

# **VICKERY EXTENSION PROJECT**

## **ENVIRONMENTAL IMPACT STATEMENT**

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# **SECTION 9**

## **ABBREVIATIONS, ACRONYMS AND GLOSSARY**

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## 9 ABBREVIATIONS, ACRONYMS AND GLOSSARY

### 9.1 ABBREVIATIONS AND ACRONYMS

%	per cent	ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
°	degree	ARTC	Australian Rail Track Corporation
°C	degrees Celsius	AS	Australian Standard
µg/m <sup>3</sup>	micrograms per cubic metre	AUTH	Authorisation
µm	micrometre	AWD	Available Water Determinations
µS/cm	microSiemens per centimetre	BAR Footprint	Biodiversity Assessment Report Development Site Footprint
AAQ NEPM	<i>National Environment Protection (Ambient Air Quality) Measure</i>	BC Act	<i>NSW Biodiversity Conservation Act, 2016</i>
ACHA	Aboriginal Cultural Heritage Assessment	BoM	Commonwealth Bureau of Meteorology
ACT	Australian Capital Territory	Box-Gum Woodland CEEC	<i>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</i> listed as a CEEC under the EPBC Act
AEP	Annual Exceedance Probability	Box-Gum Woodland EEC	<i>White Box Yellow Box Blakely's Red Gum Woodland</i> listed as an EEC under the TSC Act
AHD	Australian Height Datum	BSAL	Biophysical Strategic Agricultural Land
AHIMS	Aboriginal Heritage Information Management System	Carroll to Boggabri FMP	<i>Carroll to Boggabri Floodplain Management Plan September 2006</i>
AIP	<i>NSW Aquifer Interference Policy (NSW Government, 2012)</i>	CCC	Community Consultative Committee
AIS	Agricultural Impact Statement	CEEC	Critically Endangered Ecological Community
ANC	acid neutralising capacity	CHPP	Coal Handling and Preparation Plant
ANZEC	Australian and New Zealand Environment Council	CL	Coal Lease
ANZECC	Australian and New Zealand Environmental and Conservation Council	cm	centimetre
Approved Methods	<i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2016)</i>	CPDP	Conceptual Project Development Plan
ARI	average recurrence interval	CO <sub>2</sub> -e	carbon dioxide equivalent
		CPP	Coal preparation plant

Credit Calculator	Credit Calculator for Major Projects and BioBanking	EC	electrical conductivity
CSIRO	Commonwealth Scientific and Industrial Research Organisation	EEC	Endangered Ecological Community
dB	decibel	e.g.	example
dBa	A-weighted decibel	EIS	Environmental Impact Statement
dB(L)	linear decibel	EL	Exploration Licence
DEC	NSW Department of Environment and Conservation (now OEH)	ELA	Eco Logical Australia
DECC	NSW Department of Environment and Climate Change (now OEH)	EP&A Act	NSW <i>Environmental Planning and Assessment Act, 1979</i>
DECCW	NSW Department of Environment, Climate Change and Water (now OEH and DPI Water)	EP&A Regulation	NSW <i>Environmental Planning and Assessment Regulation, 2000</i>
DEE	Commonwealth Department of Environment and Energy	EPA	NSW Environment Protection Authority
Department of Industry	NSW Department of Industry	EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act, 1999</i>
DI Water	Department of Industry – Water	EPL	Environment Protection Licence
DotE	Commonwealth Department of the Environment (now DEE)	ERA	Environmental Risk Assessment
DP&E	NSW Department of Planning and Environment	ESD	Ecologically Sustainable Development
DP&I	NSW Department of Planning and Infrastructure (now DP&E)	<i>et al.</i>	and others
DPI	NSW Department of Primary Industries	Extent	Extent Heritage Pty Ltd
DPI Water	Department of Primary Industries – Water	FM Act	NSW <i>Fisheries Management Act, 1994</i>
Draft FMP	<i>Draft Floodplain Management Plan for the Upper Namoi Valley Floodplain 2016</i>	g/m <sup>2</sup> /month	grams per square metre per month
DRE	NSW Division of Resources and Energy (now DRG)	GDE	Groundwater Dependent Ecosystem
DRG	NSW Division of Resources and Geoscience (within the DP&E)	GDE Guideline	<i>Risk Assessment Guidelines for Groundwater Dependent Ecosystems (NOW, 2012)</i>
		GEM	Geo-Environmental Management
		GHG Protocol	Greenhouse Gas Protocol (WBCSD and WRI, 2004)
		Gunnedah LEP	<i>Gunnedah Local Environmental Plan 2012</i>
		H	horizontal

