

EXCAVATION PROCEDURE

OVERVIEW

This procedure outlines the requirements for excavating activities and the use of excavation equipment on construction sites. It ensures excavation works are planned and carried out safely to protect workers, site conditions and the surrounding environment.

Excavation risks are identified and managed through the Project Hazard Register. This Procedure aligns with the Work Health and Safety (General) Regulations 2022 (Division 3 – Excavation Work, s.304–s.306) and the WA Excavation Code of Practice, providing guidance on acceptable methods to achieve legal compliance and safe work practices.

RESPONSIBILITIES

Managing Director / General Manager	Provide resources and ensure compliance with WHS legislation and this Procedure.
Project Manager	Ensure excavation works are planned, resourced, and comply with permits, SWMS, and design requirements.
Site Manager	Accountable for site implementation of this Procedure. Ensure risk assessments, SWMS, permits, and service identification are completed before works. Ensure daily inspections, controls, and exclusion zones are in place and maintained.
HSEQ Team	Provide advice on excavation risks and compliance as per WHS legislation and this Procedure. Support review of SWMS, permits, inspections, and audits.
Engineers (where required)	Design and approve excavation support systems and manage design changes.
Supervisors / Leading Hands	Coordinate excavation activities in line with SWMS and permits. Ensure plant, operators, and spotters are compliant and controlled.
Workers / Plant Operators	Follow SWMS, permits, and site controls. Complete pre-start checks and report hazards immediately.
Spotters (where required)	Monitor excavation activities and maintain exclusion zones. Identify and manage interaction risks between plant, workers, and services.

1. RISK ASSESSMENT

Procedure:

HIRAC shall be applied to all excavations to ensure the hazards are identified, assessed for risk and controlled. Controls shall be identified and implemented in accordance with the Hierarchy of Controls.

The Site Manager is responsible for reviewing the Safe Work Method Statement for adequacy prior to the commencement of any construction excavation activity. Also to ensure that preparations have taken place for potential emergencies that might occur, which include identifying potential hazards that might arise and in the case of excavations may include engulfment from water or gas, outbreak of fire or entrapment in the event of a wall collapse.

Risk Assessment

Excavations shall:

- Have a risk assessment conducted by the Site Manager to assess the best method of excavation, type of temporary ground support systems, need and effective benching, battering or de-watering, effect of surrounding structures, existing underground services.
- Be suitably barricaded and signed.
- Not have loads (plant or excavated material) placed in such a position that they are at risk of falling into the excavation or cause collapse of the sides of an excavation.
- Consider vibrations to the local area that could cause cave-in of the excavation walls.
- Not be occupied where the excavation is greater than or equal to 1.5 metres unless the appropriate shoring is in place. If a Worker is required to work in an excavation 1.5 metres or more in depth, then the person must be protected by shoring. Protective systems include sloping and benching, support and shoring, and shield systems.
- Take into consideration if in close proximity to any buildings, roads or other structures, protect the buildings, roads or other structures by sheet piling, shoring, bracing, guying or other appropriate means.
- Have adequate dust management during excavation and earth moving works.
- Ensure that hazardous, toxic or explosive gases do not enter the excavation area where workers are present. (common gases are from petrol or diesel powered equipment)
- Be assessed/inspected daily by the Site Manager to monitor adequacy and effectiveness of identified controls in accordance with the excavation permit and plan/drawing.

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Be securely fenced at the end of each day where excavations break through security fences around electrical switchyards, railways, swimming pools etc.

2. PRE-START INSPECTION

Procedure:

Pre-start Inspection

Prior to commencement of works, the operator is to conduct a Pre-Start Inspection. The following steps are to be followed when conducting a pre-start inspection:

- [Excavation Permit \(Form 968\)](#) is submitted and approved where excavation is deeper than 300mm.
- The location of underground services must be checked prior to the commencement of excavation. Contact 'Dial Before You Dig' (phone 1100) for service locations.
- A spotter is required to monitor all works conducted in trenches. A spotter is to be identified and allocated to the task prior to commencement.
- Persons are not to work under loads that are being lifted in or out of the excavation.
- Operator and spotter are to wear appropriate PPE – minimum standards are hard hat, safety boots, safety glasses, high vis shirt or vest.
- Complete a vehicle/equipment/plant inspection prestart check
- Ensure any shoring systems used are in line with the Shoring section of this procedure.
- Safe systems of work

Above ground and underground services shall be considered and assessed for risk prior to commencing any work.

