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## Glossary of terms used in the quarrying sector

### We don't wish to overburden you, but.....

As with any industry, there are terms and processes that we in the quarry sector understand but which can be baffling to people not familiar with our industry on a day to day basis.

On that basis, we have produced a simple glossary of terms used in quarrying.

Our purpose is to assist your understanding. Creating this glossary was sparked by an AQA Board member who sat in a hearing where there was no understanding of the quarrying term 'overburden'

So, we don't wish to overburden you but here is a simple glossary of quarrying terms.

Any feedback to: [office@aqa.org.nz](mailto:office@aqa.org.nz). Look at the AQA website for more information [www.aqa.org.nz](http://www.aqa.org.nz)

TERM	ALTERNATE	DESCRIPTION
Aggregate		Particles of rock or inorganic manufactured material which when brought together in a bound or unbound condition form part or whole of a building or civil engineering structure.
Aggregate and Quarry Association	AQA	The industry representative body for quarry companies in New Zealand.
alkali-silica reaction	ASR, A.S.R.	A process of deterioration in concrete resulting from the reaction between alkalis, principally from the cement, and certain types of aggregate. abbr. ASR.
All-in aggregate		A mixture of coarse and fine aggregate.
Alluvium		A collective term for unconsolidated detritus such as clay, silt, sand and gravel deposited by streams and rivers as sorted or semi-sorted sediment in channels and over flood plains and deltas.
Approved Code of Practice	ACOP	A publication giving guidance on the implementation of requirements laid down in Regulations made under the Health and Safety at Work Act.
Apron feeder		A device, consisting of a series of steel flights (pans) bolted to heavy-duty chains which run on sprockets, used to draw material at a regulated rate from a stockpile, storage bin or feed hopper. The rate of flow is controlled by varying either the speed of the apron or the depth of material on it
Aquifer		A permeable water-bearing stratum which is capable of storing and yielding water when tapped by a well.
argillite	mudstone	A sedimentary rock consisting largely of hardened clay minerals, blackish and without lamination. Generally inferior quality.
armour rock	rip rap rock	Large irregular lumps of hard rock used for sea defences, riverbank protection etc.
Assessment of Environmental Effects (AEE)	Environmental Impact Assessment	Study of the potential environmental effects arising from a development, usually conducted before a planning application is submitted.
basalt		A fine-grained igneous rock formed by cooling of surface or near-surface lava flows. Second most commonly quarried rock in New Zealand.
basecourse	AP40, M/4, GAP40	The layer of road pavement between the sub-base and surface, usually with a nominal top size of 40mm. Basecourses are made to different specifications, e.g. NZTA basecourse is M/4 AP40 and has premium quality and grading

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		requirements. GAP40 (General All Passing) only has to meet a nominal top size of 40mm.
batching plant		A plant containing the equipment to measure, by weight or volume, the quantities of different materials required to make a correct mix of concrete.
batter		A constructed, uniform, steep slope. The incline is expressed as horizontal units to vertical units, e.g. 1:2.
benches	berms	The long horizontal levels or steps of quarry faces along which mineral, stone or overburden is worked
blast		The detonation of explosives to break rock
bund		An earth mound or embankment
Certificate of Competence	CoC, A-Grade, B-Grade	Regulations require a CoC holder to manage a quarry operation. B Grade Quarry Managers can manage up to 4 others working in the operation, A Grade Quarry Managers can manage an unlimited number of workers. Both CoCs require academic work, minimum experience requirements, an oral exam in front of a panel of examiners and good character requirements before being awarded by WorkSafe's Board of Examiners.
Clay Index	CI, methylene blue test	A laboratory test to estimate the percentage of expansive clay minerals in a sample.
Cleanfill	Hardfill	Material used as fill that is uncontaminated and non-hazardous. E.g. overburden or broken concrete.
concrete aggregates		Graded crushed rock, washed natural stone and/or sand used to make concrete.
Contamination	Units ppm	Unwanted substance (usually in cleanfill).
conveyor		A mechanical device for transporting material in a continuous stream. Most commonly, a steel frame equipped with pulleys and idlers over which a continuous rubber belt travels, loaded with material
Crushing		Mechanically reducing large rocks into small rocks. Common crusher types are jaw, cone and impactor.
cut and fill		A surface mining technique in which overburden is dumped to occupy the void created by the removal of the mineral.
decibel	dB	Unit for measuring sounds
density		The mass per unit volume of a substance. Units: kg/m <sup>3</sup> . Can be solid, insitu (bank), or loose (after extraction) and each will be a different value for the same rock.
diamond drilling	core drilling	A method of rotary drilling in rock, usually for exploratory purposes, using hollow diamond-crowned bits to obtain a core for examination.
dragline		An excavator with a bucket suspended by a wire rope from the end of a long light boom or jib. The bucket is filled by dragging it towards the machine. Draglines usually dig below the level on which they stand.
Drill and Blast		Drilling holes in rock bodies to allow the loading of explosives. Used to fracture rock where it is not rippable.
dumper		An off-highway self-propelled wheeled machine with an open body, which transports and dumps or spreads material.
dust		1. Dispersions of small solid particles in air or other gases. 2. In construction work, the term generally applies to rock product smaller than 5mm after crushing.
excavator	digger	Self-propelled crawler or wheeled machine with an upper structure capable of rotation, which excavates, swings and discharges material through a bucket fitted to the boom and arm, without moving the chassis or undercarriage.
explosives store	magazine	A storage unit constructed and certified, with its contents stored in accordance with the Health and Safety at Work (Hazardous Substances) Regulations 2017
face		An exposed surface of rock or overburden, usually near vertical. Commonly 0.5:1 in competent rock and flatter for lesser competence.

