



12

PUBLIC ENVIRONMENTAL REVIEW

glossary

12 Glossary

12.1 Units, Symbols and Prefixes

12.1.1 Units

g	gram; a unit used to express weight.
L	litre; a unit used to express volume.
m	metre; a unit used to express length.
bcm	bench cubic meters; a unit used to describe the volume of in-situ rock.
dB	decibel; unit used to express sound intensity.
h	hour; a unit used to express time.
Ha	hectare; a unit used to express area.
m ²	square metre; a unit used to express area.
m ³	cubic metre; a unit used to express volume.
V	volt; a unit used to express the potential difference across a conductor.
VA	volt-amp; a unit used to express apparent power; is equal to voltage applied multiplied by current drawn.
Yr	year.
s	second; a unit used to express time.
ppm	parts per million; a unit used to express concentration.
ppt	parts per thousand; a unit used to express concentration.
t	tonne.
Mtpa	million tonnes per annum.

12.1.2 Symbol

%	percentage (proportion out of one hundred).
/	per.
P	per.
\$	Australian dollars.
A	annum; year.

12.1.3 Prefixes

G	10 ⁹ ; giga.
M	10 ⁶ ; mega.
K	10 ³ ; kilo.
D	10 ⁻¹ ; deci.
C	10 ⁻² ; centi.
M	10 ⁻³ ; milli.
μ	10 ⁻⁶ ; micro.
N	10 ⁻⁹ ; nano.

12.2 Words

Term	Expansion / Definition
acid	substance with a pH less than 7.0; the lower the pH the higher the corrosive ability of the substance.
Acid formation	the process whereby acid is formed by the oxidation of minerals (particularly sulfides) exposed to air and water.
Acidic	having a pH less than 7.0.
AHD	Australian height datum
Al ₂ O ₃	alumina
ALARP	as low as reasonably practicable
ACMC	Aboriginal Cultural Material Committee
ACIL Tasman	ACIL Tasman Pty Ltd
AIC	Australian Interaction Consultants
alkaline	substance with a pH greater than 7.0; the higher the pH the higher the corrosive ability of the substance.
AMD	acid mine drainage; runoff of acidic water from mined materials following acid formation within the material.
Amenity	the desirability of an area.
Amphibians	animals (such as frogs) adapted to live both on land and in water.
Anben	Anben Steel Group Company. Formed in 2006 by the merger of AnSteel and Benxi Steel.
ANFO	ammonium nitrate/fuel oil.
Ansteel	Anshan Iron and Steel Group Corporation
Aquifer	a water-bearing layer of sediment or rock.
ARI	average recurrence interval; a measure of the rarity of a rainfall event.
Artefact	anything made by human workmanship, particularly by previous cultures (such as chipped and modified stones used as tools).
AS	Australian Standard
ASL	above sea level
AWS	Automatic Weather Station
Background	the conditions (e.g., noise levels, bird populations) already present in an area before the commencement of a specific activity (e.g., a mining operation).
Bensteel	Benxi Steel
Best practice	a best practice is a process, technique, or use of technology, equipment or resource that has a proven record of success.
BIF	banded iron formation
Biodiversity	the diversity of different species of plants, animals and microorganisms, including the genes they contain, in the ecosystem of which they are part.

Term	Expansion / Definition
Blasting	detonation of explosive charge in a mine to assist in the removal of hard rock.
BoM	Bureau of Meteorology
Bore	a well, usually of less than 20 cm diameter, sunk into the ground and from which water is pumped.
Bund	an earth, rock, or concrete embankment constructed to prevent the inflow or outflow of liquids or the transmission of noise.
CALM	Department of Conservation and Land Management; merged with DoE in 2006 to form DEC.
CASA	Civil Aviation Safety Authority
catchment	the entire land area from which water (e.g., rainfall) drains to a specific water course or waterbody.
Clay	a discrete group of minerals, belonging to the layered silicate group of less than 2 microns in diameter.
CMS	Cleaner magnetic separator
Compaction	the process of close packing of individual grains in a soil or sediment as a response to pressure.
Concentration	the amount of a substance per unit of mass or volume of the medium in which it occurs.
Conservative	a prediction, assumption, or measurement that errs on the side of safety.
Contractor	specialist brought in to perform a specific task, such as the construction of mine infrastructure or the excavation (mining) of the open pit.
Costean	a trench.
Cross-section	a two-dimensional diagram of an object presented as if the object had been cut along its length.
Crusher	that part of an ore-processing plant where the ore is mechanically crushed into smaller pieces.
CVRD	Companhia Vale do Rio Doce.
DEC	Department of Environment and Conservation; formed in 2006 by the merger of DoE and CALM.
DEH	Department of the Environment and Heritage; renamed the Department of the Environment and Water Resources.
Density	the mass of a substance divided by its volume.
Deposition	laying down of particulate material.
DIA	Department of Indigenous Affairs
Distribution of species	the entire area in which a population of a species, subspecies or other taxon is found.
DOC	dissolved organic carbon
DoCEP	Department of Consumer and Employment Protection
DoE	Department of Environment; merged with CALM in 2006 to form DEC.
DoH	Department of Health

