Procedure Name: Excavation and Trenching Procedure

1. Overview

The District Council of Cleve (the organisation), as part of its commitment under its Hazardous Work Policy, recognises its obligation to manage the health and safety risks associated with excavation and trenching carried out as part of construction work.

This procedure aims to:

a. Identify and manage risks to health and safety associated with excavation work before the work commences having regard to all relevant matters including:

   i. The nature of the excavation;

   ii. The nature of the excavation work, including the range of possible methods of carrying out the work; and

   iii. The means of entry into and exit from the excavation (if applicable).

b. Make sure that, when there is a need to excavate a trench at least 1.5m deep, the organisation:

   i. Minimises the risk to any person arising from the collapse of the trench by adequately supporting the sides of the trench; and

   ii. Secures the work area from unauthorised access (including inadvertent entry) and does so having regard to all relevant matters including:

      - Risks to health and safety arising from unauthorised access to the work area; and
      - The likelihood of unauthorised access occurring,

c. Set out reasonable steps for the organisation to obtain current underground essential services information about the areas in and surrounding the excavation before directing or allowing the excavation work to commence.

d. Eliminate, minimise or control risks before, during and after the performance of the work.

This procedure relates to excavation work if the work includes a trench, tunnel or shaft. It <u>does not apply to the following</u>:

a. A mine, or

b. A well, or

c. A trench for use as a place of interment.

Any excavation and trenching activities that involve hazards and risks to workers and others are subject to the Hazard Management Procedure.

[This procedure deals with excavation and trenching, which is part of construction work, as defined in WHS legislation. Users of this procedure are advised to ensure that all legal requirements for construction work are addressed. This may be assisted by reference to the LGAWCS Model WHS Construction Activities Guidance Checklist.]

2. Core Components

The core components of the Excavation and Trenching Procedure aim to:

a. Meet the legislative requirements for construction projects and construction work;

b. Implement a system for documenting and recording:

   i. Risk assessments relating to excavation and trenching;

   ii. Safe Work Method Statements (SWMS) for proposed excavation work more than 1.5 metres deep;

   iii. Appropriate controls in line with the hierarchy of control; (delete are identified etc.)

   iv. Risks associated with excavation and trenching activities carried out as part of construction works on the Hazard Profile/ Risk/ Corrective and Preventative Action Registers;

c. Manage risks to health and safety associated with excavation work before the work commences, including the risk of:

   i. A person falling into an excavation;

   ii. A person being trapped by the collapse of an excavation;

   iii. A person working in an excavation being struck by a falling thing;

   iv. A person working in an excavation being exposed to an airborne contaminant; and

d. Make sure that, when trenching, all sides of a trench are adequately supported by thorough shoring (by shielding or other comparable means), benching or battering unless in receipt of written advice from a geotechnical engineer that all sides of the trench are safe from collapse; and

e. Identify training requirements as part of the Training Needs Analysis (TNA) and maintain a record of required licences.

3. Definitions

Battering	To form the face or side or wall of an excavation to an angle, usually less than the natural angle of repose, to prevent earth slippage [as defined in the Approved Code of Practice: Excavation Work, Appendix A].
Benching	The horizontal stepping of the face, side, or wall of an excavation [as defined in the Approved Code of Practice: Excavation Work, Appendix A].
Competent person	A person who has acquired through training, qualification or experience and the knowledge and skills to carry out the task [as defined by the Work Health and Safety Regulations 2012, Regulation 5].
Construction work	Work carried out in connection with the construction, alteration, conversion, fitting-out, commissioning, renovation, repair, maintenance, refurbishment, demolition, decommissioning or dismantling of a structure

	[as defined by the Work Health and Safety Regulations 2012, Regulation 289(1)] Construction work does not include: (a) The manufacture of plant; (b) The prefabrication of elements, other than at a place specifically established for the construction work, for use in construction work; (c) The construction or assembly of a structure that once constructed or assembled is intended to be transported to another place; (d) Testing, maintenance or repair work of a minor nature carried out in connection with a structure; or (e) Mining or the exploration for or extraction of minerals. [as defined by the Work Health and Safety Regulations 2012, Regulation 289(3)]
Construction project	A project that involves construction work where the cost of the construction work is $450,000 or more. [as defined by Work Health and Safety Regulations 2012, Regulation 292]
Excavation work	(a) Make an excavation; or (b) Fill or partly fill an excavation [as defined in the Work Health and Safety Regulations 2012, Regulation 5].
Geotechnical Engineer	An engineer: (a) Whose qualifications are acceptable for membership of the Institution of Engineers, Australia; and (b) Who has qualifications and experience in soil stability and mechanics and excavation work [as defined in the Approved Code of Practice: Excavation Work, Appendix A].
Health and Safety Committee (HSC) known as the District Council of Cleve Safety Committee	The functions of a Health and Safety Committee are: (a) to facilitate co-operation between Council and workers in instigating, developing and carrying out measures designed to ensure the workers' health and safety at work; (b) to assist in developing standards, rules and procedures relating to health and safety that are to be followed at the workplace; and (c) any other functions prescribed by the regulations or agreed between Council and the committee. [Work Health and Safety Act 2012 Section 77]

Hierarchy of Control	If it is not reasonably practicable for risks to health and safety to be eliminated, risks must be minimised, so far as is reasonably practicable, by doing 1 or more of the following: (a) Substituting (wholly or partly) the hazard giving rise to the risk with something that gives rise to a lesser risk; (b) Isolating the hazard from any person exposed to it; (c) Implementing engineering controls. If a risk then remains, the duty holder must minimise the remaining risk, so far as is reasonably practicable, by implementing administrative controls. If a risk then remains the duty holder must minimise the remaining risk, so far as is reasonably practicable, by ensuring the provision and use of suitable personal protective equipment. [as defined by the Work Health and Safety Regulations 2012, Regulation 36]
High risk construction work	Construction work that— (a) Involves a risk of a person falling more than 3 metres; or (b) Is carried out on a telecommunication tower; or (c) Involves demolition of an element of a structure that is load-bearing or otherwise related to the physical integrity of the structure; or (d) Involves, or is likely to involve, the disturbance of asbestos; or (e) Involves structural alterations or repairs that require temporary support to prevent collapse; or (f) Is carried out in or near a confined space; or (g) Is carried out in or near— (i) A shaft or trench with an excavated depth greater than 1.5 metres; or (ii) A tunnel; or (h) Involves the use of explosives; or (i) Is carried out on or near pressurised gas distribution mains or piping; or (j) Is carried out on or near chemical, fuel or refrigerant lines; or (k) Is carried out on or near energised electrical installations or services; or (l) Is carried out in an area that may have a contaminated or flammable atmosphere; or (m) Involves tilt-up or precast concrete; or (n) Is carried out on, in or adjacent to a road, railway, shipping lane or other traffic corridor that is in use by traffic other than pedestrians; or (o) Is carried out in an area at a workplace in which there is any movement of powered mobile plant; or (p) Is carried out in an area in which there are artificial extremes of temperature; or (q) Is carried out in or near water or other liquid that involves a risk of drowning; or

	(r) Involves diving work. [as defined by the Work Health and Safety Regulations 2012, Regulation 291]
Health and Safety Representative (HSR)	A Health and Safety Representative is elected by a work group to represent workers in the group on matters affecting their health, safety and welfare.
Interment	The burial of a corpse in a grave or tomb.
Person Conducting a Business or Undertaking (PCBU)	A person who conducts a business or undertaking- (a) Whether the person conducts the business or undertaking alone or with others; and (b) Whether or not the business or undertaking is conducted for profit or gain. [as defined by the Work Health and Safety Act 2012]
Personal Protective Equipment (PPE)	Anything used or worn by a person to minimize risk to the person's health and safety, including air supplied respiratory equipment [as defined by the Work Health and Safety Regulations 2012, Regulation 5].
Principal contractor	The PCBU that commissions a construction project is the principal contractor, unless the person appoints another PCBU to be the principal contractor and authorises such person to have management or control of the workplace and discharges the duties of the principal contractor. A construction project has only one principal contractor at any specific time [as defined by the Work Health and Safety Regulations 2012, Regulation 293] [as explained in the Code of Practice: Construction Work, Section 1.5].
Safe Work Method Statement (SWMS)	To be prepared before high risk construction work commences, a Safe Work Method Statement must: (a) Identify the work that is high risk construction work; and (b) Specify hazards relating to the high risk construction work and risks relating to health and safety associated with those hazards; and (c) Describe the measures to be implemented to control the risks; and (d) Describe how the control measures are to be implemented, monitored and reviewed. [as defined by the Work Health and Safety Regulations 2012, Regulation 299]
Shoring	The use of timber, steel or other structural material to support an excavation in order to prevent collapse so that construction can proceed [as defined in the Approved Code of Practice: Excavation Work, Appendix A]
Structure	Anything that is constructed, whether fixed or moveable, temporary or

