

# HRP21: Excavation and Trenching

## Section 1 - Purpose and Scope

(1) The purpose of this procedure is to ensure the management of risks associated with excavation and trenching at Southern Cross University (SCU) are appropriately managed and controlled.

(2) The purpose of this procedure is to ensure Southern Cross University's management, employees, contractors, students, visitors and others are aware of the risks associated with excavation and trenching in the workplace, management strategies and to provide advice on appropriate controls.

(3) All employees, students and others including both independent contractors and contractors under SCU control are to be made aware of and follow this procedure.

(4) This Procedure applies to all SCU Work Units and sites. The procedure aligns with WHS legislation in the relevant jurisdictions SCU operates in.

(5) Excavation work includes work to make an excavation or to fill or partly fill an excavation. Excavation work commonly includes work involving the removal of soil or rock from a site to form an open face, hole or cavity, including trenches, shafts and tunnels. Excavation work is generally carried out using tools, machinery or explosives.

(6) Excavation work is also classed as a type of construction work, therefore, all requirements relating to construction work must also be followed when performing excavations. Construction work, including work connected with excavation on, in, or near a shaft or trench with 1.5 metre depth or greater, or a tunnel, is classed as 'high risk construction work' and a corresponding safe work method statement (SWMS) must be completed prior to commencing work.

## Section 2 - Definitions

Excavation	A trench, tunnel or shaft, but does not include: <ul style="list-style-type: none"> <li>• a mine</li> <li>• a bore to which a relevant water law applies, or</li> <li>• a trench for use as a place of interment</li> </ul>
Barrier	A physical structure that blocks or impedes something such as hoarding.
Bench	A horizontal step cut into the face or side or wall of an excavation to provide horizontal bearing and sliding resistance.
Benching	The horizontal stepping of the face, side, or wall of an excavation.
Competent person	A person who has acquired through training, qualification, or experience the knowledge and skills to carry out the task.
Construction work	Any work carried out in connection with the construction, alteration, conversion, fitting-out, commissioning, renovation, repair, maintenance, refurbishment, demolition, decommissioning or dismantling of a structure.
Exclusion zone	An area from which all persons are excluded during excavation work.

Face	An exposed sloping or vertical surface resulting from the excavation of material.
Shaft	A vertical or inclined way or opening from the surface downwards or from any underground working, the dimensions of which (apart from the perimeter) are less than its depth.
Shoring	The use of timber, steel, or other structural material to support an excavation in order to prevent collapse so that construction can proceed.
Tunnel	An underground passage or opening that is approximately horizontal and commences at the surface of the ground or an excavation.
Trench	A horizontal or inclined way or opening: <ul style="list-style-type: none"> <li>• the length of which is greater than its width and greater than or equal to its depth</li> <li>• that commences starts at and extends below the surface of the ground</li> <li>• that is open to the surface along its length</li> </ul>

## Section 3 - Procedures

### Risk Assessments and Safe Work Method Statements for Excavation Work

(7) All excavation work requires a risk assessment to be completed by the person undertaking the excavation using WHSMP02 – FOR – 01 - Risk Assessment and Control Tool. Property Services must approve the risk assessment.

(8) Any excavation that is considered ‘high-risk construction work, e.g., a shaft or trench with a depth greater than 1.5m, or a tunnel, will require a Safe Work Method Statement (SWMS) to be submitted to and approved by Property Services before work commencing.

(9) Both risk assessment and SWMS include the risk management process, which entails:

- a. Identifying hazards.
- b. Assessing risks.
- c. Controlling risks – in accordance with the hierarchy of controls.
- d. Monitoring and reviewing.

### Consultation

(10) Although there may be limited opportunity to consult with workers directly involved in excavation work at the design stage, it is important that such consultation occurs as the excavation nears planning and implementation stages. Example topics where consultation with workers involved in excavation works should be done include the following:

- a. Types of excavation methods.
- b. Types of proposed emergency procedures and their anticipated effectiveness.
- c. Interactions and consultation with other trades/PCBUs.
- d. Development and refinement of safe work methods statements.
- e. Managing the risks associated with excavation.
- f. Providing information and training related to safe excavation works.

(11) Consultation and coordination of multiple duty holders and between different trades/workers operating onsite near or in excavation areas is vital. For instance, consultation and open communication between project managers, engineers, mobile plant operators, and workers involved in excavations to avoid dangerous interactions or high potential incidents.

