

## Section 7

# Glossary of Technical Terms, Symbols and Acronyms

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## TECHNICAL TERMS

**A horizon** – topsoil layer located at the upper surface of a soil profile.

**Aboriginal heritage site** – discrete area or concentration of artefactual material, place of past Aboriginal activity, or place of significance to Aboriginal people.

**air contaminant** – a substance in ambient atmosphere, resulting from the activity of man or from natural processes, causing adverse effects to man and the environment (also called "air pollution").

**ambient** – relating to conditions outside the active site.

**ambient air quality** – the quality of the ambient air near ground level, expressed as concentrations or deposition rates of air pollutants – also expressed as existing air quality.

**aquifer** – water-bearing rock or sediment capable of holding and transmitting groundwater and from which groundwater can be usefully extracted from a bore.

**aquifer recharge** – re-entry of groundwater into an aquifer from which water has been removed.

**archaeology** – the scientific study of human history, particularly the relics and cultural remains of the distant past.

**attenuation** – reduction in sound pressure levels between two locations.

**average annual rainfall** – the average amount of rain to fall at a specific location over the period of 1 year (measured in millimetres).

**Average Recurrence Interval (ARI)** – statistical period in years for a design storm event.

**B horizon** – subsoil material located below the A horizon material and above the parent rock.

**background level** – the concentration (deposition) level of a pollutant which must be added to the concentration (deposition) level of the modelled sources in order to obtain a total.

**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).

**baseline data** – a body of information collected over time to define specific characteristics of an area (e.g. species occurrence or noise levels) prior to the commencement of an activity; baseline data allows any impacts arising from the activity to be identified by comparison with previously existing conditions.

**baseline monitoring** – monitoring performed prior to site development.

**best management practice** – the most effective actions which minimise human impact on the environment.

**biological diversity/biodiversity** – a concept encompassing the diversity of indigenous species and communities occurring in a given region; biological diversity includes genetic diversity, which is the diversity of genes and genotypes within each species; species diversity, which is the variety of living species; and ecosystem diversity which is the diversity of the different types of communities formed by living organisms and the relations between them.

**biophysical** – relating to the biological and physical attributes of the environment.

**bore** – a cylindrical drill hole, sunk into the ground and from which water is pumped for use or monitoring purposes.

**buffer** – a physical barrier / structure or width of land that encloses, partially encloses, or defines a particular environment. A buffer serves to minimise the impacts of non-desirable external influences on the adjoining environment.

**bulldozer** – an item of tracked mobile earth moving equipment fitted with a front blade and with rear rippers used for pushing and ripping soil and rock.

**catchment area** – the area determined by topographic features within which rainfall will contribute to runoff at a particular point.

**clay liner** - an engineered barrier to retard the movement of gas and leachate. Often the natural geology offers equivalent or better hydraulic performance as an engineered liner.

**compaction** - the process of close packing of individual grains in a soil or sediment in response to pressure.

**conservation** - the management of resources in a way that will benefit both present and future generations.

**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.

**concentration** - the amount of a substance, expressed as mass or volume, in a unit volume of air.

**consolidation** - the process whereby loose or soft sedimentary material (e.g. an alluvial deposit) becomes a compacted, harder sedimentary material (e.g. a sandstone).

**contractor** - specialist brought in to perform a specific task, such as the construction of infrastructure or the sand removal.

**culvert** - large pipe or channel carrying water underneath a structure (e.g. a road or railway track) or underneath the ground.

**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.

**diversion bank** - water management structure used to direct water away from particular areas (e.g. operational or ecologically sensitive areas).

**drainage line** - a passage along which water concentrates and flows towards a stream, drainage plain or swamp intermittently during or following rain.

**drawdown** - the difference between the water level observed during pumping and the non-pumping water level (static water level or static head).

**dry screen** - material separated into various sizes without water.

**dust** - particles of mostly mineral origin generated by erosion of surfaces and the removal and handling of materials.

**dust gauge** - instrument set up to record the rate of deposition of dust.

**ecology** - the relationship between living things and their environment.

**Ecologically Sustainable Development (ESD)**

- using, conserving and enhancing the community's resources so that the ecological processes on which life depends, are maintained, and the total quality of life now and in the future, can be increased (Commonwealth of Australia 1992).

**ecosystem** - a functional unit of energy transfer and nutrient cycling in a given place. It includes all the relationships within the biotic community and between the biotic components of the system.

**electrical conductivity** - an estimate of the total dissolved salts within a solution (e.g. soil solution or water body).

**emission** - a discharge of a substance (e.g. dust) into the environment.

**environment** - a general term for all the conditions (physical, chemical, biological and social) in which an organism or group of organisms (including human beings) exists.

**environmental policy** - statement by the organisation of its intentions and principles, in relation to the overall environmental performance, which provides a framework for action and for the setting of its environmental objectives and targets (AS ISO 14050).

**erosion** - the wearing away of the land surface (whether natural or artificial) by the action of water, wind and ice.

## ENVIRONMENTAL IMPACT STATEMENT

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**excavate** – to dig into natural material or fill using an excavator or other machinery.