	permanent, and includes— (a) Buildings, masts, towers, framework, pipelines, transport infrastructure and underground works (shafts or tunnels); and (b) Any component of a structure; and (c) Part of a structure. [as defined by the Work Health and Safety Act 2012, Section 4.] Examples of structures include: (a) A roadway or pathway; (b) A ship or submarine; (c) Foundations, earth retention works and other earthworks, including river works and sea defence works; (d) Formwork, falsework or any other structure designed or used to provide support, access or containment during construction work; (e) An airfield; (f) A dock, harbour, channel, bridge, viaduct, lagoon or dam; and (g) A sewer or sewerage or drainage works [as defined by the Work Health and Safety Regulations 2012, Regulation 290(1)]
Trench	A horizontal or inclined way or opening— (a) The length of which is greater than its width and greater than or equal to its depth; and (b) That commences at and extends below the surface of the ground; and (c) That is open to the surface along its length. [as defined by the Work Health and Safety Regulations 2012, Section 5].
Tunnel	An underground passage or opening that— (a) Is approximately horizontal; and (b) Commences at the surface of the ground or at an excavation. [as defined in the Work Health and Safety Regulations 2012, Section 5].
Well	An opening in the ground excavated for: (a) The purpose of obtaining access to underground water (b) Some other purpose but that gives access to underground water (c) Natural opening in the ground that gives access to underground water [as defined by the Natural Resources Management Act 2004, Section 3].
WHS management plan	A written plan that sets out the arrangements for managing some site health and safety matters, as set out in Regulation 309(2) [as required and prescribed under Chapter 6, Part 4 of the Work Health and Safety Regulations 2012]

4. Procedure

4.1. Responsibility for Managing Excavation or Trenching Work

4.1.1. Anyone managing excavation or trenching work as a construction activity will ensure that all legal requirements for construction work are addressed. This may be assisted by reference to the LGAWCS Model WHS Construction Activities Guidance Checklist, which will assist to determine whether the work will require the completion of a risk assessment, a SWMS or a WHS management plan.

4.1.2. Where the value of construction work is $450,000 or more, the construction work is considered a 'construction project' for which additional duties apply to the principal contractor.

a. The principal contractor may be:

i. The organisation itself, through an employee with delegated power (such as a project manager or contract manager) commissioning construction work on its behalf. In these instances, the Works Manager may carry out the functions of the principal contractor for the organisation; or

ii. A PCBU appointed by the Works Manager to act as the principal contractor for the contracted work.

4.1.3. The department manager will appoint a project manager (Works Manager or Assistant Works Manager) to manage construction work involving excavation and trenching undertaken by the organisation's employees.

4.1.4. Where construction work involving excavation and trenching is undertaken by other PCBUs, the department manager will appoint a contract manager (Works Manager or Assistant Works Manager) in accordance with the WHS Contractor Management Procedure. The contract manager will manage such work by making sure that:

a. The organisation's procurement and contractor management processes are complied with;

b. Contractual documentation specifies which PCBU is the principal contractor and is authorised:

i. As having management or control of the workplace, and

ii. To discharge the duties of a principal contractor.

c. PCBUs have been given information the organisation has in relation to hazards and risks and underground essential services information at, or in the vicinity of, the workplace where the construction work is to be carried out before being directed or allowed to commence work;

d. All necessary permits have been obtained by the PCBU;

e. PCBUs undertake hazard identification, risk assessment and elimination and control activities and, where relevant, supply documentation to verify this has occurred; and

f. Processes are implemented to monitor and review contracted work during, and at the end of, the work in accordance with the WHS Contractor Management Procedure.

4.2. Hazard Identification Associated with Excavation Work

4.2.1. Risks to health and safety associated with excavation work must be identified, assessed and managed before the work commences, including the risk of:

a. A person falling into an excavation;

b. A person being trapped by the collapse of an excavation;

c. A person working in an excavation being struck by a falling thing; and

d. A person working in an excavation being exposed to an airborne contaminant.

4.2.2. To manage the risks, all relevant matters must be considered, including:

a. The nature of the excavation;

b. The nature of the excavation work, including the range of possible methods of carrying out the work; and

c. The means of entry into and exit from the excavation (if applicable).

4.2.3. Examples of excavation specific hazards include:

a. Underground essential services - including gas, water, sewerage, telecommunications, electricity, chemicals, and fuel or refrigerant in pipes or lines;

b. The fall or dislodgement of earth or rock;

c. Falls from one level to another;

d. Falling objects (e.g., tools, debris and equipment);

e. Inappropriate placement of excavated materials, plant or other loads;

f. Instability of any adjoining structure caused by the excavation;

g. Any previous disturbance of the ground, including previous excavation;

h. The instability of the excavation due to persons or plant working adjacent to the excavation;

i. The presence, or possible inrush, of water or other liquid;

j. Hazardous manual tasks;

k. Hazardous chemicals (e.g., these may be present in the soil where excavation work is to be carried out) or through handling, use, storage, and transport or disposal of hazardous chemicals;

l. Hazardous atmosphere in an excavation (e.g., using Methyl Ethyl Ketone (MEK) solvent for PVC pipes in poorly ventilated trenches and welding fumes, gases and arcs);

m. Vibration and hazardous noise;

n. Overhead essential services (powerlines) and ground-mounted essential services (transformers, gas and water meters);

o. The location, layout, condition and accessibility of the workplace;

p. The use of ladders, incorrectly erected equipment, unguarded holes, penetrations and voids, unguarded excavations, trenches, shafts and lift wells, unstable structures such as incomplete scaffolding or mobile platforms, fragile and brittle surfaces such as cement sheet roofs, fibreglass roofs, skylights and unprotected formwork decks;

q. Collapse of trenches;

r. Structural collapse;

s. The presence of asbestos and asbestos-containing materials;

t. The interface with other works or trade activities; and

u. The physical working environment, e.g., the potential for electric shock, immersion or engulfment, fire or explosion, slips, trips and falls, people being struck by moving plant, exposure to noise, heat, cold, vibration, radiation, static electricity or a contaminated atmosphere, and the presence of a confined space.

4.2.4. The project/contract manager (Works Manager or Assistant Works Manager) will make sure consultation occurs with workers and their representatives and other PCBUs (where their duties overlap) during the hazard identification process in accordance with the organisation's Consultation and Communication Procedure.

Consultation will include discussions on the following, subject to the type of work to be undertaken:

a. Nature and/or condition of the ground and/or working environment;

b. Weather conditions;

c. Nature of the work and other activities that may affect health and safety;

d. Static and dynamic loads near the excavation;

e. Interaction with other trades;

f. Site access;

g. SWMS;

h. Management of surrounding vehicular traffic and ground vibration;

i. Type of equipment used for excavation work;

j. Public safety;

k. Existing services and their location

l. The length of time the excavation is to remain open; and

m. Provision of adequate facilities.

4.3. Risk Assessment

4.3.1. Risk assessment processes shall be conducted in accordance with the following table:

Project Value / Type	Requirements
Less than $450,000	Risk assessment
High risk construction work (less than $450,000)	SWMS
$450,000 or more (becomes a construction project)	WHS management plan (includes risk assessments or SWMS)
High risk construction work ($450,000 or more – is a construction project)	SWMS + WHS management plan

4.3.2. The project manager (Works Manager or Assistant Works Manager) should form a team to undertake risk assessment and/or prepare a SWMS/WHS management plan. The team should consist of a competent person to lead the risk assessment process, workers who are involved in the activity to be assessed, a HSR (where one exists), the manager or supervisor and other stakeholders or experts, where relevant.

4.3.3. The assessment will consider all foreseeable hazards and risks, including the following associated with excavation work:

a. Local site conditions, including access, ground slope, adjacent buildings and structures, water courses (including underground), underground cables and other services and trees;

b. Depth of the excavation;

c. Soil properties, including variable soil types, stability, shear strength, cohesion, presence of ground water, 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 specialised 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 to noise, ultra violet rays or hazardous chemicals;

h. The number of people involved;

i. The possibility of unauthorised access to the work area;

j. Local weather conditions; and

k. The length of time that the excavation will be open.

4.3.4. The project manager (Works Manager or Assistant Works Manager) will make sure that the necessary risk assessment/SWMS and/or WHS management plan) has been provided by a PCBU undertaking excavation or trenching work before work commences.

