



Section 9

Glossary of Technical Terms, Acronyms, Symbols and Units



Glossary of Technical Terms

- Aboriginal Heritage Site** – discrete area or concentration of artefactual material, place of past Aboriginal activity, or place of significance to Aboriginal people.
- acid** – substance with a pH less than 7.0
- acid sulphate soil** – common name given to sediment and soil containing iron sulphides (pyrite) which oxidise creating sulfuric acid.
- alluvium** – deposit of sand, mud, etc. formed by flowing water.
- ambient** – relating to conditions outside the active project area.
- anion** – a negatively charged ion.
- aquatic** – living in or on water, or concerning water.
- aquifer** - rock or sediment capable of holding and transmitting groundwater.
- archaeology** – the scientific study of human history, particularly the relics and cultural remains of the distant past.
- artefact** – anything made by human workmanship, particularly by previous cultures (such as chipped and modified stones used as tools).
- attenuation** – reduction in sound pressure levels between two locations.
- background noise levels** – the level of the ambient sound indicated on a sound level meter in the absence of the sound under investigation (e.g. sound from a particular noise source: or sound generated for test purposes).
- backfill** – material used to fill created void.
- biophysical** – relating to the biological and physical attributes of the environment.
- biota** – living components of a habitat.
- bore** – a well, usually of less than 20 cm diameter, sunk into the ground and from which water is pumped or monitored.
- Calcarosols** – soils formed on calcareous aeolian sediments of variable texture.
- catchment** – the entire land area from which water (e.g. rainfall) drains to a specific water course or waterbody.
- chromosols** – soils that display a strong texture contrast between surface (A) horizons and subsoil (B) horizons.
- clay** – very fine-grained sediment or soil (often defined as having a particle size less than 0.002 mm (2 microns) in diameter).
- concentration** – the amount of a substance, expressed as mass or volume, in a unit volume of air.
- conductivity** – the dissolved salt content of water expressed in terms of $\mu\text{S}/\text{cm}$.
- conglomerate** – coarse grained sedimentary rock (>2mm) consisting of subrounded fragments.
- consolidation** – the process whereby loose or soft sedimentary material (e.g. an alluvial deposit) becomes a compacted, harder sedimentary material (e.g. a sandstone).
- contaminant** – any physical, chemical, biological or radiological substance or matter in water or soil that is not of natural origin.
- contamination** – the degradation of natural water quality as a result of man's activities. There is no implication of any specific limits, since the degree of permissible contamination depends upon the intended end use, or uses, of the water.
- contour bank** – an earth bank constructed across a slope parallel to contours.
- cross-section** – a two-dimensional diagram of an object presented as if the object had been cut along its length.
- cutter-suction dredge** – a floating machine that extracts sand through mechanically cutting and then pumping the sand to a processing plant.
- cyclone** – a conical shaped vessel designed to separate particles from a moving stream of either air or water.
- decibel** – unit expressing difference in power between acoustic signals.