ha	hectare	m <sup>3</sup>	cubic metre
Hz	hertz	Mbcm	million bank cubic metres
HVCCC	Hunter Valley Coal Chain Coordinator	m/s	metres per second
i.e.	that is	mg/L	milligrams per litre
IBRA	Interim Biogeographic Regionalisation for Australia	Mining SEPP	<i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007</i>
ICOMOS	International Council on Monuments and Sites	ML	Mining Lease
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>	ML	megalitre
IPC	Independent Planning Commission	ML/annum	megalitres per annum
ISO	International Organisation for Standardisation	ML/day	megalitres per day
km	kilometre	MLA	Mining Lease Application
km <sup>2</sup>	square kilometre	MNES	Matters of National Environmental Significance
kV	kilovolt	mm	millimetre
L	litre	mm/s	millimetres per second
L <sub>A10</sub>	noise exceeded by 10% of the measured period (A-weighted)	MOP	Mining Operations Plan
L <sub>Aeq</sub>	equivalent continuous noise level (A-weighted)	Mt	million tonnes
LALC	Local Aboriginal Land Council	Mt CO <sub>2-e</sub>	million tonnes of carbon dioxide equivalent
L <sub>AN</sub>	noise exceedance level	Mtpa	million tonnes per annum
LBEM	Local Biodiversity Enhancement Measures	NAF	non-acid forming
LEP	Local Environmental Plan	NARClIM	NSW and ACT Regional Climate Modelling
LFA	Landscape Function Analysis	Narrabri LEP	<i>Narrabri Local Environmental Plan 2012</i>
LGA	Local Government Area	NEPC	National Environment Protection Council
LSC	land and soil capability	NGA Factors	<i>National Greenhouse Accounts Factors (DCCEE, 2012)</i>
LSC Scheme	<i>Land and Soil Capability Assessment Scheme</i>	NGER Act	<i>Commonwealth National Greenhouse and Energy Reporting Act, 2007</i>
m	metre		