4.4. Risk Control

4.4.1. Controls will be implemented to eliminate, so far as is reasonably practicable, identified risks to health and safety.

In all instances, an attempt will be made to eliminate the need for persons to enter an excavation or trench.

4.4.2. If it is not reasonably practicable to eliminate risks, risk controls will be selected in descending order from the Hierarchy of Control, and in accordance with the Hazard Management Procedure.

Examples of risk controls subsequent to elimination include, but are not limited to:

Substitution	Using an excavator with a rock breaker rather than manual method
Isolation	Using concrete barriers to separate pedestrians and powered mobile plant to reduce the risk of collision
Engineering	Benching, battering or shoring the sides of the excavation to reduce the risk of ground collapse
Administrative	Installing warning signs near the excavation
Personal Protective Equipment	Providing workers with hard hats, hearing protectors and high visibility vests

4.4.3. Factors that should be considered when choosing suitable control measures include:

a. Excavating plant - when quantities are large, it may be effective to use different types of plant for the various materials to be excavated;

b. Stockpiling arrangements - another site may need to be found for temporary stockpiling of materials;

c. Material placement - the methods and plant used for excavating, transporting and compacting the material should be evaluated;

d. Dewatering equipment, if required, and the system to be used;

e. Transport of the excavated material - the type of plant used, the length of haul, the nature of the haul route, and the conditions of tipping and/or spreading; and

f. The need for any remote or isolated work.

4.4.4. The risk assessment, SWMS or WHS management plan will be documented and clearly indicate what control measures are to be used.

4.4.5. Any plant or equipment, work practice or PPE used in excavation and trenching will comply with any relevant legislative and Australian Standards requirements.

4.4.6. The controls identified by the risk assessment/SWMS/WHS management plan will be in place before work commences. This may be facilitated through the use of:

a. A pre-start checklist;

b. Procedures to deal with emergencies; and/or

c. Making sure "Dial Before You Dig" has been contacted on 1100 or via their website http://www.1100.com.au/# for details of underground cables.

4.4.7. Specific controls for risks in excavation work

The following table lists common hazards associated with excavation work and examples of control measures. However, the project manager (Works Manager or Assistant Works Manager) will ensure that the specific hazards associated with the work have been considered by competent workers during the risk management process and appropriate control measures put in place.

Potential Hazards	Examples of Control Measures
Ground collapse	The use of benching or the installation of ground support (e.g., shoring)
Water inrush	Pumps or other dewatering systems to remove water and prevent build-up
Falls	Ramps, steps or other appropriate access into the excavation
Hazardous manual tasks	Rotating tasks between workers
Airborne contaminants	Mechanical ventilation to remove airborne contaminants
Buried contaminants (e.g., asbestos)	Training to identify buried contaminants and what action to take
Underground services	Obtain information from the relevant authorities on the location of underground services.

4.4.8. Any hazards that are unable to be immediately controlled within the risk assessment process will be transferred to the Corrective and Preventative Action (CAPA) Register for further action and management.

4.4.9. Each worker involved in the job will sign their acknowledgement of the risk assessment or SWMS and, where relevant, be made aware of the content of the WHS Management plan prior to work commencing.

4.4.10. When identified as a requirement in the risk assessment process, a Permit for Work will be issued by a person competent to issue such permits prior to work commencing (e.g., Work at Height Permit, Confined Space Entry permit).

4.4.11. The project manager (Works Manager or Assistant Works Manager) will inform relevant workers about the control measures selected or corrective actions that have been implemented as a result of the hazard identification and risk assessment process. Tool

Box, site or project meeting minutes and/or risk assessments (where relevant) will demonstrate that this has occurred.

4.4.12. The project manager (Works Manager or Assistant Works Manager) will confirm that any new hazards that may have been introduced by the selected control methods are identified by:

a. Regular monitoring and evaluating of the controls for effectiveness;

b. Recommencing the risk assessment process, outlined at section 4.3 above, if:

i. New hazards are identified;

ii. The measure is not effective in controlling the risk it was implemented to control so far as is reasonably practicable;

iii. Before a change at the workplace that is likely to give rise to a new or different risk to health or safety that the measure may not effectively control;

iv. The results of consultation indicate that a review is necessary; or

v. If a HSR requests a review.

c. Communicating the outcomes of the risk assessment process within the department or work group and to the HSC, as required.

4.4.13. The project manager (Works Manager or Assistant Works Manager) will consult and coordinate activities with other PCBUs who are undertaking excavation and trenching work, so far as is reasonably practicable, if their duty of care overlaps. The outcomes of this process will be communicated to affected workers.

4.4.14. The contract manager (Works Manager or Assistant Works Manager) will make sure all required risk assessment documentation has been provided before work commences.

4.5. Planning and Managing the Excavation Work

4.5.1. Designers (in-house or external) will:

a. Ensure, so far as is reasonably practicable, that the structure is designed to be without risks to the health and safety of workers who construct the structure at a workplace by considering (by way of example):

Possible excavation work methods; and

i. Health and safety control measures

when producing any final design documents and the safety report for the structure.

b. Give the PCBU who commissioned the design a written report that specifies the hazards associated with the design of the structure that, so far as the designer is reasonably aware:

i. Create a risk to the health or safety of persons who are to carry out construction work on the structure or part; and

ii. Are associated only with the particular design and not with other designs of the same type of structure.

c. Consider possible excavation work methods and health and safety control measures when producing any final design documents and the safety report for the structure.

4.6. Commissioning the Excavation Work

4.6.1. The organisation's Project/contract manager(s) (Works Manager or Assistant Works Manager) will:

a. Consult, so far as is reasonably practicable, with the designer of the whole or any part of the structure about eliminating and controlling risks; and

b. Take all reasonable steps to obtain the designer's safety report, if the organisation has commissioned the construction work but did not commission the design of the construction project (as per 4.6.2a below).

4.6.2. Principal Contractor

a. If the organisation's project/contract manager(s) Works Manager or Assistant Works Manager) did not commission the design of the construction project, they will take all reasonable steps to obtain the designer's safety report.

[The LGAWCS Model WHS Construction Activities Guidance Checklist may assist in determining and recording who the principal contractor is for the work.]

b. Where significant excavation work is being carried out prior to commencement of building works, an excavation contractor may be appointed as the principal contractor for the site preparation phase of the project, and then be replaced with a building expert after this phase is completed.

4.6.3. Safe Work Method Statements

a. A SWMS will be prepared before work starts if the excavation work is, or involves, high risk construction work. The SWMS will be developed in consultation with workers (and their representatives) who are carrying out the high risk construction work.

b. In some circumstances one SWMS can be prepared to cover more than one high risk construction work activity being carried out by contractors and/or subcontractors. For example, where there is:

i. A risk of a person falling more than 2 metres; or

ii. A trench with an excavated depth greater than 1.5 metres.

In this case, checks will be made to ensure that all SWMSs are consistent and they are not creating unintended additional risks at the workplace. The responsibility for this will need to be assigned and documented.

[LGAWCS Model WHS Construction Activities Guidance Checklist may assist in identifying and recording this responsibility.]

c. Further guidance on SWMS and an example SWMS template are available in the Code of Practice: Construction Work and at Appendix B in the Prevention of Falls Procedure.

4.6.4. Adjacent buildings or structures:

a. Excavation work will not commence until steps are taken to prevent the collapse or partial collapse of any potentially affected building or structure.

b. The following precautions will also be taken into account:

i. Any excavation that is below the level of the footing of any structure, including retaining walls that could affect the stability of the structure, will be assessed by a competent person and secured by a suitable ground support system, which has been designed by a competent person;

ii. Use of a competent person to identify whether suitable supports to brace the structure may be required;

iii. Evaluating whether other buildings in and around the excavation site could be adversely affected by vibration or concussion during the excavation work; and

iv. Making sure that excavation work is carried out in a way that does not cause flooding or water penetration to any adjacent building.

4.6.5. Essential Services

a. The principal contractor or project manager (Works Manager) will manage the risks associated with essential services at the workplace during excavation activities, including:

i. Implementing specific control measures before using excavators or other earthmoving machinery near overhead electric lines;

ii. Consulting with the relevant authority regarding approach distances and appropriate control measures implemented to prevent any part of the plant, or any load carried on it, from coming too close or contacting overhead electric lines;

iii. Obtaining underground service plans and information on current underground essential services about the areas at the workplace where the excavation work is to be carried out and providing these to the principal contractor and/or the excavation contractor.

