

EXCAVATION/PENETRATION PROCEDURE

Table of Contents

1	Purpose	2
2	Scope	2
3	Duties and Responsibilities	2
3.1	Excavation Coordinator/Permit Owner	3
3.2	Authority to Coordinate an Excavation	3
3.3	Review Team	3
3.4	Preparation	4
4	Associated Hazards	6
4.1	Environmental	6
4.2	Securing the area	7
4.3	Shoring	7
4.4	Equipment	8
4.5	Details	8
4.6	Hazard Analysis	8
5	Monitoring, Evaluation and Review	9
5.1	Training	9
5.2	Emergency Procedures	9
5.3	Administration	9
6	Associated Documents	10
7	Monitoring, Evaluation and Review	10
8	Administration	11
	Appendix A	12

1 Purpose

The purpose of this procedure is to ensure that excavations and penetrations are carried out in an orderly and coordinated manner, free from personal risk or damage to existing underground, concealed services, and the environment.

Further, it acts as a rigid procedure for confirming the location of all underground or concealed services prior to excavation/penetration activities occurring and provides a means of ensuring all underground or concealed services are surveyed or mapped prior to the backfilling of excavations and covering or closing of penetrations.

To ensure all excavations are carried in a manner as to not negatively impact the marine or landside environment.

The principal objective of this procedure is to provide guidance for when persons undertaking a task that requires the need for an excavation/penetration.

To ensure that a safe system of work exists and is followed for all persons involved in excavation/penetration activities which have the potential to expose a person to hazards when working with excavation/trenching equipment, thereby preventing collapse, injury, illness or death arising from exposure to those hazards.

2 Scope

This procedure applies to any work assignment on any Mid West Ports Authority (**MWPA**) site, operational area or leased site involving excavation and ground penetration activities with a depth more than 150mm from surface and all penetrations of floors, walls, roofs and ceilings regardless of depth.

3 Duties and Responsibilities

Role	Responsibility
Permit Owner	MWPA person who is undertaking the excavation/penetration task and completes the initial permit request.
Excavation Coordinator	MWPA person who is in charge or in control of an excavation/penetration activity undertaken by an external Party (Contractor) for MWPA.
Duty Wharf Supervisor	MWPA person who approves the excavation/penetration activities permit once all the permit criteria are met.
Maintenance Electrician	MWPA person with relevant qualification or experience to review the Electrical/Communication services drawings for the area prescribed in the permit prior to approval.
Electrical Superintendent	MWPA Site Electrical Responsible person to review the Electrical/Communication services drawings for the area prescribed in the permit prior to approval.
Maintenance Plumber	MWPA person with relevant qualification or experience to review the Water/Sewer services drawings for the area prescribed in the permit prior to approval.

Role	Responsibility
Maintenance Supervisor	MWPA person with relevant qualification or experience to review the services drawings for the area prescribed in the permit prior to approval.
Engineer	Provides engineering expertise when required by the permit prior to approval.
Environmental Officer	Provides environmental approval where an Excavation/Penetration Permit requires (as set out in section 3.3).
Commercial Officer	Provides approval for excavation/penetration activities to be undertaken on a MWPA leased site, by the leaseholder or by any Contractors employed by the Leaseholder.

3.1 EXCAVATION COORDINATOR/PERMIT OWNER

The Excavation Coordinator/Permit owner *shall* ensure a Job Safety and Environment Analysis (JSEA) Risk assessment involving all persons is completed prior to commencement of work.

The Excavation Coordinator/Permit Owner in charge of the job shall ensure that all excavation/penetration activities are supervised, and all safety precautions are followed.

The Excavation Coordinator/Permit Owner shall be fully conversant with all MWPA isolation procedures.

3.2 AUTHORITY TO COORDINATE AN EXCAVATION

The following personnel can coordinate an excavation/penetration permit under the title ‘Excavation Coordinator’:

- Maintenance Superintendent;
- Maintenance Supervisor;
- Maintenance Leading Hand;
- Project Manager;
- Electrical Engineer;
- Engineer; and
- Electrical Superintendent

Where the work is identified as being in a confined space, the Excavation Coordinator/Permit Owner shall be deemed a competent person for confined space activities, and where the work is specifically electrical, shall be a Maintenance Electrician, the Electrical Superintendent or an Electrical Engineer.

