CONFINED SPACE ENTRY PROCEDURE

Table of Contents

1 Purpose 2
2 Scope 2
3 Definitions 2
4 Roles and Responsibilities 5
5 What is a Confined Space? 7
6 General Requirements 7
7 Prior to Entering a Confined Space 7
7.1 Risk Assessment and Control 7
7.2 Permit to Work Controls 12
8 Training and Competence 13
9 Records 13
10 Associated Documents 14
11 References 14
12 Monitoring, Evaluation and Review 14
13 Administration 15
Attachment A – Permit Process Diagram 16

1 Purpose

The purpose of this Procedure is to:

- specify the controls that must be put in place to ensure that the entry of any persons into a confined space is controlled, and risk is minimised; and
- ensure that persons working within the confined space are protected from hazards associated with the confined space and/or those that may develop in the confined space while undertaking the work.

2 Scope

This Procedure applies to any work assignment on any Mid West Ports Authority (**MWPA**) controlled land or operational area that meets the criteria of a confined space.

3 Definitions

<table>
<tr>
<td>Confined Space</td>
<td>
As per the Work Health and Safety (General) Regulations, 2022:
Confined Space:
(a) means an enclosed or partially enclosed space that:
(i) is not designed or intended primarily to be occupied by a person;
(ii) is, or is designed or intended to be, at normal atmospheric pressure while any person is in the space; and
(iii) is or is likely to be a risk to health and safety from anything specified in the Table.
Table
<table>
<tr><td>1</td><td>An atmosphere that does not have a safe oxygen level.</td></tr>
<tr><td>2</td><td>Contaminants, including airborne gases, vapours and dusts, that may cause injury from fire or explosion.</td></tr>
<tr><td>3</td><td>Harmful concentrations of any airborne contaminants.</td></tr>
<tr><td>4</td><td>Engulfment.</td></tr>
</table>
Examples of Confined Spaces may include but are not limited to the following.
• Vats, tanks, pits, pipes, ducts, flues, chimneys, silos, containers, pressure vessels, underground sewers, wet or dry wells, shafts, trenches, tunnels or other similar enclosed or partially enclosed structures, any shipboard spaces entered through a small hatchway or entry point, cargo tanks, cellular double bottom tanks, duct keels, ballast and oil tanks, and void spaces when these examples meet the definition of a confined space defined above.
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Authorised Gas Tester	A person designated to undertake gas tests of confined spaces. Such a person will have received training in the use of gas measuring instruments. The responsibility for what to test for and where to test for contaminants remains with the Issuing Authority, who may also be the nominated Gas Tester. The Authorised Gas Tester must be a MWPA Staff Member, or a Contractor authorised by the Maintenance or Duty/Deputy Supervisor.
Purging	The method used to displace any contaminant from a confined space. Purging is usually done using an inert gas, such as nitrogen, to clear flammable gases or vapours before work in the confined space begins.
Competent Person	*As per the Work Health and Safety (General) Regulations 2022,* r5*:* A person who has acquired through training, qualification or experience the knowledge and skills to carry out the task.
Confined Space Entry Permit	As per the *Work Health and Safety (General) Regulations 2022,* r.67 Confined Space Entry Permit is a written authority that describes the confined space, the hazards and controls associated with the work in the space and tracking of personnel entering and exiting the space.
Airborne Contaminant	Airborne contaminant: (a) means a contaminant in the form of a fume, mist, gas, vapour or dust; or (b) includes micro-organisms.
Engulfment	Engulfment means to be swallowed up in or immersed by material, which may result in asphyxiation. Examples of materials that may pose a risk of engulfment include plastics, sand, liquids, fertiliser, grain, coal, coal products, fly ash, animal feed and sewage.
Entry (into a Confined Space)	Entry, by a person into a confined space, means the person's head or upper body is in the confined space or within the boundary of the confined space.
Exposure Standard	Exposure standard means an exposure standard in the *Workplace Exposure Standard for Airborne Contaminants* (see Attachment A of document). An exposure standard listed in Attachment A represents the airborne concentration of a particular substance or mixture that must not be exceeded. The exposure standard can be of three forms. 1. Eight hour time weighted average (TWA). 2. Peak limitation (PEL). 3. Short term exposure limit (STEL).
Issuing Authority	A person who by reason of training, education and experience is competent, to prepare and issue a Confined Space Entry Permit. An Issuing Authority shall always be a MWPA employee and is usually the Supervisor or other designated person of the area.
Lower Explosive Limit (LEL)	In relation to a flammable gas, vapour or mist, means the concentration of the gas, vapour or mist in air below which the propagation of a flame does not occur on contact with an ignition source.

