



## Excavations Standards

### Contents

TITLE	SECTION
Introduction	1
Planning	2
Collapse of the sides of the excavation	3
Access and egress	4
Protecting the excavation and signage	5
Undermining of building or scaffold	6
Inspections and reports	7
Overhead power cables and services	8
Underground services	9
Fumes and gas monitoring	10
Spoil and spoil heaps	11
Monitoring	12
Further reading	13
Tool Box Talk	14

### 1. Introduction

The purpose of these excavations standards is to highlight the health and safety requirements that need to be implemented when breaking ground and digging excavations in order to protect our employees, sub-contractors and members of the public. Working near an open excavation is working at height and the hierarchy of working at height procedure must also be followed.

Excavations are one of the higher risk activities that are carried out on our construction sites and if anything goes wrong could result in serious injury or death.

The risks include:

- Collapse of the sides;
- People and vehicles falling into the excavation;
- Materials falling onto people working in the excavation;
- Undermining nearby structures;
- Underground and overhead services;
- The ingress of ground and surface water;
- Contaminated land, and
- Reduction of oxygen levels due to toxic fumes or vapours.

### 2. Planning

Excavation work must be planned and a risk assessment and method statement (RAMS) produced by a competent person and this would normally be the grounds works supervisor. Prior to work commencing the operatives involved in the excavation work must read and sign to acknowledge acceptance of the RAMS. A 'Permit to Dig' must be issued either by site management or the ground works supervisor, for all machine or hand digging excavation operations.

Refer to HSMS form [041](#) – Permit to Dig

Prior to breaking the surface the associated site plans and utility drawings of the site must be consulted to identify if there are any existing services in the area. A Cable Avoidance Tool (CAT) and Genny scan must also be carried out by a trained, competent person.

Authorised by: HS&E Director	Version date: 09.06.23	Version: 4	STD: Excavations
Uncontrolled if printed or copied – always check the Group HS&E policy folder for latest version			

If deep excavations are planned then the Deep Excavations Checklist should be completed by the Principal Contractor.

Refer to HSMS form [040](#) – Deep Excavations Checklist

### **3. Collapse of the sides of the excavation**

Any excavation can collapse as ground conditions are unpredictable and consideration must be given to support the shallowest of excavations. Any unsupported excavation will not be safe unless its sides are battered or stepped back sufficiently, or if the excavation is in sound rock. Battering back the sides of an excavation to a safe angle is a simple and acceptable means of preventing instability. In granular soils the angle of the slope should be less than the natural angle of repose of the material being excavated. In wet ground, a considerably flatter slope will be required. For deep drainage or deep foundations, trench boxes must be used. When these are used they are classed as a standard solution in regards to temporary works and must come with a RAMS from the supplier and the use of these must be entered onto the Temporary Works Register.

Refer to HSMS form [056](#) – Temporary Works Register

### **4. Access and egress**

There must be no access to an excavation unless it is safe from collapse. To gain entry into a deep excavation a suitable means of access must be supplied, this would normally be a ladder that has been secured at the top of the excavation. Gas monitoring may be required prior to entry and during occupation if the excavation is classed as a confined space.

### **5. Protecting the excavation and signage**

Edge protection must be put in place as the excavation is dug, if operatives have to leave the excavation (tea break, lunch etc.) then they must ensure that the excavation is fully protected. Ground workers must supply their own excavation protection and not remove pedestrian barriers from site walkways.

The barriers must be robust enough to limit the risk of people and machines from falling into the excavation from all sides, this must include protection for unauthorised site visitors. Metal type crowd barriers will be appropriate for most shallow excavations that would normally contain services or shallow footing. For higher risk deep excavations (over 1.2m deep) Herras type fencing must be erected around the excavation. The barriers must be placed a sensible distance away from the excavation, the feet of the barriers must not be suspended above the excavation and Herras feet must be clear of the excavation, no part of the excavation must be on the outside of the barriers or fencing. Barriers should be placed far enough away from the edge of the excavation that they will not fall into the excavation if the sides were to collapse. As a guide, barriers should be at least 1 metre from an excavation.

Once foundations have been poured and the depth of the excavation is less than 500mm, then pins and rope or orange mesh around each individual excavation can be used.

All deep excavations should have signage displayed stating “Warning Deep Excavations”.

If excavation work is to be carried out on a highway, local authority approval will be required and appropriate signage and guarding erected that complies with Chapter 8 of the Traffic Signs Manual and the Safety at Street Works and Road Works Code of Practice. As a minimum, one operative in the work group must hold a valid New Roads and Street Works Act (NRSWA) Operative ticket and one operative / supervisor must hold a valid NRSWA Supervisor ticket.

Authorised by: HS&E Director	Version date: 09.06.23	Version: 4	STD: Excavations
Uncontrolled if printed or copied – always check the Group HS&E policy folder for latest version			

To prevent vehicles or materials falling into an excavation they must not be parked nearby and storage areas should not be located next to or near future excavations. If machines have to drive near an excavation or reverse up to them to tip, then stop blocks must be used; these must be placed far enough away from the edge to prevent the edge of the excavation from collapsing. Combustion engines must not be left running when vehicles are parked near open excavations to prevent exhaust fumes from entering the excavation and displacing oxygen.

## **6. Undermining of buildings or scaffold**

Care must be taken when excavating next to an existing structure or that excavations are not carried out within one metre of scaffold to ensure that they are not undermined as undermining can severely affect the stability of a structure. If work is to be carried out close to an existing structure then advice from a structural engineer must be sought.

