

HRP21: Excavation and Trenching

Section 1 - Purpose and Scope

(1) This Procedure aims to ensure Southern Cross University (SCU) management, employees, students, and others know the risks associated with excavation and trenching in the workplace and relevant management strategies for the risk mitigation process.

(2) All employees, students, and others must follow this Procedure.

(3) This Procedure applies to all SCU Work Units and sites.

Section 2 - Definitions

Excavation	Excavation work includes work to make an excavation, fill, or partly fill an excavation. Excavation commonly includes removing 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. 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 a 1.5-meter depth or greater or a tunnel, is classed as 'high-risk construction work' and a corresponding safe work method statement (SWMS) must be completed before commencing work. A trench, tunnel, or shaft, but does not include: • A mine. • A bore to which a relevant water law applies. • A trench for use as a place of interment.
Barrier	A physical structure that blocks or impedes something, such as hoarding.
Bench	A horizontal step cut into an excavation's face, side, or wall to provide horizontal bearing and sliding resistance.
Benching	The horizontal stepping of an excavation's face, side, or wall.
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	Timber, steel, or other structural material can support an excavation to prevent collapse so that construction can proceed.
Tunnel	An underground passage or opening that is approximately horizontal and commences at the ground's surface or an excavation.

Trench	A horizontal or inclined way or opening: 1. The length of which is greater than its width and greater than or equal to its depth. 2. That commences starts at and extends below the surface of the ground. • That is open to the surface along its length.
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Section 3 - Procedures

Risk Management Process

(4) SCU will follow the risk management process outlined in [WHSMP02: Hazard Identification, Risk and Opportunity Management](#) Procedure. This process includes:

- a. Hazard identification.
- b. Risk assessment.
- c. Risk Control.
- d. Review of control measures.

Consultation

(5) Consultation is critical for effective risk management and is outlined in [WHSMP07: Consultation, Communication and Participation](#).

(6) Although there may be limited opportunity to consult with workers directly involved in excavation work at the design stage, such consultation must occur as the excavation nears the 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. Interact and consult 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.

(7) Consultation and coordination of multiple duty holders and between 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.

Part A - Hazard Identification

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

(9) Any excavation 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.

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

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

(11) 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 include variable soil types, stability, shear strength, cohesion, presence of groundwater, and effect of exposure to the elements.
- d. Fractures or faults in rocks, including joints, bedding planes, dip and strike directions and angles, and 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, such as noise, ultraviolet rays, or hazardous chemicals, might occur?
- 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 services such as transformers, gas and water meters.

Part B - Risk Assessment

(12) Assessing risks includes:

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

Part C - Risk Control

(13) Following the hierarchy of controls, risks should be controlled by eliminating them. Suppose the requirement to excavate cannot be eliminated. In that case, a combination of controls such as substitution, isolation, and engineering

should be used to reduce risks so far as is 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 residual and unacceptable risks appropriately.

Underground Services

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

Soil Stability

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

Access and Egress

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

Fall Protection

- (23) 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 a 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.
- (24) 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. To prevent falls, barriers or edge protection should be installed around the excavation site.
 - 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 with a risk of falls 2 meters or more and/or where the trench is more than 1.5 meters deep.

Atmospheric Testing

- (25) Conduct atmospheric testing in trenches deeper than 1.5 meters with a risk of harmful atmospheres.
- (26) 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.
- (27) Air monitoring must be implemented if the airborne concentration of a substance or mixture exceeds the relevant

exposure standards in the excavation area, or monitoring is necessary to identify whether there is a risk to workers' health.

Water Management

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

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

Personal Protective Equipment (PPE)

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

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

Mobile Plant

(32) Mobile plant present 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.

(33) A primary control method 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 acknowledge onsite movements.

(34) High visibility clothing must always be worn when performing mobile plant excavation works.

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

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

Manual Work

(37) Excavations can involve cramped or awkward conditions or work close to other workers operating dangerous hand tools.

(38) Ensure the risk of musculoskeletal disorders is managed effectively.

(39) Ensure that workers are kept apart at a sufficient distance to prevent injury from using picks or hand tools, considering tool swing arcs and other movements or areas of effect of tools/equipment.

SCU Mandatory Controls

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

- a. All underground essential services in and adjacent to the excavation area have been located and identified, and appropriate controls have been 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 no underground services are in the excavation area. Refer to the Excavation Work - Code of Practice for more detailed information on risk control for excavation work.

Emergency Procedures

(41) 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 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.

Asbestos Management

(42) 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 excavated material. If asbestos or ACM is present or disturbed, the [HRP03: Asbestos Management](#) must be followed.

(43) 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

(44) 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 using, wearing, storing, and maintaining PPE.

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

Part D - Review of Control Measures

(46) 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 do not introduce more uncontrolled hazards.
- d. Workers are working following the risk assessment.
- e. Property Services and the WHS Team must conduct regular inspections, audits, and reviews to ensure compliance and make necessary procedure adjustments based on findings.

Additional Excavation Requirements - Construction Projects

(47) If the value of excavation work 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.

(48) There can only be one principal contractor for a construction project, 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

(49) Refer to [WHSMP13: Responsibility and Accountability Statement](#).

Section 5 - Records of Documentation

(50) All relevant documentation will be recorded and kept following 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

(51) 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 (in the applicable jurisdiction that SCU operates)
Work Health and Safety Regulation (in the applicable jurisdiction that SCU operates)
Excavation Work – Code of Practice 2021

Section 8 - Related Documents

WHSMP02 - FOR - 01 - Hazard Identification, Risk Assessment and Control Tool

[WHSMP09: Permit to Work - Hazardous Work](#)

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