



## Abbreviations and Glossary

### Project Specific Terminology

Abbreviation	Term
the EIS	Carmichael Coal Mine and Rail Project Environmental Impacts Statement
the Proponent	Adani Mining Pty Ltd
the Project	Carmichael Coal Mine and Rail Project
the Project (Mine)	Carmichael Coal Mine and Rail Project: Mine Component
the Project (Rail)	Carmichael Coal Mine and Rail Project: Rail Component

### Symbols and Units of Measurement

Symbol / Unit	Definition
<	Less than
>	Greater than
100K	1:100,000 scale (in relation to geological mapping)
bcm	Bank Cubic Metres: a measure of volume representing a cubic metre of in-situ rock
bhp	Brake Horse Power
Bt	Billion tonnes
C	Carbon
CE	Control efficiency (%)
CEC	Cation Exchange Capacity
CH <sub>4</sub>	Methane
Cm	Centimetre(s)
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> -e	Carbon dioxide equivalent emissions (emissions of other greenhouse gases are multiplied by their Global Warming Potential so that their effects can be compared to emissions of carbon dioxide)
CO <sub>2</sub> -e/y	CO <sub>2</sub> equivalent per year
°C	Degrees Celsius
dB	Decibel is the unit used for expressing the sound pressure level (SPL) or power level (SWL) in acoustics.



Symbol / Unit	Definition
dB(A)	Frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at very low and very high frequencies.
dS/m	Deci-Siemens per metre
DWT	Dry Weight Tonnage
EAD	Equivalent aerodynamic diameter
EF <sub>i</sub>	Uncontrolled emissions factor for pollutant i (kg per activity)
E <sub>i</sub>	Emission rate of pollutant i (kg per activity)
EP	Equivalent persons
g/m <sup>3</sup>	Grams per cubic metre
GJ	Giga Joule
GJ/y	Giga Joules per year
GL	Giga litre
GWh	Gigawatt hours
H	Horizontal
H <sub>2</sub>	Hydrogen
H <sub>2</sub> O	Water
H <sub>2</sub> S	Hydrogen sulphide
H <sub>2</sub> SO <sub>4</sub>	Sulphuric acid
ha	Hectare
HC	Hydrocarbon
HCl	Hydrochloric acid
HCO <sub>3</sub>	Bicarbonate
hrs	Hours
Hz	Hertz
K	Hydraulic Conductivity
kg	Kilogram
kg/ha	Kilogram per hectare
kL	Kilolitre
kL/day	Kilolitres per day



Symbol / Unit	Definition
km	Kilometre
km/h	Kilometres per hour
km <sup>2</sup>	Square kilometre
Kph	Kilometres per hour
kVA	Kilovolt-ampere
L	Litre
L/s	Litres per second
L/sec	Litres per second
L/yr	Litres per year
L <sub>A1, 10, 90</sub>	A weighted noise levels exceeded 1%, 10% or 90% of the time
L <sub>A90(period)</sub>	The sound pressure level that is exceeded for 90 percent of the measurement period.
L <sub>Aeq(period)</sub>	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
L <sub>Amax</sub>	The maximum sound level recorded during the measurement period.
m	Metre
m AHD	Metres Australian Height Datum
m/d	Metres per day
m/s	Metres per second
m <sup>2</sup>	Square metres
m <sup>3</sup>	Cubic metre
m <sup>3</sup>	Cubic metres
m <sup>3</sup> /h	Cubic metres per hour
m <sup>3</sup> /s	Cubic metres per second
m <sup>3</sup> /y	Cubic metres per year
mcg	Micrograms (10 <sup>-6</sup> grams)
Meq/100g	Milliequivalent per 100 grams
mg	Milligram
mg/kg	Milligrams per kilogram
mg/L	Milligrams per litre



