted in Hot Work Hazardous Area.
Ignition source	Energy source with the potential to cause a fire or explosion when in the presence of air and a fuel, or within oxygen rich or explosive atmospheres.
Intrinsically safe circuit	A circuit in which any spark or thermal effect produced in normal operation and specified fault conditions is not capable of causing ignition.
Safe Work Method Statement (**SWMS**)	A SWMS is a pre-start risk assessment that is undertaken prior to commencing any high risk construction work or as otherwise required by a supervisor or manager. Refer to the KGL Resources Risk Management Procedure for more information.
Take 5	A Take 5 is a pre-start risk assessment that is undertaken by all workers prior to commencing work. Refer to the KGL Resources Risk Management Procedure for more information.
Workers	Workers include employees, contractors, sub-contractors, volunteers, visitors and consultants who conduct work for KGL Resources.

6 RESPONSIBILITIES

Senior Leadership Team	1. Appoint 'authorised persons' to act as Permit Issuer. 2. Facilitate the development, revision and communication of this procedure and the referenced standards. 3. Provide adequate training, resources and support to ensure the requirements of this procedure can be fulfilled.
Safety Manager	1. Ensures this Procedure is fit for purpose and meets all applicable legislative requirements. 2. Ensures that this procedure is implemented and is regularly reviewed and monitored for ongoing effectiveness. 3. Supports workers and managers in the implementation and operation of this Procedure. 4. Recommends changes or improvements to this Procedure as required. 5. Provides expert advice relating to Hot Work.
Managers and Supervisors	1. Manage operational WHS compliance ensuring: a. risks associated with Hot Work are identified and develop effective controls to enable the Hot Work to be undertaken safely; b. contractors use trained personnel for Hot Work tasks and where required provide additional trained personnel to act as Fire Watch; and c. contractors work to the required standards and risk controls. 2. Ensures that all Hot Work has been risk assessed and documented in Take 5 and SWMS (if applicable) identifying the risk control actions prior to commencement of the proposed Hot Work. 3. Ensures that a Hot Work PTW is obtained before allowing any Hot Work is commenced. 4. Ensures workers performing Hot Work are adequately informed of the hazards and are trained in: a. the use of the equipment involved; b. emergency response procedures that may be required; c. the effective use of fire prevention methods and firefighting equipment (fire extinguisher) that are required; and d. performing the duties of Fire Watch.

Worker	1. Maintain/demonstrate competency and applicable certification. 2. Comply with this procedure. 3. Comply with the reasonable direction of a supervisor or manager by: • observing all safety precautions stipulated on the Hot Work PTW; • keeping the Hot Work PTW at the worksite throughout the work; • returning the PTW to the Supervisor (Permit Holder) for cancellation at the completion of the job; and When the hot work is completed, ensuring that the area is safe after consultation with the Fire Watch and returning the Hot Work PTW.
Fire Watch	1. Oversees safety of people, plant and environment from risk of fire by performing the Fire Watch duties specified in the Hot Work PTW. 2. Understands and complies with any applicable SWMS. 3. Inspect adjoining areas if heat transfer is possible. 4. Take immediate action to combat any outbreak of fire. 5. Not allow Hot work to proceed outside the area specified on the Hot Work PTW. 6. Immediately stop work if a hazardous condition occurs and notify the Permit Holder. 7. Monitor changes in wind direction. 8. Be aware of the need to use eye protection to protect from exposure to Arc Flashes and foreign bodies. 9. Ensure firefighting equipment is available, serviceable and be competent in their use. 10. Not leave the job unless relieved by the Hot Work Permit Holder 11. Maintain a Fire Watch for at least 30 minutes after completion of Hot Work.

7 BACKGROUND

This procedure details the process KGL Resources workers must take in order to commence Hot Work.

There are two categories of Hot Work that may be undertaken at Water NSW sites these include:

a) Hot Work undertaken within **'Hot Work Hazardous Area'** – identified as high risk and requiring a Take 5, Hot Work PTW and a Fire Watch; and

b) Hot Work undertaken within a **'Hot Work Designated Area'** - identified as **not** requiring a Hot Work PTW. Whereby only require a Start Card and a Fire Watch prior to the commencement of work.

