

# Glossary and abbreviations 29

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## 29 Glossary and abbreviations

### 29.1 Glossary

Term	Definition
ARI	A term used to assess rainfall data, which describes the average or expected time periods between exceedances of a given rainfall total accumulated over a given duration. The periods between exceedances are generally random.
Access track	Cleared and graded track constructed where existing tracks are not available.
Acid rain	Rain containing acids that form in the atmosphere when industrial gas emissions (especially sulphur dioxide and nitrogen oxides) combine with water.
Acid sulfate soils	Soil that contains oxidised iron sulphides (actual acid sulfate soils) and/or soil that contains iron sulphides or other sulfidic material that has not been exposed to air and oxidised (potential acid sulfate soils). The term acid sulfate soil generally includes both actual and potential acid sulfate soils. Actual and potential acid sulfate soils are often found in the same soil profile, with actual acid sulfate soils generally overlying potential acid sulfate soil horizons.
Acoustics	The science of sound and sound waves.
Active	A term applied to groundwater bores that are able to continue to provide a reasonable yield of water in terms of quality and quantity for the bores authorised purpose or use.
Adsorption	The binding (i.e. adhesion) of molecules from a gas, liquid or dissolved solid to the surface of solids.
Aerobic	Conditions that can exist only in the presence of free oxygen.
Affected person	An affected person under the <i>Environmental Protection Act 1992</i> (Qld) includes those who have a registered interest in the land or that which adjoins it and the relevant local government.
A-horizon	See <i>topsoil</i> .
Airshed	Volume of air generally confined to a distinct geographic region.
Alignment	The line or lines that describe a linear-infrastructure route; it defines how linear infrastructure (such as a road, railroad or pipeline) will be located in relation to the features encountered along the route.
Alkaline	Having the properties of any of various bases; the hydroxides of the alkali metals and of ammonium, which neutralise acids to form salts.
Alluvial	Sediments deposited following a decrease in velocity of flowing water.
Alluvium	General term for unconsolidated deposits of inorganic materials (clay, silt, sand, gravel, boulders) deposited following a decrease in velocity of flowing water.
Alluvium aquifer	An aquifer formed within alluvium. See <i>Alluvium</i> .
Ambient air quality	The state of quality of air as it exists in the environment.
Ambient background noise	The ambient noise present in the environment at a particular location in the absence of the noise source of interest.
Ambient noise	The total noise in the environment, often composed of sound from many sources.
Anabranching system	Group of distributary channels that leave a main channel and then rejoin it sometimes many kilometres downstream.
Anaerobic	Process taking place in the absence of oxygen.
Annual daily traffic	The average traffic volume expected over a 24 hour period in a given year.
Annual exceedance probability	The probability that a given total accumulated over a given duration will be exceeded in any one year.
Anthropogenic	Associated with or relating to human influence (or impact) on the environment.
Appraisal well	A petroleum well to test the potential of one or more natural underground reservoirs for producing or storing petroleum. For clarity, an appraisal well is not an exploration well.

Term	Definition
Aquaculture	Cultivation of the food resources of the sea or inland waters.
Aquatic ecosystems	The physical and chemical environment that contains a community of organisms (plants, animals, and microbes), and ecological processes within rivers and their riparian zones and reservoirs, lakes, wetlands and their fringing vegetation.
Aquifer	Rock or sediment in a formation, group of formations or part of a formation that is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.
Aquifer testing	The process where an aquifer is subjected to pumping to assess the hydraulic parameters of the aquifer.
Aquitard	Saturated geological unit with a relatively low permeability that can store large volumes of water but does not readily transmit or yield significant quantities of water to bores or springs. An aquitard can sometimes, if completely impermeable, be called an aquiclude.
Arable	Capable of producing crops or grazing land.
Arboreal	Living in or among trees.
Archaeology	The systematic study of a culture by excavation and description of its remains.
Area of disturbance	The area where existing features of the environment are physically displaced, leading to potential impacts.
Artesian aquifer	A confined aquifer whose water is pressurised i.e. if tapped by a bore, would flow naturally to the surface.
Artesian bore	A term commonly used to describe a bore that taps into an artesian aquifer.
Australian Height Datum (AHD)	A level datum that generally approximates mean sea level. The datum is treated as uniform throughout Australia.
Authorised person	A person holding office as an authorised person under an appointment under the <i>Environmental Protection Act 1994</i> (Qld) by the chief executive of a local government.
Authority to prospect (ATP)	Petroleum tenure granted under the <i>Petroleum Gas (Production and Safety) Act 2004</i> (Qld) or the <i>Petroleum Act 1923</i> (Qld) allowing the holder to undertake petroleum exploration activities and studies to evaluate the development potential of a defined resource.
Auxiliary lane	An additional lane added to the carriageway for safety and/or intersection capacity purposes.
A-weighted	A term used in noise assessments, which describes the frequency filter that approximates the subjective response of human hearing. A-weighted sound pressure levels are designated as dB(A).
Background creep	The gradual increase in background noise levels in an area as a result of successive developments generating simultaneous noise levels at a particular location.
Background noise	The existing noise level in the GFD Project area excluding the impacts from the GFD Project.
Basalt	The dark, fine-grained igneous rock of a lava flow, composed primarily of plagioclase and pyroxene. It sometimes displays a columnar structure.
Baseflow	The component of a watercourse that is derived from groundwater discharge to the river or stream.
Baseline	A basic standard or level, usually regarded as a reference point for comparison.
Bed and banks	For a watercourse or wetland, this means land over which the water normally flows or that is normally covered by the water, whether permanently or intermittently; but does not include land adjoining or adjacent to the bed or banks that is from time to time covered by floodwater.
Beneficial use	An alternative reuse for a waste material such as coal seam water or salt residues that changes the status of the material from a waste to a resource that can be used for a beneficial purpose.
Best practice environmental management	Management of an activity to achieve ongoing minimisation of the activity's environmental harm through cost-effective measures, assessed against the measures currently used nationally and internationally for the activity.