Symbol / Unit	Definition
mg/m <sup>3</sup>	Micrograms per cubic metre
µg/L	Micrograms per litre
ML	Million litres or megalitre
ML/yr	Mega litre per year
mm	Micrometres
mm/day	Millimetres per day
Mm <sup>3</sup>	Million cubic metres
Mt	Million tonnes
Mtpa	Million tonnes per annum
µS/cm	Micro Siemens per centimetre (measure of electrical conductivity in water)
MW	Megawatt
MWh	Megawatt hour
N <sub>2</sub> O	Nitrous Oxide
Nm <sup>3</sup>	Normal Cubic Metre
No.	Number
NO <sub>2</sub>	Nitrogen dioxide
N <sub>2</sub> O	Nitrous Oxide
NO <sub>x</sub>	Oxides of nitrogen
O <sub>2</sub>	Oxygen
O <sub>3</sub>	Ozone
%	Per cent
P	People
Peak particle velocity (PPV)	The maximum instantaneous particle velocity at a point during a given time interval in mm/s; A measure of the ground vibration magnitude
pH	Measure of acidity (<7) or alkalinity (>7) of a sample.
PJ	Petajoule
PM <sub>10</sub>	Particulate Matter less than 10 µm
PM <sub>2.5</sub>	Particulate Matter less than 2.5 µm
PM <sub>2.5</sub> and PM <sub>10</sub>	Particulate matter less than 2.5 or 10 microns
RN	Registration number (in relation to DERM registered bores)



Symbol / Unit	Definition
ROP	Resource operations plan
rpm	Revolution per minute
SF <sub>6</sub>	Sulphur hexafluoride
SO <sub>2</sub>	Sulphur dioxide
SO <sub>4</sub>	Sulphate
SWL	Standing water level
t	Tonne
TDS	Total dissolved solids (in relation to water quality)
TJ	Terajoules
tpa	Tonnes per annum
tph	Tonnes per hour
TSP	Total Suspended Particulates
U	Wind speed at the reference height of 10 m
UA	Unincorporated area
V	Speed of the train
V	Vertical when referring to slope angle or Volts when referring to power
VDV	Vibration Dose Value (VDV) – As defined in BS6472 – 2008, VDV is given by the fourth root of the integral of the fourth power of the frequency weighted acceleration.
yr	Year

### Acronyms

Acronym	Term
A	Activity data (units dependent on emission factors)
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACH Act	Aboriginal Cultural Heritage Act 2003 (Qld)
ADG Code	Australian Code for Transport of Dangerous Goods by Road and Rail 7 <sup>th</sup> edition
AGO	Australian Government Department of Climate Change
AHD	Australian Height Datum
ALARP	As low as reasonably practicable



Acronym	Term
AMD	Acid and Metalliferous Drainage
ANFO	Ammonium nitrate fuel oil
ANRA	Australian Natural Resource Atlas
ANZECC	Australian and New Zealand Environment and Conservation Council
APCT	Abbot Point Coal Terminal
ARI	Average Recurrence Interval
AS/NZS	Australian Standards/New Zealand Standards
ASS	Acid Sulphate Soils
AusRivAS	Australian River Assessment System
AWS	Automatic Weather Station
BBN	Brigalow Belt North
bgl	Below ground level
BIBO	Bus-in/bus-out
BOM	Bureau of Meteorology
BPA	Biodiversity Planning Assessment
BPO	Barcaldine Post Office
BVC	Broad Vegetation Community
BVG	Broad Vegetation Group
CALMET	Atmospheric meteorological modelling system
CALPUFF	Gaussian puff modelling system for the simulation of atmospheric pollution dispersion distributed
CAMBA	Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment
CASA	Civil Aviation Safety Authority
CCD	Census Collection District
CEC	Cation Exchange Capacity
CEMP	Construction Environment Management Plan
CFI	Carbon Farming Initiative
CHMP	Cultural Heritage Management Plan
CHP	Coal Handling Plant