3.3 REVIEW TEAM

The following personnel are required to review the permits under the below conditions.

Title	Permit Review Requirement
MWPA Engineering	When an excavation/penetration is undertaken in an area with structural implications (Wharf deck, Breakwater, Roadway, Building structural components, shiploader structure).

Title	Permit Review Requirement
MWPA Maintenance Supervisor	All excavation/penetration Permits.
MWPA Maintenance Electrical	When an electrical services drawing is reviewed, or electrical site visit is required.
MWPA Maintenance Plumbing	When a Water or Sewer services drawing is reviewed, or plumbing site visit is required.
MWPA Environmental Officer	When the excavation/penetration requires more than 100kg (1 x Wheelbarrow) of soil to be moved from the site of the excavation/penetration.
MWPA Commercial Manager	When the excavation/penetration is to be undertaken by any person on a MWPA leased site.

3.4 PREPARATION

Application to Excavate/Penetrates Permit shall be used when:

- Any activity involving surface excavations, penetration by star pickets, auger drilling, trenching by backhoe, ditch witch, excavator or crowbar/pick is to take place exceeding 150mm below ground surface.

Note – This does not include excavation by hand/shovel or Non-intrusive digger (Vacuum Excavator).

OR

- Any activity involving the penetration of any floors, walls, roofs and ceilings is to take place, regardless of depth.

Two major reasons prevail:

- It provides a requirement to confirm that buried or concealed services such as electrical, telecom, water, and natural gas, are present or not in the area of a proposed excavation or penetration activity and assists in preventing these services from being damaged. Damage to these services can lead to a significant risk of electric shock/electrocution, gas explosion, water inundation, loss of power supply, communications disruptions and possible disruption to plant distributed control system.
- If new services are to be buried, this permit requires notice to be given to drafting personnel and surveyors to accurately record the physical location, type of service and material details of the services, enabling them to be added to master service plans for future reference prior to the excavation/penetration being filled.

The following steps shall be adhered to by the Permit Owner and or the Excavation Coordinator:

- Application to Excavate/Penetrates Permit is required for all excavations that exceed 150mm below ground surface or penetration activities regardless of what is known about the area.
- The permit shall not be presented for authorisation less than two working days prior to the proposed start date of the work. The Duty Supervisor may waive this requirement depending on the circumstances involved.

Note – In situations involving Western Power or Telstra services, extended notice may be required to comply with legal obligations which must be followed.

- The work to be performed and the location shall be assessed. A risk assessment shall be conducted and a JSEA shall be written by the execution team for the work to be undertaken.
- An Excavation/Penetration Permit shall be completed by the Permit Owner/Excavation Coordinator stating all relevant information. Permits shall be presented with a current buried services drawing.
- The permit shall be presented to the authorised Duty Wharf Supervisor who will detail any hazards which might exist and precautions to take if there are any buried or concealed services in the vicinity or environmental, Commercial or Engineering concerns and forward to the relevant review team member for sign off. Once the authorised Duty Wharf Supervisor has received the appropriate sign off he/she will sign and authorise the permit.

Once the Excavation Coordinator/Permit Owner has registered the works on the Daily Works Portal and received all the relevant approvals the Duty Wharf Supervisor will then register and issue the permit to the Permit Owner Excavation Coordinator.

