Southern Ports

Hot Work Procedure

DOCUMENT CONTROL

Revision Number	Description	Reviewed by	Approved by	Review Date	Issue Date
01	Initial release.	A Sharpe	D Graham	29/06/2021	29/06/2021
02	Updated for all ports.	Health & Safety teams	Group HSE Manager	23/06/2023	23/06/2023
03	Updated for all ports.	Squad Review: Port Health & Safety teams, Port Environment teams	Chief Operating Officer	16/10/2025	17/10/2025
04	Correction Section 7	Group HSE Manager	Chief Operating Officer	27/10/2025	27/10/2025
05	Update to Section 7	Group HSE Manager	Chief Operating Officer	22/12/2025	22/12/2025

AUDIT

This Procedure shall be reviewed or revised:

- where a Risk Assessment or Audit identifies a need to review
- when legislative changes impact this Procedure
- following a significant incident involving this Procedure
- at least every three years.

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1 INTRODUCTION

1.1 Purpose

This Hot Work Procedure describes processes used by Southern Ports to manage [Title]. It provides information and guidance as to the minimum standards for the prevention of injury or damage as a result of hot work in the workplace. It addresses the assessment of hazards, authorisation and preparation for hot work including sentry duties and the emergency response arrangements to ensure that a safe system of work is maintained.

1.2 Scope

In Scope	Out of Scope
All Hot work activities by workers (employees, contractors and consultants – but not visitors) under the control of Southern Ports inside the port land and marine boundaries.	Hot Work activities conducted by leaseholders that are under the full control of the lessee, and actions of the public (non-shipping) inside the marine boundaries.

Note Should a contractor or port user documented safe system of work exceed the requirements outlined in this procedure then the contractor or port user standards shall apply once a Risk Assessment has been undertaken and approved by Southern Ports.

2 CRITICAL CONTROLS

- Where the work is being conducted outside a designated Hot Work area, a Hot Work Permit has been approved and is available on the job.
- Task specific Job Hazard Analysis has been developed and approved and is available on the job. All relevant workers have signed on
- Total fire ban check and notification to DFES as required.
- Access to the work area is controlled by appropriate barricading and signage
- A Hot Work Sentry has been appointed and is stationed outside of, and near, the hot work area.
- Transformer and inverter type welding machines are fitted with a Voltage Reduction Device.
- Flash back arrestors fitted at both ends of the lines for gas and inspected / tested annually, fit for purpose and without damage
- All other types of welding machines are fitted with an inline isolator or a “dead man” type switch.
- Gas cylinders are secured in an upright position, and regulators are in a good operating condition.
- Additional ventilation has been considered and is appropriately applied where relevant.
- Air quality monitoring conducted and recorded by an authorised gas tester where potential for atmosphere to change and become hazardous (example in restricted space, in confined space there must be continuous monitoring)
- Task appropriate PPE: Welding mask / helmet and positive airflow with appropriate filters, welding gloves fit for purpose, in good condition, dry and used on both hands while welding and changing electrodes.
- In date correct type & speed rated grinding / cutting disc fitted for the task being undertaken.
- Firefighting & fire suppression equipment in place and operational.
- Welding screens & fire blankets in place as appropriate to task

3 GENERAL REQUIREMENTS

Hot Work is work which may create sufficient energy to ignite flammable solids, liquids, gases or combustible dusts.

All welding, grinding and allied work shall comply with all relevant legal and other obligations Undertaking hot work in an area where flammable liquids, vapours or gases, combustible liquids, combustible materials, dust or fibres, or other flammable or explosive substances are present creates a significant risk of fire, explosion or production of toxic gases.

All persons undertaking hot work must be trained and competent in the task they are performing, use of the task specific equipment, use of fire fighting equipment and in emergency response and evacuation procedures.