Term	Definition
B-horizon	An intermediate layer of soil beneath the A-horizon containing organic matter and clay.
Biocondition	The degree to which the attributes of a patch of vegetation differ from the attributes of the same vegetation in its reference (undisturbed) state.
Biodiversity	The number and variety of organisms found within a specified geographic region or within a given ecosystem.
Biodiversity status	<p>Biodiversity status is used for a range of planning and management applications including biodiversity planning assessments and to determine environmentally sensitive areas that are used for the regulation of the extractive industry through provisions in the <i>Environmental Protection Act 1994</i> (Qld).</p> <p>Biodiversity status is ascertained through assessing the condition of an ecosystem's remnant vegetation. An ecosystem's biodiversity status is listed according to classes as defined in the <i>Vegetation Management Act 1999</i> (Qld). The classes, which are defined elsewhere in this glossary are defined within Vegetation Management Act conservation status.</p>
Bioregion	Landscape pattern that reflects changes in geology and climate, as well as major changes in floral and faunal assemblages at a broad scale.
Biosecurity	Security measures against the transmission of disease to the plants or animals of a particular region.
Bore	<p>Artificially constructed or improved groundwater cavity used for the purpose of accessing or recharging water from an aquifer.</p> <p>Interchangeable with <i>borehole</i>, <i>piezometer</i>.</p>
Borrow pit	Quarry pit created to provide soil, sand, gravel or rocks that can be used as fill or construction material at another location.
Brackish	Water that contains between 500 and 10,000 milligrams per litre of dissolved solids according to National Water Commission.
Brigalow Belt	The bioregion that spans inland and eastern Queensland from Townsville in the north to northern New South Wales, covering an area of 36,400,000 ha. The bioregion, as its name implies, is characterised by brigalows. The bioregion also supports a range of ecosystems including eucalypt forest and woodlands, grassland, dry rainforest, cypress pine and riparian communities.
Brine	Saline water with a total dissolved solid concentration of greater than 40,000 milligrams per litre (mg/L). May be a wastewater produced by the desalination of coal seam water (e.g. by reverse osmosis).
Buffer	An area of land separating adjacent land uses that is managed for the purpose of mitigating impacts of one use on another. A buffer area consists of a separation distance and one or more buffer elements.
Bund (or bunding)	Wall of a secondary containment system, usually in the form of an embankment, used to prevent sediment and liquids from entering the environment.
Cadastral	Relating to the official register of property, with details of boundaries, ownership, etc.
Cainozoic	Relating to the geological era of rocks of most recent age (65.5 million years ago to present).
Carbon dioxide equivalent (CO <sub>2</sub> -e)	Greenhouse gas emissions unit used to provide a common unit of measure between the various greenhouse gases due to their differing global warming potential.
Carbon monoxide	Toxic, colourless and odourless gas produced by burning fuels.
Catchment	The area of land that collects and transfers rainwater into a waterway.
Category A environmentally sensitive area (ESA)	Means any environmentally sensitive area listed in Section 25 of the <i>Environmental Protection Regulation 2008</i> (Qld).
Category B environmentally sensitive area (ESA)	Means any environmentally sensitive area listed in Section 26 of the <i>Environmental Protection Regulation 2008</i> (Qld).



Term	Definition
Category C environmentally sensitive area (ESA)	Means any of the following environmentally sensitive areas: <ul style="list-style-type: none"> <li>• Nature refuges and resources reserves as defined under the <i>Nature Conservation Act 1992</i> (Qld)</li> <li>• Koala habitat areas as defined under the <i>Nature Conservation Act 1992</i> (Qld)</li> <li>• State forests or timber reserves as defined under the <i>Forestry Act 1959</i> (Qld)</li> <li>• Declared catchment areas under the <i>Water Act 2000</i> (Qld)</li> <li>• An area identified as 'essential habitat' for a species of wildlife listed as endangered, vulnerable, rare or near threatened under the <i>Nature Conservation Act 1992</i> (Qld)</li> <li>• Any wetland shown on the map of referable wetlands available from Queensland Department of Environment and Heritage Protection's website</li> <li>• Of concern regional ecosystems identified in the database maintained by Queensland Department of Environment and Heritage Protection called 'Regional Ecosystem Description Database' containing regional ecosystem numbers and descriptions.</li> </ul>
Chemical evolution	Changes and trends in the chemistry of groundwater as it moves through different aquifers and rock types over geologic time.
Chemical Transport Model (CTM)	The CSIRO chemical transport model used in conjunction with The Air Pollution Model to model complex chemical transformations.
Clay	Deposit of particles with a diameter less than 0.002 mm, typically contain variable amounts of water within the mineral structure, and exhibit high plasticity.
Clearing	For vegetation – means removing, cutting down, ringbarking, pushing over, poisoning or destroying in any way including by burning, flooding or draining; but it does not include destroying standing vegetation by stock, or lopping a tree.
Cleat	Natural fracture within a coal bed, accounting for most of the permeability and much of the porosity of coal seam gas reservoirs.
Climate change	Any change in long term climatic conditions over time, whether due to natural variability or as a result of human activity.
Climate change adaptation	Actions in response to actual or projected climate change and impacts that lead to a reduction in risks or realisation of benefits.
Climate change projection	A projection of the response of the climate system to scenarios of greenhouse gas emissions or atmospheric concentrations of greenhouse gases; often based upon simulations by computer based mathematical models depending on assumptions and response of the climate system to changes in these variables and can therefore be distinguished from climate predictions.
Coal	Carbon-based sedimentary rock formed by the accumulation and decomposition of plant material in layers, which can be used as a combustible fuel. Main types, in order of highest to lowest rank of energy density, are black coal (anthracite, bituminous, sub-bituminous), and brown coal (lignite).
Coal seam gas	Natural gas extracted from coal seams.
Coal seam water	Groundwater produced at the surface by the depressurisation of coal seams during gas production.
Coffer dam	Watertight enclosure constructed in a watercourse and then pumped dry so that bridge foundations, pipeline crossings, etc. may be constructed in the open.
Colluvium	General term applied to any loose, heterogeneous and incoherent sediment such as soil material and/or rock fragments transported by gravity and deposited or built up at the bottom of a low-grade slope.
Computable general equilibrium model	A whole of economy model that captures the interactions between different sectors of the economy through a series of simultaneous equations. CGE models can be used to estimate how an economy might respond to changes in government policy, technology, investments or other external factors relative to a baseline.
Conceptual project design	Proposed configuration, layout and timeframes for development of the GFD Project, established for the purpose of environmental impact assessment.
Confined aquifer	An aquifer bounded above and below by impervious (confining) layers. In a confined aquifer, the water is under sufficient pressure so that when wells are drilled into the aquifer, measured water levels rise above the top of the aquifer.

