

S11 – Opening Statement

Explosives & Shotfiring

The handling and use of explosives has the potential to be one of the most hazardous activities on a site if it is not properly controlled. Only authorised, trained, and competent personnel may undertake shotfiring activities.

The Explosives Procedure outlines the duties of a responsible manager and an explosives supervisor. It explains what is required in a blasting specification and in shotfiring rules.

There are example documents for preparing a blast design. It is the responsibility of the explosives supervisor to ensure that the design is suitable and sufficient before a shot is fired.

Finally there are HSE documents for applying for explosives licences.



S11 – Explosives & Shotfiring

What is this?

These are written procedures which explain the duties of key personnel in relation to the handling and use of explosives in the workplace.

The person responsible for implementing this procedure is:

What do senior management need to do?

The **responsible manager** must appoint an Explosives Supervisor and confirm it in writing. This person must have sufficient experience, and both theoretical and practical knowledge to manage the use of explosives on site. This person will be responsible for planning, co-ordinating and supervising the activity.

What do responsible managers need to do?

The responsible manager must ensure:

- All appropriate regulations are complied with;
- Explosives are stored, transported and used securely and safely;
- Rules are maintained for all shotfiring activities;
- The Explosives Supervisor receives the rules and demonstrates his understanding;
- He monitors compliance with the rules;
- An adequate written specification is prepared for each shotfiring operation at the quarry.

Note: The responsible manager and Explosives Supervisor can be the same person. In this case the above duties will go up the management structure to the senior responsible manager or responsible director.

What do Explosives Supervisors need to do?

The Explosives Supervisor is in charge of the use of explosives on the site. He will make the following appointments:

- Shotfirer: will personally supervise all shotfiring operations;
- Explosives storekeeper: will maintain the condition of the store and maintain the records of explosives and accessories held;
- Trainee shotfirer (as appropriate): will work under the close supervision of the shotfirer;



- Explosive handlers: will assist with the storage, transportation and use of explosives;
- Sentries: will safeguard the danger zone.

Note: All of the above individuals must be provided with a copy of the shotfiring rules and demonstrate their understanding.

Blasting specification: The Explosives Supervisor must ensure:

- An adequate specification is prepared and recorded for each shotfiring operation; **and**
- The shotfiring activity is undertaken in line with the blasting specification and shotfiring rules.

What is in the blasting specification?

The following needs to be addressed when planning, preparing for and undertaking a blast:

- The following needs to be addressed when planning, preparing for and undertaking a blast:
- A plan to show where the blast will be occurring;
- The intended hole positions, marked on a plan, showing the length, diameter and angle of inclination and direction at which the drill is to be set for each hole;
- The surface position* and number for each shothole;
- The angle of inclination, direction, length, diameter and extent of subgrade drilling for each completed shothole;
- Where minerals form a face, the profile required to determine the burden around each hole;
- Any geological anomalies which could affect the blast, in particular those identified during drilling and inspection, e.g. cavities, clay bands, joint planes, bedding planes or discontinuities;
- From the above, the burden for each shothole should be determined and consequently the amount, type and placement of explosives to be used, so the blast can be carried out safely;
- The actual amount, type and placement of explosives, detonators and stemming in each shothole;
- The system of initiation, including full details of any delay sequence and timing;
- A plan showing the danger zone, shotfiring and sentry positions (this can be shown on the same plan as above);
- The visibility and other precautions required to minimise the risk of:
 - Material being projected by the blast;
 - Misfires; **and**
 - Injury during inspection of the site before and after the blast.

* The surface position needs to be identified with sufficient accuracy to enable the explosives to be located in the event of a misfire.



What is in the shotfiring rules?

The shotfiring rules should cover the following topics:

- Notice of times when shotfiring is permitted
- The warning system that will be used
- The authorisation and appointment of key personnel
- Surveying and drilling
- The blasting specification
- How explosives will be stored and issued
- How explosives will be transported to and from the blasting area
- The charging of shotholes
- The control of bulk emulsion trucks (as appropriate)
- How shots will be connected
- How circuits will be tested
- How danger zones will be cleared and where sentries will be placed
- The firing of shots
- How explosives would be safeguarded overnight
- How to deal with misfires
- How to deal with 'flyrock' incidents
- Transporting explosives on the public highway
- Monitoring compliance.

Dealing with misfires and 'flyrock' incidents

If a misfire or 'flyrock' incident occurs it must be handled in line with the shotfiring rules. It should be treated as a serious incident, fully investigated and recorded. It must be reported to the HSE as a Dangerous Occurrence in line with the Reporting of Injury, Diseases and Dangerous Occurrence Regulations (RIDDOR) 1995.

Legislation

The main pieces of legislation for this procedure are:

- Quarries Regulations 1999
- Reporting of Injury, Disease and Dangerous Occurrence Regulations (RIDDOR) 1995