Peak Exposure Limit (PEL)	• Means a maximum or peak airborne concentration of a substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes. • Peak or peak limitation exposure standards are set for some substances, exposure to which can induce acute effects after relatively brief exposure to high concentrations. • Excursions above the peak limitation exposure standard are not permitted at any time because to do so would expose a person above the exposure standard for that substance. • Although it is recognised there are analytical limitations to the measurement of some substances, to comply with 'peak limitation' exposure standards, exposure must be determined over the shortest analytically practicable period of time. • However, this period must not exceed 15 minutes.
Permit	Confined Space Entry Permit.
(r.71)	Reference to the specific regulation as identified in the *Work Health and Safety (General) Regulations 2022.*
Safe Oxygen Level	As per the *Work Health and Safety (General) Regulations 2022,* r.5: Means a minimum oxygen content of air of 19.5% by volume under normal atmospheric pressure and a maximum oxygen content of air of 23.5% by volume under normal atmospheric pressure.
Short Term Exposure Limit (STEL)	The STEL is a 15 minute time weighted average exposure limit which must not be exceeded at any time during an eight hour working day, even if the exposure during the full day is less than the TWA exposure standard. Exposures at the STEL must not be longer than 15 minutes and must not be repeated more than four times per day. There must be at least 60 minutes between successive exposures at the STEL.
Sentry / Standby Person	A competent person assigned to **remain on the outside** of, and in close proximity to the confined space, and is capable of being in continuous communication with, and if practicable, to observe those inside. In addition, where necessary, may initiate emergency response and monitor equipment used for the safety of personnel in the confined space including gas testing equipment.
Time-weighted Average (TWA)	TWA means the maximum average airborne concentration of a substance when calculated over an eight hour working day, for a five day working week. During periods of daily exposure to an airborne contaminant, exposure above this value is permitted for short periods, if they are compensated for by equivalent exposures below the exposure standard during the working day. If there is a STEL and a TWA exposure standard, the STEL must also be observed.
Upper Explosive Limit (UEL)	Upper Explosive Limit (UEL), in relation to a flammable gas, vapour or mist, means the concentration of the gas, vapour or mist in air above which the propagation of a flame does not occur on contact with an ignition source.

Hazardous Atmosphere	An atmosphere is a hazardous atmosphere if: • the atmosphere does not have a safe oxygen level; • the concentration of oxygen in the atmosphere increases the fire risk; • the concentration of flammable gas, vapour, mist or fumes exceeds 5% of the LEL for the gas, vapour, mist or fumes; or • combustible dust is present in a quantity and form that would result in a hazardous area.
Positive Isolation	Positive isolation, sometimes called 'air gapping' is the introduction of a physical gap / space between the energy source and the confined space. It may include the removal of a pipework section or spool piece and blanking the live end or physically locking out of electrical connections so there is a physical gap in the circuit.

4 Roles and Responsibilities

All personnel involved in confined space entry work must follow the requirements laid down in this Procedure and the Permit to Work Procedure, at all times.