Term	Definition
Confining layer	Layer of low permeability material underlying or overlying an aquifer, which restricts the vertical movement of water.
Conglomerate	Consolidated gravel consisting of rounded and waterworn pebbles etc. embedded in a finer cementing material.
Conservation significant species	See <i>Threatened species</i> .
Consolidated aquifer	Water bearing rock aquifer such as sandstone, coal, limestone, granite, etc.
Constraints mapping	The processes used to assess the environmental framework for development where by areas of environmental sensitivity are graphically depicted to determine areas where development may be constrained.
Contamination	The introduction of a pollutant into the environment.
Contour plot	Graphical technique for representing a three-dimensional surface by plotting contours, in a two-dimensional format.
Controlled action	A proposed action designated under the controlling provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) that is likely to have a significant impact on a matter of national environmental significance, the environment of Commonwealth land (even if taken outside Commonwealth land).
Controlling provision	Under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth): an action that a person proposes to take is a <i>controlled action</i> if the taking of the action by the person without approval under Part 9 for the purposes of a provision of Part 3 would be (or would, but for section 25AA or 28AB, be) prohibited by the provision. The provision is a <i>controlling provision</i> for the action.
Cover material	Soil, alluvium, weathered basalt or other suitable plant-growth medium, typically non-crusting and of low salinity, placed on reshaped spoil surfaces.
Cretaceous	Relating to the third period within the Mesozoic era beginning approximately 145.6 million years ago and ending approximately 65 million years ago.
Critical habitat	The whole or any part or parts of an area or areas of land comprising the habitat of an endangered species, an endangered population or an endangered ecological community that is critical to the survival of the species, population or ecological community. Critical habitat is listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth).
Critically endangered	See: <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (EPBC Act) conservation status.
Crowding out	When one activity competes with other sectors of the economy for a relatively fixed amount of inputs to the production process (e.g. labour, capital or other goods and services). It can also be caused by increased pressure on the output side, by competing in a market that displays relatively inelastic demand. This can create a displacement of economic activity towards the sector and region generating the excess demand.
Crustacean	An arthropod with jointed appendages, a hard protective outer shell, two pairs of antennae and eyes on stalks (e.g. crabs, prawns, etc.).
Cultural heritage	Indigenous and non-Indigenous items and areas (commonly referred to as places) that are a significant indicator of historical and cultural events and practices.
Cultural significance	The meaning or value ascribed to the cultural landscape. It normally stems from a combination of association and integrity.
Culvert	Covered channel that carries water, often covered by a bridge or a road.
Cumulative impact	The combined impact to one or more environmental values delivered by multiple projects being undertaken simultaneously within the same sphere of physical influence.
Dam	An engineered land-based structure that is designed to contain, divert or control liquid. A dam does not mean a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.
Decibel [dB]	A unit of sound level measurement.

Term	Definition
Decibel [dB] A weighted [A]	The method of frequency weighting the electrical signal from a noise measuring instrument to simulate the way the human ear responds to a range of acoustic frequencies. The symbols for the noise parameters often include the letter "A" (e.g. LAeq) to indicate that frequency weighting has been included in the measurement.
Declared pests	An animal or plant declared under the <i>Land Protection (Pest and Stock Route Management) Act 2002</i> (Qld).
Deep groundwater	Groundwater resources associated with aquifers and resources at depths >100 m.
Demography	The range of different groups existing in a particular populace, as distinguished by factors such as age, ethnicity, social background, etc.
Depressurisation	The lowering of the groundwater elevation over an area.
Desalinate	To remove dissolved salts from saline water so that it becomes suitable for beneficial uses (e.g. drinking water or for agricultural irrigation) or release to the environment.
Dewatering	Draining, permanently or temporarily, partially or fully, a wet area of land or an aquifer.
Direct economic impact	A measure of the total value added in a defined geographical region directly attributable to a given event, organisation or industry.
Direct impacts	Impacts that result from a direct interaction between GFD Project activities and the receptor (e.g. land clearing resulting in vegetation and habitat loss).
Directional drilling	Technique of drilling non-vertical or horizontal wells to intercept the target coal formations.
Discharge area	That part of the land surface where groundwater discharge produces a net movement of water out of the groundwater.
Dissolved oxygen (DO)	The amount of oxygen dissolved in water.
Dissolved solids	Minerals and organic matter dissolved in water; a measure of salinity.
Disturbance	A physical displacement of existing features that leads to impacts.
Diversion channel	A constructed waterway used to redirect drainage lines and watercourses around infrastructure areas.
Drawdown	The decline in the groundwater level in a bore from the standing water level when influenced by pumping.
Drilling rig	A machine that creates holes (usually called wells or bores) in the ground.
Easement	Legal term used to describe land over which a third party has rights to locate infrastructure and undertake certain activities.
Ecological	Relating to the relationships between organisms and their environment.
Ecological community	An assemblage of species occupying a particular area.
Ecological sustainability	The capacity of a development to continue operating perpetually, and avoid adverse effects on ecology.
Ecology	Scientific study of abundance, distribution and interactions between organisms and their natural environment.
Ecosystem	An organic community of plants, animals and bacteria and the physical and chemical environment they inhabit.
Emission factor	Calculation factor expressing greenhouse gas emissions per unit of activity.
Endangered	See: <i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i> (EPBC Act) conservation status; <i>Nature Conservation Act 1992 (Qld)</i> conservation status; <i>Vegetation Management Act 1999 (Qld)</i> (VM Act) conservation status.
Endemic	Native to a country or a locality, although also found elsewhere.
Environmental authority (EA)	A licence to operate, issued in accordance with the <i>Environmental Protection Act 1994</i> (Qld), that imposes conditions on authorised activities to reduce or avoid potential environmental impacts; used by Queensland Department of Environment and Heritage Protection to assess and administer regulatory environmental compliance of a project.
Environmental flow	Water flow regimes required to sustain freshwater and estuarine ecosystems e.g. to deliver nutrients and sediment downstream, etc.



Term	Definition
Environmental impact statement (EIS)	A document prepared to identify, describe and assess the potential impacts of a proposed action on the environment, and document ways to mitigate such impacts; it should provide sufficient detail to inform a decision on the proposal.
Environmental management plan (EMP)	Document that provides operational detail of how environmental management measures identified in the environmental impact statement will be implemented.
Environmental nuisance	An unreasonable interference or likely interference with an environmental value caused by noise, dust, odour or light; caused by an unhealthy, offensive or unsightly condition or in another way prescribed by regulation.
Environmental offsetting	If a project has a significant residual impact in one area, environmental offsetting facilitates an environmental gain in another area.
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) conservation status	<p>Under the EPBC Act, listed threatened species and ecological communities are assigned a conservation status of extinct in the wild, critically endangered, endangered or vulnerable. Definitions of these terms under the EPBC Act are as follows:</p> <p><b>Extinct in the wild</b></p> <ul style="list-style-type: none"> <li>It is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range</li> </ul> <p><b>or</b></p> <ul style="list-style-type: none"> <li>It has not been recorded in its known and / or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.</li> </ul> <p><b>Critically endangered</b></p> <p>It is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.</p> <p><b>Endangered</b></p> <p>While the species or community is not critically endangered, it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.</p> <p><b>Vulnerable</b></p> <p>It is not critically endangered or endangered and it is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria</p>
Environmental values	Desirable characteristics, properties and behaviours or an aspect of the environment.
Environmentally relevant activity (ERA)	An activity with potential to release contaminants into the environment defined in schedule 2 of the <i>Environmental Protection Regulation 2008</i> (Qld).
Environmentally sensitive area (ESA)	Location, however large or small, that has environmental values recognised in the <i>Environmental Protection Act 1994</i> (Qld) that contribute to maintaining biological diversity and integrity; has intrinsic or attributed scientific, historical or cultural heritage value; or is important in providing amenity, harmony or sense of community.
EPBC threshold criteria	The rules or principles used to measure the significance of a plant, animal or ecosystem against the requirements of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth).
Ephemeral	Relates to the amount of time that surface water persists in a watercourse or wetland; ephemeral watercourses flow only during significant rainfall events and for a short-time following rainfall events.
Equivalent person	An equivalent person under volume 1, section 2 of the <i>Guidelines for Planning and Design of Sewerage Schemes, October 1991</i> , published by the Water Resources Commission, Department of Primary Industries, Fisheries and Forestry.
Erosion	Wearing away of rock or soil caused by physical or chemical processes.
Erosion stability	The ability of an area to resist the natural forces of soil erosion.