Acronym	Term
CHPP	Coal Handling Preparation Plan
CL	Clay
CLR	Contaminated Land Register
CLU	Contaminated Land Unit
CN	Stony coal
CNG	Compressed natural gas
COD	Chemical oxygen demand
CoG	The Coordinator-General of the State of Queensland
CS	Claystone
CSIRO	Australian Government agency Commonwealth Scientific and Industrial Research Organisation
CTRC	Charters Towers Regional Council
DEHP	Department of Environment and Heritage Protection
DEM	Digital Elevation Model
DEU	Desert Uplands
DIDO	Drive-in/drive-out
DMC	Dense Medium Cyclone
DO	Dissolved oxygen
DEHP	Department of Environment and Heritage Protection
DNRM	Department of Natural Resource Management
DSDIP	Department of State Development, Infrastructure and Planning
DSEWPaC	Commonwealth Department of Sustainability, Environment, Water, Population and Communities
DTMR	Department of Transport and Main Roads
EA	Environmental Authority
EC	Electrical conductivity
ECP	Electronically Controlled Pneumatic Braking System
EEO	Energy Efficiency Opportunities
EEO Act	Energy Efficiency Opportunities Act 2006
EF	Emission factor



Acronym	Term
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMM	Environmental Monitoring Manual
EMP	Environmental Management Plan
EMR	Environmental Management Register
EMS	Environmental Management System
EP Act	Environmental Protection Act 1994 (Qld)
EP Regulation	Environmental Protection Regulation 2008
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
EPC	Exploration Permit for Coal
EPCA	Exploration Permit for Coal Application
EPP	Environment Protection Policy
EPR	Environmental Protection Regulation
EPT	Ephemeroptera, Plecoptera, Trichoptera
ERA	Environmentally Relevant Activities
ESA	Environmentally Sensitive Area
ESCP	Erosion and Sediment Control Plan
ESP	Exchangeable Sodium Percentage
FIFO	Fly-in/fly-out
FoS	Factor-of-Safety
FPC	Foliage Protective Cover
FullCAM	Full Carbon Accounting Model
GAB	Great Artesian Basin
GDP	Gross Domestic Product
GGE	Greenhouse Gas Emissions
GGSA	Greenhouse Gas Storage Act 2009 (Qld)
GHG	Greenhouse gas
GHG Protocol	The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard
GIS	Geographic Information Systems





Acronym	Term
GLC	Gas Liquid Chromatography
GMA	Groundwater management area
GMU	Groundwater management unit
GPS	Global Positioning System
GPT	Gross Pollutant Trap
GQAL	Good Quality Agricultural Land
GRP	Gross Regional Product
GSP	Gross State Product
GSQ	Geological Society Queensland
GT	Gas Turbine
GWP	Global Warming Potential
HES	High Ecological Significance
HFCs	Hydrofluorocarbons
HIPAP	Hazardous Industry Planning Advisory Paper
IAP2	International Association of Public Participation
IAS	Initial Advice Statement
IBRA	Interim Biogeographic Regionalisation of Australia
IECA	International Erosion Control Association
ILUA	Indigenous Land Use Agreements
IRC	Isaac Regional Council
IRR	Internal Rate of Return
ISO	International organisation for standardisation
IUCN	International Union for the Conservation of Nature
JORC	Joint Ore Reserves Committee
JSEA	Job Safety and Environmental Analysis
KPIs	key performance indicators
LGA	Local Government Area
LNG	Liquid natural gas
MDL	Mining Development Licence
MIC	Maximum Instantaneous Change



Acronym	Term
ML	Mining Lease
MLA	Mining Lease Application
MM5	Mesoscale Model for weather forecasts and climate projections (Fifth-Generation Penn State)
Matters of NES	Matters of National Environmental Significance
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
NAF	Non Acid Forming
NATA	National Association of Testing Authorities
NCAR	National Centre for Atmospheric Research
NCAT	National Carbon Accounting Toolbox
NCWR	Nature Conservation Wildlife Regulation
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NGA	National Greenhouse Accounts
NGER Act	National Greenhouse and Energy Reporting Act 2007
NGERS	National Greenhouse and Energy Reporting Scheme
NGS	National Greenhouse Strategy
NOHSC	National Occupational Health and Safety Commission
NPI	National Pollutant Inventory
NPR	Net Potential Ratio
NPV	Net Present Value
NRM	Natural Resource Management
NTA	Native Title Agreement
OCM	Open Cut Mine
OESR	Office of Economic and Statistical Research
OH&S	Occupation Health and Safety
OHS	Occupational health and safety
PAF	Potentially Acid Forming
PAWC	Plant Available Water Capacity