Examples of where hot work permits are always required outside of designated hot work area include but are not limited to the below;

- Mechanical and Metalwork
  - Welding (arc, MIG, TIG, gas welding)
  - Cutting (oxy-acetylene, plasma cutting)
  - Grinding (especially when producing sparks)
  - Drilling or sawing metal with power tools that generate heat or sparks
- Heat Application
  - Soldering and brazing
  - Heat treating metals
  - Use of blow torches or heat guns
  - Bitumen heating for roofing or roadworks
  - Scrub/ Fire break burns

Examples of where you may need to have a hot work permit based on risk assessment

- Hand tools that may create a spark i.e. hammers, chisels, hand saws etc.
- Electrical conductors and equipment.
- Use of non-flameproof electrical equipment requiring batteries, explosive items, radioactive sources, including cameras, radios, mobile phones, tablets, torches and pagers (except low energy or totally enclosed devices e.g. hearing aids, watches)
- Use of Power tools
- spark ignition or non-approved combustion ignition engines in operations areas and tank compounds

4 RISK MANAGEMENT

4.1 Risk Assessment

In accordance with the Southern Ports Risk Assessment Procedures, a risk assessment using the appropriate methodology shall be conducted by the personnel undertaking hot work;

- identify the hazards present and those that the hot work may introduce into the work area,
- assess the risks and
- identify the required controls to mitigate the hazards. The hierarchy of controls must be applied to eliminate or mitigate risks identified.

4.2 Work area inspections and preparation

In preparation for Hot Work, the work area shall be inspected and verified as free of combustibles. Consideration should be given to the combustibility of the tools and equipment to be used for the work such as ropes and fabric slings. If combustibles cannot be removed, the potential for ignition must be mitigated by:

- providing screens
- covered with a non-combustible blanket or
- wetting down the area.

Sparks must be contained in the work site for process areas containing flammable or combustible materials. When the spark production period is long or the potential for ignition high, a suitable pressurised welding habitat should be used. It should be pressured with air from a safe source.

All drain openings within a radius of 15 m of the Hot Work location must be covered. All potential sources of flammable vapour and liquid in the area, such as vents, sample points, drains and relief valves, should be checked and made safe, gas detection may be required to identify hazardous substances.

Earthing of equipment shall be provided when static discharge could result in ignition of flammable materials.

Prior to undertaking Hot Works permits shall be obtained in accordance with the Authority to work and Permits procedure.

Work area protection should be established in accordance with the Southern Ports Barricading, Guarding and Signage Procedure to prevent persons not associated with task from entering the immediate work area, and protect them from harm as a result of exposure to sparks, heat, welding flash or other hazards.

4.3 Typical Hazards Associated with Hot Work

If effective controls are not implemented to control the hazards or to mitigate the risks associated with the Hot Work, the following incidents may occur:

- Fire caused by heat, sparks, molten metal or direct contact with the flame.
- Explosion when cutting up, repairing or working in the vicinity of drums, tanks, pipes, vessels, which contain or may have contained flammable materials.
- Fire/explosion caused by a gas leak, backfire or flashback.
- Fire/burns from the misuse of oxygen.
- Burns from contact with the flame, explosions or hot metal.
- Crush or impact injuries resulting from explosion or when handling cylinders.

5 AT RISK AREAS

Additional vigilance and hazard controls are required for at risk areas. At risk areas are defined by AS/NZS IEC 60079.10.1:2022 Explosive atmospheres – Classification of areas – Explosive gas atmospheres.

At risk areas in Southern Ports include fuel tanks, spray painting booths, drains and pipes that may contain hazardous substances or atmospheres, sulphur storage areas and wastewater treatment plants. At risk areas also include any confined space and any restricted space which may become a confined space due to hot work.

5.1 Additional Hazard Controls for At Risk Areas

Prior to hot work commencing on at risk areas, the plant on which the hot work is being conducted may need to be prepared to mitigate the hazards associated with the work. The

preparation may include depressurising, purging, cleaning, draining, and isolation of sources of potential energy.

Isolation of sources of potential energy shall be conducted in accordance with the Southern Ports Isolation and Tagging Procedure.