- An excavation/penetration activity shall not proceed until:
 - checked by the required review members and signed;
 - the works are included in the daily works notification;
 - the permit is signed issued by the Duty Wharf Supervisor; and
 - the permit is accepted by the Permit Owner/Excavation Coordinator.
- Any buried or concealed services that are discovered during the excavation/penetration activity must be immediately reported to the Duty Wharf Supervisor and works suspended immediately. The Wharf Supervisor shall assess the situation with the relevant persons (Safety, Electrical, Plumbing, Engineering or Environment) and shall either permit the works to continue or cancel the current permit or request a new permit to be raised which details the change in conditions. The excavation/penetration permit shall be cancelled and a new permit raised which details any changed conditions.
- On completion of the excavation/penetration activity and prior to back filling the excavation, or covering the penetration, the Excavation Coordinator/Permit Owner, shall arrange to have the excavation/penetration accurately locate and record all details of the services involved and update the master service plan.
- The permit shall be retained until all excavation/penetration activities, backfilling works, penetration covering and recording of the location of services involved are completed.
- When backfilling and covering is complete, the Permit Owner/Excavation Coordinator shall declare the work complete by signing the permit and returning it to the Duty Wharf Supervisor for closing of the permit.

4 Associated Hazards

The following are typical of the hazards that may be present in the vicinity of, or due to, excavation activities or the penetration of walls, ceilings, roofs and flooring.

- Live electrical services carrying voltages up to 11,000 volts alternating current.
- Piping associated with gas services.
- Piping associated with water services.
- Piping associated with sewerage and wastewater services.
- Piping associated with chemicals.
- Telecommunication wiring.
- Fibre Optic Cabling.
- Traffic Movement.
- Excavation, trenching and digging machinery.
- Ground movement, wall collapse.
- Inclement weather.
- Electrical power tools.
- Noise.
- Confined spaces.
- Personnel.
- Potentially contaminated soil and groundwater.

As each excavation/penetration activity presents a unique set of hazards, a thorough risk and hazard assessment shall be conducted prior to the issue of Application to Excavate/Penetrates Permit.

4.1 ENVIRONMENTAL

Due to parts of MWPA site being deemed 'potentially contaminated' there is a requirement to manage surplus excavated soil with a structured approach. MWPA management requirements are set out in the following procedures:

- Sections 2 and 3 of the 'Potentially Contaminated Soil Procedure'.
- Section 10.2 of the 'Waste Management Procedure'.

If a quantity of soil greater than 100kg (1 x Wheelbarrow) will be moved or has the potential to be moved from the excavation site, the Environmental Officer is to be notified prior to the excavation starting (as part of the Excavation/Penetration Permit approval process) or, if an unplanned activity, then before the soil is moved.

Note – No soil is to leave the Port without written approval from the MWPA Environment Team (refer Section 3 ‘Potentially Contaminated Soil Procedure’). Project Managers must ensure Contractors they engage comply with this requirement. This is to ensure potentially contaminated waste soil is disposed of in accordance with the requirements of the *WA Landfill Waste Classification and Waste Definitions 1999*.

Additionally, Permit Owners need to ensure JSEAs consider potentially contaminated soil/groundwater as an occupational hazard and ensure workers under the permit follow good personal hygiene practices to minimise their direct exposure to potentially contaminated soil.

4.2 SECURING THE AREA

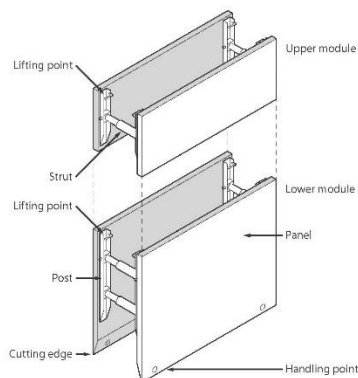
All exposed excavations are to be cordoned off with the appropriate tape/barricading:

- If the site is attended or work is underway soft barricading, information tape/tags.
- If at shift or days end and the excavation is to be left unattended the Permit Owner/Excavation Coordinator must ensure as far as practicable, that the work area is secured from unauthorised access (including inadvertent entry). Barricading to be marked with Danger tape and information tags.
- Information tag is to contain the following information – Name of Permit Owner/Excavation Coordinator, Date, Contact details of the Owner or Coordinator.
- The permit owner/excavation coordinator who proposes to excavate deeper than 1.5m must ensure, as far as practicable, that the work area is secured from unauthorised access (including inadvertent entry).

