Ground Disturbance Procedure

Approved: 07 October 2021 Review due: October 2024

1. Objective

This Procedure documents the requirements for the management of risks associated with ground disturbance activities such as excavation, trenching and pot holing at Goulburn Murray Waters' (GMW) controlled work sites. In particular it:

- Sets out the requirements and procedures for the protection of people undertaking Ground Disturbance work.
- Details the risk assessment process and compliance requirements to eliminate or minimise potential fatalities, injuries and incidents arising from risks related to Ground Disturbance.

The need for this procedure will be identified when the "Safe Start" document indicates Ground Disturbance will be undertaken.

2. Scope

This procedure applies to all GMW employees, labor hire and contractors (where reasonably practicable) that undertake ground disturbance activities for or on behalf of Goulburn Murray Water.

3. Procedure

Overview

Goulburn Murray Water will manage their facilities, plant, work environment and tasks to eliminate the risks, as far as reasonably practicable, that are associated with Ground Disturbance at their worksites or at worksites that Goulburn Murray Water controls.

Safe Work Method Statement

A risk assessment shall be conducted prior to undertaking all Ground Disturbance using the Trenching Safe Work Method Statement (SWMS 04). The SWMS will be reviewed/consulted in accordance with this procedure.

The safe work method statement must be reviewed when:

- a super saturated trench reaches a depth of 1metre
- a dry trench reaches a depth of >1.5metre
- change of anticipated excavation dimensions
- as necessary due to changes in soil type or condition, weather conditions, particularly after rainfall
- Each day before the commencement of work

The SWMS should be reviewed after coming back from a break (such as lunch break). This is to ensure that the conditions haven't changed whilst the team have been away.

Pot Holing and Ground Probing

Ground disturbance work including pot holing and ground probing being conducted by any mechanical device will be undertaken by a competent and trained person.

Any worker conducting manual Pot holing or Ground Probing activities must have completed and be up to date with GMW's manual handling training and be deemed physically capable of conducting these activities as identified in the RA / SWMS

At the end of the job, completed documents (i.e. SWMS, permits, inspection records) are to be kept and stored in the project file.

Workers and other affected stakeholders such as contractors shall be consulted during the risk assessment process. All persons working on the site including contractors will read through, and sign and date the SWMS.

A summary of potential hazards to consider during the risk assessment is listed in Table 1.

Table 1 Examples of Ground Disturbance Hazards

Underground essential services - electricity, sewerage, water, gas, chemicals or refrigerant in pipes or lines.	Hazardous chemicals that for example may be present in the soil, & natural gases & naturally formed hazardous chemicals i.e. sulphur etc.
Fall or dislodgement of earth or rock, potential engulfment	Inappropriate placement of excavated materials, plant or other loads
Falling objects	Hazardous atmosphere in an excavation
Instability of any adjoining structure caused by the excavation	Presence of or possible inrush of water or other liquid
Asbestos including naturally occurring asbestos	Suspected contaminated soils or other contaminated matter

When assessing the risks associated with Ground Disturbance work the following should be considered:

- Local site conditions including access, ground slope, adjacent buildings and structures, water courses and trees
- Depth of the excavation
- Soil properties including variable soil types, stability, shear strength, cohesion, presence of groundwater, effect of exposure to the elements or suspected contaminated soil
- Fractures or faults in rocks including joints, bedding planes, dip and strike directions and angles, clay seams
- Any specialised plant or work methods required (e.g. ground support);
- Method of transport, haul routes and disposal
- Development of lift plans by suitably qualified personnel i.e. geotechnical engineers, qualified rigger must be completed prior to conducting any lifting operations which involve shoring, piping or other equipment identified in the risk assessment
- What exposures might occur such as to noise, lasers, Radiation electromagnetic and or chemical, ultra violet rays, hazardous chemicals or environmental hazards
- Number of people involved
- The possibility of unauthorised access to work areas
- Weather conditions
- Length of time that the excavation or trench will be open
- Geographical location and previous land use should be established, for example, old mine shaft location, old landfill location, flood prone areas etc.