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floor		The base of an excavation.
fly-rock		Material which is projected outside the declared danger zone by a quarry blast. Fly-rock may be caused by poor blast design or unexpected zones of weakness in the rock.
Front End Loader	loader	Rubber wheeled loader with a front bucket. Used to create stockpiles, feed and extract from the crushing or screening plant and load material onto trucks.
gabion	gabion basket	A wire cage containing rock which can be used to give protection against erosion or to enhance slope stability.
grader		A machine used for the final surfacing and repairing of haul roads. It has a blade the tilt and angle of which can be varied while the machine is in motion and its wheel cambers can also be altered.
greywacke		A hardened sandstone, usually with argillite present. The main quarried rock in New Zealand (approx. 80% of quarries).
ground water		Water which has penetrated from the surface and filled the pores and fissures of the strata up to the water table.
Hard-rock quarry		A quarry that is carved into a solid rock face and usually has multiple benches. Usually requires blasting to remove rock.
hazard		Something that is an actual or potential cause or source of harm (illness, injury or death) to a person.
High-Hazards Unit	HHU	A branch of WorkSafe that is responsible for regulating the health and safety of quarry operations, amongst other high-hazard industries.
Institute of Quarrying New Zealand (Inc)	IOQ, IOQNZ	The representative professional body for quarry managers and operators in New Zealand.
limestone		A sedimentary rock consisting predominantly of calcium carbonate. Approximately 10% of New Zealand's quarried rock.
Load and Haul		Loading material onto an off-road truck with a digger or loader which is then transported and dumped in another location.
Load Out		Loading a road truck (usually using a loader) for delivery of product to the customer.
Managed Fill		Fill material that is not necessarily classed as cleanfill and so requires stricter management in terms of storage and testing.
Manufactured Sand	PAP	Sand produced using a crushing process. Used in asphalt and ready mix concrete. Usually <5mm.
motorized scrapers	Motor Scraper	Single or twin-engined bowl scrapers that are hydraulically operated. They are used on sites where thin layers of material must be removed quickly and ground conditions are relatively firm.
Noise Exposure Level	$L_{Aeq,8h}$	The level of daily noise exposure normalised to an 8h day, i.e. the steady noise level over 8h that would cause the same damage as the actual noise exposure during the workday. NZ limit is 85dB(A).
operator		1. the person (or company) in overall control of the working of a quarry. 2. A worker who operates a machine, e.g. digger operator
overburden		Overlying material, whether consolidated or not, which must be removed before a mineral such as greywacke can be extracted. Also see Stripping.
Particle Size Distribution	PSD, grading curve	A graph showing the percentage passing each sieve size in a graded aggregate sample. These give a visual indication of whether an aggregate is graded within its required specification.
pavement		The part of the road structure above the sub-grade.
Plasticity Index	PI, Atterberg Limits	The plasticity index is a measure of the plasticity of the <425µm portion of an aggregate sample. It shows the size of the range of water contents where the sample exhibits plastic properties.
Principal Hazard Management Plan	PHMP	A plan for managing principal hazards (i.e. hazards that can cause multiple fatalities in a single event) in a quarry or mine.

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quarry		An open pit or excavation from which stone, sand, gravel or mineral is extracted, including any location where the extracted substance is processed.
Regulations	MOQO	Health and Safety at Work (Mining Operations and Quarrying Operations) Regulations 2016
Respirable Crystalline Silica	RCS	Very fine (< 2 µm) respirable jagged edged silica particles. Over exposure through inhalation can cause accelerated silicosis of the lungs and death.
Rippable Rock		Rock that can be removed from a face or ripped up with a bulldozer without the use of explosives.
sand		(1) A naturally occurring granular material in the size range 0.06mm to 2mm, often containing a high proportion of quartz. (2) Concrete sand is a fine aggregate having a nominal upper size limit of 5mm.
Sand Equivalent	SE	A measure of the sand content compared to the silt and clay content in the fine fraction (<4.75mm) of an aggregate sample.
scalping		Separation of undersize material from a crushing circuit feed.
screening		The separation of solid materials of different sizes.
Sediment Control		The processes used to prevent sediment leaving a designated area as suspended particles in water. Often includes filtering, settling or mixing techniques that promote the agglomeration of particles.
settling pond		A reservoir of still water in which fine material is allowed to settle.
shotfirer		A person who must have training, knowledge and experience to detonate explosives safely.
silt		A fine-grained sediment having a particle size intermediate between that of fine sand and clay. 0.002 - 0.06mm.
stripping		The removal of overburden.
sub-base		One or more layers of aggregate situated between the basecourse and the sub-grade.
sub-grade		The upper part of the soil, natural or constructed, which supports the loads transmitted by the overlying pavement.
subsoil		1. The weathered soil or rock immediately below the topsoil. 2. A drain in a pavement or fill which lowers the water table.
sump		A pit in which water collects before being pumped out. The pump suction is suspended in the sump.
topcourse	AP20	An all-in crushed aggregate with a nominal top size of 20mm used in upper layers of pavement or for lighter duty roads.
topsoil		The uppermost layer of soil, generally containing a high proportion of organic matter, that can support vegetation.
Washing		Using water to remove deleterious or undersize material to create a clean aggregate.
X-Ray Diffraction	XRD	A rapid test to determine the nature of the crystalline content in an aggregate, e.g. to determine the types of clays in the aggregate.