Term	Definition
Essential habitat	For species of wildlife listed as endangered, vulnerable, rare, or near threatened under the <i>Nature Conservation Act 1992 (Qld)</i> , an area of vegetation shown on the regional ecosystem map or remnant map as remnant vegetation: <ul style="list-style-type: none"> <li>(a) that has at least three essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database, or</li> <li>(b) in which the protected wildlife, at any stage of its life cycle, is located.</li> </ul> Essential habitat areas are identified on a map certified by the chief executive of Queensland Department of Environment and Heritage Protection for the purposes of the <i>Vegetation Management Act 1999 (Qld)</i> .
Estuarine	Formed in an estuary.
Exploration well	A petroleum well that is drilled to: <ul style="list-style-type: none"> <li>• Explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum, or</li> <li>• Obtain stratigraphic information for the purpose of exploring for petroleum.</li> </ul> For clarity, an exploration well does not include an appraisal or production well.
Exploring for petroleum	Carrying out an activity for the purpose of finding petroleum or natural underground reservoirs as per section 14 of the <i>Petroleum Gas (Production and Safety) Act 2004 (Qld)</i> , for example including: <ul style="list-style-type: none"> <li>• Conducting geochemical, geological or geophysical survey</li> <li>• Drilling a well</li> <li>• Carrying out testing in relation to a well</li> <li>• Taking a sample for chemical or other analysis.</li> </ul>
Extinct in the wild	See: <i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i> (EPBC Act) conservation status; <i>Nature Conservation Act 1992 (Qld)</i> (NA Act) conservation status.
Extreme event	Weather conditions that are rare for a particular place and/or time such as an intense storm or heat wave.
Fault	Zone of displacement in rock formations resulting from forces of tension or compression in the earth's crust.
Fauna	The animals of a given region or period, taken collectively.
Feral	Animal existing in a wild or untamed state, having escaped from domestication.
Fill	Any kind of material in solid form (whether or not naturally occurring) capable of being deposited at a place but does not include material that forms a part of, or is associated with, a structure constructed in a watercourse, wetland or spring including a bridge, road, causeway, pipeline, rock revetment, drain outlet works, erosion prevention structure or fence.
Flare pit	An earthen containment area in which waste gases and liquids released during drilling are combusted.
Floodplain	Flat or nearly flat land adjacent a stream or river that stretches from the banks of its channel to the base of the enclosing valley walls and experiences flooding during periods of high flow.
Flora	The plants of a given region or period, taken collectively.
Fluid injection wells	Wells that are used to manage concentrate (fluid) from desalination treatment. The fluid is injected into deep, saline fractured basement rock formations. Fluid injection wells will comprise similar surface facilities to that established for production wells, plus associated storage tanks and treatment facilities (e.g. sterilisation and de-oxygenation units, treatment chemicals, pressure pumps and control systems).
Fluvial geomorphology	The study of river-related landforms and the processes that shape them.
Footprint	See <i>Area of disturbance</i> .
Foreseeable future	The period used for assessing the total probability of an event occurring. Permanent structures and ecological sustainability should be expected to still exist at the end of a 150 year foreseeable future with an acceptably low probability of failure before that time.

Term	Definition
Forest reserve	Tenure of an interim nature for a maximum of five years and managed by the Environmental Protection Agency with associated conditions under the <i>Nature Conservation Act 1992</i> (Qld).
Forestry entitlement area	Land in a deed of grant or freeholding lease where the commercial timber and the land on which it stands is reserved by the State of Queensland.
Fossil fuel	Hydrocarbon deposit, such as petroleum, coal, or natural gas, derived from alteration of living matter of a previous geologic time, and used for fuel.
Fracture	Any break in a rock including cracks, joints and faults.
Fractured aquifer	An aquifer that owes its water-bearing properties to fracturing caused by folding and faulting.
Fragmentation	Discontinuities in an organism's preferred habitat.
Freehold	Land held by the State in Fee Simple (freehold title) which includes titles surrendered to the State of Queensland (or Crown) in terms of Section 358 of the <i>Land Act 1994</i> (Qld).
Fresh water	Water that contains less than 1,000 milligrams per litre dissolved solids.
Fugitive dust	Dust derived from a mixture of non-point or not easily defined sources; examples include dust from vehicular traffic on unpaved roads, materials transport and handling and disturbed (unvegetated) soils and surfaces.
Fugitive emission	Emission of gases or vapours from industrial activities due to leaks and various other unintended or irregular releases of gases.
Full-time equivalent (FTE)	<p>A ratio of the total number of paid hours during a fixed time period by the number of hours worked in that period.</p> $FTE = \frac{\text{Total paid hours worked in given period}}{\text{Normal working hours in given period}}$
Functional vegetation	Vegetation that consists of species able to survive and regenerate under specific conditions, providing soil erosion control and fauna habitat.
Gas compression facility	A facility that houses multiple compressor units, either nodal or hub compressors or a mixture of both used to increase the pressure of gas for the purpose of transmission; may be collocated with a gas treatment facility and/or water management facility.
Gas field	Geographic area delineated by petroleum tenure that is developed for a natural gas resource.
Gas gathering lines	High-density polyethylene pipelines through which natural gas flows from a wellhead to gas compression facility under low pressure.
Gas reserve	The quantity of gas in a natural gas field.
Gas treatment facility	A facility that may use various treatment technologies to remove heavy hydrocarbon gases (e.g. ethane, propane, butane, pentane, hexane and heptane), moisture and other impurities from the gas to meet supply specifications.
Gathering network	Integration of multiple gathering lines.
Geochemistry	The chemical characteristics of a soil or rock material.
Geographical information system (GIS)	Computer system that can capture, store, analyse, and present in various ways data that locates places on the earth's surface.
Geomorphic process	Chemical, physical or biological operation at the earth's surface that shape the landscape and its deposits.
Geomorphology	Study of the physical features of the surface of the earth and their relation to underlying geological structures.