## **7. Inspections and reports**

Excavations that need to be supported or battered back to prevent danger must be inspected. The person in control of the excavation must arrange for a competent person to carry out these inspections, this is usually the groundworks supervisor:

- At the start of the shift before work begins;
- After any event likely to have affected its stability; and
- After any accidental fall of rock, earth or other material.

If the person inspecting the excavation is not satisfied that the excavation can be used safely they must ensure that no one enters the excavation until measures have been put in place to render the excavation safe.

For an excavation, an inspection and written inspection report must be completed every seven days, unless there has been a collapse/ fall of material or other event likely to affect stability. In this case an inspection and written inspection report will be required before work starts again.

Refer to HSMS form [019B](#) – Excavations Inspections Register

The written inspection report must be completed by the competent person, before the end of the working period. Any issues observed from the report must be rectified. The report must be kept on site during the construction work period then it must be kept on file for a further 3 months.

## **8. Overhead power cables and services**

If there are overhead power cables a GS 6 Survey must be carried out by the local electricity provider. They will issue a report that will detail the safety distances that must be maintained at all times. If a machine has to work under them or close to them then the correct size machine must be selected and it may need to be fitted with mechanical restrictors to prevent it encroaching into the danger areas.

Overhead telecoms cables will also need to be identified and protected to ensure that they are not damaged or brought down.

## **9. Underground services**

Extreme care must be taken when digging around known services, a service strike can be fatal and costly. Before digging commences the site drawings must be checked and the ground must be scanned with a CAT and genny, the operator must be trained and the CAT and genny must

Authorised by: HS&E Director	Version date: 09.06.23	Version: 4	STD: Excavations
Uncontrolled if printed or copied – always check the Group HS&E policy folder for latest version			

be in date for calibration. If services are suspected but have not been identified then trial holes must be hand dug. The hand tool must be insulated and consider the use of flame retardant PPE. If setting out pegs are required then wooden ones should be used in grassed or un-surfaced areas after the area has been subject of a CAT and genny scan.

**Refer to excavations flow chart to avoid hitting buried services (below)**

Mechanical excavators and power tools must not be used within half a metre of the indicated line of a service. Power tools may be used to break paved surfaces but great care must be taken to avoid over-penetration, as a service may have been laid at an unusually shallow depth. Power tools must never be used directly over the indicated line of a cable unless you have written confirmation that it has been made dead.

Ground workers must ensure that they follow the Permit to Dig and their RAMS.

### **Service strikes**

The relevant Groundworks Contractor must investigate the circumstances of the service strike and supply their findings to the local Group HS&E Advisor.

The local HS&E Advisor will record the pertinent details of the service strike on a service strike report.

**Refer to HSMS form 071 – Service Strike Report**

### **10. Fumes and gas monitoring**

If fumes are suspected in an excavation, then it must be treated as a confined space. Confined space trained operatives are only allowed to enter the excavation, gas monitoring must be carried out and a specific risk assessment completed. A written escape plan must also be put in place with control measures to extract an operative if they are overcome by fumes.

A confined space is a place which is substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen).

### **11. Spoil & spoil heaps/ stockpiles**

When excavations are dug, the spoil must be placed far enough from the excavation to ensure that it is not going to slip back into the excavation. They must also ensure that the weight of the spoil does not force the sides of the excavation to collapse. Edge protection must also be in place such as toe boards, projecting trench sheets or trench box sides.

If spoil heaps are constructed then they must be managed and maintained to prevent them from sliding, they must be of a shallow angle and must not have any vertical sides, that could cause a fall from height. The ground workers must decide the safe distance away from excavations, this will depend on the size of the spoil heap, type of material on the spoil heap and also taking into account the materials angle of repose.

Material stockpiles must have a temporary works design, the Group Technical Department have produced a generic design for stockpiles. The side notes in the design must be followed. If the stockpile will be out of the scope of the design or the side notes, then a site-specific design must be carried out, by a competent person.

HSMS [guidance](#) – Stockpile designs

Authorised by: HS&E Director	Version date: 09.06.23	Version: 4	STD: Excavations
Uncontrolled if printed or copied – always check the Group HS&E policy folder for latest version			

## 12. Monitoring

Due to the higher risks involved with excavations it is essential that excavations are closely monitored by ground workers and site management on a daily basis. The Group HS&E department will monitor compliance with these standards during routine HS&E inspections.

## 13. Further reading

HSMS [guidance](#) – Stockpile designs

<https://www.hse.gov.uk/construction/safetytopics/excavations.htm>

<https://www.hse.gov.uk/pubns/priced/hsg150.pdf>

<https://www.hse.gov.uk/pubns/priced/hsg151.pdf>

<https://www.hse.gov.uk/pubns/priced/hsg47.pdf>

## 14. Tool Box Talk

Refer to HSMS [TBT](#) – W@H Excavations

Authorised by: HS&E Director	Version date: 09.06.23	Version: 4	STD: Excavations
Uncontrolled if printed or copied – always check the Group HS&E policy folder for latest version			

<b>VERSION ISSUED</b>	<b>Date</b>
<u>Version 1</u> Sections 1,2,3, 4,5,6,7,8,9,10,11, 12,13,14	08.11.2021
<u>Version 2</u> Section 9 – service strike section added	02.02.2022
<u>Version 3</u> Section 11 – guidance for stock pile design added	09.03.2023
<u>Version 4</u> Section – changes to wording	01.09.23

## Excavations flow chart to avoid hitting buried services