**excavator** – item of earth-moving equipment fitted with a bucket on an articulated boom used for digging material from a face in front of, or below the machine.

**excavated material** – unweathered shale material extracted from within the extraction area by drill and blast methods for crushing and blending with blending and recycling materials to produce specialised and general quarry products.

**fauna** – a general term for animals such as birds, reptiles, marsupials, fish etc.

**flora** – a general term for plants.

**friable** – easily crumbled as in poorly cemented rocks.

**front-end loader** – machine used to lift and place soil, earth, rocks, etc. or to load products into trucks.

**gravel** – particles with a maximum diameter exceeding 2mm.

**gradient** – rate of change of a given variable (such as temperature or elevation) with distance.

**groundwater** – water contained in voids such as fractures and cavities in rocks and inter-particle spaces in sediments e.g. sand.

**groundwater depression** – localised lowering of the regional water table.

**habitat** – the place where an organism normally lives; habitats can be described by their floristic and physical characteristics.

**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 groundwater flow.

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**hydrocarbon** – any organic compound, gaseous, liquid, or solid, consisting solely of carbon and hydrogen. Crude oil is essentially a complex mixture of hydrocarbons.

**hydrology** – the study of surface water and groundwater.

**hydrogeology** – the study of groundwater.

**impact** – the effect of human induced action on the environment (modified from Westman, 1985).

**infrastructure** – the supporting installations and services that supply the needs of a project e.g. roads.

**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.

**landform** – a specific feature of a landscape (such as a hill) or the general shape of the land.

**leachate** – water which has come into contact with emplaced waste (other than daily cover).

**matrix** – fine grained constituent of some sedimentary rocks containing coarser grains and fragments.

**massive** – of homogeneous structure, lacking bedding, stratification, etc.

**migratory** – passing, usually predictably (based on aquatic species), from one region or climate to another, for purposes of feeding, breeding, or other biological purposes.

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

**monitoring** – the regular measurement of components of the environment to understand a feature of the environment and/or establish that environmental standards are being met.



**native** – said of an organism or group of organisms that is restricted to a particular region or environment. A local inhabitant of a place.

**oxidation** – the process of combining with oxygen.

**particle size distribution** – the relative proportions of particles (e.g. in a sediment) that fall within specific size categories.

**particulate matter** – small solid or liquid particles suspended in or falling through the atmosphere - sometimes expressed by the term particulates.

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

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

**permeability** – a material property of a porous rock relating to the ability of the material to transmit water.

**pest** – a plant or animal species that has undesirable impacts on environmental, economic or social values.

**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).

**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.

**progressive rehabilitation** – rehabilitation of a disturbed area as soon as practicable after the final landform is achieved.

**receptor** – a privately-owned residence, community facility or enterprise at which noise and/or air quality impacts are considered as a result of the Proposal.

**recycling materials** – waste concrete, bitumen, brick and other construction material that is imported to the Project Site for the purposes of recycling.

**rehabilitation** – the preparation of a final landform after disturbance and its stabilisation with grasses, trees and/or shrubs.

**Residual waste** – general solid (non-putrescible) waste which is unable to be economically reused, recovered or recycled and is emplaced at the Project Site.

**resource** – an estimate of potentially usable material in a defined area based on preliminary geological information.

**revegetation** – replacement of vegetation, principally grasses and legumes on areas disturbed by quarrying activities.

**runoff** – that part of precipitation flowing to surface streams or dams.

**salinity** – the total content of dissolved solids in groundwater, commonly expressed as parts of dissolved solids per million parts of water (ppm), or milligrams of dissolved solids per litre of solution (mg/L); the significance of salinity depends on the nature as well as the amount of the dissolved solids.

**sand** – sediment comprising particles in 0.063mm to 2mm size range.

**sandstone** - general term for sedimentary rock with grain size from 0.063mm to 2mm - grains may be minerals or rock fragments.

**scarify** – to stir the soil without altering its form, or disturbing its sequence of layers.

**silt** – sediment comprising most particles between 0.004mm and 0.063mm in diameter.

**silt-stop fencing** – fine mesh fencing normally installed downslope of a sediment source, designed to trap silt and sediment and allow the water to pass through.

**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.

## ENVIRONMENTAL IMPACT STATEMENT

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**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.

**stockpile** – a pile or mound used to store material, typically products.

**storage capacity** – the maximum volume of liquid able to be retained in a structure.

**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.

**surface waters** – all water flowing over, or contained on, a landscape (e.g. runoff, channels, ponds etc.).

**suspended solids** – solids held in suspension by the turbulent flow of a fluid.

**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).

**terrestrial** – of or relating to the land, as distinct from air or water.

**topography** – the physical relief and contour of an area.

**topsoil** – the surface layer of a soil profile containing the main percentage of organic material and viable life forms and seeds.

**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).

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**transect** – a fixed line along which observations are made of flora and fauna.

**tributary** – a stream or river that flows into a larger river or lake.

**unconsolidated** – loose or soft, not compacted (particularly soil or sediment).

**Virgin Excavated Natural Material (VENM)** – material excavated during construction or other earth disturbing activities that is not contaminated with a non-natural material such as bricks, concrete, building materials, wood or chemicals.