Planning Ground Disturbance Work

Location of Services

Before any excavation or trenching is undertaken, a check shall be conducted for all known underground utilities. This must be undertaken by:

- Checking existing site maps
- Contact Dial Before You Dig (Call 1100 or www.1100.com.au)
- Cable avoidance tool
- Pot holing with hand tools
- Ground probing
- Use of Vac truck and/or locator by a location company.

The location of services shall be documented prior to commencement of works and provided to the Supervisor/Field Team leader. This information shall be kept on site until the work is completed.

Shoring Benching and Battering

All worksites where there is a requirement for ground disturbance activities shall be risk assessed by a competent person prior to commencement of the work. This is to determine the need for:

- Shoring (and which type)
- Benching or battering.

This shall include an evaluation of the effects of this work on adjacent structures. All relevant matters must be considered in managing the risks, including:

- The nature of the excavation
- The nature of the excavation work, including the range of possible methods of carrying out the work
- The means of entry into and exit from the excavation (if applicable)

The excavation and trench must be assessed to determine if it is a confined space. If so, refer to the Confined Space Procedure and SWMS. A record of all details of this inspection must be kept on site.

Ground Disturbance – Left unattended

Anytime a ground opening is to be left unattended or needs to remain open for more than 1 day a risk assessment is to be conducted and the area made safe. When making the area safe, the following should be considered:

- Barricades
- Safety signage
- Pit lids / trench covers

Planning the Ground Disturbance – Supervision

All Ground Disturbance work shall be planned, monitored, and reviewed by the Supervisor/Field team leader.

Worksafe notification is required in writing prior to excavating greater 1.5m at least 3 working days prior to works commencing

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A safe start / risk assessment is required prior to conducting any ground disturbance work Before ground disturbance work is commenced in any location, the person in control of the workplace (PICOW) shall ensure that:

- Implement an emergency plan compiled in consultation with relevant workers;
- Risk Assessments, SWMS, DBYD, GMW permits or relevant external permits i.e gas, GVW etc have been completed, communicated and signed by all workers onsite
- The hazards of the location have been identified and reported
- Controls for managing all hazards are in place
- The plant being used to excavate is fit for purpose
- The equipment is located so that, in the event of malfunction of the equipment, a collapse or unsafe hazard is not created
- There is no inherent hazard due to the nature of the area on which the excavation work is to be performed
- Relevant stakeholders are informed.

Isolation of Services

If working on or above, or very close proximity, this will be in line with the risk involved i.e. HV is high risk, 12 mm water tapping is low risk. Where high risk and isolation is not practicable then pot holing will be required to accurately locate the service.

Refer to Overhead/Underground Fatal Risk Procedure (A4045516)

Further requirements maybe attained from the asset owner.

Barricades

Suitable barriers and warning signs must be installed if any person is at risk of harm in the ground disturbance area. The nature of barricades will be determined during the risk assessment. The person in control of the works is responsible for ensuring barricades are in place, as outlined in a risk assessment. They are also to ensure that at the end of the work day that the site is to be secure.

Communications

An effective communication system based on two-way acknowledgement between mobile plant operators and ground personnel must be established and communicated before work commences.

Emergency Plan

An Emergency Plan shall be developed when the risk assessment identifies the requirement for an Emergency Plan to be developed. The Emergency Plan is to deal with unexpected incidents, such as ground slip, flooding, gas leaks and the rescue of workers from an excavation. All operators must be trained in this Emergency Plan and regular rehearsals are to be conducted. Review of the Emergency Plan should be conducted daily before work commences and/or if the conditions should change and a walk through of the plan conducted at regular intervals throughout the life of the job/project.

In the event of a collapse, immediately contact Emergency Services (000) and implement emergency response plan. Details are to be included in the jobs Emergency Plan.

Injuries

Any injuries are to be reported to your immediate supervisor onsite first, followed by a notification to OccCorp.

Controlling the Risk

The ways of controlling the risk of Ground Disturbance work are ranked from the highest level of protection and reliability, to the lowest. This ranking is known as the hierarchy of control. The hierarchy is to be used to select the control that most effectively eliminates or minimises the risk for the related circumstances. This may involve a single control measure or a combination of two or more different controls.