Information on the location of underground services may be obtained by contacting the "Dial Before You Dig" service (see section 4.4.6 for contact details).

iv. Providing other relevant parties, including any subcontractors and plant operators carrying out the excavation work, with information about essential services and other plans so the information is considered when planning all work in the area.

b. Project/contract managers (Works Manager) will make sure that underground essential services information is:

i. Made available to workers, principal contractors and subcontractors;

ii. Readily available for inspection; and

iii. Retained in accordance with the requirements of General Disposal Schedule 20 for Local Government.

c. It is important that excavation methods include an initial examination of the area to be excavated as available information about existing underground services may not always be accurate, for example, sampling the area by exposing a short section of underground services usually using water pressure and a vacuum system to excavate or 'pothole' the area.

d. Further guidance on underground essential services and how to locate them is available in the Code of Practice: Construction Work.

4.6.6. Securing the work area:

a. Any work area in which an excavation of a trench of at least 1.5 m deep is proposed will be secured from unauthorised access (including inadvertent entry) so far as is reasonably practicable.

b. In securing the trench or excavation, consider:

i. Risks to health and safety arising from unauthorised access to the work area; and

ii. The likelihood of unauthorised access occurring.

c. This requirement is specific to the excavation or trench and is in addition to general security requirements for construction sites. Examples of methods to meet this requirement include:

i. Fencing the excavation and only allowing authorised workers into the area;

ii. Providing supervision to prevent unauthorised persons in the vicinity of the excavation; and

iii. Covering the excavation when work is not occurring.

4.7. Additional Controls – Trenches

4.7.1. If a worker is required to enter a trench and there is a risk of engulfment, control measures will be implemented regardless of the depth of the trench:

a. A report from a geotechnical engineer may be required to provide information on the stability and safety of a trench excavation:

The report should include details of the soil conditions, any shoring or trench support requirements, dewatering requirements and any longer term effects on stability and safety of the excavation.

b. A competent person (e.g., an engineer) should design any support systems or be involved in the selection of other ground collapse control measures, such as trench shields;

c. Shoring, benching and/or battering may not be required if written advice is received from a geotechnical engineer that all sides of the trench are safe from collapse; and

d. Any advice must state the period of time to which it applies and may be subject to a condition that specified natural occurrences may create a risk of collapse.

4.7.2. The project/contract manager (Works Manager) or principal contractor who proposes to excavate a trench at least 1.5m deep, will minimise the risk to any person arising from the collapse of the trench by ensuring that all sides of the trench are adequately supported by one or more of the following:

a. Shoring by shielding or other comparable means (e.g., boxing);

b. Benching; and/or

c. Battering.

4.7.3. A combination of these control measures may be the most effective, depending on the work environment and characteristics of the excavated material. In built-up areas or streets, the excavation may have to be fully or partly sheeted or supported to prevent collapse due to localised vehicle movement.

4.7.4. The soil condition and the state of shoring, battering and trench walls should be frequently checked by a competent person for signs of earth fretting, slipping, slumping or ground swelling. Where necessary, the excavation will be repaired or the shoring system strengthened from above before allowing work below ground to continue. The frequency of inspections will be determined and documented as part of the hazard management process.

The LGAWCS have engaged a geotechnical engineer to develop guidelines for the excavation activities involved in "rubble raising" or "borrow pits", which is attached at Appendix A. If this guidance note is followed it will meet the requirements of a geotechnical engineer's report, as required in 4.7.1c above.

4.8. Additional Controls – Tunnelling

4.8.1. Safe tunnel construction depends on adequate pre-construction engineering investigation of the ground and site, and accurate interpretation of the information obtained. Designers will:

a. Obtain, or be provided with, all available relevant information;

b. Be advised of any gaps in the information for planning and construction;

c. Undertake or be involved in data acquisition for the site investigation program; and

d. Have on-site involvement during the engineering investigation to the extent reasonably practicable.

4.8.2. The information obtained from the engineering investigation and the anticipated excavation methods will be considered in preparing a tunnel design. The design will include:

a. Details on the tunnel dimensions and allowable excavation tolerances;

b. Temporary and final support and lining requirements for each location within the tunnel;

c. Details of expected tunnel drive lengths and location of shafts; and

d. Any other requirements for the finished tunnel.

4.8.3. The design should also include information on the excavation methods and ground conditions considered in the design. This will allow the design to be reviewed if another excavation method is chosen or the ground conditions differ from that expected as the excavation proceeds.

4.8.4. The design will also take into account the construction methods that may be used to construct the tunnel so that a safe design for construction purposes is achieved.

Further details on hazards, risk and relevant control measures can be found in the Code of Practice: Excavation Work.

4.8.5. Using ground support designed for the unique circumstances of the work is essential to control the risk of a collapse or tunnel support failure. All excavation for tunnelling should be supported.

4.9. Additional Controls - Preventing Ground Collapse

4.9.1. When undertaking excavation work, ground collapse is one of the primary risks to be controlled.

4.9.2. The project/contract manager (Works Manager) or principal contractor will check that appropriate excavation methods and control measures have been selected for the specific work, including (if relevant) that consideration has been given to:

a. The type and strength of the material to be excavated (e.g., whether the ground is natural and self-supporting or has been previously backfilled);

b. The moisture content of the soil;

c. If the ground is level or sloping;

d. If groundwater is present;

e. If there are any discontinuities or faults in the strata;

f. If there are any other nearby water courses, drains or run-off that might affect the stability of the excavation;

g. The work area and any access or operational limitations;

h. The planned height of the excavated face;

i. If vehicular traffic and/or powered mobile plant will operate near the excavation;

j. If there will be other construction activity nearby that may cause vibration;

k. Any other loads adjacent to the planned excavation (e.g., buildings, tanks, retaining walls, trees);

l. If the need for persons to enter the excavation can be eliminated; and

m. Any underground essential services.

4.10. Emergency and Rescue Procedures

4.10.1. The project/contract manager (Works Manager) will make sure that:

a. An emergency plan has been prepared (Appendix B) that considers emergency and rescue scenarios that might arise from excavation and trenching activities, in consultation with workers and their representatives, such as:

i. Falls from one level to another;

ii. Ground slip;

iii. Flooding;

iv. Gas leaks; and

v. The rescue of workers from an excavation.

b. A register of all persons who are at the construction workplace on a particular day is kept so that in the case of any emergency everyone can be accounted for;

c. When establishing emergency procedures, the following is taken into account:

i. Location of the work area (i.e. remote, isolated, accessible, distance from medical facilities, etc.);

ii. Communications (i.e. how will workers communicate in an emergency?);

iii. Rescue equipment (i.e. relevant to the nature of the task, proximity of such equipment);

iv. Capabilities of rescuers (i.e. are they trained in specific rescue requirements, have emergency procedures been tested?);

v. First aid (i.e. appropriate first aid kits and trained first aiders?); and

vi. Local emergency services (i.e., how will they be contacted and time for response if they are to be relied on for rescue?)

d. If a fall arrest system is used as a control measure, emergency procedures will include suspension intolerance as a potential hazard and appropriate preventative measures and rescue procedures will be put in place in accordance with the requirements of the Prevention of Falls Procedure;

e. Access is available to first aid equipment, facilities for the administration of first aid, and workers trained to administer first aid, in accordance with the First Aid Procedure; and

f. Emergency procedures are tested regularly with workers who undertake the work in accordance with the WHS Workplace Emergency Management Procedure.

4.10.2. The project/contract manager (Works Manager) in consultation with the Administration Officer-Compliance and Governance with WHS responsibility will make sure that:

a. The emergency procedures and first aid response have been incorporated into the emergency plan;

b. Relevant workers are provided with suitable and adequate information, training and instruction in relation to the relevant emergency procedures, including making sure:

i. Any emergency rescue process starts immediately (when safe to do so); and

ii. Workers do not put themselves at risk during a rescue.

c. Training frequency takes into account the worker's competence and their ability to retain competence through regular exposure to the equipment and skills needed to perform a rescue.

4.10.3. The contract manager (Works Manager) will make sure that principal contractors prepare and supply an emergency plan before work commences.

4.11. Incidents or Accidents Related to Excavation and Trenching

4.11.1. Any worker of the organisation involved in an incident involving excavation or trenching activities will report the incident to their project manager (Works Manager) as soon as reasonably practicable. Contractors should immediately notify their contract manager (Works Manager) or direct supervisor.

4.11.2. The relevant manager will immediately notify the Administration Officer-Compliance and Governance with WHS responsibility as soon as reasonably practicable, who will ascertain whether statutory reporting to SafeWork SA or the Office of the Technical Regulator is required.