Term	Definition
GFD Project area	<p>The Gas Field Development Project area is located across in the Surat and Bowen basins consists of the GFD Project gas fields and adjacent areas. The tenure that comprises the GFD Project include::</p> <ul style="list-style-type: none"> <li>• Arcadia gas field – PL 233, PL 234, PL 235, PL 236, ATP 526P (5 parts), ATP 653P (1 part), ATP 745P (2 parts), ATP 804P (1 part), PLA 420, PLA 421, PLA 440 (2,726 km<sup>2</sup>)</li> <li>• Fairview gas field – PL 90, PL 91, PL 92, PL 99, PL 100, PL 232, ATP 655P (2 parts) (1,962 km<sup>2</sup>)</li> <li>• Roma gas field – PL 3 (313), PL 6 (316), PL 7 (317), PL 8 (318), PL 9 (319), PL 10 (320), PL 11 (321), PL 13 (322), PL 93 (323), PL 309, PL 310, PL 314, PL 315, PLA 281, PLA 282, ATP 336P (2 parts), ATP 631P (2 parts), ATP 665P (2 parts), ATP 708P (1 part) (4,383 km<sup>2</sup>)</li> <li>• Scotia gas field – PL 176, ATP 803P (1 part), ATP 868P (1 part) (1,605 km<sup>2</sup>).</li> </ul>
GFD Project life	The total duration of the construction, operations and decommissioning phases of the GFD Project.
Gilgai	A small ephemeral lake that forms in the soil depressions; they typically form over certain clay soils (vertisols), which swell and shrink through the addition and evaporation of water. Known as mima mounds, hogwallows and melon holes.
Gladstone gas transmission pipeline	The 420 kilometre long gas pipeline that transmits compressed gas at high-pressure, typically 10 to 15 megapascals, from gas compression facilities in the gas fields to export facilities at Gladstone; part of the GLNG Project approved via the 2009 EIS.
Global climate models	Computer generated simulations developed to predict future weather and climate trends. This includes taking into account changes in greenhouse gas concentrations in the atmosphere. Also referred to as general circulation models or climate models.
Global warming potential	Measure of how much a given mass of greenhouse gas is estimated to contribute to global warming. It is a relative scale that compares the gas in question to that of the same mass of carbon dioxide (CO <sub>2</sub> ) with global warming potential of 1.
Good quality agricultural land (GQAL)	Agricultural land of high quality as defined by <i>State Planning Policy 1/92: (Development and the Conservation of Agricultural Land) Order</i> .
Greenfield	Of or relating to land that has not previously been developed or polluted.
Greenhouse gas	Any of the atmospheric gases that contribute to the greenhouse effect by absorbing infrared radiation produced by solar warming of the Earth's surface; including carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), nitrous oxide (N <sub>2</sub> O) and water vapour.
Greenhouse Gas Protocol	Corporate accounting and reporting standards for greenhouse gas emissions developed by the World Resources Institute and the World Business Council for Sustainable Development.
Gross domestic/state/regional product (GDP/GSP/GRP)	The market value of officially recognised final goods and services produced within a country/state/region in a given period. Final goods and services are defined as those which are not used to produce other goods or services.
Groundwater	Water found in the subsurface in the saturated zone below the water table or piezometric surface i.e. the water table marks the upper surface of groundwater systems.
Groundwater flow	The movement of water through openings and pore spaces in rocks below the water table, i.e. in the saturated zone.
Groundwater resource	Groundwater available for beneficial use, including human usage, aquatic ecosystems and the greater environment.
Groundwater vulnerability	The tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer.
Habitat	The area or natural environment in which an organism or population normally lives. A habitat is made up of physical factors such as soil, moisture, range of temperature, and availability of light as well as biotic factors such as the availability of food resources and the presence of predators.

Term	Definition
Hazardous material	Substance that, if improperly treated, stored, disposed of, or otherwise managed, is likely to cause serious or material environmental harm because of (a) its quantity, concentration, acute or chronic toxic effects, carcinogenicity, teratogenicity, mutagenicity, corrosiveness, explosiveness, radioactivity, or flammability or (b) its physical, chemical, or infectious characteristics.
Heavy vehicle	Any vehicle with three or more axles or with dual tyres on the rear axle.
HERBRECS	Database maintained by the Queensland Herbarium that provides a list of specimens and collections for a specified search area.
Heritage place	Any place that may be of cultural heritage significance, or any place with potential to contain archaeological artefacts that are an important source of information about Queensland's history.
Heritage precinct	A wider area that contains a number of historic and archaeological sites.
Heritage values	An object, site, area, or landscape that holds aesthetic, historic, scientific, social or spiritual value for past, present or future generations.
Heterogeneous regional ecosystem polygon	An area (polygon) comprising a mixture of regional ecosystems types; allows mapping of areas of vegetation that would normally be too small to map, to be shown at the scale which regional ecosystems are normally mapped.
High bank	The defining terrace or bank or, if no bank is present, the point on the active floodplain, which confines the average annual peak flows in a watercourse.
High pressure	Gas flow of 10 to 15 megapascals such as the pipeline pressure in the Gladstone gas transmission pipeline.
High value regrowth	Regulated regrowth vegetation includes vegetation that falls into one of the following categories: <ul style="list-style-type: none"> <li>• Vegetation identified on a regrowth vegetation map as high value regrowth vegetation</li> <li>• Vegetation located within 50 metres of a watercourse, which is identified on the regrowth vegetation map as a regrowth watercourse</li> <li>• Vegetation contained in a category C area on a property map of assessable vegetation.</li> </ul> High-value regrowth vegetation is mature native vegetation that has not been cleared since 31 December 1989.
Highly erodible soils	Very unstable soils that are generally described as sodosols with hard-setting, fine sandy loam to silty clay loam surfaces (solodics, solodised solonetz and solonetz), soils with a dispersible layer located less than 25 centimetres deep or soils less than 25 centimetres deep.
Highway	High-order road of a high standard, facilitating connectivity between population centres.
Holocene	Holocene is the name of a geological time epoch commencing ~10,000 years ago and extending to present. Pre-Holocene is the time proceeding this epoch.
Homogeneous regional ecosystem polygon	An area (polygon) delineated on a map of regional ecosystems comprising a single regional ecosystem.
Hub compressor	Second stage gas compression; compresses gas to the pressure required for transmission via the Gladstone gas transmission pipeline (or third party transmission pipeline); minimum inlet pressure is 1,500 kilopascals; typically operated remotely.
Hydraulic conductivity	Measure of the ease with which water will pass through earth material; defined as the rate of flow through a cross-section of one square metre under a unit hydraulic gradient at right angles to the direction of flow (metres per day).
Hydraulic fracturing	Hydraulic fracturing in coal seam gas production involves pumping a fluid under pressure into a coal seam to open up and connect fractures within the coal, increasing the opportunity for gas to move within the coal seam and flow toward the well.
Hydraulic gradient	Change in hydraulic head over a certain distance.
Hydraulic head	Elevation to which water will rise in a borehole connected to a point in an aquifer.
Hydrogeology	The study of the interrelationships of geological materials and processes with water, especially groundwater.