Spotter

For any excavation or trenching work being conducted around utilities where either a risk assessment or authority requires a spotter is to be present.

The role of the spotter is to check adjacent equipment and observe practices to ensure that they are being conducted safely and the work activities do not affect any utility asset

NOTE: The Spotter does NOT simply conduct periodic checks; it is a continuous and thorough inspection and presence in the area and its vicinity by the assigned personnel, with special attention being given to any new developments that might affect the safe condition of operations.

Safety Observer

Safety observers may be required on ground disturbance activities to manage and control exclusion zones where members of the public or other workers may be exposed to the risk of being struck by the excavation equipment or ground disturbance. The Safety Observer, will have similar requirements to the Spotter

Access and Egress into Trench or Excavation

Persons shall not enter or direct another person to enter any trench or excavation unless control measures, identified by a risk assessment have been implemented.

Specifically, hazards associated with the following potential events are to be identified, risk-assessed and control measures implemented as part of the Safe Work method Statement:

- An emergency response plan must be developed prior to undertaking the activity
- A person shall not step nor jump over an excavation or trench
- A person being trapped by the collapse of the excavation or trench
- A person being struck by an object falling into the excavation or trench
- A person falling into the excavation or trench
- A person must not walk within 0.5m from the edge of an excavation or trench unless actually conducting a specific task
- A person inhaling, or otherwise being exposed to, airborne contaminants, fumes and gases in the excavation or trench.

A safe means of access in and out of a trench or excavation must be available at all times, as outlined in the SWMS.

Ladders are to be used to enter and exit trenches as per the requirements outlined in the Risk of Falls Procedure (A4003981). Ladders must be no more than 9m apart and at least 1m of the ladder must extend out of the trench and secured

While carrying out any excavation work, the following requirements apply:

- Each person associated with the work shall follow the precautions to be taken as specified in the relevant risk assessment and SWMS as per the site safety requirements
- No person shall enter an excavation or trench where the head & shoulders are below the edge / top of the excavation to carry out work alone if the excavation is not benched, battered or shored or if there is a risk of engulfment
- A documented site inspection must be carried out each day prior to work commencing or if site conditions change before work can commence.
- Equipment or plant that produces fumes or gases that may result in creating a hazardous atmosphere within the excavation is not to be used. Where alternative equipment cannot be identified, mechanical ventilation increasing air circulation is to be installed prior to a worker entering the excavation / trench

PPE

PPE must be appropriate to the task performed as outlined in the Personal Protective Equipment Procedure. As a minimum this will include ankle high laced safety boots (or safety gumboots), long-sleeve high visibility clothing (orange, sleeves rolled down), drill long pants, gloves to be carried onsite at all times, hard hat with a wide brim, clear/tinted safety glasses, sunscreen, hearing protection, and any others as identified in a risk assessment.

Plant and Equipment

Petrol or diesel equipment such as vehicles, generators and pumps must not be used in or near the trench if there is a risk of exhaust fumes entering an excavation that is or will be occupied by personnel (refer to Confined Space Procedure), or a risk of flammable mixtures igniting.

Areas in which plant and equipment is required to be operated should be adequately assessed for all potential risks for example, ground composition and materials, geographical location, ground compaction & stability, location of existing services, vibration caused by the plant, human interaction etc.

Excavation Stability

Controls for maintaining the stability of disturbed soil during excavation activities shall be in place. Engineering controls such as battering, benching, shoring or shielding shall be used to support or stabilise the faces of the excavation to prevent collapse and harm, as determined by the risk assessment or at trench depths greater than 1m

If the trench depth is planned at 1.5m or greater, Worksafe (Vic) must be notified 3 days prior to the commencement of works. Where the depth is not planned and the excavation reaches 1.5m or greater the works must cease and Workcover must be notified and confirmation received prior to recommencing work

Shoring & Shielding controls shall be designed and prepared by an appropriately qualified person (current trenching and shoring training) and comply with the WorkSafe Compliance Code - Excavation 2019.

Any support systems shall be removed in a way that protects workers from cave-ins, structural collapse or being struck. Temporary structural measures may be required during the removal process.