4.11.3. If a notifiable incident occurs that involves excavation or trenching, namely:

a. The death or a person; or

b. A serious injury or illness of a person; or

c. A dangerous incident

i. A notifiable incident is reported to SafeWork SA by the fastest possible means (telephone 1800 777 209 - 24 hours a day) immediately after becoming aware that a notifiable incident has occurred.

ii. Any incident occurring that involves electricity or an electric shock, gas or plumbing is reported to the Office of the Technical Regulator (telephone: 8226 5518; Business Hours or 1800 558 811 After Hours):

- In the case of a death resulting from the incident - immediately by telephone
- In the case of a person requiring medical assistance resulting from the incident - within one working day of the incident
- In any other case that involves electricity - within ten working days of the incident
- Gas incidents resulting in damage to property of $5,000 or more – within ten working days of the incident
- Gas incidents involving a gas infrastructure pipeline (operating above 1050 kPa) resulting in any injury or damage to property, or incidents requiring the

attendance of a fire brigade – within one month from the date of the incident.

- In the case of Water or Sewerage system incidents:
  - For Priority type 1 incidents – Verbal notification immediately and written notification within 24 hours
  - For Type 1 incidents - Verbal notification within 3 hours and written notification within 24 hours
  - For Type 2 incidents - Verbal notification not required and written notification within 10 working days.

  Further guidance can be found here

4.11.4 Whenever any statutory reports are made, the Manager Corporate Services] should ensure that the LGAWCS is notified.

4.11.5 Any claim for worker's compensation should be reported in accordance with the Workplace Return to Work Procedure.

4.11.4. The Incident Reporting and Investigation Procedure will be complied with, including the requirement that the site where the incident occurred is not disturbed until an inspector arrives at the site or any earlier time that an inspector directs.

4.12. Monitoring and Evaluation

4.12.1. Project/contract manager (Works Manager) will review and revise any existing risk control measures related to excavation and trenching during project coordination or site meetings, using the same methods as the initial hazard identification process:

a. When the control measure does not minimise the risk so far as is reasonably practicable;

b. Before a change at the workplace that is likely to give rise to a new or different health and safety risk that the control measure may not effectively control;

c. If a new hazard or risk is identified;

d. If the results of consultation indicate that a review is necessary; or

e. If a HSR requests a review.

4.12.2. When reviewing control measures, a SWMS will be reviewed and revised where necessary.

4.12.3. During the course of contracted work, the contract manager or delegate will monitor the contract in accordance with the requirements of the WHS Contractor Management Procedure and any contractual arrangements:

a. The monitoring may be conducted against the Risk Assessment, SWMS or WHS Management Plan provided by the contractor; and

b. The contract manager will verify that any corrective actions identified have been effectively closed out within the designated timeframes.

4.12.4. The Health and Safety Committee should monitor the Hazard Profile/Risk/Corrective and Preventative Action (CAPA) Register (including any issues related to excavation or trenching or contracted work) during its meetings. A report should be presented to the management team listing outstanding items requiring their direction or enforcement.

4.12.5. The management team will review incident statistics related to excavation and trenching, audit results, legislative changes and other information relating to excavation and

4.12.6 The Excavation and Trenching Procedure will be subject to audit and the audit findings will be reported as part of the ongoing management review process.

4.12.7 The management team will set, monitor and review objectives, targets and performance indicators for programs incorporating excavation and trenching, as relevant.

5. Training

5.1. The organisation's Training Needs Analysis (TNA) will identify the training needs for those persons required to:

5.1.1. Carry out excavation and trenching work; or

5.1.2. Undertake a risk assessment/SWMS for excavation and trenching work; or

5.1.3. Prepare a WHS management plan; or

5.1.4. Manage or supervise persons working in or with excavations and trenches; or

5.1.5. Maintain equipment used for, or during work in, excavation and trenching; or

5.1.6. Purchase, distribute or maintain PPE for use in excavation and trenching; or

5.1.7. Potentially be involved in a rescue or first aid procedure resulting from excavation or trenching work.

5.2. The TNA should have regard to:

5.2.1. The nature of the work carried out by the worker;

5.2.2. The nature of the risks associated with the work at the time of the information, training and instruction; and

5.2.3. The control measures implemented.

5.3. Workplace specific training will be conducted (and licences checked) by the project manager or by the principal contractor for the construction project.

5.3.1. Training will be provided by a competent person who is specific to the excavation work and to the site.

5.3.2. Training requirements include:

a. Each worker undertaking excavation or trenching activities holding a general construction induction training card;

b. Workers operating certain types of plant at the workplace possessing a valid licence to operate that plant;

c. Workers in a supervisory role (e.g., leading hands or team leaders) being experienced and trained in excavation or trenching work to make sure the work is carried out in accordance with the organisation's documented requirements;

d. Other training, insofar as is relevant to the performance of the particular work and the worker's duties, which may cover:

i. Safety documents, policies and plans, including the WHS management plan and SWMS that cover:

- Planning and preparation of work
- Setting out excavation and erecting safety equipment
- Assisting machine excavation operation.
- Installation of excavation support
- Clean up.

ii. Supervisory, consultation and reporting arrangements;

iii. Workplace safety rules, including first aid provisions and emergency procedures;

iv. Workplace facilities, including their location, use and maintenance;

v. Emergency procedures, including after-hours emergency contacts;

vi. Health monitoring requirements and procedures;

vii. Access, egress and security;

viii. Workplace specific hazards and control measures;

ix. The selection, use, fit and maintenance of PPE;

x. How safety issues are resolved, including HSR arrangements (if applicable);

xi. How to report hazards and unsafe work practices;

xii. How to report accidents, incidents and dangerous occurrences; and

xiii. What to do if a person is injured, including first aid provisions.

5.4. Such training may be competency based and will be in accordance with the Work Health and Safety Act and Regulations and relevant Codes of Practice and/or Australian Standards. Training will be documented and relevant information forwarded to the Administration Officer-Compliance & Governance with WHS responsibility for inclusion in the training records.

5.5. The project/contract manager should check that the findings of the risk assessment or SWMS are explained to those persons involved in the activity and is signed by each person before any work commences.

6. Records

Records relating to excavation and trenching will be maintained. Examples included but are not limited to:

6.1 Contract documentation;

6.2 Permit processes;

6.3 Plant and equipment inspection, testing and maintenance records;

6.4 Plant and equipment registration and certification records;

6.5 Plant and equipment registers;

6.6 Purchase or hire documentation, including operation manuals;

6.7 Risk assessments, SWMS, WHS management plans;

6.8 Statutory notifications;

6.9 Training records, licences and other competency records; and

6.10 Underground essential services information.

All records will be managed in line with the current version of General Disposal Schedule 20 for Local Government Records.

7. Responsibilities

7.1. The management team is accountable for:

7.1.1. Checking that the organisation manages excavation and trenching in accordance with legislative requirements;

7.1.2. Approving reasonably practicable expenditure necessary for excavation and trenching upon receipt of such requests;

7.1.3. Setting objectives, targets and performance indicators for any programs incorporating excavation and trenching, as relevant.

7.1.4. Checking that consultation, cooperation and coordination of the management of WHS risks occurs with all other PCBUs who have a WHS duty in relation to excavation and trenching.

7.1.5. Checking that managers and supervisors have been provided with training to ensure, so far as is reasonably practicable, that they understand and can:

a. Apply the requirements of the construction work legislation, codes of practice and this procedure to the areas and activities under their control;

b. Apply the requirements of the Excavation and Trenching Procedure, as relevant; and

c. Provide adequate training and supervision to the persons under their management.

7.1.6. Identifying, assessing and controlling (when elimination is not practicable) reasonably foreseeable hazards associated with excavation and trenching.

7.1.7. Making sure an emergency plan is in place, which includes the first aid and rescue procedures to be followed in an emergency in relation to excavation and trenching and that regular testing of those procedures occurs.

7.1.8. Monitoring the Hazard Profile/Risk/CAPA Register and enforcing close out of items.

7.1.9. Reviewing the effectiveness of the Excavation and Trenching Procedure.

7.1.10. Including excavation and trenching within the management review process.

7.2. The Department Manager is accountable for:

7.2.1. Appointing project/contract managers to manage excavation and trenching work.

7.2.2. Checking that persons required to manage excavation and trenching work have been trained and assessed as competent where relevant, in accordance with legislative requirements.

7.2.3. Checking that all plant and PPE used in excavation and trenching work is fit for purpose, inspected prior to use and maintained by competent persons, in accordance with legislative requirements.

7.2.4. Checking that workers required to undertake excavation and trenching work have been trained and assessed as competent as relevant, in accordance with legislative requirements.