Role	Responsibility
Permit Owner	• Person who is undertaking the confined space entry task and completes the initial permit request, including the collation of supporting documentation (both mandatory and guidance information). • Permit owners are responsible to ensure the permit requirements are adhered to during the work activity.
Permit Coordinator	• The MWPA person who coordinates the permit process once all the applicable documentation is submitted by the Permit Applicant. • The Permit Coordinator liaises with the Issuing Authority and Permit Applicants to ensure that the activities can safely proceed so as not to impact other Port users.
Issuing Authority	The MWPA person with the training, experience and technical expertise who prepares and issues a Confined Space Entry Permit. They must ensure: • that hazards and risks, in and associated with, the confined space have been identified and controlled prior to work commencing; and • suitable atmospheric testing has been completed prior to allowing personnel entry to the confined space.
Maintenance Supervisor / Duty/Deputy Supervisor	• The MWPA person with the technical expertise and/or experience and competence, to review the activities described in the permit application and to review and approve the content or reject the application until further information is provided.

Role	Responsibility
Supervisors	Supervisors in control of a workplace involving a confined space entry must ensure: • that hazards and risks, in and associated with, the confined space have been identified and controlled prior to any personnel entering a confined space; • suitable equipment is available and provided for personal protection, rescue, first aid and fire suppression; • conformance with this Procedure, including ensuring that personnel have the training, experience and equipment necessary to complete their tasks safely; and • visits to the worksite regularly to identify any potential new confined spaces that may have arrived or developed.
Sentry / Standby Person	The Confined Space Sentry / Standby Person must: • monitor, control and maintain a written entry and exit log / control board outside the confined space; • maintain communications with those inside the confined space and specific personnel outside the confined space; • maintain breathing air supplies (as required); • ensure safe working environment is maintained; • initiate any emergency procedures; • never enter the confined space, even in an emergency they are to raise the alarm and stay outside of the confined space; and • never leave the entry point for any reason whilst people are still in the confined space.
Relevant Workers	Refers to all personnel who carry out any function in relation to work inside a confined space: • must be trained and competent for the role they undertake in the confined space activity; and • must be aware of the hazards associated with working in the confined space including the requirements for entry and exit from a confined space and their actions in an emergency situation.
Work Health and Safety Advisors	• MWPA personnel who conduct health and safety inspection and audit services of confined space entry activities.
Authorised Gas Tester	• Is trained and competent in atmospheric gas testing for confined spaces. • Test the monitoring equipment and ensure it is calibrated prior to evaluating the confined space. • Remain outside the confined space during initial testing unless a risk assessment has been completed and approved by the Manager or their delegate. • Follow the steps of this Procedure. • Complete the appropriate sections of the Confined Space Permit form.

5 What is a Confined Space?

As defined in Section 3, a confined space means an enclosed or partially enclosed space that:

- is not designed or intended primarily to be occupied by a person;
- is, or is designed or intended to be, at normal atmospheric pressure while any person is in the space; and
- is or is likely to be a risk to health and safety from:
  - an atmosphere that does not have a safe oxygen level;
  - contaminants, including airborne gases, vapours and dusts, that may cause injury from fire or explosion;
  - harmful concentrations of any airborne contaminants; or
  - engulfment.

6 General Requirements

The minimum mandatory requirement for work associated with a confined space include the following.

Requirement	Document
Identify the Confined Space(s)	All areas defined as confined spaces shall be signposted accordingly where practicable. Where signage is not in place, refer to Section 2 – Definitions to determine if the space falls under the definition of a confined space.
Confined Space – General	The mandatory documents used to manage confined space entry include the following. • Risk Assessment (in the form of a risk assessment, JSEA or SWMS) • Permit to Work Procedure • Authority to Access • Application for Confined Space Entry • Confined Space Entry Permit (Written Authority • Work activity specific Permit(s) including Isolation permits • Isolation and Tagging Procedure

7 Prior to Entering a Confined Space

7.1 RISK ASSESSMENT AND CONTROL

Personnel in charge of a workplace must manage the risks to health and safety associated with a confined space including risks associated with entering, working in, on or in the vicinity of the confined space (including a risk of a person inadvertently entering the confined space). A risk assessment must be completed and reviewed on site prior to the activity commencing.