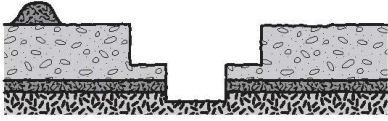
4.3 SHORING

A person who proposes to excavate a trench at least 1.5m deep, must minimise the risk to any person arising from the collapse of the trench or excavation by ensuring all sides of the trench/excavation are adequately supported by one or more of the following:

- Shoring, by shielding or other comparable means (for example, boxing)



- Benching



- Battering



Note – All excavations, trenches, or pits that remain open at the end of shift, shall either be constructed with egress for fauna, or covered, such that animals cannot become trapped.

4.4 EQUIPMENT

Equipment required includes:

- Service Drawings if applicable;
- Barricading, safety tape and information tags;
- Cable Locator; and
Stud and live cable Indicator.

4.5 DETAILS

There is a wide variety of potential hazards unique to each excavation/penetration activity and the nature of the work to be carried out.

Because of the nature of this work, all participants shall be made aware of the hazards involved prior to the commencement of any work.

4.6 HAZARD ANALYSIS

A hazard analysis/risk assessment or JSEA shall be carried out which identifies the hazards and risks involved in the excavation/penetration activity.

This assessment shall clearly identify the hazards people are exposed to, equipment involved and the sequence of events that could lead to an incident.

The likelihood and consequence of an incident shall be considered, and if either is high, then that event shall be planned for, even if the event occurrence is rare.

This assessment shall be carried out involving all relevant personnel and the group will be made up of the area personnel, the associated supervisors and any other person that may be appropriate.

The MWPA Risk Assessment Matrix will be used as an assessment tool to develop a safe system of work (refer Risk Assessment Template).

When assessing the potential risks, these points should be considered:

- Hazards involved and the associated risks;
- Whether any isolations are required;
- Type specific conditions;
- Number of workers required;
- What protective equipment is required;
- Whether special techniques are necessary; and
- Emergency and rescue procedures are in place.

A risk assessment for each excavation/penetration permit shall be conducted to identify and develop a safe system of work before any excavation/penetration activity begins.

5 Monitoring, Evaluation and Review

5.1 TRAINING

Persons carrying out excavation/penetration activities must be given training, which includes:

- hazards of excavation/penetration activities;
- assessment procedures;
- control measures;
- emergency procedures pertaining to work being carried out; and
- selection, use, fit and maintenance of personal protective equipment.

5.2 EMERGENCY PROCEDURES

Appropriate rescue, first aid procedures and provisions must be planned, established, rehearsed and followed at all times.

5.3 ADMINISTRATION

There are a number of basic requirements to be met to fulfil this procedure.

- A risk assessment shall be conducted to assess the hazards and to complete a JSEA for working safely.
- Procedures shall be developed in conjunction with the permit to allow access and authorisation for work to commence.
- Personnel shall be appropriately trained for the task.

- Records shall be kept:
 - Excavation/penetration permits are kept on file by the authorised person for a minimum period of two years.
 - Training records are kept for the term of the employee.
 - All records are available to the employee and any inspectors on request.
- Changes and amendments to these procedures must follow the applicable control procedures.
- All incidents, or failures to adhere to this procedure, must be investigated and appropriate action taken to prevent recurrence as per Risk Management.
- These procedures shall be reviewed in accordance with MWPA record management system, the review group made up of relevant MWPA personnel.

6 Associated Documents

Document Title
Risk Management Procedure
Risk Assessment Template
Job Safety and Environment Analysis (JSEA)
JSEA Guide to Common Hazards
HSE-PRO-037/FRM01 Application to Excavate/Penetrate Permit
MWPA Risk Assessment Matrix
MWPA Potentially Contaminated Soil Procedure
JSEA

Location - Mid West Ports Intranet – [Document Centre](#)

Safe Work Australia – Excavation code of practice
AS3798-2007 Commercial and Residential earthworks
Codes of Practice excavation – Department of Mines, Industry Regulation and Safety