Furthermore, a SWMS is required for Hot Work when it meets the definition of High-Risk Construction Work under the WHS Regulation, as detailed in the KGL Resources Risk Management Procedure.

8 HOT WORKS RISK MANAGEMENT

KGL Resources manages risk involved with the process of Hot Works through a risk management approach. The key elements of KGL Operation's systematic approach to risk management include:

a. hazard identification;
b. risk assessment;
c. controlling risks; and
d. reviewing control measures to ensure they remain effective.

This is to be undertaken in line with the **KGL Resources Risk Management procedure.**

1.1 Hazard Identification

The purpose of identifying hazards associated with Hot Work is to eliminate or, if it is not reasonably practicable to eliminate the risk, to minimise it so far as is reasonably practicable.

Potential Hot Work hazards may be identified in a number of different ways including:

- conducting a walk through assessment of the workplace where the Hot Work is to be conducted;
- inspecting the materials and equipment that will be used during the Hot Work process;
- reading product labels, SDSs and manufacturer's instruction manuals; and
- reviewing incident reports.

1.2 Risk Assessment

When assessing the risks arising from working from Hot Work, workers must consider the following:

- identify which workers are at risk of exposure;
- determine what sources and processes are causing that risk;
- identify if and what kind of control measures should be implemented; and
- check the effectiveness of existing control measures.

1.3 Risk Control Measures

As set out in **KGL Resources Risk Management Procedure**, control measures should always be considered in the order of the hierarchy of control starting with elimination. In some circumstances, two or more control measures will be required to minimise so far as is reasonably practicable the risk(s).

KGL Resources applies the hierarchy of control to eliminating, so far as is reasonably practicable, or minimising the risks arising from **Hot Work**. Set out in **Table 1** below are some examples of risk control measures to eliminate or minimise these risks according to the hierarchy of control.

Table 1 Examples of risk control measures for Hot Work

Risk Control Hierarchy		Example of risk control measures Hot Work
Level 1	• Eliminate the hazards	• Can the work be taken off-site • Could a mechanical repair such as bolting be used • Undertake the work when the weather is more suitable
Level 2	• Substitute the hazard with something safer • Isolate the hazard from people • Reduce the risks through engineering controls	• Conduct testing of the atmosphere prior to the commencement of Hot Work • Isolate workers from contacting hot work pieces
Level 3	• Reduce exposure to the hazard using administrative actions • Use personal protective equipment	• Toolbox Safety brief • Use of PPE

1.4 Guidelines for Risk Control Measures

Where the risk of Hot Work cannot be eliminated through design of the structure, redesign of the task or through other means the following may be required:

Table 2 Guidelines for risk control measures

Level 1	
Eliminate	
	Can the Hot Work be eliminated?
Level 2	
Substitute, isolate, engineer	
Testing of the atmosphere	Where flammable gases or potentially explosive atmospheres may be present, testing of the atmosphere, using approved and serviceable gas monitors, shall be performed by competent persons and ideally before issuing the Hot Work PTW. Where it has been identified that time lapses prevents testing prior to the issue of the Hot Work PTW, the Hot Work PTW worker must brief all workers on the requirement for atmospheric testing, and the Fire Watch must record results of the testing. Continuous gas monitoring shall be conducted where hot work is undertaken in a confined space or restricted space, or where a hazardous atmosphere could exist. The results of the testing shall be recorded. **Note**: Gas testing should take place as close as practicable to the time of commencement of the hot work. If hot work is suspended for longer than two hours, a further test shall be taken before work recommences.
Fire and explosion	An area not less than 15 metres around the work area must be cleared of readily flammable material and/or thoroughly wet down. Isolate fuel sources from ignition sources. Purge all traces of flammable or combustible materials from drums, vessels and tanks which and prior to carrying out any hot work be preferably filled with an inert substance such as nitrogen gas or water. Use fire resistant barriers to prevent sparks accidently reaching flammable and combustible materials. Ensue work areas are well ventilated to prevent accumulation of flammable vapours in the work area.