NGERS	National Greenhouse and Energy Report System	PoEO Act	<i>NSW Protection of the Environment Operations Act, 1997</i>
NOW	NSW Office of Water (now DPI Water)	ppm	parts per million
NO <sub>x</sub>	Oxides of Nitrogen	PPV	Peak Particle Velocity
NPI	National Pollutant Inventory	Project Soil Resource Assessment	<i>Soil Resource Assessment –Vickery Extension Project</i>
NPfi	<i>NSW Noise Policy for Industry</i> (EPA, 2017)	RAP	Registered Aboriginal Party
NPV	net present value	RFFE	Regional Flood Frequency Estimation
NPW Act	<i>NSW National Parks and Wildlife Act, 1974</i>	RFS	Rural Fire Service
NSESD	<i>National Strategy for Ecologically Sustainable Development</i> (Commonwealth of Australia, 1992)	RING	<i>Rail Infrastructure Noise Guideline</i> (EPA, 2013)
NSW	New South Wales	RMS	NSW Roads and Maritime Services
NSWLEC	NSW Land and Environment Court	ROM	run-of-mine
NSW Offset Policy	<i>NSW Biodiversity Offsets Policy for Major Projects</i> (OEH, 2014)	RTA	NSW Roads and Traffic Authority (now RMS)
NTSCORP	Native Title Services Corporation limited	Santos	Santos QNT Pty Ltd
NTU	nephelometric turbidity unit	SEARs	Secretary’s Environmental Assessment Requirements
NZS	New Zealand Standard	Semi-evergreen Vine Thicket EEC	<i>Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions</i> listed as an EEC under the TSC Act and <i>Semi-evergreen Vine Thicket in the Brigalow Belt (North and South) and Nandewar Bioregions</i> listed as an EEC under the EPBC Act
OEH	NSW Office of Environment and Heritage	SEPP	State Environmental Planning Policy
PAF	potentially acid forming	SEPP 33	<i>State Environmental Planning Policy No. 33 – Hazardous and Offensive Development</i>
PEL	Petroleum Exploration Licence	SEPP 44	<i>State Environmental Planning Policy No. 44 – Koala Habitat Protection</i>
PHA	Preliminary Hazard Analysis	SEPP 55	<i>State Environmental Planning Policy No. 55 – Remediation of Land</i>
PM <sub>10</sub>	particulate matter with an equivalent aerodynamic diameter of 10 µm or less		
PM <sub>2.5</sub>	particulate matter with an equivalent aerodynamic diameter of 2.5 µm or less		
PMF	Probable Maximum Flood		

State and Regional Development SEPP	<i>State Environmental Planning Policy (State and Regional Development) 2011</i>	WAL	Water Access Licence
SVC	Site Verification Certificate	WBCSD	World Business Council for Sustainable Development
t CO <sub>2</sub> -e	tonnes per carbon dioxide equivalent	Weeping Myall Woodland EEC	<i>Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes Bioregions</i> listed as an EEC under the TSC Act
t CO <sub>2</sub> -e/t	tonnes of carbon dioxide equivalent per tonne		
TDS	total dissolved solids		
TEM	transient electromagnetic	Weeping Myall Woodlands EEC	<i>Weeping Myall Woodlands</i> listed as an Endangered Ecological Community under the EPBC Act-
TEOM	Tapered Element Oscillating Microbalance		
the Best Practice Report	<i>NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining</i>	Whitehaven	Whitehaven Coal Limited
		WRI	World Resources Institute
		WRM	WRM Water and Environment
the Minister	NSW Minister for Planning		
the New England North West SRLUP	<i>the New England North West Strategic Regional Land Use Plan</i>		
the OEH Credit Calculator	<i>OEH Credit Calculator for Major Projects and BioBanking</i>		
TSC Act	<i>NSW Threatened Species Conservation Act, 1995</i>		
TSP	total suspended particulates		
TSS	total suspended solids		
UQCHU	University of Queensland Culture and Heritage Unit		
US EPA	United States Environmental Protection Agency		
V	vertical		
Voluntary Land Acquisition and Mitigation Policy	<i>Voluntary Land Acquisition and Mitigation Policy – For State Significant Mining, Petroleum and Extractive Industry Developments</i>		
VPA	Voluntary Planning Agreement		

## 9.2 GLOSSARY

Alluvial	A general term for clay, silt, sand and gravel transported by water and deposited on the bed of a floodplain, river or stream.
Alluvium	Sediment (gravel, sand, silt, clay) transported by water (i.e. deposits in a stream channel or floodplain).
Ambient air quality	The all-encompassing air quality associated with a given environment. It is the cumulative result of emissions (e.g. dust, particulates) from many sources, both near and far.
Ambient Noise	The all-encompassing noise associated with a given environment. It is the cumulative result of sounds from many sources, both near and far.