Requirement	Topic

Risk Assessment – Minimum Written Requirements	The minimum written requirements recorded must include the following.
	• **Entry and Exit** – State the work to be done and whether the work can be carried out without the need to enter the confined space.
	  • Entry into a confined space is deemed to be when the person's head or upper body is inside or within the boundary of the confined space.
	  • An entry board must be placed by the entrance way for access control – logging entry and exit of personnel.
	  • Identifying the requirements for the removal of all personnel, tools, equipment and materials prior to vacating and closing / sealing the space.
	• **Nature of the Confined Space** – Identify and state the following.
	  • **Access / Exit Points** – Size, location and obstructions. A safe method of entry and exit must be established, such as scaffold, platforms, fixed ladders or fall restraint and harness if retrieval is required.
	  • **Internal Configuration** – Are walking and working surfaces level? Are internal obstructions present? What controls shall be implemented to manage these?
	• **Method of Work** – Identify the range of methods by which the work can be done including:
	  • does equipment required for the task such as electrical cables, leads, hoses and ventilation ducts need to pass through an access way? If so, an alternate access point may be needed to allow for emergency retrieval.
	• **Equipment Required** – Specific equipment must be identified, and controls documented including:
	  • gas supplied equipment ***must*** be outside the confined space when not in use. Gas torches are to be ignited outside the confined space, brought in for the task then returned outside and shut down; and
	  • portable electrical equipment ***must*** be connected to an earth-free, protected extra-low voltage supply (see AS/NZS 3000) from an isolating transformer or earth leakage circuit breaker, or be protected through a residual current device complying with AS/NZS 3190 and located outside the confined space.
	• **Permit** – A confined space entry permit (written authority) must be listed as a control on the risk assessment – see Confined Space Entry Permit – Mandatory Requirements section below.

Requirement	Topic

	• **Atmospheric Hazards** – Identify the actual or potential atmospheric hazards including the requirements to manage oxygen levels, contaminants and flammables. Additionally:
	  ◦ the atmosphere must be continuously tested and monitored while personnel are inside the confined space; and
	  ◦ refer to Specific Considerations – Atmospheric Hazards (below) for more detail.
	• **Signage** – Must be in place before work commences and while work is being carried out in the confined space. The signs must:
	  ◦ clearly identify the confined space, be located next to each entry to the space and inform personnel that a permit is required to enter the space; and
	  ◦ clearly identify if other activities are occurring outside / near the confined space that require notification.
	• **Communication** – Continuous communication must be in place with worker(s) inside the space and the outside and with external parties (emergency response) via suitable means such as voice, radio, mobile phone or combination of these.
	  ◦ A standby person must be present in the vicinity of the space.
	• **Isolation Requirements** – Any plant, equipment or services connected to the space must be isolated to prevent activation or energisation. Refer below to Specific Considerations – Isolation.
	• **Personnel and Training** – The minimum number of personnel required to safely complete the task including mandatory standby personnel are identified.
	  ◦ Personnel must be and the training and competence requirements must be identified including specific confined space rescue training.
	• **Emergency Procedures** – Must be developed and as a minimum identify the following.
	  ◦ Primary and secondary escape routes.
	  ◦ Identify the rescue team, including a Team Leader who is aware of the work being conducted prior to its commencement. If BA is required a dedicated rescue person is to be appointed and must be on site and ready to deploy for the entire activity.
	  ◦ The rescue equipment.
	  ◦ Emergency contacts.
	(Refer to r.66 – r.70, Work Health and Safety (General) Regulations, 2022 if more detail is required).

Requirement	Topic
Risk Assessment – General Considerations	• **Lighting** – Low voltage portable lighting can be used only in a safe atmosphere, where the risk of flammables exists, intrinsically safe lighting is to be used. • **Mechanical Protection** – Additional temporary sheath protection is required on all unarmoured leads where they pass through vessel openings or entry ways. • **Special Requirements** – A list of any special controls required, for example, a maximum or minimum number of personnel able to enter the space at any one time.