Term	Definition
Hydrograph	Graph that shows groundwater or surface water properties as a function of time.
Hydrostatic testing	The process in which a pipeline is filled with water and subjected to higher than normal operational pressures to test its physical integrity (also referred to as hydro-testing).
Hydrotest water	Water used for hydrostatic testing of pipeline integrity.
Igneous rock	Rock formed from magma that has cooled and solidified either at the earth's surface (volcanic rock) or deep within the earth's crust (plutonic rock).
Impact	An event that alters ecosystem, community, or population structure and alters the physical environment, directly or indirectly. An impact may have a short or long duration.
Impermeable subsoil	Layer of soil below the topsoil that slows or stops infiltration.
Indirect economic impact	The flow-on value added generated in other sectors of the economy as a result of the demand stemming from a given event, organisation or industry.
Indirect impacts	Impacts that are not a direct result of project activities but that occur away from the original impact area, sometimes via a complex pathway.
Infield transmission pipelines	Engineered pipelines used to transmit gas or water under pressure downstream of any gas compression or water pumping process, either within or between petroleum tenure.
Infiltration	The downward movement of water from the atmosphere into the ground; not to be confused with percolation.
Infrastructure	A general term that refers to the plant or works involved with development and operation of the GFD Project. Typical plant and works include communication systems, compressors, power lines, pumping stations, reservoirs, roads and tracks, water storage dams, evaporation or storage ponds and tanks, equipment, buildings and other structures built for the purpose and duration of the conduct of the petroleum activity(ies) including temporary structures or structures of an industrial or technical nature, including, for example, mobile and temporary camps. Infrastructure does not include other facilities required for the long term management of the impact of those petroleum activities or the protection of potential resources. Such other facilities include dams other than water storage dams, pipelines and assets, that have been decommissioned, rehabilitated, and lawfully recognised as being subject to subsequent transfer with ownership of the land.
Infrastructure agreement (IA)	An agreement established between the proponent (Santos GLNG) the Department of Transport and Main Roads and all relevant regional councils impacted by the Santos GLNG Project. The IA establishes a framework for negotiating road impact mitigation; how to conduct road impact assessments (RIAs); establishes the forward work schedule to confirm costs and timing of road treatments; and how to manage variations and disputes.
Initial advice statement (IAS)	Document prepared to provide preliminary information about the physical, ecological and socioeconomic environment of a project; for purposes of 'significant project' declaration under the <i>State Development and Public Works Organisation Act 1971</i> (Qld).
Intermediate input	Raw materials or semi-finished goods and services that are purchased from supply-industries and then used to produce other goods and services for final consumption.
Intrusion	The solidified remnants of an igneous flow of rock into sedimentary strata.
Invertebrate	Animal without a backbone.
Jurassic	The geologic period that extends from 201.3± 0.6 to 145± 4 million years ago. The period occurred within the Mesozoic era, following the Triassic and preceding the Cretaceous periods.
Kandosol	Non-texture contrast soils (with little or gradual increase in clay content with depth) that have weakly to non-structured subsoils (B horizons).
Kurosol	Soil type in which the B horizon is significantly more clayey in texture than the A horizon, the upper part of the B horizon being strongly acidic.
L <sub>10</sub> / L <sub>A10</sub> [dB or dB(A)]	The noise level equalled or exceeded for 10% of the measurement period. The L <sub>A10</sub> is commonly used to approximate the average maximum sound or noise level.

Term	Definition
L <sub>90</sub> / L <sub>A90</sub> [dB or dB(A)]	The noise level equalled or exceeded for 90% of the measurement period. The L <sub>A90</sub> (in the absence of the noise source under investigation) is commonly used to approximate the background sound or noise level.
Lacustrine	Of or relating to a lake. Term is commonly used in reference to soils and ecosystems
Lake	Permanent or ephemeral natural or artificial body of water of considerable size surrounded by land.
L <sub>Amax</sub>	The maximum noise level during a noise measurement period.
Land access agreement	An agreement that formalises the compensation that Santos GLNG will pay to a landholder for adverse impacts that result from Santos GLNG's activities on a landholder's property and sets out standards for land access. Also known as conduct and compensation agreements.
Land degradation	An adverse change in the characteristics of the Earth's surface that results in one or more of the following: soil erosion, rising water table, the expression of salinity, mass movement by gravity of soil or rock, stream-bank instability, or a process that results in declining water quality.
Land suitability	The capacity of land resources to sustain particular forms of land use such as cattle grazing, cropping, forestry, etc.
Landholder	The owner, occupier, manager, or controller of land or water, including anyone acting on their behalf.
Landscape character zone	Areas of landscape that have similar topographic, vegetation and land use features that create areas of similar visual character. Landscape character units are smaller areas within landscape character zones, which have uniform vegetation, topography and land use that collectively make up the landscape patterns of the various landscape character zones.
Leaching profile	Vertical change in chemical concentrations down the soil profile due to leaching.
Least concern / no concern present	See: <i>Vegetation Management Act 1999 (Qld)</i> (VM Act) conservation status.
Lentic	Non-flowing or still water.
L <sub>eq</sub> /L <sub>Aeq</sub> [dB or dB(A)]	The constant sound pressure level that exhibits the equivalent acoustic energy of a fluctuating noise level. Otherwise known as the "Energy-Average" sound level.
Licence	Approval to operate; usually imposes conditions on authorised activities and is subject to regulations.
Licensed waste disposal facility	Facility approved under a development approval and operated by a holder of a registered certificate for environmentally relevant activity 75 under Schedule 1 of the <i>Environmental Protection Regulation 1998 (Qld)</i> .
Life cycle analysis	An analysis of the total environmental impact of a product or item including aspects of its existence from raw material production to ultimate disposal.
Light vehicle	Car, four wheel drive, motorcycle or car towing a caravan.
Light vehicle access	Formed road on the petroleum lease to carry light vehicles such as is normally permitted to use public roads without being escorted.
Likely maximum development scenario	Scenario for purposes of assessing the maximum impact of the proposed development.
Limited petroleum activities	Any low impact petroleum activity and single well leases (includes observation, pilot, injection and production wells) and associated infrastructure (water pumps and generators, sumps, flare pits or dams) located on the well lease, multi-well leases and associated infrastructure (water pumps and generators, sumps, flare pits, dams or tanks) located on the well leases, construction of new access tracks that are required as part of the construction or servicing a petroleum activity, upgrading or maintenance of existing roads or tracks, power and communication lines, gas gathering lines from a well lease to the gas compression facility, water gathering lines from a well lease to water storage, and camps within well lease that may involve sewage treatment works that are a no release works.
Linear infrastructure	Including but not limited to gas and water gathering lines, low and high pressure gas and water transmission pipelines, power lines, communication, roads and access tracks.