<p><b>Amenity</b></p> <p>Useful and enjoyable quality.</p>	<p><b>Batter</b></p> <p>An engineered slope of soil or rock fill on either side upslope or downslope of a road, embankment or waste rock storage; the sloping banks of cut earth separating different levels in an open pit.</p>
<p><b>Annual Exceedance Probability (AEP)</b></p> <p>The probability that a flood of a defined magnitude or larger will occur in any year.</p>	
<p><b>Approved Road Transport Route</b></p> <p>The route used to transport coal and coal reject between the Approved Mine and the Tarrawonga and Rocglen coal mines to the Whitehaven CHPP, which includes the use of public roads, including Blue Vale Road and the Kamilaroi Highway (from Development Consent SSD-5000).</p>	<p><b>Biodiversity</b></p> <p>The diversity of different species of plants, animals and micro-organisms, including the genes they contain, in the ecosystem of which they are part.</p>
<p><b>Aquatic</b></p> <p>Living in or on water, or concerning water.</p>	<p><b>Bund</b></p> <p>An earth, rock or concrete wall or mound constructed to restrict the inflow or outflow of liquids or noise.</p>
<p><b>Aquifer</b></p> <p>A sub-surface rock formation containing water in recoverable quantities.</p>	<p><b>Catchment</b></p> <p>The entire land area from which water (e.g. rainfall) drains to a specific watercourse or water body.</p>
<p><b>Background</b></p> <p>The condition (e.g. noise levels) already present in an area before the commencement of a specific activity.</p>	<p><b>Confluence</b></p> <p>A body of water formed by the flowing together of two or more watercourses.</p>
<p><b>Baseflow</b></p> <p>The discharge of sub-surface water into a stream (i.e. groundwater seepages).</p>	<p><b>Cross-section</b></p> <p>A two-dimensional diagram of an object presented as if the object had been cut across its length.</p>
<p><b>Baseline Monitoring</b></p> <p>Monitoring conducted over time to collect a body of information to define specific characteristics of an area (e.g. species occurrence or noise levels) prior to commencement of a specific activity.</p>	<p><b>dB</b></p> <p>Decibel; unit used to express sound intensity.</p>
	<p><b>dBa</b></p> <p>Decibel (A-weighted scale); unit used for most measurements of environmental noise; the scale is based upon typical responses of the human ear to sounds of different frequencies.</p>

<p>dB</p> <p>Linear decibels; measurable effect of an event (e.g. blast) on air pressure including measurement of generated energy which is below the limit of human hearing.</p>	<p>Groundwater</p> <p>All waters occurring below the land surface; the upper surface of the soils saturated by groundwater in any particular area is called the watertable.</p>
<p>Decommissioning</p> <p>Removal or reuse of infrastructure.</p>	<p>Habitat</p> <p>The particular local environment occupied by an organism.</p>
<p>Drawdown</p> <p>The localised lowering of groundwater level.</p>	<p>Hardstand areas</p> <p>Flat or gently sloping surface that has been engineered such that it is suitable for trafficking by vehicles and/or location of infrastructure.</p>
<p>Ecologically Sustainable Development (ESD)</p> <p>Development that improves the quality of life, in a way that maintains the ecological processes on which life depends.</p>	<p>Hydraulic conductivity</p> <p>A measure of the rate at which water moves through a soil/rock mass. It is the volume of water that moves within a unit of time under a unit hydraulic gradient through a unit cross-sectional area that is perpendicular to the direction of flow.</p>
<p>Ecosystem</p> <p>An interacting system of animals, plants, other organisms and non-living parts of the environment.</p>	<p>Hydraulic gradient</p> <p>The change in static head (i.e. elevation and pressure) per unit of distance in a given direction (units: dimensionless).</p>
<p>Electrical Conductivity (EC)</p> <p>The ability of a substance (either solid, liquid or gas) to transmit electricity.</p>	<p>Hydraulic properties</p> <p>Parameters which measure the rate at which water moves through a soil/rock mass.</p>
<p>Emission</p> <p>The discharge of a substance (e.g. dust) into the environment.</p>	<p><i>in-situ</i></p> <p>A term used to distinguish material (e.g. soils, minerals, fossils, etc.) found in its original position of formation, deposition, or growth, as opposed to transported material.</p>
<p>Final void</p> <p>A depression below the natural ground level at the completion of open cut mining and closure.</p>	<p>Infrastructure</p> <p>The supporting installations and services that supply the needs of the Project.</p>
<p>Greenhouse gases</p> <p>Gases with potential to cause climate change (e.g. methane, carbon dioxide and non-methane volatile organic compounds). Usually expressed in terms of carbon dioxide equivalent.</p>	