Risk Assessment Specific Considerations – Atmospheric Hazards	Specific considerations regarding the identification and management of atmospheric hazards to include in the risk assessment are as follows.
	• **Atmospheric Testing** – Ensuring the atmosphere is safe to enter by testing it according to the following requirements.
	  • **Equipment and Personnel** – Equipment shall be appropriately calibrated, and personnel trained in its use.
	  • **Locations** – Prior to entry, testing shall occur outside the space around hatches, doors, openings, vents. Inside the space, testing is performed without entering the space and at different heights within the space. If all areas inside the space cannot be adequately tested to ensure a safe atmosphere, then entry and testing shall only be done once the risk assessment has been approved and Breathing Apparatus (BA) is used.
	  • **Continuous Testing** – While personnel are inside the confined space, continuous monitoring of the atmosphere will occur.
	• **Purging or Ventilation** – Used to displace a contaminant from a confined space.
	  • Air monitoring must be carried out to determine if the airborne concentration of a contaminant exceeds the exposure standard or if monitoring is necessary to determine if there is a risk to health.
	  • Pure oxygen or gas mixtures with oxygen in a concentration exceeding 21% by volume must not be used for purging or ventilation of any airborne contaminant in the space.
	  • Ventilation via natural, forced or mechanical means is normally required prior to and during entry. A ventilation plan to identify the process is required, for example, pressure, de-pressure with nitrogen, purge with steam, flood with water and drain and/or use of air ducts.
	  • Atmospheric testing must be carried out before entry to check that the purging and ventilation have been effective.

Requirement	Topic

	• **Oxygen Level** – The atmosphere must have a safe oxygen level (r.71).
	  ◦ That is not below 19.5% and not above 23.5%.
	  ◦ If the atmosphere in the space has an oxygen level less than 19.5% by volume, work will not proceed until safe oxygen level is achieved.
	  ◦ Where it may be necessary to enter a confined space to conduct testing of the atmosphere that cannot be confirmed as safe (a remote area of the space); this must be done using breathing apparatus, once the risk assessment is completed and approved.
	• **Flammable Gas and Vapours** – The atmosphere:
	  ◦ must have a concentration of any flammable gas, vapour or mist in the atmosphere of the space, less than 5% of its Lower Explosive Limit (LEL). If the concentration exceeds this level, personnel are to be removed immediately from the confined space.
	  ◦ Work cannot recommence until the concentration is less than 5% of its Lower Explosive Limit (LEL).
	  ◦ A thorough assessment of the type of hydrocarbon gases likely to be present must be completed as mixtures of some hydrocarbons such as benzene, toluene, xylene may have a narcotic effect at levels lower than those allowable under exposure standards.
	• **Liberation of Airborne Hazards** – Residual products inside the space may be released if disturbed (for example, by walking in the space) or as the by-products of the work inside the space (for example, heating, cutting, cleaning) and must be continuously gas monitored.
	• **Emergency Response** – Except in the case of emergency response, entry or remaining in a confined space shall not be permitted where atmospheric conditions are outside the allowable ranges described above. In the case of emergency, only trained emergency services personnel may enter the space.

Requirement	Topic
Risk Assessment Specific Considerations – Isolation	Specific considerations regarding the identification of potentially hazardous plant and services, shall be managed by the risk assessment and PTW processes. Refer to the Isolating and Tagging Procedure and Permit to Work Procedure for further detail of the isolation process / tagging requirements for personnel. Isolation considerations shall include the following. • **Drawings** – A drawing of the enclosed space with isolation locations identified. • **Hazardous Contaminants or Conditions** – If liquids, gases or vapours could be introduced through piping, ducts, vents, drains, conveyors, service pipes or fire protection equipment they shall be positively isolated. • **Activation / Energisation** – Any plant and/or machinery in the space may start operating or be energised to operate shall be positively isolated. • **External Plant or Services** – Plant / machinery or services conducted outside the space that could adversely affect the space must be assessed and shall be positively isolated if there is a risk to the confined space. • **Stored Energy Release** – The release of stored energy or potential energy including hydraulic, pneumatic, electrical, chemical, mechanical, thermal or other types of energy must be assessed and shall be positively isolated.