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- deposited dust** – relatively large dust particles which settle out – not detrimental to health.
- dermosols** – non texture contrast soils that have structured subsoils (B horizons).
- Development Application** – an application for approval of an activity deemed to require an approval prior to commencement.
- dewatering** – part removal of water from an aquifer system in excess of natural recharge so that the potentiometric surface declines appreciably in the area of extraction.
- ecologically sustainable development (ESD)** – using, conserving and enhancing the community's resources so that ecological processes on which life depends are maintained and the total quality of life, now and in the future can be increased.
- electrical conductivity (EC)** – the ability of a substance (either solid, liquid or gas) to transmit electricity – an indicator of salinity.
- ephemeral** – lasting only a short time.
- ephemeral creek** – creek in which flow is intermittent, usually short term following rainfall.
- erodibility** – the tendency of soil, earth or rock to erode.
- erosion** – the wearing away of the land surface (whether natural or artificial) by the action of water, wind and ice.
- evaporation** – the loss of water as vapour from the surface of a liquid that has a temperature lower than its boiling point.
- exotic** - introduced or foreign, not native.
- extraction area** – an area that is approved for extraction.
- final void** – cavity created by material extraction.
- fluvial** – pertaining to or produced by a river.
- fractures** – any breakage of a rock mass along a direction or directions not associated with cleavage or fissility.
- geochemical** – chemical aspects of the composition of the earth's crust.
- geomechanical** – the materials engineering of rock properties and behaviour when forces or loads are applied to the rock mass.
- geotechnical** – technical or engineering aspects relating to soil, rock and other materials.
- groundcover** – vegetation that grows close to the ground (such as grasses and herbs) providing protection from erosion.
- groundwater** – all waters occurring below the land surface; the upper surface of the soils saturated by groundwater in any particular area is called the water table.
- habitat** – the place where an organism normally lives; habitats can be described by their floristic and physical characteristics.
- haul road** – road used for haulage of material.
- heavy metals** – normally trace metals which occur in ore deposits and may be environmentally hazardous.
- heavy mineral concentrate** - a concentrate of heavy mineral where waste and other impurities have been almost completely removed, therefore incorporating only valuable heavy minerals (mostly zircon, rutile and ilmenite) and some residual waste
- hydraulic conductivity (k)** – the rate of flow of water in an aquifer through a cross section of unit area under a unit hydraulic gradient, at the prevailing temperature. Usually expressed in units of metres per second or metres per day.
- hydraulic gradient** - the direction of flow of groundwaters.
- hydrosol** – soils that are saturated with water for long periods of time.
- in-situ** – a term used to distinguish material (e.g. rocks, minerals, fossils, etc.) found in its original position of formation, deposition, or growth, as opposed to transported material.
- interburden** – material of any nature that lies between two or more bedded ore zones.
- Inter-generational equity** – the present generation should ensure that the health, diversity and the productivity of the environment is maintained or enhanced for the benefit of future generations.
- intermittent** - periodically, irregularly.
- intra-generational equity** – the present generation should ensure that improved well-being and welfare are accessible to all sectors of society within Australia does not result in decreased welfare in other nations.



lithology – refers to the general characteristics of sediments or rocks.

Local Environmental Plan (LEP) - a plan developed by a council to control development in part or all of its local government area.

lunettes – formed from material which is blown out of water bodies and deposited on their leeside during drier climatic periods.

mitigation measures – measures employed to reduce (mitigate) an impact (such as the construction of a perimeter bund to reduce sound emissions).

mobile equipment - wheeled or tracked self-propelled equipment such as trucks and front-end loaders.

monitoring – systematic sampling and, if appropriate, sample analysis to record changes over time caused by impacts such as mining.

non-perennial – refers to streams which do not flow the whole year through – also known as intermittent streams.

offsets – to offset an activity means to compensate for the negative impacts of that activity, by taking a separate action with positive impacts.

operational constraints – limitations upon a project by equipment or machinery.

overburden - subsoil and decomposed rock overlying the main rock body that is not suitable for use in the final product.

oxidation – the process of combining with oxygen.

perennial – refers to stream which has flow throughout the year.

permeability - a material property relating to the ability of the material to transmit water.

permeable – able to transmit fluids e.g. groundwater.

pH – a measure of the degree of acidity or alkalinity of a solution; expressed numerically (logarithmically) on a scale of 1 to 14, on which 1 is most acid, 7 is neutral acid, and 14 is most basic (alkaline).

piezometer – a hole drilled and fitted specifically for the monitoring of groundwater levels and water quality.

pollution – the alteration of air, soil, or water as a result of human activities such that it is less suitable for any purpose for which it could be used in its natural state.

population – a group of organisms all of the same species occupying a particular area.

porous - containing voids, pores, interstices or other openings which may or may not be interconnected.

potable - water suitable for human consumption.

precautionary principle – where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

production bore – a small diameter hole from which groundwater is extracted. It usually relates to a cased and screened, adequately developed and efficient bore used for groundwater removal.

progressive rehabilitation – rehabilitation of disturbed areas as soon as practicable after they are no longer required during the life of a project.

Ramsar listed wetlands – wetlands recognised to have considerable ecological value in accordance with the Ramsar convention.

recharge – the addition of water to an aquifer, directly from the surface, indirectly from the unsaturated zone, or by discharge from overlying or underlying aquifer systems.

rehabilitation - the progressive formation of a landform after disturbance and its stabilisation with grasses, trees and/or shrubs.

reject - the by-product of the mining or processing operations with the valuable material removed.

reserves – refers to an estimated quantity of usable material.

resource – an estimate of potentially usable material in a defined area based on preliminary geological information; recoverable material of economic interest.

revegetated – an area that has been planted with trees, bushes and grasses after being disturbed.