5.1.1 Depressurising

When depressurising of equipment is required, an assessment of any hazards, protection of the environment, system constraints, conflicting work, personal protection and a means of verification by two independent methods must be considered when undertaking the Job Hazard Analysis for the proposed works.

5.1.2 Purging

Methods of purging should avoid the formation of flammable mixtures. Wherever possible, inert gases such as nitrogen should be used, or where temperature, pressure or chemical compatibility limitations do not preclude their use, water or steam can be used to displace flammable liquids or vapours.

Purging with an inert gas introduces a secondary hazard of oxygen deficiency which must be considered for enclosed or Confined Space entry. Testing and monitoring of the atmosphere shall be conducted by a competent person for hazards identified in the Confined Space Permit or in spaces where purging has been undertaken. The gas testing shall include but not be limited to oxygen content, gases, flammable contaminants, and potentially harmful substances.

Precautions should be taken to prevent backflow or cross contamination during purging. Verification that all flammables have been purged from the equipment must be obtained.

5.1.3 Cleaning

Where cleaning involves entry into a confined space the entry shall be conducted under an authorised Confined Space Entry Permit.

5.1.4 Draining

When draining equipment, consider the protection of the environment, vessel contents, pressure and temperature, vessel internals and the verification of the effectiveness of the draining process.

5.1.5 Gas Testing

Gas testing should be conducted prior to undertaking hot work to determine if a hazardous atmosphere exists. Gas test shall be conducted during hot works being undertaken in, on or adjacent to potentially hazardous spaces including ‘at risk areas’, Hazardous areas or zones, enclosed or partially enclosed spaces, spaces that contain residual flammable or toxic products, and spaces that have been purged with an inert gas, vapour or liquid prior to works commencing.

Table 4 below provides guidance on limits for gas test equipment alarm levels prior to conducting Hot Work and before entry into a Confined Space.

Table 1: Gas Test Equipment Alarm Levels

	LEL (CH_4)	O_2	H_2S	CO	SO_2
Safe Entry	Below 5%	20% to 23%	0 to 9 ppm	0 to 29 ppm	0 ppm
Low Alarm Level	5%	19.5%	10 ppm	30 ppm	1 ppm
High Alarm Level	10%	23.5%	15 ppm	60 ppm	2 ppm

Should the gas test indicate that the atmosphere exceeds the nominal fresh air calibration results the *Permit Holder* (competent person supervising the work) shall consult their

Supervisor when developing the Job Hazard Analysis and determining the appropriate controls to mitigate the hazards for the proposed work.

6 DESIGNATED HOT WORK AREAS

A designated hot work area is an area where Hot work may be performed without a Hot Work Permit. Following the management of change process, A risk assessment and approval process must be undertaken in order to designate a hot work area, the following minimum conditions should be met;

- Fire suppression resource
- Adequate ventilation
- Process to ensure Inflammable materials in work area are cleared or controlled prior to task starting

Communication of Designated Hot Work Areas at each port shall be communicated to workers through;

- sign posted areas
- Site notice / Alert as
- Prestart meetings

Approval of designated hot work area is through the Maintenance Manager or Regional Manager for the Port. Conditions may still apply where a total fire ban is in effect and the process outlined on DFES website shall be followed.

7 EXEMPTIONS AND TOTAL FIRE BAN (TFB)

Exemptions for hot work during total fire bans may be obtained through DFES, however this does not mitigate requirement for hot work controls. Additionally, the requirement for notification of planned hot work must be followed as specified by DFES.

When a Total Fire Ban is declared, normal work activities which do not present a risk of initiating a fire may be conducted, but it is illegal to light any fires in the open air or conduct any other activities that may start a fire, including any hot work. It also includes welding, grinding, soldering, gas cutting, or use of vehicles off road.

Total fire ban rules do not apply to buildings and structures that are fully enclosed. Door and windows shall be checked prior to commencing hot work to ensure the requirements of the TBF rules are met.

Where an operational requirement exists for hot work to be performed in the open air during a TFB, approval for any hot work is to be provided by the Maintenance Manager, Regional Manager or their authorised delegate prior to initiation of the task.