Term	Definition
Liquefied natural gas	Gas consisting primarily of methane, liquefied to facilitate transport and storage.
Lithology	The physical character of rocks.
LNG facility	The gas liquefaction, storage and export facility of approximately 10 million tonnes per annum capacity on Curtis Island, Gladstone. A three-train LNG Facility was approved as part of the GLNG Project via the 2009 EIS, and a two-train facility is currently under construction.
LNG train	One continuous processing unit containing the liquefaction and purification facilities required to condense natural gas from a gaseous state to a liquid state.
Loam	Loose soil of clay and sand with organic matter, often very fertile.
Localised irrigation	Spray or low-pressure drip directed at a plant's base or root system.
Low frequency noise	Noise containing major components in the low-frequency range (20 to 250 hertz) of the frequency spectrum.
Low impact petroleum activities	Petroleum activities which do not result in the clearing of native vegetation, earthworks or excavation work that cause either, a significant disruption to the soil profile or permanent damage to vegetation that cannot be easily rehabilitated immediately after the activity is completed. Examples of such activities include (but are not necessarily limited to) chipholes, coreholes, geophysical surveys, seismic surveys, soil surveys, topographic surveys, cadastral surveys, ecological surveys, installation of environmental monitoring equipment (including surface water). .
Low pressure	Under reservoir flow (gas) or gravity (water) conditions such as the flow in gathering lines upstream of gas compression or water pumping facilities.
Major flood risk areas	Land that is at risk of being inundated during major floods.
Matters of national environmental significance	Listed under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth); includes listed threatened species and ecological communities, migratory species protected under international agreements, Ramsar wetlands of international importance, the Commonwealth marine environment, World Heritage properties, National Heritage places, the Great Barrier Reef Marine Park, water resources, and nuclear actions.
Matters of state environmental significance	Matters of state environmental significance (MSES) are a component of the biodiversity state interest that is defined under the State Planning Policy (SPP). MSES includes certain environmental values that are protected under Queensland legislation including the: <ul style="list-style-type: none"> <li>• <i>Nature Conservation Act 1992</i></li> <li>• <i>Marine Parks Act 2004</i></li> <li>• <i>Fisheries Act 1994</i></li> <li>• <i>Environmental Protection Act 1994</i></li> <li>• <i>Wild Rivers Act 2005</i></li> <li>• <i>Vegetation Management Act 1999</i></li> <li>• Legally secured offset areas protected by a registered covenant or similar statutory mechanism.</li> </ul>
Median	The middle value of a discrete series.
Medium pressure	Compressed flow of gas between nodal and hub compressors or water under pumping pressure such as that in the infield transmission pipelines.
Mesa	An elevated area of relatively level land, surrounded by steeper slopes or cliffs and smaller in extent than a plateau.
Mesozoic	The geological era from ~250 million to ~65 million years ago. It is the era between Palaeozoic and Cainozoic.
Meteorological	Relating to meteorology or to phenomena of the atmosphere or weather.
Migratory species	Species listed as 'migratory' under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth); refer to definitions of <i>Environment Protection and Biodiversity Conservation Act 1999</i> conservation status, for meaning of 'migratory' under the Act.

Term	Definition
Mitigation	To appropriately protect and maintain the existing environment in accordance with relevant legislation and best-management principles; taken to have the same meaning as management.
Monitoring bore	A bore used to monitor groundwater levels or quality, often containing a piezometer.
Morphology	Form and structure of organisms without consideration of function.
Mudstone	A clayey rock of nearly uniform texture throughout, with little or no lamination.
Multi-well lease	A well lease that hosts more than one production well.
National Environment Protection Measure (NEPM)	Broad framework-setting statutory instruments defined under the <i>National Environment Protection Council Act 1994</i> (Cth); outlines agreed national goals, standards, protocols, and guidelines for protecting or managing particular aspects of the environment.
National park	Land reserved by the Department of National Parks, Recreation, Sport and Racing for a National Park, National Park (Scientific), Conservation Park or Resource Reserve.
Native Title	The legal recognition of some Indigenous people's rights and interests to land and water that comes from their traditional laws and customs under the <i>Native Title Act 1993</i> (Cth); bestows different rights to the holders. In cases where the land was Crown land, it may include the right to possess and occupy an area to the exclusion of others.
Natural resource	Resource that occurs naturally, such as sunlight, wind, soil, or water.
<i>Nature Conservation Act 1992</i> (Qld) conservation status	<p>Under the Nature Conservation Act, protected species are assigned a conservation status of extinct in the wild, endangered, vulnerable, near threatened or least concern.</p> <p>Definitions of these terms under the Act are as follows:</p> <p><b>Extinct in the wild</b></p> <ul style="list-style-type: none"> <li>• There have been thorough searches conducted for the wildlife, and</li> <li>• It's not been seen in the wild over a period that is appropriate for the life cycle or form of the wildlife.</li> </ul> <p><b>Endangered</b></p> <ul style="list-style-type: none"> <li>• There have not been thorough searches conducted for the wildlife and the wildlife has not been seen in the wild over a period that is appropriate for the life cycle or form of the wildlife, or</li> <li>• The habitat or distribution of the wildlife has been reduced to an extent that the wildlife may be in danger of extinction, or</li> <li>• The population size of the wildlife has declined, or is likely to decline, to an extent that the wildlife may be in danger of extinction, or</li> <li>• The survival of the wildlife in the wild is unlikely if a threatening process continues.</li> </ul> <p><b>Vulnerable</b></p> <ul style="list-style-type: none"> <li>• Its population is decreasing because of threatening processes, or</li> <li>• Its population has been seriously depleted and its protection is not secured, or</li> <li>• Its population, while abundant, is at risk because of threatening processes, or</li> <li>• Its population is low or localised or depends on limited habitat that is at risk because of threatening processes.</li> </ul> <p><b>Near Threatened</b></p> <ul style="list-style-type: none"> <li>• The population size or distribution of the wildlife is small and may become smaller, or</li> <li>• The population size of the wildlife has declined, or is likely to decline, at a rate higher than the usual rate for population changes.</li> </ul>
Near threatened	See: <i>Nature Conservation Act 1992</i> (Qld) conservation status.
Net present value (NPV)	The financial worth of a series of cash flows occurring over time, discounted to reflect the total dollar value in today's terms.