7.2 PERMIT TO WORK CONTROLS

Permit to Work documents used to manage confined space entry activities include:

- Application for Confined Space Entry; and
- Confined Space Entry Permit.

The Confined Space Entry Permit (Permit) is a document that describes the confined space, the hazards and controls associated with the work in the space and tracking of personnel entering and exiting the space. A Permit must be issued prior to entry into a confined space and is used during all confined space activity.

Requirement	Topic
Confined Space Entry Permit – Mandatory Requirements	Refer to the Permit to Work Procedure for detail of the PTW system. The following conditions will apply. • Personnel are prohibited from entering a confined space to carry out work unless an approved Permit is in place. • The Permit manages the hazard and risk associated with entering, working and exiting the space. Additional hazards, for example – hot work and abrasive blasting must be assessed and managed according to the requirements of the PTW system.

Requirement	Topic

	• A Permit shall be in writing and shall include the following details.
	  • Completed by a competent person(s).
	  • A description of the confined space.
	  • Names of persons permitted to enter the space.
	  • The period of time during which the work in the space will be carried out.
	  • The measures to control risk associated with the proposed work in the space. These measures must be based on the risk assessment.
	  • An area to acknowledge that work in the confined space has been completed and that all persons have left the confined space.
	• Permits are valid for a maximum of 12 hours and will require revalidation every 24hrs.
	• Specific control measures associated with activities occurring inside the confined space, such as hot work, excavations and abrasive blasting have additional control measures identified within those procedures. **Additional permits shall be required for these activities.**
	(Refer to r.66, Work Health and Safety (General) Regulations 2022 for more detail)

8 Training and Competence

Personnel who carry out any function in relation to work in a confined space (for example, entering a confined space, acting as a sentry or other associated role supporting the work in a confined space) are required to be provided with suitable and adequate information, training and instruction.

MWPA require these Relevant Workers to have completed approved training provided by a Registered Training Organisation and have evidence of this training available when conducting confined space activities.

Training, depending upon the role performed, shall include the following or the equivalent.

- Confined Space Entry.
- Gas Test Atmospheres.
- Undertake Confined Space Rescue Training.

9 Records

Records relating to a confined space entry task are to be kept on file for the following minimum period.

Document	Retention Time
Confined Space Entry Permit (Including Risk Assessment)	24 months
Risk Assessments	24 months

Document	Retention Time
Training Records	At least 24 months. MWPA Personnel – If greater than 24 months, the full length of their employment and if they are under health surveillance records are retained in perpetuity.

10 Associated Documents

Document Title
Application for Confined Space Entry
Confined Space Entry Permit
Permit to Work Procedure
Isolation and Tagging Procedure

Location – Mid West Ports Intranet – Document Centre

11 References

Standard	Title
Australian Standards	AS2865: 2009: Safe working in a confined space AS/NZS 3000: 2018 – Wiring rules AS/NZS 3190: 2016 – Approval and test specification

Location – SAI Global – https://www.saiglobal.com/online/

Act or Regulation
Work Health and Safety Act 2020
Work Health and Safety (General) Regulations 2022, Part 4.3 – Confined spaces

Location - Western Australian - https://www.legislation.wa.gov.au | Australian - https://www.legislation.gov.au

Authority	Resource
Safe Work Australia	Confined Spaces: Code of Practice
Safe Work Australia	Workplace Exposure Standard for Airborne Contaminants

12 Monitoring, Evaluation and Review

This document is required to be reviewed every two years from the last scheduled review date.

