

Types of Blasting

Bench blasting is the most widely used type of production blasting utilised in quarrying, strip mining and construction excavation. This involves drilling inclined, vertical or horizontal blast holes in single or multiple row patterns to depths ranging from a few metres to 30 metres or more depending on the desired bench height. Other types of controlled blasting techniques are pre splitting, smooth blasting, line drilling, perimeter blasting and cushion blasting.

Regulated blasting operation must be carried out safely and efficiently by skilled professionals complying with the links below and any planning constraints as applied by the local authority or national regulation.

Fife Council has responsibility for preparing any frameworks and planning applications for mineral development. Fife Council can also add any planning conditions to mineral extraction as they see appropriate to any application.

Why Blasting?

Blasting is required to loosen in situ rock to facilitate its removal by mechanical excavators and dump trucks prior to crushing and processing. Blasting should be undertaken only when geological conditions make alternative extraction techniques either impossible, or uneconomic or where these alternatives would have worse environmental effects.

Environmental Effects

Environmental effects have impacts beyond the site boundary.

These effects are:

- Ground vibration - radiates away from the quarry as a stress wave
- Air over pressure - airborne vibration, meteorological conditions should be taken into consideration e.g. low cloud base
- Noise
- Dust
- Fly rock - debris from the blow

Operator responsibility

A blast operator must design a blast that takes into account geological accounts and all blasts must be monitored and modified appropriately.

Property

The property damage values occurring from blasts are generally categorised as cosmetic and/or structural. Cosmetic damage can be caused with blast levels around 25mm/s. Structural damage can be caused by blast values in excess of 50mm/s. For example a foot step on a wooden floor has a vibration to 3 - 50mm/s.

BS6472 1992 Guide to Evaluation of Human Exposure to Vibration in Buildings recommends a magnitude of 8.5mm/s to an absolute limit 12.7mm/s. However, this can be adjusted down by the local council on a site assessment and enforced as a planning condition.

Further Information

Fife Council Minerals Supplementary Guidance 2018

<https://www.google.com/search?client=firefox-b-d&q=Fife+Plan+Guidance+Minerals+Supplement+2018>

See also the Scottish Government website, Advice and Guidance (links below):

Surface Mineral Workings: Controls and Blasting - [published 02/2000] - this is part of Building, Planning and Design

Planning Advice Note 50 - (PAN 50)

- Annex A - environmental effects - <https://www.gov.scot/publications/planning-advice-note-pan-50-annex-controlling-environmental-effects-surface/>
- Annex B - dust surface - <https://www.gov.scot/publications/dust-surface-mineral/>
- Annex C - traffic surface - <https://www.gov.scot/publications/traffic-surface-mineral/>
- Annex D - blasting surface - <https://www.gov.scot/publications/blasting-surface-mineral/>

Legislation and references - Please note, that at the end of each of these documents there are a range of additional sources which are important.