Term	Expansion / Definition
DoHW	Department of Housing and Works
DoIR	Department of Industry and Resources
DoPI	Department of Planning and Infrastructure
DoW	Department of Water
Drawdown	a reduction in water level and/or pressure level in an aquifer as a result of ground water extractions.
DRF	Declared Rare Flora
Drilling	the action of boring holes (usually less than 30 centimetres in diameter and up to several hundred metres deep) into the ground, typically to establish a water bore or to investigate the geology found at depth.
DTR	Davis Tube Recovery; a test used to indicate the recovery expected from a magnetic drum separator.
EC	electrical conductivity.
Ecosystem	an interacting system of animals, plants, other organisms and non-living parts of the environment.
eH	a parameter used to quantify the activity of electrons.
Emission	a discharge of a substance (e.g., dust) into the environment.
EMS	Environmental Management System
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.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999.</i>
Ephemeral	not permanent, e.g., a stream that flows only seasonally or after rainfall or a lake that periodically dries out.
Erosion	the wearing away of the land surface (whether natural or artificial) by the action of water, wind and ice.
Excavator	vehicle used to excavate holes and move soil, earth, or rocks.
Fauna	a general term for animals (birds, reptiles, marsupials, fish etc.), particularly in a defined area or over a defined time period.
FCT	floristic community type
Fe	iron
Feasibility study	a preliminary technical and economic study to assess the viability of a project.
Feed	material being fed into a process.
FIFO	fly-in, fly-out.
Flora	a general term for plants, particularly those found in a defined area or characteristic of a defined time period.
Foraging	searching for food over a wide area.

Term	Expansion / Definition
Formation	a large stratigraphic sequence of rock beds (such as sandstone, shale, limestone, etc.) generally deposited over a distinct geological period (e.g., during a glacial period).
GCA	Graeme Campbell and Associates Pty Ltd
GHG	greenhouse gases
Gilgai	the microrelief of soils, generally with high clay content, produced by expansion and contraction with changes in moisture.
Gindalbie	Gindalbie Metals Ltd
GPA	Geraldton Port Authority
Grade	the concentration of metal, e.g., iron either in an individual rock sample or averaged over a specified volume of rock.
Grader	vehicle used to smooth a soil or rock surface.
Gradient	rate of change of a given variable (such as temperature or elevation) with distance.
Greenhouse gases	carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride.
Ground vibration	vibration transmitted through the ground following blasting.
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.
GRP	Gross Regional Product; the market value of all final goods and services produced within a region in a given period of time.
GSP	Gross State Product; the market value of all final goods and services produced within a state in a given period of time.
GST	Goods and Services Tax
GSTC	Geraldton Southern Transport Corridor
GWSA	Groundwater Sub Area
Habitat	the particular local environment occupied by an organism.
Haul trucks	heavy vehicles used for the transportation of ore or waste rock.
HPGR	High pressure grinding rolls
Hydrology	the study of water, particularly its movement in streams, rivers, or underground.
IBRA	Interim Biogeographic Regionalism for Australia
ICMM	International Council on Mining and Metals
IMS	Intermediate Magnetic Separators
Infrastructure	the supporting installations and services that supply the needs of a project.
Introduced	introduced to a particular environment; exotic.
Intruded	geological term for (igneous) rock formed by the injection of molten magma up into the earth's crust and its subsequent cooling and crystallisation.
Invertebrates	commonly, animals without a backbone (jellyfish, worms, molluscs, etc.).
irrigation	the artificial flooding of agricultural land to promote cultivation.