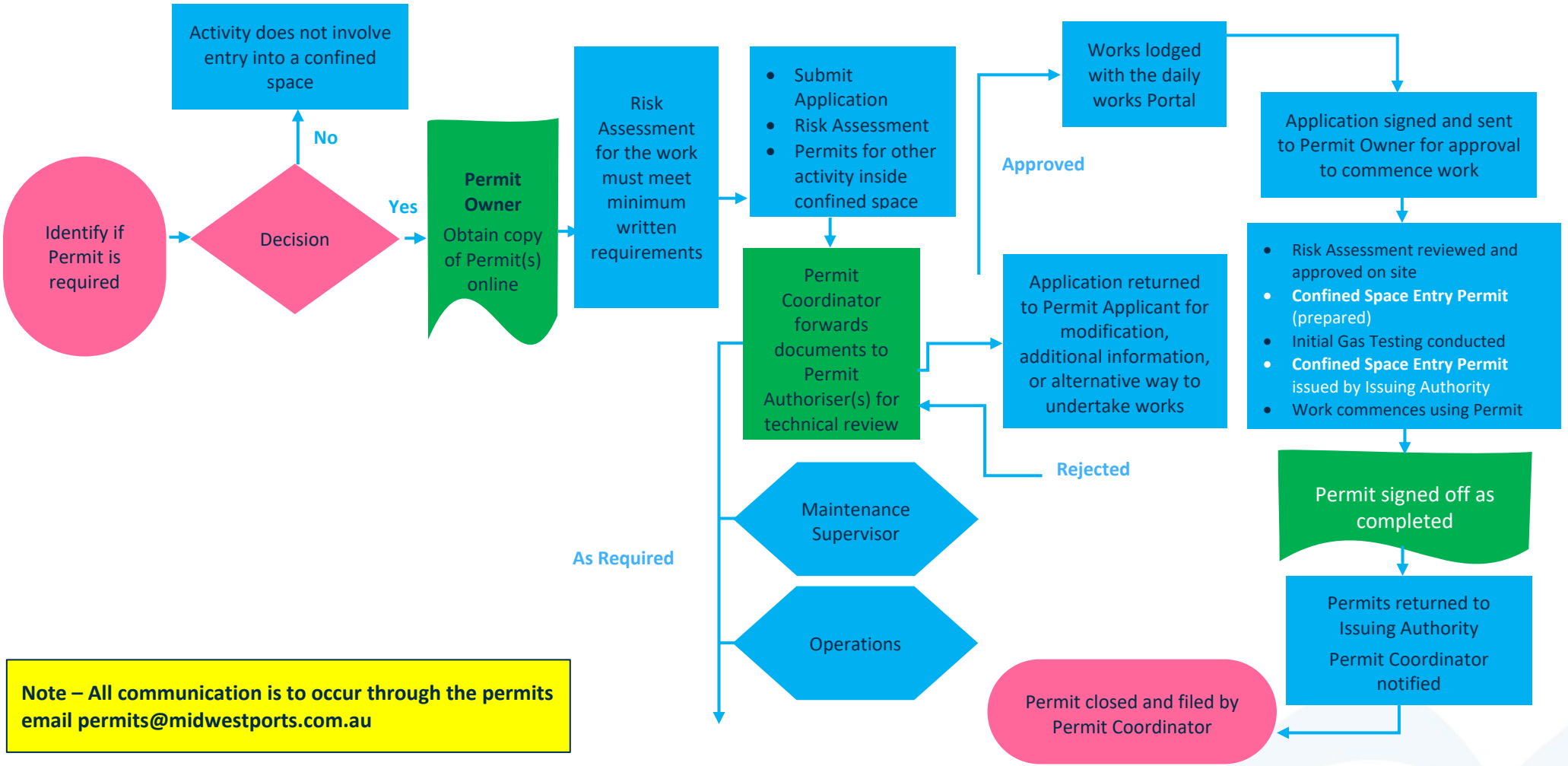
Minor updates made within this two year period, will not be taken as a *full review*.

The Document Custodian is responsible for conducting the review in accordance with **Controlled Documents Review and Approval Process Work Instruction**.

13 Administration

Document Custodian:	Operations Manager
Document Approver:	Chief Operating Officer
Approval Date:	14 January 2023
Document Review Period:	2 yrs

Attachment A – Permit Process Diagram



Note – All communication is to occur through the permits email permits@midwestports.com.au