Before conducting any hot work activities during a TFB, DFES and the local government must be notified at least 30 minutes before undertaking the activity, via lodgement of an Online Notification Form on the DFES website.

Use of the DFES issued Total Fire Ban Activity Checklist – Hot Work is required to ensure compliance with DFES requirements. Checklist can be found on the DFES site: Total-Fire-Ban-checklist-WA-Hot-Work.docx

The checklist is to be completed by the work group and provided to the HSES team or Emergency Services Coordinator, who will lodge the online notification.

To check if there is a fire ban, visit the DFES website to search for total fire bans in effect. https://www.emergency.wa.gov.au/#totalfirebans

8 OTHER WORK ACTIVITIES

When preparing for hot work, the *Permit Requestor* shall determine if incompatible work is being conducted adjacent to the proposed hot work area. Incompatible work includes but

is not limited to spray painting, cleaning with flammable solvents or liquids, open pits or sulphur in loading. Incompatible work shall not be conducted within 15 m, in any direction, from a proposed Hot Work area.

9 HOT WORK SENTRY

The nominated *Hot Work Sentry* is responsible for monitoring the safety of all personnel when the potential for a fire may be present. A *Hot Work Sentry* must be present whenever the hot work is conducted outside a Designated Hot Work Area. The duties of the *Hot Work Sentry* include:

- Ensuring that the initial emergency response equipment is available and serviceable including but not limited to the appropriate fire extinguishers, process water or fire hose rolled out and water is proved.
- Remove combustible material, install fire blankets and conduct pre-wetting in accordance with the Hot Work Permit.
- Stopping the work and notifying the *Permit Holder* of any change in conditions or incompatible activities which may affect the work, for example but not limited to spray painting.
- Preventing the taking of samples, venting or opening of piping or equipment in the immediate area of the Hot Work where such action would release flammable dust, liquids or vapours.
- Undertake an inspection of the work area 30 minutes after the hot work has been completed to ensure all potential heat sources have been extinguished.
- On completion of the work, ensuring that any firefighting equipment is returned to its original location and condition.
- Initiates the emergency response, in accordance with the Port specific emergency response procedure.
- initiates extinguishment of the fire, if safe to do so.

Where Hot Work is being conducted in a Confined Space, one *Standby Person* may assume the roles of both *Hot Work Sentry* and *Standby Person*, if determined safe to do so, in the Job Hazard Analysis or Safe Work Method Statement for the work. The attention of standby person must not be removed from workers in confined space.

The number of spotters and sentries required shall be identified by a risk assessment.

When the duties of a *Hot Work Sentry* and a *Standby Person* are undertaken by the same person, the responsibilities shall include the requirements stated in the Southern Ports Confined Space Entry Procedure.

10 EMERGENCY RESPONSE

Appropriate firefighting equipment, such as extinguishers and fire or process water hoses must be made available at the hot work site. Fire extinguishers shall be serviceable and appropriate for the hazard. The nominated process water or firefighting hoses should be run out, pressurized and water shall be proved prior to commencing the Hot Work.

Personnel must be familiar with the procedure for initiating an emergency response. In the event of an emergency initiate local emergency response in accordance with the Port's *Emergency Response Plan* and Procedures.

11 REFERENCES AND RECORD MANAGEMENT

11.1 Permits and Authority to Work

A copy of the Authority to Work, other permits and associated documentation must be stored in an accessible location known to all workers, as well as at the location where the task is being performed to ensure all workers are able to review them as required.

Where works are conducted under a Hot Work Permit, on completion of the hot work, the Southern Ports *Project Manager* or *Supervisor* should return the completed Permit to the issuing authority.

11.2 Exposure Standards

To comply with the Work Health and Safety (General) Regulations 2022, monitoring of workplace contaminant levels for chemicals with exposure standards may be necessary.

The results of air monitoring must be recorded and kept for 30 years after the date the record is made.

