

## S14 – Opening Statement

### Geotechnical

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Ever since the serious incidents of the 1960s, most notably Aberfan, there has been a legal duty to improve the way tips and stockpiles are built and inspected.

The Geotechnical Procedure outlines the requirements regarding the management of tips, stockpiles and quarry faces. It outlines the duties of the responsible manager, the geotechnical specialist and the geologist.

There are guidelines on what is required in a geotechnical assessment and excavation and tip rules. Finally, there are template documents for tip, excavation and lagoon inspection and appraisal.



## S14 – Geotechnical

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### What is this?

This is a written procedure which outlines the requirements regarding the management of tips, stockpiles and quarry faces.

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### The person responsible for implementing this procedure is:

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### What is the responsible manager required to do?

The responsible manager must ensure:

- That a competent person is appointed to advise on all geotechnical issues.
- That all excavations and tips are designed, constructed, operated and maintained to ensure that instability or movement that may cause a risk to the health and safety of any person is avoided.
- Appraisals of all proposed or existing excavations and tips are carried out to determine whether they are a significant hazard.
- Appraisals are reviewed at appropriate intervals, or when there are significant changes to the working environment or hazards, or there is evidence of failures or errors in the appraisals.
- Completed appraisals are sent to the responsible geologist and geotechnical specialist.
- That information is made available to a geotechnical specialist that may be relevant to a geotechnical assessment whilst the assessment is being undertaken.
- Any corrective actions identified during a geotechnical assessment are completed by the date specified by the geotechnical specialist.
- Inspections of the excavations and tips are carried out in accordance with the inspection scheme and a record of substances tipped is kept.
- A Monthly report of inspections is sent to the geotechnical specialist.
- Benches and haul roads are designed, constructed and maintained to allow vehicles to use them safely. When necessary, barriers are provided to prevent vehicles leaving benches or haul roads.
- A suitable barrier is maintained around the quarry to discourage trespassers.
- There are sufficient rules to ensure the safe construction and operation of each tip and excavation.
- That 30 days notice is given to the HSE before the commencement of excavations or tips which are expected to be a significant hazard.



## What does the geotechnical specialist need to do?

The geotechnical specialist must ensure that:

- A register of all excavations and tips is maintained.
  - A set of excavation and tips rules is kept, and advice is provided for responsible managers on the selection of rules for site excavation and tips rules.
  - Appraisals of all tips and excavations where significant hazards have been identified are reviewed. Where it is agreed the hazard is significant, a geotechnical assessment is carried out and a report is prepared which identifies any remedial measures and the HSE is notified.
  - Where the geotechnical specialist decides the excavation or tip is not a significant hazard the conclusion is recorded in sufficient detail to explain how that decision was reached.
  - Geologists and responsible managers are advised on the preparation and review of appraisals as required.
  - Monthly inspection reports from responsible managers are reviewed.
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## What do the geologists need to do?

The responsible geologist needs to:

- Review all appraisals and check the conclusions. Send all appraisals with significant hazards to the geotechnical specialist.
  - Advise responsible managers on the preparation of appraisals if required.
  - In liaison with the geotechnical specialist and the responsible manager, prepare a design for the phased working of the quarry.
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## What is required in a geotechnical appraisal?

A geotechnical appraisal should contain the following elements:

- A site survey;
- A site investigation;
- Cross-sections based on the site investigation;
- Plans based on the site investigation;
- Assumptions made before analysis;
- Findings of the analysis
- The design coming out of the analysis; and
- Requirements during and after construction.



## What is required in excavation and tip rules?

The rules should specify the way in which the excavation or tip will be constructed and managed to ensure safety. They need to address:

- The maximum depth/height;
- The preparation necessary (for example, the standard of foundations required for a tip);
- The provision of drainage and how it is installed, maintained and inspected;
- The height of the slopes and faces, and the thickness of the layers in which a tip is constructed;
- The degree of compaction in solid tips;
- The type of plant and machinery used;
- The construction standards for roadways and edge protection;
- The level of supervision required;
- How defects are dealt with; **and**
- How material will be removed from the excavation or tip.

Excavation rules will also need to address:

- The sequence in which the site will be excavated; **and**
- How faces will be maintained.

Lagoon rules will also need to address:

- The provision of emergency overflows;
- Minimum freeboard heights;
- The operation and maintenance of pumps;
- How materials will be recovered from lagoons; **and**
- If appropriate, how to cover lagoons.

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## Legislation

- Quarries Regulations 1999
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## Associated documentation

- Solid tip and earthwork inspection form
- Excavation inspection form
- Lagoon and open bodies of water inspection form
- Solid tip appraisal form
- Excavation appraisal form
- Lagoon and open bodies of water appraisal form
- Repeat appraisal form