7.3. The Contract Manager (Works Manager) is accountable for:

7.3.1. Complying with the organisation's procurement and contractor management processes.

7.3.2. Checking contractual documentation specifies which party is the principal contractor and has control of the workplace.

7.3.3. Making sure contractors have been given any information the organisation has in relation to hazards and risks at or in the vicinity of the workplace where the construction work is to be carried out.

7.3.4. Checking contractors undertake hazard identification, risk assessment and control activities and, where relevant, have supplied documentation to verify this has occurred.

7.3.5. Assigning responsibility to check that all SWMSs are consistent and they are not creating unintended additional risks at the workplace.

7.3.6. Making sure processes are implemented to monitor and review contracted work during and at the end of the work in accordance with the WHS Contractor Management Procedure.

7.4. The Project/Contract Manager (Works Manager) is accountable for:

7.4.1. Making sure that risks to health and safety associated with excavation work are managed before the work commences.

7.4.2. Consulting with workers and their representatives and other PCBUs where their duty of care overlaps.

7.4.3. Consulting, so far as is reasonably practicable, with the designer of the whole or any part of the structure about eliminating and controlling risks and taking all reasonable steps to obtain the designer's safety report.

7.4.4. Making sure each excavation activity has a documented risk assessment~~/JSA~~, SWMS or WHS management plan (as required by this procedure) that clearly indicates what control measures are to be used.

7.4.5. Checking that all plant and PPE used in excavation and trenching work is fit for purpose, inspected prior to use, and maintained by competent persons, in accordance with legislative requirements.

7.4.6. Making sure that any hazards that are unable to be immediately controlled within the risk assessment process are transferred to the CAPA Register for further action and management.

7.4.7. Informing relevant persons about the control measures selected or corrective actions that have been implemented as a result of the hazard identification and risk assessment process.

7.4.8. Making sure that an emergency response plan has been developed, implemented and documented before any work which involves entry into excavation and trenching work areas is commenced for the first time.

7.4.9. Making available information about essential services to any worker, principal contractor and sub-contractors, and making that information available for inspection as required under the Work Health and Safety Act.

7.4.10. Making sure that excavation work does not commence until steps are taken to prevent the collapse or partial collapse of any potentially affected building or structure.

7.4.11. Checking that written reports have been obtained from a geotechnical engineer when required.

7.4.12. Checking that the frequency of inspections of soil condition and the state of shoring, battering and trench walls have been determined and documented as part of the risk assessment process.

7.4.13. Checking that appropriate excavation methods and control measures have been selected for the specific work.

7.4.14. Making sure that any permits for work have been issued.

7.4.15. Checking that any excavation and trenching signage is maintained.

7.4.16. Checking that excavation and trenching work areas are secured against unauthorized entry.

7.4.17. Implementing control measures in line with this procedure to make sure, so far as is reasonably practicable, the safety of workers when undertaking excavation and trenching work.

7.4.18. Checking that persons required to undertake excavation and trenching work have been trained and assessed as competent, where relevant, in accordance with legislative requirements.

7.4.19. Checking that any person who works in an excavation is given information about the hazards that are present in the work location, prior to the work being undertaken.

7.4.20. Undertaking inspections to monitor compliance with requirements.

7.4.21. Checking that all persons working in an excavation have returned from their tasks at the end of the day.

7.4.22. Checking that hazards identified or incidents that occur when undertaking excavation and trenching work are reported, investigated, and control measures are implemented in accordance with the Hazard Management Procedure.

7.4.23. Implementing any corrective or preventative actions required for excavation and trenching work.

7.4.24. Maintaining documented records for excavation and trenching activities.

7.5. The Administration Officer-Compliance and Governance with WHS responsibility is accountable for:

7.5.1. Maintaining the Hazard Profile/Risk/CAPA Register

7.5.2. Making sure that training for workers undertaking excavation and trenching activities is identified and monitored, and that the training register is kept up to date.

7.5.3. Initiating the development and the testing of the emergency plan for emergencies that may arise from excavation or trenching activities.

7.5.4. Maintaining legislative currency of procedures and systems in relation to excavation and trenching.

7.5.5. Initiating audit and review activities as required.

7.6. The Manager Corporate Services is accountable for:

7.6.1. Undertaking statutory reporting when required.

7.6.2. Ensuring the LGAWCS has been notified when any statutory reporting has occurred.

7.7. The Designer is accountable for:

7.7.1. Making sure, so far as is reasonably practicable, that the structure is designed without risks to the health and safety of persons who construct the structure at a workplace.

7.7.2. Considering possible excavation work methods, and health and safety control measures, when producing any final design documents for a structure.

7.7.3. Producing a written report that specifies the hazards associated with the design of the structure which, so far as the designer is reasonably aware:

a. Create a risk to the health or safety of persons who are to carry out construction work on the structure or part, and

b. Are associated only with the particular design and not with other designs of the same type of structure.

7.8. The Principal Contractor has a range of duties in relation to a construction project that will be complied with, including:

7.8.1. Preparing and reviewing a WHS management plan.

7.8.2. Confirming hazards and risks are identified and managed before excavation work begins.

7.8.3. Obtaining SWMS before any high risk construction work commences.

7.8.4. Putting in place arrangements to manage the work environment including falls, facilities, first aid, an emergency plan and traffic management.

7.8.5. Installing signs showing the principal contractor's name, contact details and location of any site office.

7.8.6. Securing the construction workplace.

7.9. Any person required to undertake work associated with excavation or trenching is accountable for:

7.9.1. Maintaining training and competence in relation to excavation and trenching hazards, control measures, PPE and permits to work in accordance with legislative requirements.

7.9.2. Complying with the requirements of risk assessment, SWMS and WHS management plan and permit(s) to work (as relevant) and relevant Work Health and Safety policies and procedures, information and instruction provided to them whilst undertaking their tasks.

7.9.3. Only undertaking tasks they are competent to undertake (or are in training to undertake with appropriate supervision).

7.9.4. Keeping their general construction induction training card and relevant licences available for inspection.

7.9.5. Using PPE and safety equipment provided.

7.9.6. Assisting in assessing risks, implementing control measures and evaluating them for effectiveness, as required.

7.9.7. Seeking assistance to manage hazards.

7.10. The Health and Safety Committee is accountable for:

7.10.1. Facilitating co-operation between management and workers in matters relating to excavation and trenching activities.

7.10.2. Monitoring the Hazard Profile/Risk/CAPA Register and referring issues to the management team that require management direction or enforcement.

7.11. Health and Safety Representatives may:

7.11.1. Facilitate consultation between department managers and workers in relation to any excavation and trenching activities that affect the work group they represent.

7.11.2. Request and assist in the review and revision, where necessary, of risk control measures related to excavation and trenching activities.

8. Review

8.1. The Excavation and Trenching Procedure will be reviewed by the management team, in consultation with workers or their representatives, every three (3) years or more frequently if legislation or organisational needs change. This will include a review of:

8.1.1. Feedback from managers, workers, HSRs, HSC, contractors or others;

8.1.2. Legislative compliance;

8.1.3. Performance Standards for Self Insurers;

8.1.4. LGAWCS guidance;

8.1.5. Internal or external audit findings;

8.1.6. Incident and hazard reports, claim costs and trends;

8.1.7. Any other relevant information.

8.2. Results of reviews may result in preventative and/or corrective actions being implemented or ~~and~~ revision of this document.

9. References

Work Health and Safety Act 2012

Work Health and Safety Regulations 2012

General Disposal Schedule 20 for Local Government

ReturnToWorkSA's Performance Standards for Self-Insurers

Code of Practice: How to Manage Work Health and Safety Risks

Code of Practice: Excavation Work

Code of Practice: Construction Work

Code of Practice: Safe Design of Structures

Code of Practice: Managing the Risk of Falls at Workplaces

Code of Practice: Managing Electrical Risks in the Workplace

Office of the Technical Regulator: Working Safely Near Overhead Powerlines pamphlet

10. Related Documents

LGAWCS WHS Construction Activities Guidance Checklist

WHS Guidelines for Rubble Raising Pit Excavations

Risk Assessments/SWMSs, WHS Management Plan

Emergency Management Plan

WHS Workplace Emergency Management Procedure

WHS Contractor Management Procedure

Electrical Safety Procedure

First Aid Procedure

Incident Reporting and Investigation Procedure

Plant Procedure

Remote or Isolated Work Procedure

Hazard Management Procedure

Hazard Profile/Risk/CAPA Register

SIGNED: .....

Chief Executive Officer

Date: 25/_7_/2017

.....

