

Ground vibration monitoring

Fosterville Gold Mine maintains a network of surface ground vibration monitors to measure and understand the levels of ground vibration produced by blasting and mine-induced seismicity.



Measuring ground vibration

Surface ground vibration is monitored using a network of geophones installed on the surface, which measure ground acceleration at sensitive receptors surrounding the underground mining areas.

Underground vibration is measured using a dedicated seismic monitoring system. The underground seismic monitoring system enables FGM to measure the magnitude and location of recorded events.

When a vibration event is detected on the surface, the information is immediately sent to an online portal for analysis by the Environment and Community Team, Drill and Blast Engineers and Geotechnical Engineers.

Left: Ground vibration monitoring unit.

Limits on ground vibration

Ground vibration levels at FGM are regulated by Earth Resources Regulation. Limits for blast vibration apply at sensitive receptors (e.g. Occupied dwellings) and is defined as the acceleration of the ground, measured as Peak Particle Velocity (PPV) in millimetres per second (mm/s).

The ground vibration limits at sensitive receptors that apply to FGM's operations are:

- › PPV must not exceed 5 mm/s on more than 5% of blasts fired in a 12-month period.
- › PPV must not exceed 10 mm/s PPV at any time for all blasts.

These limits are based on human comfort considerations and are well below levels at which damage to light-framed, residential type buildings is known to occur.

Right: A production drill rig drilling a stope



Minimising ground vibration

FGM acknowledges the potential impacts to community from its blasting activities and has developed several initiatives to manage the effects of blasting. These include:

- › SMS blast notifications prior to all scheduled production firings.
- › An online survey available for residents to provide instant feedback on blast events.
- › Baseline building inspections and structural assessments, where appropriate.
- › Temporary blast monitor installations at a landholder's request.
- › Third party reviews of FGM's blasting practices and blast monitoring network to review and identify opportunities for continuous improvement.

FGM uses complex computer modelling to predict mine-induced seismic events. The numerical model predicts the rate of energy release and can assist in understanding where events may occur.

The model does not predict exactly when an event will occur or the magnitude of an event however, as our understanding of mine induced seismicity grows, FGM's capacity to manage and minimise future events will evolve.

Ground vibration monitoring results are routinely reported to the Environment Review Committee and are published in FGM's Community Newsletters.

Left: Geophone and monitoring unit.



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