	Ensure work area is free from rubbish, paper or dust and other sources of flammable material that could be potential fuel sources or produce dust explosions. Use flash back arrestors on gas hoses to prevent the flames travelling back and igniting the gas in cylinder. Drain and purge equipment, such as gas hoses, and lock the gas off at the valve immediately after use. Do not store flammable and combustible materials near welding area. Keep and maintain firefighting equipment near welding area.
Compressed and liquefied gases	Store and handle cylinders appropriately. For further guidance refer to AS 4332: The storage and handling of gases in cylinders. Keep cylinders maintained free from leaks or dents. Store cylinders in an upright position to ensure the safety device functions correctly. Secure cylinders to prevent dislodgement. Flashback arrestors should be fitted at the blow pipe and to the oxygen and fuel gas regulators. Keep the cylinder valve closed when the cylinder is not being used. Keep all sources of heat and ignition away from gas cylinders, even if the cylinders do not contain flammable material.
Airborne contaminants	If it is not reasonably practicable to eliminate the risk, measures to minimise it must be used. For example: (a) substituting a hazardous chemical with a less hazardous one or reducing the quantity of a hazardous chemical that is used, handled or stored at the workplace; (b) isolating the source of exposure to the hazardous chemical, for example, welding in isolation booths away from others; (c) using engineering control measures, for example, installing ventilation systems to capture or remove airborne contaminants. Implement administrative control measures, for example procedures to handle hazardous chemicals safely.

	Provide appropriate respiratory protection.
Burns and exposure to heat	Isolate workers from contacting hot work pieces, for example, carrying out post-weld heat treatment in areas where work pieces cannot be accidently touched.
Asphyxiation hazards	Keep the work area well ventilated, particularly in low lying areas and roof spaces where gases can accumulate. Monitor the atmosphere to check it is free of harmful contaminants and contains an adequate oxygen level. Check cylinder fittings, hoses and connections are not damaged or in poor condition. **Refer to KGL Resources Confined Space Procedure**
Level 3	
Administrative and PPE	
Toolbox Safety brief and sign-on for Hot Work in Hazardous Areas	The Hot Work PTW worker shall conduct a toolbox safety brief prior to the commencement of all Hot Work being undertaken in hazardous areas daily as required. The toolbox safety brief shall cover though not be limited to: a. 'Hot Work Hazardous area' and work site design; b. worker and Fire Watch requirements including the requirement for atmospheric monitoring where applicable; c. use of Take 5 in identifying hazards and controlling risk; d. use of daily pre-start checklists for plant; e. personal protective equipment requirements; f. safe entry and exit; and g. emergency response. All workers involved in the Hot Work shall sign-on to the Take 5 and where relevant the SWMS and the Hot Work PTW confirming their understanding of the hazards, safety

	precautions and responsibilities prior to commencing work.
Radiation	Use signs to warn that welding is occurring. Provide PPE including filter shades for goggles and face shields to protect the eyes from radiation. Gloves and other protective clothing should be worn to cover exposed skin.
Electrical risks	Use fully insulated electrode holders. The holder should never be dipped into water to cool or be placed on conductive surfaces. Inspect all equipment to check that it is in good condition prior to use, including power switches, terminals, connections, cables and insulation
Burns and exposure to heat	Mark or label as 'hot' equipment, metals, plates or items likely to be hot in the welding area to minimise accidental burns. Contact with heated surfaces can be avoided by using thermal insulating materials and wearing personal protective equipment.
Lead	Ensure so far as is reasonably practicable that lead is confined to a lead process area at the workplace and that, the lead process area is kept clean. Ensure that methods used to clean a lead process area do not create a risk to health of persons in the immediate vicinity or have the potential to spread the contamination of lead. Ensure that workers remove clothing and equipment that is or likely to be contaminated with lead and wash their hands and faces before entering an eating or drinking area.

9 GENERAL REQUIREMENTS – HOT WORK HAZARDOUS AREA

A Hot Work PTW is an essential part of the WHS control process and must be obtained and used in order for KGL Resources workers to undertake Hot Work within a '**Hot Work Hazardous Area**'.