Chairperson, Health and Safety Committee

Date: 25/_7_/2017

11. Document History

Document History:	Version No:	Issue Date:	Description of Change:
	1.0	26/08/2010	New Document
	2.0	8/05/2014	Terminology changes to reflect 2012 WHS act, Regulations and Codes of Practice. Examples of changes include: OHS to WHS and employee to worker where appropriate. Expansion of Definitions section. Expansion of Hazard Identification and Risk Control sections to include specific information from appropriate COPs. Inclusion of considerations for construction work.
	2.1	21/08/2014	Inclusion of "Work Health and Safety Guidelines for Rubble Raising Pit Excavations" as an appendix.
	3.0	27/06/17	Amend value of construction project to $450,000; Update references to Codes of Practice; Addition of PCBU and HSC definitions; 4.6.3(b) amended to 2 metres; notification requirements updated to include Gas and Plumbing notification requirements; language, changes to formatting and hyperlinks; addition of guidance material at Appendix A.

APPENDIX A WORK HEALTH AND SAFETY GUIDELINES FOR RUBBLE RAISING PIT EXCAVATIONS

WORK HEALTH AND SAFETY GUIDELINES FOR RUBBLE RAISING PIT EXCAVATIONS	Version No:	1.0
	Issued:	06/05/14
	Next Review:	06/05/19

Introduction

This guideline aims to assist with the management of health and safety in respect of rubble raising pit (RRP) excavation works, by addressing general stability-related safety concerns during excavation works and providing a framework for rubble pits to be safely operated without the need for a site specific geotechnical report. A selection of long term considerations for the remediation of the site has also been identified.

For the purpose of this guideline, RRP excavation works include those activities involved in the removal of road fill material from an incidental site close to the worksite (i.e. not a quarry, open cut mine or any other formal permanent mineral extraction site).

Some materials and conditions (e.g. saturated soil strength materials, presence of shallow groundwater, highly organic soils) will exhibit characteristics that cannot be managed within the framework of this guideline. In those circumstances and if in doubt as to whether this guideline can be used to manage a specific site, then the advice of a suitably experienced and qualified geotechnical practitioner must be sought.

This guideline is to be used in conjunction with the Council's hazard management procedure and Council's excavation and trenching procedure.

Planning and Preparation

The proposed RRP site must be planned and prepared prior to the commencement of excavation.

Each Council site is likely to have its own specific requirements, which are to be read in conjunction with this guideline.

The following items are the minimum standard for planning and preparation works:

- Obtain any required permits and/or authorisation.
- Give consideration to relevant legislation, codes and social and environmental issues.
- The RRP site must be located a suitable distance away from any road. A number of factors including, but not limited to, the following will require assessment:
  - Road usage.
  - Speed limits.
  - Road geometry.
  - Road surface and construction details.
  - Final geometry and isolation (i.e. barrier, etc.) requirements.
- Define the limits and depth of the RRP to establish and delineate work area.
- Additional procedures apply for excavations carried out on or in ground that is, or could be, contaminated. If any contamination is known or suspected then excavation must not proceed until an environmental assessment is undertaken to ascertain any risk and management required.
- Undertake an assessment of underground services at the defined RRP location
- Plan and Implement appropriate stormwater management.
- Develop a management plan for both the operation and rehabilitation of the RRP.
- Training specific to the excavation work and to site be provided to workers by a competent person.
- Workers operating plant hold a valid licence to operate that plant if required.

WORK HEALTH AND SAFETY GUIDELINES FOR RUBBLE RAISING PIT EXCAVATIONS	Version No:	1.0
	Issued:	06/05/14
	Next Review:	06/05/19

Excavation Stability (During RRP Operations)

- Maintain batter slopes no steeper than 1 vertical to 2 horizontal (1V:2H).
- Ensure that the spoil stockpile is far enough removed from the pit such that spoil cannot slump into the pit. Do not place loads including spoil stockpiles and plant closer to the excavation crest than a distance equal to the total depth of the excavation (refer to Figure 1).

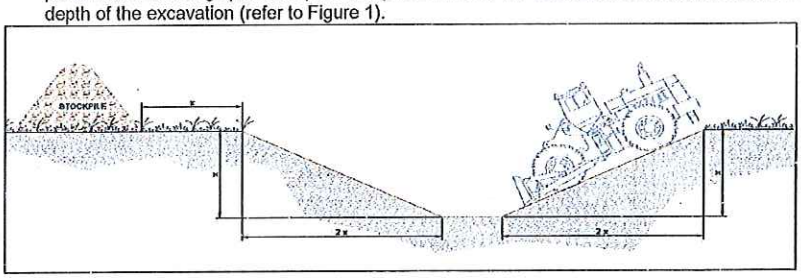

Figure1: Operational Excavation Conditions

- Excavation stability is decreased by erosion or accumulation of water in the soil. Effective management of stormwater will be critical in order to maintain the integrity of the excavation. To reduce the risk of instability control measures must be implemented where they are reasonably practicable, for example provision of storm water drainage around the excavation. Control measures will be identified by the risk assessment.
- Regularly monitor the site for
  - Tension cracks adjacent to and within the pit;
  - Material slumping from the sides; and
  - Significant groundwater inflow.
- If any of the above are evident or suspected, remedial works will need to be undertaken to address the issue. In particular:
  - If cracking at or near the crest is observed the loose material must be excavated from the crest/wall and a shallower batter slope shall be implemented.
  - If slumping is observed from the sides of the excavation a shallower batter slope shall be implemented.
- If tension cracking or slumping are observed subsequent to flattening batter slopes in response to an observation of instability, works are to be stopped and a site inspection be undertaken by a suitably experienced and qualified geotechnical practitioner.

Do not enter any excavation, regardless of depth, if you are not certain that it is safe to do so.

Long Term Management of RRP Excavations

Development and implementation of a documented long term management plan will be required for each RRP excavation. Consideration must be given to pre-existing and future land use in conjunction with social and environmental issues.

- In general, the excavation should be shaped to form batter slopes no steeper than 1V:3H.
- Assess the risk of erosion due to water and wind (i.e. will revegetation help mitigate erosion?).
- Does the site require further rehabilitation? (i.e. backfilling, replacement of organic topsoil, revegetation).

Tom Hills (BE (Civil), MIEAust, CPEng, RPEQ)
Associate, Principal Geotechnical Engineer
Golder Associates Pty Ltd

APPENDIX B EMERGENCY RESPONSE PLAN EXCAVATION AND TRENCHING

Worksite: _____

Distance from response groups: _____ Date: _____

Weather conditions: _____

Workers in attendance:

Name: _____ Signature: _____

Name: _____ Signature: _____

Task: Excavation / Trenching / Construction

(please specify) _____

EMERGENCY RESPONSE PLAN

Yes	No	General Requirements
☐	☐	Designated Assembly point
☐	☐	Black Spot area? If yes, what communication precautions have been put in place?
☐	☐	Communication systems in place – Radio/Mobile Phone/Spot Tracker
☐	☐	Regular contact with Works Department/Office
☐	☐	Fire extinguisher(s) in place (fully operational and tagged)
☐	☐	Appropriate PPE available for the task
☐	☐	First Aid Kit in place, which includes Snake Bite Kit
☐	☐	Trained First Aid Officer on site
☐	☐	Site conditions:
☐	☐	Emergency Contacts: SAPOL FIRE AMBULANCE Nearest Medical Facility – location and phone number
Yes	No	Relevant Considerations

Procedure Name: Excavation and Trenching Procedure

☐	☐	Falls from one level to another
☐	☐	Ground slippage
☐	☐	Flooding
☐	☐	Gas leaks
☐	☐	Falling Objects
☐	☐	Striking electrical cables/lines
☐	☐	Location of work area, i.e. remote, isolated, accessible, distance from medical facilities, etc.
☐	☐	Workzone Traffic Management Procedure is in place
☐	☐	Rescue equipment, i.e. relevant to the nature of the task, proximity of such equipment
☐	☐	Capabilities of rescuers, i.e. are they trained in specific rescue requirements, have emergency procedures been tested?
☐	☐	Local emergency services, i.e. how will they be contacted and time for response if they are to be relied on for rescue?

Approved by Works Manager (or delegate): Date: _____

Name:_____ Signature:_____

Procedure Name: Excavation and Trenching Procedure

APPENDIX C PRE-EXCAVATION RISK ASSESSMENT WORKSHEET

THIS DOCUMENT IS TO BE HELD IN THE FRONT OF THE WORKING FILE AND HANDED TO THE OPERATIONAL STAFF PRIOR TO COMMENCEMENT OF WORK

To identify potential hazards at the worksite to enable planning of control measures before work commences.