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- revegetation** - replacement of vegetation in on disturbed areas.
- riparian** – pertaining to or situated on the bank of a river or creek.
- rudosol** – soils with rudimentary pedological development, apart from minimum development of a surface (A) horizon.
- runoff** – that portion of the rainfall falling on a catchment area that flows from the catchment past a specified point.
- saline** – water with high salt concentration.
- salinity** – the dissolved content of water expressed in terms of milligrams per litre.
- sedimentary rocks** – rocks formed from material derived from pre-existing rocks or by chemical precipitation.
- sedimentation** – process or rate of depositing of sediment.
- social equity** – embraces value concepts of justice and fairness so that the basic needs of all the sectors of society are met and there is a fairer distribution of costs and benefits to improve the well-being and welfare of the community, population or society.
- species** – a taxonomic grouping of organisms that are able to interbreed with each other but not with members of other species.
- species diversity** – a measure of the number of different species in a given area.
- stormwater** – surface water runoff reaching stream channels immediately after rainfall.
- subsoil** – surface material comprising the B and C Horizons of soil with distinct profiles; often having brighter colours and higher clay contrasts.
- sulfate** – a bivalent negative ion of sulphur and oxygen (SO₄).
- surface waters** – all water flowing over, or contained on, a landscape (e.g. runoff, channels, ponds, etc.).
- sustainable development** – development that meets the needs of the present without compromising the ability of future generations to meet their needs (World Commission on Environment and Development 1990).
- swales** – linear, depressed channels that collect and transfer stormwater.
- terrestrial** – of or relating to the land, as distinct from air or water.
- topsoil** – the upper layer of soil, usually containing more organic material and nutrients than the subsoil beneath it.
- total suspended solids** – a common measure used to determine suspended solids concentrations in a waterbody and expressed in terms of mass per unit of volume (e.g. milligrams per litre).
- turbidity** – discolouration of or suspension of particles in water resulting in a reduction in clarity.
- type I road train** - a heavy combination vehicle no longer than 36.5m consisting of a prime mover towing two trailers.
- type II road train** - a heavy combination vehicle consisting of a prime mover towing three trailers.
- unconsolidated** – loose or soft, not compacted (particularly soil or sediment).
- vehicle movement** – a one-way trip.
- water quality** – degree of the lack of contamination of water.
- water table** – the upper limit of the saturated zone within a rock mass, generally at atmospheric pressure. It is characteristic of unconfined aquifers.
- watercourse** – stream or river, running water.
- weathered rock** – rock affected to any degree by the processes of chemical or physical weathering.
- weathering** – the group of processes (e.g. action of air, rain, water, etc.) change in character, decay and eventually crumble to soil.
- weed** – any plant (in particular an herbaceous one) that survives in an area where it is harmful or troublesome to the desired land use.



Glossary of Acronyms

ACHAR – Aboriginal Cultural Heritage Assessment Report	GDE – Groundwater Dependent Ecosystems
ACHCRs – Aboriginal Cultural Heritage Consultation Requirements for Proponents	GRES – GR Engineering Services Pty Ltd
AEP – Annual Exceedance Probability	HEVAE – High Ecological Value Aquatic Ecosystem
AHD – Australian Height Data (in metres)	HIO – Hawsons Iron Ore
AHIMS – Aboriginal Heritage Information Management System	HHAR – Historic Heritage Assessment Report
ALRA – Aboriginal Land Rights Act	LEP – Local Environmental Plan
ANCOLD – Australian National Committee on Large Dams	LGA – Local Government Areas
ANL – Amenity Noise Levels	LNS – Liquefied Natural Gas
ANZECC – Australian and New Zealand Environment and Conservation Council	LPS – Loxton-Parilla Sands
AQIA – Air Quality Impact Assessment	LSC – Land and Soil Capability
AQMS – Air Quality Monitoring Station	MDB – Murray Darling Basin
AS – Australian Standard	MDP – Mining Development Panel
BAL – Basic Auxiliary Left	MEG – Mining, Exploration and Geosciences
BAM – Biodiversity Assessment Method	MLA – Mining Lease Application
BAR – Basic Auxiliary Right	MNES – Matters of National Environmental Significance
BCD – Biodiversity Conservation Division	MRCC – Mildura Regional City Council
BDAR – Biodiversity Development Assessment Report	NATA – National Association of Testing Authority
BoM – Bureau of Meteorology	NGER – National Greenhouse and Energy Reporting
CIV – Capital Investment Value	NHMRC – National Health and Medical Research Council
DP – Deposited Plan	NML – Noise Management Level
DPC – Department of Premier and Cabinet	NSW – New South Wales
DPE – Department of Planning and Environment	OEH – Office of Environment and Heritage
DPIE – Department of Planning, Industry and Environment	OOH – Out of Hours
DoI – Department of Industry	PAD – Potential Archaeological Deposit
EM – Electromagnetic	PANL – Project Amenity Noise Level
ENM – Excavated natural material	PCT – Plant Community Type
EPL – Environmental Protection Licence	PFM – Planning Focus Meeting
ESA – Equivalent Standard Axles	PHA – Preliminary Hazard Analysis
	PINL – Project Intrusiveness Noise Level