## Identifying Hazards

(12) Identifying hazards associated with excavation work is the first step in the risk management process and the following should be considered (note, that this is not an exhaustive list):

- a. Local site conditions, including access, ground slope, adjacent buildings and structures, watercourses (including underground), and trees.
- b. Depth of excavation.
- c. Soil properties, including variable soil types, stability, shear strength, cohesion, presence of groundwater, effect of exposure to the elements.
- d. Fractures or faults in rocks, including joints, bedding planes, dip and strike directions and angles, clay seams.
- e. Any specialized plant or work methods required (e.g., ground support).
- f. The method/s of transport, haul routes, and disposal.
- g. What exposures might occur, such as noise, ultraviolet rays, or hazardous chemicals.
- h. The number and type of people involved.
- i. The possibility of unauthorised access to the work area.
- j. Local weather conditions.
- k. The length of time that the excavation will be open.
- l. Excavation-specific hazards may include:
- m. Underground essential services (gas, water, sewerage, telecommunications, electricity).
- n. Fall or dislodgement of earth or rock.
- o. Falls from one level to another and falling objects.
- p. Inappropriate placement of excavated materials, plant, or other loads.
- q. Instability of adjoining structures.
- r. Previous ground disturbance and instability due to adjacent work.
- s. Presence of or possible in-rush of water or other liquids.
- t. Hazardous manual tasks, hazardous chemicals, and hazardous atmospheres.
- u. Vibration, hazardous noise,
- v. Overhead essential services such as powerlines, and ground -mounted essential services such as transformers, gas and water meters.

## Assessing Risks

(13) Assessing risks includes:

- a. Identifying which people are at risk.
- b. Determining what sources and processes are causing the risks.
- c. Identifying if and what kind of control measures should be implemented to mitigate the risks.

## Controlling the Risks

(14) In accordance with the hierarchy of controls, risks should be controlled by eliminating them. If the requirement to excavate cannot be eliminated, a combination of controls such as substitution, isolation, and engineering should be used to reduce risks so far as it reasonably practicable. These higher-order controls should be supplemented and supported by administrative controls (e.g., training and procedures) and personal protective equipment (PPE), to reduce any residual and unacceptable risks to an appropriate level.

## **Underground Services**

- (15) Use Dial Before You Dig service to locate underground utilities.
- (16) Physically mark the location of underground services before excavation.
- (17) Hand dig or use non-destructive methods within proximity of marked services.

## **Soil Stability**

- (18) Assess soil type and stability before excavation.
- (19) Implement appropriate shoring, shielding, or benching systems for trenches deeper than 1.5 meters.
- (20) Avoid working in trenches during or after heavy rainfall.

## **Access and Egress**

- (21) Ensure the work area is secured against unauthorised access.
- (22) Provide safe access and egress for trenches deeper than 1.2 meters (e.g., ladders, ramps).
- (23) Ensure access points are within 8 meters of any worker within the trench.

## **Fall Protection**

- (24) Where reasonably practicable, works must be carried out at the lowest point or on a solid construction (i.e., an area that has a structural capability to sustain the load of people and plant/equipment, has edge protection installed, has an even surface gradient, and safe access and exit points) to eliminate the risks of falls.
- (25) Where fall risks cannot be eliminated, the following controls must be implemented, in order, so far as reasonably practicable to minimise risk:
  - a. A fall prevention device.
  - b. A work positioning system such as rope access systems.
  - c. A fall arrest system.
  - d. Install barriers or edge protection around the excavation site to prevent falls.
  - e. Keep materials, tools, and equipment at least 1 meter from the edge of the trench.
  - f. A safe work methods statement must be prepared for works where there is a risk of falls 2 metres or more and/or where the trench is more than 1.5 meters in depth.

## **Atmospheric Testing**

- (26) Conduct atmospheric testing in trenches deeper than 1.5 meters where there is a risk of harmful atmospheres.
- (27) Ensure proper ventilation and use gas detectors as needed, which are installed, calibrated, and maintained by appropriate competent persons. Consider the effects of mobile plant and other equipment (e.g., combustion engines) being operated in the vicinity of trenches and the potential for harmful gasses to accumulate.
- (28) Air monitoring must be implemented if it is not certain if the airborne concentration of a substance or mixture exceeds the relevant exposure standards in the area of excavation, or monitoring is necessary to identify whether there is a risk to workers' health.

## **Water Management**

(29) Implement dewatering measures to control water accumulation in trenches.

(30) Use pumps, drainage systems, or other methods to maintain a dry working area.

## **Personal Protective Equipment (PPE)**

(31) Provide and enforce the use of appropriate PPE (e.g., hard hats, high-visibility clothing, gloves, steel-capped boots).

(32) Ensure all PPE is in good condition, maintained and correctly used.

## **Mobile Plant**

(33) Mobile plant presents a high risk to -employees, contractors or other pedestrians in the vicinity of excavation works mainly due to operator blind spots, so employees and contractors must be made aware of such blind spots through induction and training.

(34) A primary method of control involves establishing positive communication protocols that ensure mobile plant operators are aware of employees and contractors in the vicinity and do not operate until both parties make and receive acknowledgement of onsite movements.

(35) High visibility clothing must be worn at all times when performing excavation works involving mobile plant.

(36) Alarms and other devices to warn either the operator or the pedestrians of mobile plant movements (e.g., cameras) must be installed and operable.

(37) Plant movement near open excavation areas must be restricted physically or managed through ensuring a competent person is engaged to ensure that the load of the mobile plant can be sustained.

## **Manual work**

(38) Excavations can involve cramped or awkward conditions, or working in close proximity to other workers who are operating dangerous hand tools.