Underground services

Prior to the commencement of any excavation works, services and their locations shall be identified with consideration given to potential impacts on adjoining buildings/structures, potential impacts on neighbouring premises and risk of environmental impact. Dial Before You Dig information and existing underground services locations shall be available for the duration of the works and reviewed prior to any excavation works commence. Scanning may be undertaken where unidentified services are located or where no records exist. Where underground services are identified scanning by hand shall be conducted when within 600mm of a service location unless otherwise specified.

Workers shall be informed of any identified underground essential services and associated information prior to commencing works.

Above ground services

Above ground services shall be identified and assessed for risk of hazard. Where risk of hazard is identified, adequate controls shall be implemented using the Hierarchy of Control including but not limited to:

- Alteration in work method to avoid area
- Notification to facility owner
- Isolations (as applicable in accordance with facility owner and conducted by qualified and authorised personnel)
- Installation of tiger tails by facility owner

3. PERMITS

Procedure:

Excavation Permit

Prior to any excavation greater than 300mm in depth taking place, the responsible person shall source an [Excavation Permit \(Form 968\)](#) from the Site Manager. The Excavation Permits shall contain a detailed drawing of the area and any potential hazards that are present. The information contained within the Excavation Permit shall be incorporated into the risk assessment for the scope of works.

All sections of the Permit must be completed, and a responsible person (spotter) is to be nominated to supervise the excavation.

Where vegetation is required to be cleared in order to excavate, approval must be obtained from the appropriate Environment &/or Community Department/s.

4. TEMPORARY SUPPORT SYSTEMS

Procedure:

Shoring / ground support systems

Systems of safety include battering, benching, support systems, shoring systems and shield systems.

One of these systems of safety must be used to ensure safe excavation and prevent cave-ins, and selection is usually dependant on the depth of excavation. The particular system employed will also be influenced by many other factors, such as the location of the excavation and the nature of the soil.

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Excavations without shoring

For a trench to be excavated without shoring, the trench must be less than 1.5 meters deep, the sides should be cut back to a safe slope, such that the material in the sides is able to stand under all anticipated conditions of work and weather. A safe slope may be judged by the careful examination of the size, shape, nature and bedding of the material in the face. Daily inspections shall be conducted on all excavations by the Site Manager prior to works continuing in an existing excavation

Where an excavation exceeds three metres in depth, it should be horizontally benched to stabilise the slopes and to prevent material from the top of the slopes falling down to the working area. Benches should be at about three metre vertical intervals and should not be less than 1.2 metres wide. Factors such as material type, nearby traffic and length of time the excavation will be in place must be considered. The width may need to be greater than 1.2 metres.

Excavations requiring shoring (1.5 metres to 4.8 Metres)

Shoring

Shoring is to be designed by a qualified Engineer, installed and removed in accordance with the Original Equipment Manufacturer's requirements by competent persons who have received instruction and training on the method of installation and removal. The installation must be verified as correctly installed in accordance with the drawing / plan prior to use, by a person responsible for the installation and who has received instruction and training on the method of installation of the shoring system.

Trench Shield / Trench Box (constructed from steel)

A shield is a structure, usually manufactured from steel, which can withstand the forces imposed by a cave-in and protect workers within it. Shields can be permanently installed or portable and designed to move along as work progresses. The use and application of shields and boxes must be determined by a qualified engineer. Shields and boxes must be installed and removed in accordance with the Original Equipment Manufacturer's requirements by competent persons who have received instruction and training on the method of installation and removal. The installation must be verified as correctly installed in accordance with the drawing / plan prior to use, by a person responsible for the installation and who has received instruction and training on the method of installation of the shoring system.

On all Perkins sites steel trench boxes can only be used up to a maximum of 4.8 metres in depth The use of trench boxes to greater depths MUST be approved by a qualified Engineer.

ANY OTHER SHORING SYSTEM THAN THE ABOVE-MENTIONED MUST BE DESIGNED AND APPROVED BY AN ENGINEER BEFORE ANY WORKER IS PERMITTED INTO A TRENCH TO WORK.

Removal of shoring:

Shoring and all support systems should be removed in a manner that protects workers from cave-ins, structural collapse or being struck by structural members. Under no circumstances should shoring be partly removed unless it is for the purpose of complete removal and backfilling.