11.3 References

11.3.1 Legislation, Standards and Codes of Practice

Legislation, Standards and Codes of Practice referenced by procedure are shown in the below table.

Table 2: Legislation, Standards and Codes of Practice

Document Reference	Document Title
AS/NZS 3190:2016	Approval and test specification - Residual current devices (current operated earth-leakage devices)
AS/NZS 2865:2009	Confined Spaces
Safe Work Australia	Confined Spaces – Model Code of Practice
AS/NZS IEC 60079.10.1:2022	Explosive atmospheres – Classification of areas – Explosive gas atmospheres
WA	Explosives and Dangerous Goods (Dangerous Goods Handling and Storage Regulations) 1992
AS 4603:1999 (Reconfirmed 2016)	Flashback arresters - Safety devices for use with fuel gases and oxygen or compressed air
AS/NZS 1335:2020	Gas welding equipment — Rubber hoses for welding, cutting and allied processes
AS 4267:2016	Pressure regulators for use with industrial compressed gases
AS/NZS 1674.1:2025	Safety in welding and allied processes – Part 1 Fire precautions
AS 1674.2-2025	Safety in welding and allied processes – Part 2 Electrical
AS 1319:1994 (2018)	Safety signs for the occupational environment
AS/NZS 1715: 2009	Selection, use and maintenance of respiratory protective equipment
AS/NZS 4839:2001	The safe use of portable and mobile oxy-fuel gas systems for welding, cutting, heating and allied processes
AS/NZS IEC 60079.10.1:2022	Explosive atmospheres Classification of areas - Explosive gas atmospheres
Safe Work Australia	Welding Processes – Model Code of Practice
WA	Work Health and Safety (General) Regulations 2022
WA	Work Health and Safety Act 2020

11.3.2 Southern Ports Documents

Southern Ports documents referenced in this Procedure are shown in Table 4 below.

Table 3: Southern Ports Documents

Document Reference	Document Title
D23/2427	Authority to Work
D16/10	Authority to Work Procedure
D18/2169	Barricading, Guarding and Signage Procedure
D20/415	Confined Space Entry Procedure
D16/654	Hot Work Permit
D16/714	Isolation and Tagging Procedure
D16/1002	Personal Protective Equipment Procedure
D19/12256	Risk Assessment Procedure
D18/11692	Risk Management Framework
D18/24902	Work Health and Safety Management Plan

11.4 Definitions

Definitions for terms used in this procedure are shown in Table 4 below.

Table 4: Terms and Definitions

Document Reference	Document Title
Authority to Work	An Authority to Work is a document approved by an authorised and competent Southern Ports Representative to authorise any task to be undertaken by a worker at Southern Ports.
Authorised Gas Tester	A person who is trained and competent to understand the measurement technology, record and interpret the results in an accurate, consistent and reliable manner.

Confined Space	As defined in the Work Health and Safety (General) Regulations 2022, a Confined Space means an enclosed or partially enclosed space that:
	• is not designed or intended to be occupied by a worker
	• is, or is designed or intended to be, at normal atmospheric pressure while any worker is in the space
	• is or is likely to be a risk to health and safety from:
	  ○ an atmosphere that does not have a safe oxygen level, or
	  ○ contaminants, including airborne gases, vapours, and dusts, that may cause injury from fire or explosion, or
	  ○ harmful concentrations of any airborne contaminants, or
	  ○ engulfment.
	Each space shall be assessed with the above criteria to determine if it is classed as a Confined Space prior to entry.

Hazardous Atmosphere	An atmosphere which contains: • less than 19.5% oxygen or greater than 23.5% oxygen (at atmospheric pressure); and/or • dusts, vapours or gases present in toxic concentrations; and or flammable and combustible vapours or dusts.