Term	Expansion / Definition
key stone species	a species that plays a critical role in maintaining the structure of an ecological community and whose impact on the community is greater than would be expected based on its relative abundance
KIOP	Karara Iron Ore Project
KML	Karara Mining Limited; Joint venture between Gindalbie and Anshan Iron and Steel Group Corporation.
KMS	Karara Management Services Pty Ltd
KP	Kilometre Point; distance along the specified linear route
KPI	key performance indicator
L_{A10}	a noise level audible to human ears that is exceeded for 10% of the time that is measured during a measurement period.
L_{Aeq}	the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.
landform	a specific feature of a landscape (such as a hill) or the general shape of the land.
leach	dissolution and removal of a soluble substance from a soil or a rock, e.g., the leaching of salt (by water) from a soil or the leaching of gold (by cyanide) from a rock.
LGA	Local Government Area
lithology	the description of rocks on the basis of colour, mineralogical composition, and grain size.
load	the amount of a substance discharged into a body of water (e.g., salt or sediment); usually expressed as mass over a specified time (e.g., tonnes per year).
Lol	Loss on ignition
massive	soil or rock with no observable structure.
MCA	Minerals Council of Australia
mesocavern	cavity within a rock with a diameter of between 0.1 cm and 20 cm.
Midwest Corporation	Midwest Corporation Limited
metallurgical	pertaining to metals, particularly their extraction from ore.
mine waste	by-products of mining operations with no economic value.
mineralisation	the occurrence of metals or ore-bearing minerals within a rock sequence.
model	a mathematical simulation of a natural system (such as the variation of particulate levels within a lake) used to predict how the system will change with time, particularly where external changes have been imposed upon it (such as from mining operations).
monitoring	systematic sampling and, if appropriate, sample analysis to record changes over time caused by impacts such as mining.
MOU	Memorandum Of Understanding
MPG	Malleefowl Preservation Group.
Mtpa	Million tonnes per annum.
NAF	non-acid forming
native	belonging to, or found naturally, in a particular environment.
natural	existing in, or formed by, nature (generally excludes anything obviously modified by human beings).

Term	Expansion / Definition
NEPM	National Environment Protection Measure
neutral	neither acidic nor basic (e.g., a pH equal to 7.0).
nitrate	NO_3^- , nitrogen compound commonly found in waterbodies and used by plants and algae as a nutrient.
nutrients	generally refers to nitrogen and phosphorus, which are essential for biological growth.
ODAC	Office of Development Approval Co-ordination
open pit	large hole excavated in an open-cut mining operation to remove the ore.
operational phase	that period of the mining project, after construction and prior to decommissioning, during which pit excavation and metal extraction takes place.
operations	mining and ore processing activities.
Operating Licence	a licence to operate a prescribed premises, issued by DEC.
ore	a mineral or mixture of minerals containing a metal in sufficient amounts for its extraction to be profitable.
ore processing	the mechanical and chemical process by which a metal is extracted from an ore.
orebody	a solid mass of ore (both high and low grade) that is geologically distinct from the rock that surrounds it and that is commercially extractable.
overburden	material that overlies a deposit of ore.
oxidation	the process by which an element or compound undergoes a chemical reaction involving the removal of electrons; often involves reaction with oxygen to form an oxide (e.g., the rusting of iron).
P	phosphorus
PAF	potentially acid forming
PAF-long lag	PAF-materials that are initially circum-neutral that may acidify within a matter of weeks-to-months when subjected to "aggressive-ambient-weathering", corresponding to periods of at least a few days during which unsaturated-conditions prevail (via drainage/evaporation processes) between successive inundations that, in turn, occur semi-regularly (e.g. weekly-to-fortnightly "on-average" during most of the annual hydrological-cycle).
PAF-short lag	PAF-materials where exposure to the atmosphere for years (even decades, or longer) may be needed before acidification develops.
passive	performing a function without electrical or mechanical action or movement.
PAWC	Plant Available Water Capacity or Plan-Available Water Capacity.
PER	Public Environmental Review
perimeter	outer boundary.
permeability	the ability of a rock or soil to allow fluid to pass through it.
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 and 14 is most basic (alkaline).
pig	a tool which is inserted into a pipeline and propelled along by the gas flow to internally clean and inspect the pipe.

Term	Expansion / Definition
pit	see open pit.
pit water	water inflow into the pit from incident rainfall or groundwater seepage from pit walls.
PM ₁₀	the fraction of dust with a particle size of 10 µm or less. A health indicator for the fine particles of respirable dust capable of being inhaled into the lungs.
PM _{2.5}	the fraction of dust with a particle size of 2.5 µm or less. A health indicator for the very fine particles of respirable dust capable of deep penetration into the lungs and alveoli.
potable water	water of quality suitable for human consumption.
PPE	Personal Protective Equipment
precipitation	1. the process of changing from a dissolved compound into a solid, insoluble compound. 2. rain, hail and snow.
Prescribed Premise	a premise that falls into the categories prescribed in Schedule 1 of the Environmental Protection Regulations 1987.
progressive rehabilitation	rehabilitation of mined or disturbed areas as soon as practicable after they are released during the life of the mine.
project area	the total area covered by the project, including pit, processing plant, stockpiles, access road, rail siding, Port facilities etc.
rainfall event	period of rainfall.
receptor	a designated place at which an impact may occur (e.g., a dwelling).
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.
regolith	a layer of loose, heterogeneous material covering solid rock.
rehabilitation	the restoration of a landscape and especially the vegetation following its disturbance.
reptiles	cold-blooded vertebrates, including lizards, snakes, turtles, and crocodiles.
reserve	commercially extractable minerals.
residual impacts	impacts from an activity (e.g., mining) that remain after mitigation measures.
resource	minerals in the ground, but not necessarily commercially extractable.
richness (of fauna or flora)	a measure of the number of species in a given area or assemblage.
RMS	Rougher magnetic separators
RO	reverse osmosis
ROM	run-of-mine; see ROM pad.
ROM pad	the stockpile of freshly mined ore used to feed the mill and process plant.
ROW	Right of Way; the 30 m wide construction area of the linear infrastructure corridor.
runoff	that portion of precipitation (rain, hail and snow) that flows from a specific area as water.
S	sulphur
SAG	semi-autogenous grinding