When undertaking Hot Work within a '**Hot Work Hazardous Area'** workers must:

a. use a Hot Work PTW in conjunction with, a Take 5, SWMS (if required) and in conjunction with any applicable Standard Controls;

b. ensure that the person responsible for the site is aware of the Hot Works being undertaken and that there are no risks arising from other works or operational activities taking place on the site; and

c. ensure that they understand what they plan to do, have identified all hazards and risks arising from the work and have the appropriate controls in place before they commence work.

The Hot Work PTW process is detailed below in **section 8.2.**

Mandatory Controls for `Hot Work Hazardous Areas'

Table 3 Mandatory Controls for Hazardous Areas

Mandatory Controls
Mandatory control measures that need to be detailed within the Take 5, Hot Work PTW and implemented during 'Hot Work Hazardous Areas' are:
• appropriate firefighting equipment, one suitable 9kg Fire extinguisher and a secondary system such as a hose connected to a water supply, portable firefighting unit or 15kg firefighting knapsack and kept near the hot work area
• defined roles and responsibilities of workers including the Fire Watch
• use of fire-resistant barriers to prevent sparks accidently reaching flammable and combustible materials
• emergency response
• monitoring of the area for fire outbreak for at least 30 minutes after completion of Hot Work

When considering further Risk Controls – **see Table 1** for controls that should be considered when undertaking Hot Work.

9.1 HOT WORK PERMIT TO WORK (PTW) PROCESS

Any worker required to undertake Hot Work within a 'Hot Work Hazardous Area' must:

Step 1: Complete a Take 5 and have it signed off by the appropriate manager or supervisor;

Step 2: Complete a SWMS (if required) and have it signed off by the appropriate manager or supervisor prior to a Hot Work PTW being issued;

Step 3: Contact the manager or supervisor of the site and request a Hot Work PTW;

Step 4: A Hot Work PTW form must be completed and signed off by the Hot Work PTW Issuer prior to undertaking the Hot Work within a 'Hot Work Hazardous Area';

Step 5: A Hot Work PTW will be issued if the Hot Work PTW Issuer is satisfied that all necessary controls are in place and the worker has undertaken a KGL Resources general induction and a site specific induction; and

Step 6: The Hot Work PTW Recipient is to confirm with the Hot Work PTW Issuer when the works have been completed and the PTW closed out.

NOTE: The Hot Work PTW is only valid for a maximum of one day and shall be readily accessible at the work area while the hazardous work is being undertaken.

All Take 5's and SWMS must be completed in accordance with the requirements in the KGL Resources Risk Management Procedure.

1.5 Validity Period & Revocation of Hot Work PTW

A worker must contact the Hot Work PTW Issuer if any conditions in the Hot Work PTW change, including but not limited to:

a. changes in the worker team;

b. changes in the agreed work practice;

c. when total Fire bans are in place;

d. the time required for the work (for example, for extra time on the same day only). Prior to any extension of time being granted, the conditions identified in the SWMS must be reassessed.

A Hot Work PTW may be revoked at any time by a worker who has a reasonable concern that to carry out the work would expose the worker to a serious risk to their health or safety, emanating from an immediate or imminent exposure to a hazard.

Additionally, all Hot Work must stop whenever the following is detected:

a. fire;

b. an unsafe act or condition; and or

c. the presence of flammable or explosive gases or dusts, other than those used for oxy-acetylene welding or cutting.

All KGL Resources Workers whether involved with the actual work team or not, are authorised to Stop Work if unsafe conditions are identified. Work can only re-commence with approval from a Hot Work PTW Issuer.

9.2 SUPERVISION OF WORK ACTIVITIES UNDER A HOT WORK PTW

Supervision of workers must be by the site representative (manager or supervisor).

Managers and supervisors must supervise compliance with the Hot Work PTW, including as a minimum, visiting the site subject to issuing a Hot Work PTW:

- once per day; **or**
- if the site is a remote site, by conducting random site audits, in accordance with the KGL Resources Risk Management Procedure.