Acronym	Term
PFCs	Perfluorocarbons
PFS	Pre-feasibility Study
PHA	Preliminary Hazard Analysis
PHIDU	Public Health Information Development Unit
PIFU	Planning, Information and Forecasting Unit
PM	Particulate matter (fine dust)
PMF	Probable Maximum Flood
PSU/NCAR	Pennsylvania State University/National Center for Atmospheric Research
QAS	Queensland Ambulance Services
QBOP	Queensland Biodiversity Offset Policy (QBOP)
QFRS	Queensland Fire and Rescue Services
QH	Queensland Health
Qld	Queensland
QR	Queensland Rail
QRC	Queensland Resources Council
QWQG	Queensland Water Quality Guidelines 2009
RBL	<p>Rating Background Level: The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24 hour period used for the assessment background level). This is the level used for assessment purposes. It is defined as the median value of:</p> <ul style="list-style-type: none"> <li>▶ All the day assessment background levels over the monitoring period for the day; (7:00 am to 6:00 pm)</li> <li>▶ All the evening assessment background levels over the monitoring period for the evening; (6:00 pm to 10:00 pm)</li> <li>▶ All the night assessment background levels over the monitoring period for the night. (10:00 pm to 7:00 am)</li> </ul>
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
REs	Regional Ecosystems
RESS	Rechargeable Energy Storage System
RL	Reduced Level
RLRPA	Regional Landscape and Rural Production Area



Acronym	Term
ROKAMBA	Agreement between the Government of Australia and the Government of the Republic of Korea on the Protection of Migratory Birds
ROM	Run-Of-Mine
ROW	Right of Way
SCA	site contamination assessment
SCL	Strategic Cropping Land
SDPWO Act	State Development and Public Works Organisation Act 1971 (Qld)
SEIFA	Socio-Economic Index for Areas
SES	State Emergency Service
SIA	Social Impact Assessment
SIAU	Social Impact Assessment Unit
SIMP	Social Impact Assessment Management Plan
SLA	Statistical Local Area
SLATS	Statewide Landcover and Tree Study
SMP	Site Management Plan
SMPs	Soil Management Plans
SMS	Safety Management Systems
SOPs	Standard Operating Procedures
SP Act	Sustainable Planning Act 2009 (Qld)
SPP	State Planning Policy
SRN	Stock Route Network
TAPM	The Air Pollution Model
TC	Tropical Cyclone
TCLP	Toxic Characteristic Leaching Potential
TEC	Threatened Ecological Community
TLM	Track Laying Machine
TLO	Train Load-out
TMP	Traffic Management Plan
ToR	Terms of Reference
TSS	Total suspended solids



Acronym	Term
TSSC	Threatened Species Scientific Committee
TWA	Time Weighted Average
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	United States Environmental Protection Agency
VKT	Vehicle Kilometre Travelled
VL	Viewing Location
VM	Vegetation Management
VM Act	Vegetation Management Act 1999 (Qld)
VOC	Volatile Organic Compound
WA	Western Australia
WCI	World Coal Institute
WHO	World Health Organisation
WONS	Weeds of National Significance
WQO	Water Quality Objectives
WRC	Whitsunday Regional Council
WRP	Water Resource Plan
ZN	Coaly mudstone
ZTV	Zone of Theoretical Visibility
ZVI	Zone of Visual Influence

## Definitions

Term	Definition
Airblast overpressure	The energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave is known as the peak air overpressure, generally measured in decibels using linear frequency weighting.
Background view	6 km – 16 km - Textures are no longer visible, but mountain and valley forms, skylines and ridgelines are important (Forest Practice Board Tasmania, 2006).
Blasting	The use of explosives to fracture rock, coal or other materials for later recovery.
Bonn Convention	Convention on the Conservation of Migratory Species of Wild Animals.
Cut	An excavation for constructing below the natural ground level.