Term	Expansion / Definition
sand	siliceous group of particles within the size range 63 microns to 2 millimetres.
scree	small, loose rocks that gather on a slope and often at the bases of cliffs.
seepage	1. subsurface movement of water. 2. emergence of subsurface flow at the ground surface.
sequence (geological)	layers of (predominantly) sedimentary rocks sourced from a common geological environment or period.
sheet flow	runoff that is of substantial lateral extent and relatively uniform depth (rather than concentrated in channels).
SiO ₂	silica
silt	a sediment with particles finer than sand and coarser than clay, i.e. 2 to 63 microns.
site-specific	an observation that is particular to one site.
slaking	breaking apart due to weathering.
slurry	mixture of fluid and solid.
species	a taxonomic grouping of organisms that are able to interbreed with each other but not with members of other species.
SRE	short-range endemics
stockpile	a pile used to store material (such as low-grade ore) for future use.
stockpiled	stored in a stockpile.
storage capacity	the maximum volume of liquid able to be retained in a structure or container (e.g., a reservoir or lake).
stripping	removal of vegetation and topsoil.
stygofauna	groundwater inhabiting aquatic fauna.
substrate	an underlying layer.
sump	pit sunk to collect water.
surface water	water flowing over, or contained on, a landscape (e.g., runoff, streams, lakes, etc.).
suspended (solids)	solids held in suspension by the turbulent flow of a fluid.
SWIS	South West Interconnected System; the main Western Australian electricity grid.
tailing	by-product of the metal extraction process consisting of crushed rock from which the metal or ore minerals have been extracted (the solid fraction or portion) and a liquid fraction or portion composed of water and residual chemicals used in the extraction process.
TAPM	The Air Pollution Model
TDS	total dissolved solids; a common measure used to determine dissolved solids concentrations in a waterbody and expressed in terms of mass per unit of volume (e.g., milligrams per litre).
TEC	Threatened Ecological Communities
throughput	quantity of material (ore, chemicals, etc.) moving through a system (e.g., an ore-processing plant).

Term	Expansion / Definition
topography	physical relief and contour of a region.
topsoil	upper layer of soil, usually containing more organic material and nutrients than the subsoil beneath it.
troglofauna	fauna that live entirely underground in caves or in the pore space between rocks or soil.
TSF	tailing storage facility; a storage facility for tailing.
TSP	total suspended particulates; mass of all suspended particulates.
TSS	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).
variable	not constant, subject to change.
vector	A coordinate-based data model that represents geographic features as points, lines, and polygons. Each point feature is represented as a single coordinate pair, while line and polygon features are represented as ordered lists of vertices. Attributes are associated with each vector feature, as opposed to a raster data model, which associates attributes with grid cells.
velocity	speed in a given direction.
vibration	oscillating movement.
vug(s)	small to medium sized cavity within a rock that is linked with crystals.
vugginess	degree to which a rock contains vugs.
waste rock	uneconomic rock extracted from the ground during a mining operation to gain access to the ore.
water balance	the sum of the inputs and outputs and changes in storage levels of water in a given locality.
water quality	degree of the lack of contamination of water.
water table	the surface of the groundwater, below which soil and rock are saturated.
watercourse	stream or river, running water.
weathering	the in-situ physical disintegration and chemical decomposition of rock materials at or near the earth's surface.
weed	any plant (in particular an herbaceous one), most commonly non-indigenous or endemic to the area, that survives in an area where it is harmful or troublesome to the desired land use.
wetland	a low-lying area regularly inundated or permanently covered by shallow water.
WHO	World Health Organization
wind erosion	wearing away of exposed soil, earth, or rock surfaces by the abrasive action of wind-blown particles (e.g., grains of sand).
WMC	Western Mining Corporation
Works Approval	an approval, under Part V of the EP Act, to authorise work to be undertaken (including construction) on a prescribed premise.
WWTP	wastewater treatment plant
yield (of a water bore)	the capacity of the bore to produce water or the amount of water actually withdrawn.