Drawings/Plans

Where temporary support systems are utilised, they will be detailed on up-to-date drawings/plans specific to the excavation works.

Changes to Design

Where changes to the design or to installed systems are required this will be authorised and signed off by a suitably qualified Engineer. Where the change in design is material and may have implications for health, safety or quality, the change is implemented in accordance with the [Hazard-Risk Management Practices Procedure \(Form 90.01.02\)](#).

5. WORK AREA INSPECTION

Procedure:

Work Area Inspection

A work area inspection will be conducted prior to the commencement of any excavation. A work area inspection shall include:

- Permit in place for excavation.
- Erection of barricades, bunting or fencing to prevent unauthorised entry, trips, slips or falls into/within excavation work area.
- Erection of signage to warn persons of excavation.
- Adequately battered and benched to prevent collapse.
- Access and egress adequate for personnel to safely enter and exit excavation (ramp, ladder etc.).
- Emergency procedure in place for recovery of personnel within excavation.
- All prevention controls to prevent person falling into excavation are adequate and have been implemented.

Persons working in excavation shall:

- Not work alone and be continuously supervised when at significant risk
- Not work under loads that are being lifted in or out of the excavation
- Wear safety helmet and eye protection and wear high visibility clothing when working around mobile equipment
- Have safe access and egress provided in the form of ladder-ways, stairs or ramps. In trenches access ways shall be provided at least every 30 metres where people are working near junctions or angles in the trench line
- Not climb on excavation/trench supports
- Have an effective communication system in place between themselves and plant operators
- Be informed through the site induction of these requirements, and any hazards which may be present on site

Uncontrolled when printed

ID: Procedure 90.01.17

Version: 2.0

Last Review date: 22/04/2026

Owner: HSEQ

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- Be protected from falls

Mobile equipment working in, around or on the excavation shall:

- Be operated by a competent person who holds the appropriate high risk work licence for the mobile equipment, or a Statement of Attainment issued by a RTO.
- Have a reversing alarm and revolving light
- Inspected and maintained in accordance with the manufacturer's instructions
- Not operate in close proximity to the edge of an excavation
- Be separated from unrelated traffic in/out of the excavation, where practicable
- Operate on properly constructed ramps at least 3.7 metres wide for one way traffic or non-passing traffic and at least 6.7 metres for passing traffic
- Not operate within the danger zone of an overhead power line

Inspection

Daily inspections shall be conducted on all excavations by the Site Manager prior to works continuing in an existing excavation. Visual inspections shall be documented in the daily site diary to verify that the inspection has been undertaken and that the excavation is safe with all relevant measures in place to prevent injury, harm or damage.

Temporary Support Systems (shoring/shields/boxes) shall be inspected and monitored in accordance with the Original Equipment Manufacturer's requirements, or where no requirements are outlined, in accordance with routine site inspections as per the [HSE Management Plan \(Form 967\)](#) (in addition to daily inspections by the Site Manager as above).

If unsafe conditions are found either during the inspection or during the normal course of work, work in the excavation shall cease immediately and persons should not enter the excavation until the unsafe condition has been rectified

6. HAZARDS

Procedure:

Hazards

- Plant and personnel in close proximity to each other
- Personnel injury or property damage sustained by being hit by moving plant.
- Plant failure causing damage to equipment/property or injuring personnel/general public.
- Trench cave-ins causing serious bodily injury.
- Objects falling onto personnel in the trench causing cuts, lacerations and head injuries.
- Personnel falling into the trench/excavated area.
- Lack of oxygen or contaminated air.
- Contact with underground/overhead services.
- Airbourne contaminants.

Controls

All excavations shall be adequately controlled by use of barriers, exclusion zones, battered and / or benched, signage erected, permits submitted and approved, visually inspected daily by the Site Manager and shall include adequate access and egress at all times.

Shoring shall be installed where applicable to prevent collapse of trench sides.

All excavations should be conducted in reference to the Work Health and Safety (General) Regulations 2022 and the WA Excavation Code of Practice.

LINK TO SUPPORTING DOCUMENTS

- [Excavation Permit \(Form 968\)](#)
- [Hazard-Risk Management Practices Procedure \(Form 90.01.02\)](#)
- [HSE Management Plan \(Form 967\)](#)

REFERENCES

- Work Health and Safety Act 2020
- Work Health and Safety Regulations 2022
- WA Excavation Code of Practice