	Y/N	Action/Comments	Responsible Person	Date
ETSA power lines Telecom lines Service infrastructure supports (Poles, etc.)				
Nature of ground Soil or rock Moisture content Water table level Faults or bedding planes				
Possibility of flooding Stormwater drains Surface run off after heavy rain Swamp, dam, reservoir, lake or river				
Underground services (Dial before you Dig 1100) High pressure gas lines Electrical cables Sewer Water mains Telephone lines Previous trenching work				
Hazards – natural or artificial Intersecting old trenches Manholes and other shafts				

Procedure Name: Excavation and Trenching Procedure

	Y/N	Action/Comments	Responsible Person	Date
Bends in an excavation line Leaking services Trees Ground contamination – Industrial/waste Location of Industry Pedestrian ways				
Static loads Spoil pile Buildings including garage and outbuildings Fence lines Water tanks/towers Brick or stone walls Earth embankment				
Dynamic loads Traffic (highway/rail) Excavation equipment and other plant WorkZone Traffic Management (AS 1742.3)				
Facilities Lunch Toilet and hygiene Inclement weather				
Excavation Plant Storage Access Pre-start checklist completed				
Staff Plant operator competency requirements Personal protective equipment requirements				

Procedure Name: Excavation and Trenching Procedure

	Y/N	Action/Comments	Responsible Person	Date
Training for task Competent person to inspect site Safety Supervisor (20 + persons involved Reg. 5.10.2)				
Trench support requirements Equipment (shoring, etc.) Staff training				
Notification requirements Div 6.5 Form sent to SafeWork SA 24hrs prior to work commencing				
Prevention of falls (ladders, fall arrestors, platforms, signage, pedestrian safety, PPE)				
Any other issues identified affecting the design or work. E.g. Confined Space requirements				

Procedure Name: Excavation and Trenching Procedure

HAZARD/ACTION WORKSHEET (Record of action, changes or hazards identified during week)

DATE	COMMENTS

Procedure Name: Excavation and Trenching Procedure

APPENDIX D EXCAVATION AND TRENCHING PERMIT

Location of work:
Description of work:
Risk Assessment undertaken and attached: Yes / No

CONTROL MEASURES:

Isolation Area needs to be isolated from: Do not work within 2 metres of power lines or underground cables, when using backhoe, excavator, hoists, lifting equipment, shoring, etc.			Personal Protective Equipment (PPE) The following safety equipment shall be worn as a minimum: Accredited PPE Yes / No
Power isolated from work areas where necessary.			Safety vest / jacket Yes / No
Water / gas pipes clear of work area.			Safety glasses, suggest clear for visibility. Yes / No
Ample room in trench or excavation for clearance when lifting pipes, etc., into trench, excavation.			Hard hats must be worn where there is a possibility of injury from material falling from above.
Locks / Tags Yes / No			Gloves Yes / No
Have been affixed to isolation points. Yes / No			Recommended safety boots Yes / No
Note: Barricades and signs must be displayed.			
Note: There must be no unauthorised access to work in trenches or excavation work areas.			Communication equipment where work is spread over a longer trench. Yes / No
Weather Conditions Fine and Sunny Yes/No			Other: Yes / No
Fine but Cloudy Yes/No			
Overcast Yes/No			
Raining Yes/No			Other Precautions
Rain forecast Yes/No			
Thunderstorm imminent Yes/No			All persons are trained. Yes/No
Wind strength, gusty, over 25kph Yes/No			Barricades, solid or mesh. Yes/No
Note: There must be sufficient lighting when working below ground level where visibility may be poor.			Safety rails Yes/No Battering Yes/No Stepping Yes/No
			Warning notices Yes/No
Depth to be working			*Note: NO SMOKING in excavation or trench.*
			Other:
.5m Yes/No		1.5m Yes/No	*Note: Shoring protection and engineer's report must be provided when working in excavations, trenches and pits. In excess of 1.5m, SafeWork SA to be notified 24 hours prior.*
1m Yes/No		More than 1.5m Yes/No	

Procedure Name: Excavation and Trenching Procedure

Hot Work		Standby Personnel / Spotter
Area is clear of combustibles.	Yes/No	Standby personnel / requirements:
Fire prevention equipment available.	Yes/No	
Suitable access / egress.	Yes/No	
Hot work is permitted.	Yes/No	

AUTHORITY TO PERFORM EXCAVATION OR TENCHING

The control measures and precautions put in place to enable safe work in excavating or trenching have been implemented, and the persons required to work in excavations or trenches have the necessary training and accreditation to perform this work safely.
The persons performing work in excavation or trenching have been advised of, and understand, this written authority.

Signed: (Person in direct control) Date: / / Time am / pm

Written authority is valid until: Date: / / Time am / pm

Estimated time required for task: Hours

PERSONS REQUIRED TO WORK IN EXCAVATION OR TRENCH

Start of work			End of work		
Name	Date	Time	Name	Date	Time

WITHDRAWAL OF WRITTEN AUTHORITY

Please circle: Task complete, postponed or cancelled Yes/No

Equipment checked and stored correctly Yes/No

Signed: (Work Health and Safety Coordinator or delegated representative)

Date: Time am / pm

Comments about the work:

Procedure Name: Excavation and Trenching Procedure

APPENDIX E EXCAVATION / TRENCHING PRE-START CHECKLIST

WORKSITE

PROJECT NAME

Check the following:				
	DATE			
		Y	N	N/A
1	Project manager appointed.			
2	Relevant training undertaken by workers assigned to project.			
3	WHS Construction Activities Guidance Checklist read.			
4	Excavation / Trenching Risk Assessment completed and reviewed.			
5	Safe Work Method Statement completed and reviewed.			
6	Excavation / Trenching Permit completed.			
7	Emergency Response Plan in place.			
8	WHS documentation received from participating PCBU(s).			
9	Soil test conducted.			
10	Designer's safety report received.			
11	Geotechnical engineer's report received (if depth greater than 1.5m).			
12	Consultation with workers and their representatives and other participating PCBUs has occurred.			
13	"Dial Before You Dig" service contacted.			
14	The means of entry to, and exit from, the work site determined.			
15	Weather conditions considered.			
16	Length of time of open excavation / trench considered.			
17	SafeWork SA notified.			
18	PPE, plant and safety equipment is fit for purpose and inspected.			
19	Workzone Traffic Management requirements determined.			
20	Public safety issues managed.			
21	Site secured from unauthorised access.			
22	Relevant barricades / signage in place.			
23	Steps taken to prevent the (partial) collapse of any adjacent building / structure.			
24	Power isolated from work site.			
25	Shoring protection available on site (if depth greater than 1.5m).			
26	First aid kit available on site.			
27	Fire extinguisher available on site.			
28	An operating radio / phone on site.			
	Signature of project manager			

COMMENTS:

APPENDIX F EXCAVATION / TRENCHING DAILY INSPECTION SHEET

WORKSITE

NOTES FROM PREVIOUS WEEK

	Check the following. *Mark N/A where not applicable.*													
	DATE	M		T		W		T		F		S		S	
		Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
1	Effective barricades (access control & fall prevention), traffic control, signs and records														
2	Open excavation / trench														
	• Angle of repose														
	• Depth of cut														
	• Material excavated														
	• Undercutting														
	• Climatic conditions														
	• Traffic – vehicular / pedestrian														
3	Flammable liquid, gases, potential Monoxide fumes in close proximity to trench / excavation														
4	Excavation area clear of:-														
	• Spoil														
	• Tools														
	• Pipes / supplies														
	• Equipment / machinery not in use														
	• Other materials (rubbish, timber off-cuts, containers, etc.)														
5	Adequate surface water control (reduce erosion / flooding)														
6	Appropriate PPE being worn														
	• Safety helmet in excavation or near plant														
	• Gloves, high visibility clothing, footwear														
7	Shoring where used, securely fixed														
	• Toms, struts, whalers, props, wedges, sheeting														
8	Mechanical ground support systems														
	• Screw hydraulic spreaders														
	• Wall plates														
	• Tools and equipment														
9	Warning signs of collapse														

	• Timber or supports creaking / becoming tight / loose													
	• Water entering excavation													
	• Tension cracks along top of trench													
	• Subsidence, fretting or sag under plant weight													
	• Previous excavation in immediate area													
10	Efficient means of access / egress													
	• Ladders installed within immediate work area													
11	First aid													
	• First aid kit available on site													
	• First aider on site as required													
	• Emergency procedure known													
12	Communication system													
	• An operating radio / phone on site													
	Signature of supervisor inspecting site													

USE REVERSE SIDE OF THIS FORM FOR COMMENTS

THIS DOCUMENT MUST BE HELD AT THE WORKSITE AT ALL TIMES