7 Monitoring, Evaluation and Review

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

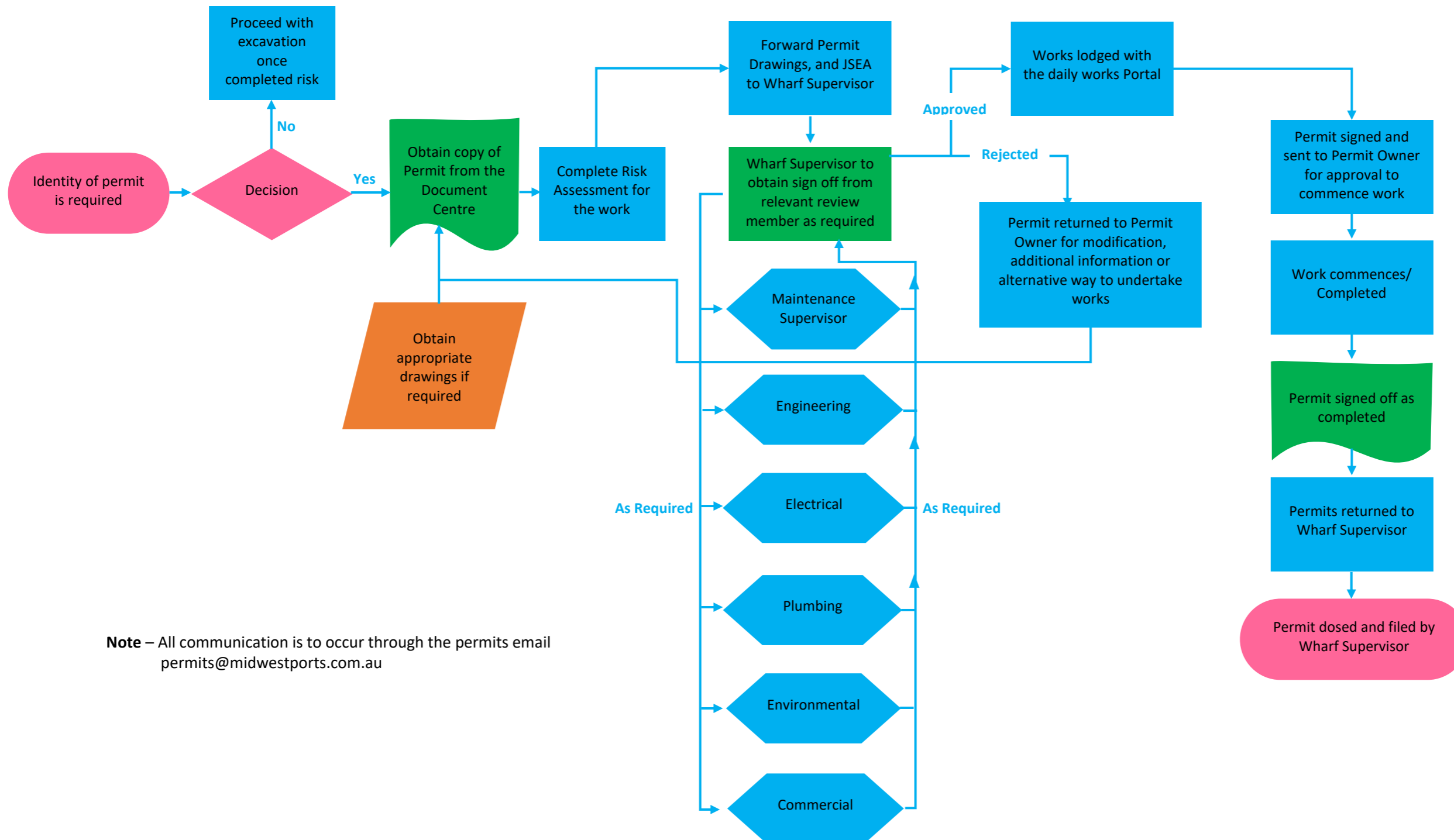
Minor updates made within this two year period, will not be taken as a *full review*.

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

8 Administration

Document Custodian: Electrical Superintendent
Document Approver: Maintenance Services Manager
Approval Date: 8 October 2021
Document Review Period: 2 yrs

Appendix A



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