Term	Definition
Cut batters	The side slopes of cuttings.
Ecology	A branch of biology dealing with the relations and interactions between organisms and their environment, including other organisms.
Emission	The release of material into the environment (such as, dust)
Fill	Earth used to construct an embankment.
Foreground	0-1 km – Is the visual zone where colour contrast and textural detail are most clearly perceived (Forest Practice Board Tasmania, 2006).
Greenhouse Gases	Gases that accumulate within the earth's atmosphere (eg: primarily carbon dioxide and methane) which contribute to global climatic change/global warming (i.e. the 'greenhouse effect')
Intervisibility	Two points in the landscape that are mutually visible.
Landscape feature	A component, part or feature of the landscape that is prominent or eye-catching, e.g. hills, buildings, vegetation.
Landscape quality	Largely subjective judgement based on particular characteristics that influence the way in which the environment is experienced, including special interests such as cultural associations or heritage interests, the presence and/or type of elements and condition.
Landscape sensitivity	The extent to which landscape can accept a change of a particular type and scale without unacceptable adverse impacts on its character.
Landscape value	Areas of formally designated landscape that through national or local consensus, reflect the value placed by society on particular environments and/or their features.
Low Frequency Sound	Sound in the frequency range 10 Hz to 200 Hz.
Middleground view	1 km-6 km – different elements in the landscape are visually apparent (Forest Practice Board Tasmania, 2006).
Mitigation	Limit the intensity of impacts or prevent impacts.
National Environmental Significance (NES)	Matters of NES as listed under the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 which include World/National Heritage properties, Ramsar Wetlands, Nationally Threatened Species and Ecological Communities, Migratory Species, Commonwealth Marine Areas, Nuclear Actions and National Heritage Places.
Noise Sensitive Place/Receptor	With consideration to the Environmental Protection (Noise) Policy 2008 and of relevance to the Project (Rail) a noise sensitive place (that is a potential sensitive receptor) is defined as (amongst others): <ul style="list-style-type: none"> <li>▶ A dwelling</li> <li>▶ A library, childcare centre, kindergarten, school, college, university or other educational institution.</li> <li>▶ A hospital, surgery or other medical institution.</li> </ul>



Term	Definition
	<ul style="list-style-type: none"> <li>▶ A protected area, or an area identified under a conservation plan as a critical habitat or an area of major interest under the Nature Conservation Act 1992.</li> <li>▶ A marine park under the Marine Parks Act 1982.</li> <li>▶ A park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment.</li> </ul>
Sensitive visual receptor	Person and/or viewer group that would experience an impact.
Study Area (rail terrestrial ecology)	A 2 km wide investigation area that encapsulates the Project (Rail) and Infrastructure Corridor over the length of approximately 185 km between Carmichael Mine and Moranbah the area
Vibration	The variation of the magnitude of a quantity which is descriptive of the motion or position of a mechanical system, when the magnitude is alternately greater and smaller than some average value or reference. Vibration can be measured in terms of its displacement, velocity or acceleration. The common units for velocity are millimetres per second (mm/s).
Viewing locations	Viewing locations are used in this report to typify the views experienced by sensitive visual receptors throughout the visual catchment of the proposal. Viewing locations in this report often represent a viewing area, rather than one exact point.
Visual amenity	The value of a particular area or view in terms of what is seen.
Visual catchment	Extent of potential visibility to or from a specific area, feature or proposal.
Visual impact	Changes in the appearance of the landscape or in the composition of available views as a result of development, to people's responses to these changes, and to the overall impacts in regard to visual amenity. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction).

