Section Seven

Glossary of Terms, Acronyms and Symbols

GLOSSARY

A-weighted – an electronic filter having the frequency response corresponding approximately to that of human hearing.

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 project 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.

anecdotal evidence – informal, oral or written evidence of an event.

aquifer – rock or sediment capable of holding and transmitting groundwater.

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 (eg 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.

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.

chronic effects – the effect on an organism of a continuous abnormal condition applied over 10% or more of its lifespan.

coarse sand – sand predominantly >0.6mm.

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 milligrams per litre.

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.

crystalline silica – silica (SiO_2) within a crystalline form, such as quartz. Commonly found within gravel, sand and soils.

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

deceleration lane – a lane used for decreasing speed of motor vehicles before leaving the road.

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 (eg 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 (eg. 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.

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.

extant vegetation – remaining or existing vegetation.

extraction – a term synonymous with quarrying and dredging.

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

flora – a general term for plants.

fractures – Any breakage of a rock mass along a direction or directions not associated with cleavage or fissility.

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.

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

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.

inter-generational equity – the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

intra-generational equity – the present generation should ensure that improved well-being and welfare are accessible to all sectors of society within Australia and that improved welfare within Australia does not result in decreased welfare in other nations.

in-situ – a term sued 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.

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.

mortar sand plant – a dry processing plant designed to separate the sand from oversize material by simple vibration and screening.

mottling – multi-coloured effect in soils - grey and yellow-brown is common.

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

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

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.

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).

powerscreen – a simple mobile item of equipment normally used to separate two sizes of material.

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.

processing plant – a group of equipment used to clean and separate sands into various sizes.

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 a disturbed area as soon as practicable after the final landform is achieved.

quartz – crystalline silica, an important rock-forming mineral SiO_2.

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

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

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.

salinity – the total content of dissolved solids in groundwater, commonly expressed as parts of dissolved solids per million parts of solution, 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 0.004 mm and 0.063 mm 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.

slake – breakdown of soil particles in water due to the swelling of clays and air expulsion.

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.

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.

sump (surface) – a dam within the lowest point of the sand removal area or processing plant site designed to collect runoff.

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).

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).

visual amenity – attractiveness to the eye.

wash plant – a plant designed to wash unwanted sized materials from product.

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 corridor – a strip of vegetation that has a design purpose of allowing animals to pass from one area to another and acting as an undisturbed area for wildlife preservation.

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.

worstcase 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.

bcm – bank cubic metres

^{o}C – degrees Celsius.

μg/L – micrograms per litre.

μg/m^3 – micrograms per cubic metre.

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

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

dS/cm – decisiemens per centimetre; a measure of conductivity.

dS/m – decisiemens per metre; a measure of conductivity.

g – gram (= 0.001 kilogram).

g/m^2/month – grams per square metre per month unit for deposited dust.

g/t – grams per tonne.

ha – hectare (100 m x 100 m).

kg – kilogram (weight measure).

kL – kilolitre (thousand litre).

km – kilometre (= 1 000 metres).

km^2 – square kilometres.

km/hr – kilometres per hour.

L – litre.

L/day – litres per day.

L/s – litres per second.

L/t – litres per tonne.

lcm – loose cubic metres.

L_{A10} – sound level exceeded 10 per cent of the sampling time.

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.

$L_{Aeq(1\ hour)}$ – the "equal energy" average noise level over 60 minutes – used for assessing impacts of motor vehicles.

$L_{Aeq(T)}$ – Sound level of continuous noise which emits the same energy as the fluctuation sound over a given time period (T).

L_{Amax} – the absolute maximum noise level measured in a given time interval.

L_{AN} – the A-weighted sound pressure level exceeded by N% of a given measured period.

m – metre.

m AHD – metres Australian Height Datum.

m^2 – square metre.

m^3 – cubic metre.

mg – milligram (weight unit).

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

ML – megalitre.

mm – millimetre (= 0.001 metres).

Mm^3 – million cubic metres.

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

$PM_{2.5}$ – particulate matter <2.5μm in diameter.

PM_{10} – 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^3 – 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

AMMAAT Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW

ACGIH American Council of Governmental Industrial Hygienists

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

AWS Automatic Weather Station

BoM Bureau of Meteorology

CAMBA China/Australia Migratory Bird Agreement

DEC Department of Environment and Conservation

DoP Department of Planning

DPI Department of Primary Industries

DNR Department of Natural Resources

EA Environmental Assessment

EMP Environmental Management Plan

ENM Environmental Noise Model

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

HVAS High Volume Air Sampler

INP Industrial Noise Policy

JAMBA Japan/Australia Migratory Bird Agreement

LALC Local Aboriginal Land Council

LEP Local Environmental Plan

NEPC National Environment Protection Council

NEPM National Environment Protection Manual

NHMRC National Health and Medical Research Council

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

NPWS National Parks and Wildlife Service (NSW)

RBL Rating background level

REL Reference Exposure Level

REP Regional Environmental Plan

RTA Roads Traffic Authority

SEPP State Environmental Planning Policy

SIS Species Impact Statement

SREP Sydney Regional Environmental Plan

TAPM The Air Pollution Model

TSC Act Threatened Species Conservation Act 1995 (NSW)

TSP Total Suspended Particulate matter

TWA Time Weighted Average

V:H vertical is to horizontal