Interburden	Rock material that separates two economically viable coal seams	Mitigation	Measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.
Inter-generational equity	The concept that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	Overburden	Waste rock material overlying <i>in-situ</i> coal that must be removed prior to mining of coal.
Intra-generational equity	The concept that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of their own generation.	Permeability	The ability of a rock or soil to allow fluid to pass through it.
L <sub>A10</sub>	A-weighted noise exceeded by 10% for the measurement period. Commonly referred to as the average maximum.	Permian age	The youngest geological period of the Palaeozoic era, covering a span between approximately 290-250 million years.
L <sub>Aeq</sub>	A-weighted equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.	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).
Land capability	A method of land use assessment used to estimate the ability of the land to support a particular land use. Classification is based on an assessment of the land's biophysical characteristics.	Population	A group of individuals of one species in an area.
Mine water	Water that accumulates within or drains from, active mining and infrastructure areas, and any other areas where runoff may have come in contact with carbonaceous material.	Rating Background Level (RBL)	The overall single-figure sound background level representing each assessment period (day/evening/night) over the whole monitoring period, and is the level used for assessment purposes.
		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.

<p>Rehabilitation</p> <p>The restoration of a landscape and especially the vegetation following its disturbance.</p>	<p>the Approved Mine</p> <p>The approved Vickery Coal Project.</p>
<p>Remnant Vegetation</p> <p>Native vegetation remaining after widespread clearing has taken place.</p>	<p>the Project</p> <p>The Vickery Extension Project.</p>
<p>Riparian</p> <p>Pertaining to, or situated on, the bank of a body of water, especially a watercourse such as a river.</p>	<p>Topsoil</p> <p>The upper or top layer of soil, that typical has higher levels of organic matter and associated micro-organisms.</p>
<p>Runoff</p> <p>A portion of precipitation (rain, hail and snow) that flows across the ground surface as water.</p>	<p>Total suspended particulate matter (TSP)</p> <p>The mass of all particulate matter suspended in a solution (e.g. the air).</p>
<p>Salinity</p> <p>The total content of dissolved solids in groundwater or surface water, commonly expressed as parts of dissolved solids per million parts of solution, or milligrams of dissolved solids per litre of solution (mg/L).</p>	<p>Total suspended solids (TSS)</p> <p>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).</p>
<p>Spontaneous combustion</p> <p>Self heating and ignition of a combustible material such as coal.</p>	<p>Tributary</p> <p>A smaller watercourse, which discharges into a larger watercourse.</p>
<p>Stakeholder</p> <p>Any individual, group or organisation that can affect, be affected by, or perceive itself to be affected by the behaviour of a company or an organisation.</p>	<p>Value-added</p> <p>The difference between the value of a firm’s output and the cost of the inputs of raw materials, components or services brought in to produce that output.</p>
<p>Temperature inversion</p> <p>An atmosphere phenomenon in which air temperature increase with height over a particular interval.</p>	<p>Waste rock</p> <p>Uneconomic rock extracted from the ground during mining operation to gain access to the coal.</p>
<p>Terrestrial</p> <p>Living or growing on the land.</p>	<p>Whitehaven CHPP</p> <p>The CHPP located 5 km north-west of Gunnedah which is approved to process ROM coal from Whitehaven mining operations.</p>