Table 4: Terms and Definitions

Document Reference	Document Title
Hazardous Zone and Hazardous Area	Hazardous Areas are defined in AS/NZS IEC 60079.10.1:2022 Explosive atmospheres Classification of areas - Explosive gas atmospheres, as “an area in which an explosive atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of potential ignition sources”. Hazardous Areas are divided into zones for gas, vapour and dust hazards.
Hot Work	Hot Work is work which may create sufficient energy, heat or sparks to ignite flammable gases, solids, liquids or combustible dusts. All other work is Cold Work. Hot Work includes but is not limited to: • welding, soldering • fires or naked flames • battery powered or electrical tools and equipment that may create a spark or generate heat • spark ignition or non-approved combustion ignition engines in operations areas and tank compounds; and • work on live electrical conductors and opening live electrical enclosures. All welding, grinding and allied work shall comply with all relevant legal and other obligations.
Designated Hot Work Area	Designated area where Hot Work may be undertaken without a Hot Work Permit.
Hot Work Sentry	A *Hot Work Sentry* is a competent person (employee or contractor) who maintains and continuously monitors an area during hazardous operations to safeguard personnel and equipment. A *Hot Work Sentry* shall be present during Hot Work which is conducted outside designated hot work areas.
Ignition Source	A source of energy sufficient to ignite a flammable or explosive atmosphere. Such sources include but not limited to flames, incandescent material, electrical sparks, hot surfaces and mechanical impact sparks.
Job Hazard Analysis	A Job Hazard Analysis is a Risk Assessment required for tasks that require a Permit or non-routine tasks that do not already have a documented safe system of work. It focuses on the relationship between the worker, the task, the tools and equipment, and the environment and identifies control to reduce or eliminate the hazard. The Job Hazard Analysis must be reviewed prior to each task commencement to ensure risk controls remain adequate.
Lower Explosive Limit	The concentration of a flammable contaminant in air below which the propagation of a flame does not occur on contact with an ignition source.
May, Should	Recommended, but discretionary.
Must, Shall, Will	Mandatory.
Purging	The displacement of contaminants from an area, vessel or Confined Space by means of another appropriate material. For example, but not limited to steam, air and nitrogen
Radiography	The use of a radioactive isotope for inspection and testing of welds, wall thickness or ground density

Table 4: Terms and Definitions

Document Reference	Document Title
Risk Assessment	A Risk Assessment identifies hazards and the required controls to minimise risk to safety, health, environment and community. May include Safety in Design, Risk Assessment, Safe Work Method Statement, Job Hazard Analysis, Stop & Think, or a combination of the above.
Safe System of Work	A documented safe system of work is specific to the task being conducted and identifies and controls all plant, equipment and environmental risks at the location they are being conducted. Examples include a Job Hazard Analysis, Safe Work Instruction or Safe Work Method Statement. Additionally, for all high risk and non-routine repeated tasks or wherever there is a change to the task step, plant equipment or environmental conditions, a documented task level Risk Assessment must be completed or amended. For example, the documented safe system of work is amended to clearly identify additional hazards.
Safe Work Instruction	See Safe Work Method Statement.
Safe Work Method Statement	A Safe Work Method Statement is required under the Work Health and Safety Regulations 2022 for works considered high risk construction. At Southern Ports, the terms Safe Work Method Statement and Safe Work Instruction are used interchangeably. A Safe Work Method Statement breaks jobs down into a logical sequence of steps, identifies hazards, addresses control measures to mitigate risks, and identifies who is responsible for implementing the controls. A Safe Work Method Statement assists in ensuring that all workers have a full understanding of the risks involved in the work activities or tasks they are performing, by setting out instructions required to conduct a job.
Standby Person	A *Standby Person* is a competent person assigned to remain on the outside of, or in close proximity to, a work area, and in continuous contact with those inside, to initiate rescue procedures and operate equipment used for entry to the work area where necessary.
Southern Ports Representative	The *Southern Ports Representative* is the Southern Ports *Manager*, *Superintendent* or *Supervisor* assigned and authorised to consult with the Contractor on behalf of Southern Ports, who is the *Contract Owner*.
Workers	Workers at Southern Ports include Employees, Contractors and consultants who are performing work (but not Visitors).
Workplace	An area, ship, vehicle, building, or other structure, where employees work or are likely to occupy in the course of their work.