For trenches deeper than 3m, written approval by a geotechnical engineer must be obtained stating that the trench is safe to work in. The approval must be kept on site at all times during the work activity.

Excavation Activities

Mobile plant, materials and spoil must be kept at a distance of 1m or more from the excavation edge to prevent potential hazards to the person working in the excavation (refer to the Mobile Plant Procedure). Vibration from external sources such as roads and railways may need to be considered in the risk assessment.

Dewatering

Dewatering operations must be performed where there is a risk of excess water accumulating around the excavation. Dewatering tasks shall be included in the SWMS/Risk Assessment.

Placement of Spoil

Excavated spoil must be placed at least 1m away from the edge of the excavation, and that shall be no higher than 1m.The further away from the excavation the higher the pile can be stacked. Noting that higher spoil piles will require further environmental considerations such as but not limited to dust suppression, sediment run off etc. The Project Manager shall determine through a risk assessment whether a geological load bearing test is required.

Backfilling

Backfilling and rehabilitation requirements shall be determined by the Supervisor/Field Team Leader prior to excavation works commencing.

Hazard/Incident Reporting

Any hazard/incident involving ground disturbance work on a Goulburn Murray Water controlled site must be reported in IRIS.

Documentation and Record Keeping

A copy of all records (i.e. completed SWMS, permits, inspection records etc) will be held as a physical hard-copy securely kept / held at site in a manner that is easily accessible for audit and review process.

Review

The Ground Disturbance Procedure is to be reviewed every 2 years or earlier if:

- There is an identified risk to business
- A significant safety or serious injury event occurs
- Incident investigation or audit results show that application of the standard fails to deliver the required outcomes
- There are changes in associated legislation
- There is evidence that the standard is not having a positive impact on safety-related KPIs.

Incident Reporting

Any incident involving ground disturbance work is to be reported in IRIS within 24hrs of the incident occurring.

AN Incident escalation and management (2-24-2) is to be initiated within 2hrs (or the next working day) of the incident occurring (A3838999)

4. Responsibilities

This Procedures applies to all activities involving ground disturbance in circumstances where GMW has management and control of the work site.

Responsibility	Who
Approval	General Manager People, Culture & Safety
Ownership and implementation	Manager, Safety Wellbeing and Environment

Outlined below are responsibilities specific to ground disturbance requirements at all GMW workplaces and controlled sites.

GMW Executive Leadership Team (ELT)

GMW Executive (ELT) are responsible for overseeing and ensuring the implementation of the requirements of this procedure and related procedures within their respective functional areas. This includes ensuring all Ground Disturbance tasks are suitably risk assessed and that appropriate controls are implemented to minimise the risk of injury or harm to workers.

Senior Leadership Team (SLT)

Managers in all operational areas and GMW worksites are responsible for ensuring the review and management of risks associated with ground disturbance tasks. This includes:

- Ensuring adequate resources are available to enable the effective implementation of systems to control and manage risks;
- Review and manage risks associated with Ground Disturbance;
- Ensuring all applicable employees are aware of this Ground Disturbance procedure;
- Providing resources for the Ground Disturbance program works; and

Coordinators, Supervisors and Field Team Leaders

Supervisors and Team Leaders in all operational areas and GMW worksites are responsible for ensuring that risks associated with Ground Disturbance are managed by ensuring workers are made aware of and comply with the Ground Disturbance Procedure and Goulburn Murray Water's requirements. This includes:

- Ensuring underground services near proposed work have been identified by Dial Before You Dig (DBYD) and located as required
- Ensure WorkSafe are notified as required prior to conducting ground disturbance greater than 1.5m
- Ensure the all Safe Work Method Statement (SWMS) are complied with and all workers and contractors have signed and dated
- Addressing the risks associated with Ground Disturbance in site inductions
- Documenting and retaining safety records
- Ensuring only appropriately trained and competent people undertake ground disturbance activities or operators of plant

Workers

All workers shall ensure that they:

- Read understand sign and Follow the requirements detailed in the SWMS this procedure and associated documents
- Report any hazards/incidents/injuries immediately to their supervisor in accordance with GMW OHS Incident Reporting and Investigation Procedure