**visual amenity** – attractiveness to the eye.

**waste emplacement** – the environmentally secure disposal of waste at the facility.

**water quality** – degree or the lack of contamination of water.

**water table** – the upper limit of the saturated zone within a rock or sediment mass, generally at atmospheric pressure. It is characteristic of unconfined aquifers.

**weed** – any plant (in particular an herbaceous one) that survives in an area where it is harmful or troublesome to the desired land use.

**wildlife** – non-domesticated fauna.

**wind rose** – diagrammatic representation of wind direction, strength, and frequency of occurrence over a specified period.

**woodland** – plant communities dominated by trees whose crowns shade less than 30% of the ground.

**worst-case scenario** – a sequence of events likely to result in the worst-case effects on the environment.

**yield** – yield of a water bore can refer either to the capacity of the bore or to the amount of water actually withdrawn.



## SYMBOLS

~ – approximately.

°C – degrees Celsius.

µg/L – micrograms per litre.

µg/m<sup>3</sup> – micrograms per cubic metre.

µm – micron, one millionth of a metre (one thousandth of a millimetre).

µS/cm – microsiemens per centimetre; a measure of electrical conductivity.

% – percentage.

< – less than.

≤ – less than or equal to.

> – greater than.

≥ – greater than or equal to.

cm – centimetre (unit of measure).

dB(A) – the unit of measurement of sound pressure level heard by the human ear, expressed in “A” scale.

g – gram (= 0.001 kilogram).

g/m<sup>2</sup>/month – grams per square metre per month unit for deposited dust.

ha – hectare (100 m x 100 m).

kg – kilogram (weight measure).

kL – kilolitre (thousand litres).

km – kilometre (= 1 000 metres).

km<sup>2</sup> – square kilometres.

km/hr – kilometres per hour.

L – litre.

L/day – litres per day.

L/s – litres per second.

L/t – litres per tonne.

L<sub>A10</sub> – sound level exceeded 10 per cent of the sampling time.

L<sub>A90</sub> – sound level exceeded 90 per cent of the sampling time.

L<sub>Aeq</sub> – the L<sub>Aeq</sub> 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<sub>Aeq(1 hour)</sub> – the “equal energy” average noise level over 60 minutes – used for assessing impacts of motor vehicles.

L<sub>Aeq(T)</sub> – Sound level of continuous noise which emits the same energy as the fluctuation sound over a given time period (T).

L<sub>Amax</sub> – the absolute maximum noise level measured in a given time interval.

L<sub>AN</sub> – the A-weighted sound pressure level exceeded by N% of a given measured period.

m – metre.

m<sup>2</sup> – square metre.

m<sup>3</sup> – cubic metre.

mg – milligram (weight unit).

mg/L – milligrams per litre (parts per million).

ML – megalitre.

mm – millimetre (= 0.001 metres).

Mm<sup>3</sup> – million cubic metres.

Mt – million tonnes (metric tonne = 1 000 kg).

PM<sub>2.5</sub> – particulate matter <2.5µm in diameter.

PM<sub>10</sub> – particulate matter <10µm in diameter.

ppm – parts per million.

swl – standing water level.

t – tonnes.

TDS – total dissolved solids expressed in mg/L



**t/m<sup>3</sup>** – tonnes per cubic metre.

**tpa** – tonnes per annum.

**tpd** – tonnes per day

**tph** – tonnes per hour.

**V** – volt.

## ACRONYMS

**AADT** Annual Average Daily Traffic.

**ABS** Australian Bureau of Statistics

**AHD** Australian Height Datum; generally equivalent to mean sea level.

**ANZECC** Australian and New Zealand Environment and Conservation Council

**ARI** Average Recurrence Interval

**AS** Australian Standard

**BoM** Bureau of Meteorology

**DECC** Department of Environment and Climate Change

**DECCW** Department of Environment, Climate Change and Water

**DoP** Department of Planning

**DII** Department of Industry and Investment

**DPI** Department of Primary Industries

**DWE** Department of Water and Energy

**DEWHA** Department of the Environment, Water, Heritage and the Arts

**EP&A Act** Environmental Planning and Assessment Act 1979 (NSW)

**EPA** Environment Protection Authority (NSW)

**EPBC Act** Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

**ESD** Ecologically Sustainable Development

**LALC** Local Aboriginal Land Council

**LEP** Local Environmental Plan

**LGA** Local Government Area

**LMP** Landfill Management Plan

**NEPC** National Environment Protection Council

**NEPM** National Environment Protection Manual

**NP&W Act** National Parks and Wildlife Act 1974 (NSW)

**NPWS** National Parks and Wildlife Service (NSW)

**REP** Regional Environmental Plan

**RTA** Roads and Traffic Authority

**SEPP** State Environmental Planning Policy

**TSC Act** Threatened Species Conservation Act 1995 (NSW)

**TSP** Total Suspended Particulate matter

**VENM** Virgin Excavated Natural Material

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