(39) Ensure the risk of musculoskeletal disorders are managed effectively.

(40) Ensure that workers are kept apart at a sufficient distance, to prevent injury from the use of picks or hand tools, taking into account tool swing arcs and other movements or areas of effect of tools/equipment.

## **SCU Mandatory Controls**

(41) For any excavation over 300mm, excavation cannot commence until:

- a. All underground essential services in and adjacent to the excavation area have been located, identified and appropriate controls implemented to mitigate risks associated with the location of these services, regardless of depth.
- b. Electrical services have been isolated. If electrical services cannot be isolated, a cable detector must be used to ensure that there are no underground services in the excavation area. Refer to the Excavation Work - Code of Practice 2021 for more detailed information on risk control for excavation work.

## **Emergency Procedures**

(42) As per the Excavation Work - Code of Practice 2021, ensure emergency procedures are in place before the

commencement of any excavation work. Emergency procedures should cover a range of unexpected emergency incidents, e.g. ground slip, engulfment, flooding, gas leaks and rescuing workers from an excavation. Emergency procedures must include:

- a. Identification of potential emergencies relevant to the work site.
- b. Emergency contact details.
- c. Locations of emergency equipment.
- d. Procedures for the notification of emergency services.
- e. Evacuation procedures and routes.
- f. First aid arrangements.
- g. Asbestos Management

(43) During excavation work employees and contractors may come into contact with material contaminated with asbestos, e.g. underground water pipes, telecommunication pits or naturally occurring asbestos in the material being excavated. In the event that asbestos or ACM is present or disturbed the HRP03: Asbestos Management procedure is to be followed.

(44) The asbestos register must be reviewed and updated if asbestos is removed, disturbed, sealed, or enclosed during excavation and trenching as per the HRP03: Asbestos Management procedure.

### **Training and Competency**

(45) Any SCU employee undertaking excavation and trenching work should receive suitable and adequate information, training, and instruction. Training must be site-specific and provided by a competent person. Employees must also be trained in the use, wearing, storage, and maintenance of PPE.

(46) Supervisors must be experienced and trained to ensure excavation work is carried out safely. All employees operating specific plant must have valid licences.

### **Monitoring and Review of Process**

(47) It is paramount that all implemented controls are monitored and reviewed continuously to ensure:

- a. The risk assessment process has been effective in identifying all hazards.
- b. Hazards are being effectively controlled.
- c. The implemented controls are not introducing more uncontrolled hazards.
- d. Workers are working in accordance with the risk assessment.
- e. Property Services and the WHS Team must conduct regular inspections, audits, and reviews to ensure compliance and make necessary adjustments to the procedures based on findings.

### **Excavation Works Classed as Construction Projects**

(48) If the value of an excavation works either in isolation or in conjunction with other construction activities is \$250,000 or more, then it is classed as a construction project and additional WHS requirements will apply.

(49) There can only be one principal contractor for a construction project, and this will be either SCU when commissioning the project or a person appointed as the principal contractor by SCU. Principal contractors on construction projects have additional duties that include:

- a. Preparing and reviewing a WHS management plan.
- b. Preparing or taking all reasonable steps to obtain a safe work methods statement before any high-risk

construction work commences.

- c. Establishing measures to manage the work environment including reducing the risk of falls, providing appropriate facilities, first aid, an emergency plan and traffic management.
- d. Installing signs that display information about the principal contractor including name, contract details, and site office details.
- e. Securing the construction workplace from unauthorised access.

## Section 4 - Roles and Responsibilities

(50) Refer to WHS Responsibility and Accountability Statement.

## Section 5 - Records of Documentation

(51) All relevant documentation will be recorded and kept in accordance with WHS Legislation and other legislative obligations including:

- a. Risk assessments
- b. Training records
- c. Emergency procedures
- d. Asbestos identification and removal, including the asbestos register

## Section 6 - Revision and Approval History

(52) This procedure will be reviewed as per nominated review dates or because of other events, such as:

- a. Internal and external audit outcomes.
- b. Legislative changes.
- c. Outcomes from management reviews.
- d. Incidents.

## Section 7 - References

Work Health and Safety Act 2011
Work Health and Safety Regulation 2011 (QLD) 2017 (NSW)
Excavation Work - Code of Practice 2021

## Section 8 - Related Documents

WHSMP02 - FOR - 01 - Risk Assessment and Control Tool.
WHSMP09: Permit to work - Hazardous Work

## Status and Details

<b>Status</b>	Current
<b>Effective Date</b>	9th December 2024
<b>Review Date</b>	9th December 2027
<b>Approval Authority</b>	Vice President (People and Culture)
<b>Approval Date</b>	9th December 2024
<b>Expiry Date</b>	Not Applicable
<b>Responsible Executive</b>	Kim Franks Vice President (People and Culture)
<b>Head of Work Unit</b>	Brendan Pearce Director, Workplace Relations
<b>Enquiries Contact</b>	Shaun Brown Manager, Workplace Health and Safety <hr/> Vice President (People and Culture) portfolio