Spotter / Safety Observer (Administrative Control)

A Spotter must at all times:

- Be aware of the need to use appropriate PPE during the excavation/penetration work;
- Inspect adjoining compartments, if any condition changes are possible;
- Not allow excavation/penetration work to proceed outside the area specified
- Immediately stop the work, if a hazardous condition is observed;
- Assemble appropriate safety rescue equipment close to work as outlined in the emergency rescue plan;
- Be alert for any collapse or hazard;
- Take immediate action as per the emergency plan if any unexpected changes occur, including the use of rescue equipment;
- Not leave the job unless properly relieved by an authorised and competent person.

Unsupervised or Principal Contractors

Contractors that meet the requirements under the OHS Act and OHS Regulations, and have documented safe systems of work approved by their organisation, will be deemed as meeting the minimum standards required to conduct ground disturbance activities for or on behalf of GMW.

5. Definitions

Barricade: Any object or structure that creates a barrier obstacle to control, block passage or force the flow of traffic in the desired direction.

Backfill: a material used for refilling excavations.

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.

Bench: horizontal stepping of the face, side or wall of an excavation.

Competent Person: a person who has acquired through training, qualification or experience the knowledge and skills to carry out the task.

DBYD: acronym used for Dial Before You Dig.

Excavation Work: Work involving removal of soil or rock from a site to form an open face, hole or cavity using tools, machinery or explosives.

Ground Disturbance: work activities including trenching, excavation, pot holing and ground probing.

Hazardous Area: an area in which an adverse change may occur through, natural ground condition, vibration, weakening of structural integrity, outside services, equipment movements.

Hierarchy of Control: is a system used to Eliminate or minimise exposure to hazards.

Manager: The Manager who has direct responsibility for the activity being performed or the area the activity is occurring in.

Notifiable Incident: The collapse or failure of an excavation or of any shoring supporting an excavation is a dangerous incident and must be notified to WorkSafe Victoria.

SWMS: acronym used for Safe Work Method Statement.

Spotter: A person assigned to work with the people conducting the excavation work processes, normally located outside the work area, to watch for any condition changes resulting from the excavation work process.

Shoring: use of timber, steel or other structural material to support an excavation in order to prevent collapse so that construction can proceed.

Permit Receiver: A person who receives a permit from a permit issuer.

Permit Issuer: A person who is authorised to complete and issue a permit.

Permit to Work: A document authorising a person to undertake specific work in a designated area.

Supervisor: term used for any GMW employee who acts or is appointed as a Supervisor, Coordinator or Field Team Leader within GMW.

SMS: acronym used for GMW's Safety Management System.

Trench: horizontal or inclined way or opening below ground level.

OHS: acronym used for Occupational Health and Safety.

6. Document history

Doc #	Date approved	Approved by	Approval #
A3824889	7/10/21	Glenda Smith, General Manager People, Culture & Safety	A4154819

7. Associated documents

Document name	#
Occupational Health and Safety Act (Victoria)	2004
Occupational Health and Safety Regulations (Victoria)	2017
WorkSafe Victoria - Using Earthmoving Equipment Near Overhead Electrical Assets - Handbook for Workplaces	
WorkSafe Victoria - Construction and Utilities, No Go Zones For Underground Utility Services	
WorkSafe Victoria - Construction and Utilities, No Go Zones For Overhead Electrical Power Lines	
Hazard Monitoring Assessment and Control - GMW Safe-Start Form	A2135655
Underground Assets Form	A4066281
Overhead and Underground Assets – Emergency works	A4066340
Overhead Assets	A4066279
Confined Space Procedure	
Personal Protective Equipment Procedure	A3964800
OHS Incident Reporting and Investigation Procedure	A3859790
Overhead/Underground Fatal Risk Procedure	A4045516
Risk of Falls Procedure	A4003981
Trenching Safe Work Method Statement (SWMS04)	A3029942
Mobile Plant Procedure	A4005594
WorkSafe Compliance Code- Excavation (2019) https://content.api.worksafe.vic.gov.au/sites/default/files/2020-02/ISBN-Compliance-code-excavation-2019-12.pdf	