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- PNTL** – Project Noise Trigger Level
- RAP** – Registered Aboriginal Party
- RBL** – Rating Background Level
- RFS** – Rural Fire Service
- RMS** – Roads and Maritime Services
- RWC** – R. W. Corkery & Co
- SEED** – Sharing and Enabling Environmental Data
- SEIFA** – Socio-Economic Indexes for Areas
- SEPP** – State Environmental Planning Policy
- SES** – Swainsona Environmental Services
- SIA** – Social Impact Assessment
- SILO** – Scientific Information for Landowners
- SISD** – Safe Intersection Sight Distance
- SSD** – State Significant Development
- SSM** – Sustainable Soils Management Pty Ltd
- TBDC** – Threatened Biodiversity Data Collection
- TDS** – Total Dissolved Solids
- THM** – Total Heavy Mineral
- TSP** – Total Suspended Particulates
- VENM** – Virgin Excavated Natural Material
- VI** – Vegetation Integrity
- VIS** – Vegetation Information System
- VLAMP** – Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments
- WAL** – Water Access Licence
- WSC** – Wentworth Shire Council
- WM** – Water Management



Glossary of Symbols and Units

% – percentage	mSv/yr – millisieverts per year
< – less than	Mt – million tonnes (metric tonne = 1 000 kg)
> – greater than	Mtpa – million tonnes per annum
Bq/g – becquerel per gram	NO_x – oxides of nitrogen
CO_{2-e} – carbon dioxide equivalent	NO₂ – nitrogen dioxide
CO – carbon monoxide	pH – a measure of the degree of acidity or alkalinity of a solution; expressed numerically (logarithmically) on a scale of 1 to 14, on which 1 is most acidic, 7 is neutral acid, and 14 is most basic (alkaline)
cm – centimetre (unit of measure)	PM_{2.5} – particulate matter <2.5µm in diameter
dB – decibel, unit used to express sound intensity	PM₁₀ – particulate matter <10µm in diameter
dB(A) – the unit of measurement of sound pressure level heard by the human ear, expressed in “A” scale	SiO₂ - Silica
GJ/kL – energy content	SO₂ – sulphur dioxide
ha - hectares	t – tonnes
kg – kilogram (weight measure)	TDS – total dissolved solids expressed in mg/L
kL – kilolitre (thousand litre)	tpa – tonnes per annum
km – kilometre (= 1 000 metres)	µg/m³ – micrograms per cubic metre
L – litre	µm - micrometres
L/s – litres per second	µS/cm – micro seimens per centimetre
L_{A90} – sound level exceeded 90 per cent of the sampling time	
L_{Aeq} – the L _{Aeq} is the “equal energy” average noise levels, and is used in some instances for the assessment of traffic noise effects or the risk of hearing impairment due to noise exposures	
L_{Amax} – the absolute maximum noise level measured in a given time interval	
m – metre	
m AHD – metres Australian Height Datum	
m² – square metre	
m³ – cubic metre	
mg – milligram (weight unit)	
mg/L – milligrams per litre (parts per million)	
ML – megalitre	
mS/m – milliSiemens per meter	