Supervision will include, as a minimum, verifying that the work tasks being undertaken are in accordance with the Take 5, SWMS, PTW and any relevant Standard Controls.

9.3 COMPLETION OF WORK

At the completion of work, workers must:

a. inform the Hot Work PTW Issuer when the hazardous work is complete;

b. ensure that isolations have been removed and;

c. the Hot Work PTW Issuer must close out the Hot Work PTW when the worker(s) have ensured that the site is safe;

9.4 HOT WORK PTW FORM

The standard Hot Work PTW Form is designated KGL-WHS-FM-006.

10 GENERAL REQUIREMENTS – HOT WORK DESIGNATED AREA

An area can be deemed as a 'Hot Work Designated Area' by a site manager on the advice of a Competent Person if it complies with the following:

a. the work is carried out within fully enclosed area such as an outdoor area that is clear of all combustible materials for 15-m in all directions. The area shall be concrete, bitumen, gravel/road base or water only;

b. the area is thoroughly wet down such as directly after rain and that area extends at least 30-m away from the point of Hot Work and the area will remain thoroughly wet for the duration of the Hot Work;

b. an area identified with appropriate signage indicating 'Hot Work Designated Area';

c. a workshop, dedicated Hot Work Room or Tent\Encapsulation which complies with the following:

   i. no flammable materials within the room or they need to be least 15m away from the hot work;

   ii. suitable fire extinguisher is within 15 m of the work area;

   iii. contained within four walls and a roof;

   iv. cavities in walls or eaves need to be blocked to stop the ingress of sparks, walls also need to be non-flammable; and

   v. drains need to be covered.

11 INFORMATION, INSTRUCTION, TRAINING & SUPERVISION

All workers must be provided with appropriate information, instruction and training in safe systems of work applicable to the work being performed.

Competent persons responsible for planning and executing hot work must be properly trained in these skills.

Additional training relevant to the job requirements shall be provided when identified by verification of competency, inspections, incidents, or audits.

12 RECORDS MANAGEMENT

Copies of Hot Work PTW and Hot Work PTW training records shall be stored and kept for a period of seven (7) years. This includes:

a. Original records of the PTW and SWMS, if applicable;

b. SOP and other records identified by site /facility; and

c. PTW log may be used to check number of PTW issued and type of works conducted in each day.

13 BREACH OF THIS PROCEDURE

Workers must comply with this procedure at all times. KGL Resources takes breaches of this procedure very seriously.

If an employee is found to have breached this procedure, they may be subjected to disciplinary action in accordance with KGL Resources disciplinary processes. Contractors of KGL Resources who are found to have breached this procedure may be the subject of action under their contract with KGL Resources.

14 INCIDENT REPORTING AND INVESTIGATION

Any incidents arising from hot work must be reported in accordance with the **KGL Resources Incident Management Procedure**.

15 DISPUTE RESOLUTION

A worker's grievance at a decision relating to hot work should be referred to the supervisor in the first instance. Thereafter, parties may seek grievance resolution through KGL Resource's human resources processes.

16 CONSULTATION

This procedure has been developed and implemented in consultation and co-operation with KGL Resource's workers.

17 RELATED DOCUMENTATION

KGL-8000-MGT-PRO-0006	Risk Management
KGL-8000-MGT-PRO-20	Incident Management
KGL-8000-MGT-FM-0011	Incident Report
KGL-8000-MGT-FM-0017	Safe Work Method Statement
KGL-8000-MGT-FM-0018	Take 5 Booklet
KGL-8000-MGT-FM-0025	Hot Work Permit to Work Form

18 MONITORING, EVALUATION AND REVIEW

VERIFICATION	
Monitoring	Compliance with this procedure will be monitored through training and regular audits.
Evaluation & Review	The risk rating is moderate, reviewed every 2 years.

	A review will be undertaken sooner if there are changes to legislation, standards and industry codes, or following a review, changes as defined by WHS Regulators, or to ensure continual improvement.
Version Control	Version 1: May 2026

19 APPROVAL

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