Term	Definition
Nitrogen dioxide	An air pollutant, high concentrations of which can contribute to acid rain, eutrophication of watercourses and formation of photochemical smog.
Nodal gas compression facility	First stage gas compression; compresses gas collected in the gathering lines to the pressure required for transport via infield transmission pipelines to second stage compression; often co-located with hub compressors at gas compression facilities; typically operated remotely.
Non-remnant vegetation	Vegetation that is not mapped as remnant vegetation by Queensland Department of Environment and Heritage Protection and/or which fails to meet criteria for remnant vegetation (see <i>remnant vegetation</i> ); includes regrowth, heavily thinned or logged vegetation and significantly disturbed vegetation that fails to meet the structural and/or floristic characteristics of remnant vegetation. Non-remnant vegetation may retain significant biodiversity values.
Normal cubic metre (Nm <sup>3</sup> )	Metric expression of gas volume at standard conditions i.e. 0°C and at an absolute pressure of 101.3 kilo Pascals (1 atmosphere).
Notifiable activity	An activity that could potentially result in land contamination.
Noxious	Harmful to the environment or ecosystem.
Of concern	See: <i>Vegetation Management Act 1999</i> (Qld) conservation status.
Oxidation	The addition of oxygen to a compound; entails the loss of an electron.
Oxides of nitrogen	Nitric oxide and nitrogen dioxide.
Palaeontology	The study of fossils to determine the structure and evolution of extinct animals and plants.
Particulate matter	Particles (e.g. dust, vapour) that are introduced or resuspended into the air through certain activities, such as soil cultivation or vehicles operating on open fields or dirt roadways. PM <sub>10</sub> is particulate matter 10 micrometres or less in diameter. PM <sub>2.5</sub> is particulate matter 2.5 micrometres or less in diameter; generally described as fine particles.
Perched groundwater systems	A locally developed, water saturated body located above the regional water table due to the presence of an underlying layer of low permeability.
Percolation	The movement and filtering of fluids through porous materials.
Perennial	Lasting for an indefinite amount of time.
Perennial watercourse	A watercourse that has continuous flow in parts of its stream bed all year round during years of normal rainfall.
Permanent operations camp	Permanent facilities that are designed to provide accommodation for operations personnel for the duration of the GFD Project. These facilities will accommodate about 80 people.
Permeability	The ease with which a fluid can pass through a porous medium and is defined as the volume of fluid discharged from a unit area of an aquifer under unit hydraulic gradient in unit time (metres per day).
Permian	Geological period from approximately ~300 million years ago to ~251 million years ago. The Permian period occurred between the Carboniferous period and Triassic period.
Pest	Means any species: <ul style="list-style-type: none"> <li>• Declared under the <i>Land Protection (Pest and Stock Route Management) Act 2002</i> (Qld)</li> <li>• Declared under local government local laws</li> <li>• That may become invasive in the future.</li> </ul>
PET richness	The richness of pollution-sensitive invertebrate taxa Plecoptera (stoneflies), Ephemeroptera (mayflies) and Trichoptera (caddisflies) within an area.
Petroleum activities	Low impact petroleum activities, limited petroleum activities, and all other GFD Project activities including major facilities such as permanent accommodation camps, gas treatment facilities, air strips, gas compression facilities, water management facilities such as water storage and water treatment facilities.



Term	Definition
Petroleum authority	Right granted under the <i>Petroleum Act 1923</i> (Qld) or <i>Petroleum and Gas (Production and Safety) Act 2004</i> (Qld) to allow a proponent to explore for or develop the State's petroleum resources; the types of authorities that may be granted under these acts include authority to prospect, petroleum lease, data acquisition authority, water monitoring authority, petroleum facility licence, petroleum survey licence and petroleum pipeline licence. Authorities to prospect and petroleum leases are collectively referred to as <i>petroleum tenure</i> . Survey licences, pipeline licences and petroleum facility licences are collectively referred to as a <i>licence</i> .
Petroleum pipeline licence	Authorises the construction and operation of a pipeline under <i>Petroleum Act 1923</i> (Qld) or <i>Petroleum and Gas (Production and Safety) Act 2004</i> (Qld).
Petroleum project	Petroleum activities conducted under one or more petroleum authorities as a single integrated operation. To be a single integrated operation: (a) the activities must be carried out under the day-to-day management of a single responsible person (for example, a site or operations manager), must be operationally interrelated, must be operated in a way that leads to a lower risk of environmental harm being caused by the activities, and must be carried out in two or more places at about the same time; and (b) the places where the activities are carried out must be separated by a distance short enough to make integrated day-to-day management of activities feasible.
Petroleum resource rent tax (PRRT)	A tax generally on profits generated from the sale of marketable petroleum commodities. The PRRT affects an entity that has an interest in an offshore or onshore exploration permit, retention lease or production licence.
Petroleum tenure	Right granted under the <i>Petroleum Act 1923</i> (Qld) or <i>Petroleum and Gas (Production and Safety) Act 2004</i> to allow a proponent to explore for or develop the State's petroleum resources; refers to authorities to prospect and petroleum licence, collectively.
Photochemical	Produced by the action of light triggering a chemical process.
Photochemical smog	Air pollution formed by chemical reactions that take place in the presence of sunlight between mono-nitrogen oxides and volatile organic compounds, which form ground-level ozone.
Pollution	The introduction into the environment of any substance by the action of humans, which results in significant harmful effects to man or the environment.
Precautionary principle	Common principle of environmental management; where an activity has the potential to threaten or cause serious or irreversible damage to the environment or human health, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Preferential flow	Movement of groundwater through a pathway of more permeable zones in the subsurface.
Primary view zone	Critical part of a view zone of significance to a homestead; part of a view that is within a horizontal arc of 300° either side of the centre line of a view and a vertical arc of 300° above the horizontal; seen with the greatest clarity.
Production well	A well that is designed to extract gas from one or more natural underground reservoirs.
Proponent	Santos GLNG, a Joint Venture between Santos Limited, PETRONAS, Total and KOGAS.
Putrescible waste	Refuse or other discarded material that is liable to become putrid or rotten through decay or decomposition.
Qualitative	Relating to or concerned with quality or qualities, rather than quantity or measured value.
Quantitative	An assessment based on quantities or quantifiable data.
Quaternary	The geological time period beginning ~2 to ~3 million years ago and extending to present; encompasses the Pleistocene and Holocene time epochs.

Term	Definition
Ramsar wetland	An area designated as a wetland of international importance under the <i>Ramsar Convention</i> (also known as the <i>Convention on Wetlands of International Importance</i> signed by Australia in 1971) because of its role in preserving biological diversity, or because it is a representative, rare or unique wetland type.
Rating background level (RBL)	Median assessment background level (ABL) for each day, evening and night period; min L <sub>A90,1hour</sub> .
Raw water	Untreated water from the environment.
Receptor	That part of the environment that may be the recipient of environmental harm; receptors may include houses, schools, hospitals, surface waters, land, ecosystems etc.
Recharge	Recharge is defined as the process by which water is added from outside to the zone of saturation of an aquifer, either directly into a formation, or indirectly by way of another formation.
Recovery	Rise of the water level in a bore or an aquifer after the pumping rate has been reduced, the pump has been shut off or natural gas activities have ceased. Also known as rebound.
Refugial pool	A pool of permanent water contained either within a watercourse, or on the floodplain of a watercourse, that persists when surrounding aquatic habitats become dry. Refugial pools are places where aquatic fauna can persist during dry periods (dry seasons through to droughts) and therefore enable recolonising of other aquatic habitats following rain.
Regional connecting road	High-order road of a high standard, facilitating connectivity between townships.
Regional ecosystem	A vegetation community, within a bioregion, that is consistently associated with a particular combination of geology, landform and soil. Regional ecosystems may be classified under schedules 1–3 of the <i>Vegetation Management Regulation 2012</i> (Qld) as endangered, of concern or least concern. Refer to <i>Vegetation Management Act 1999</i> (Qld) <i>conservation status</i> for meaning of endangered, of concern and least concern under the Act.
Registered groundwater bore	Groundwater bore that is recorded in the Queensland Department of Natural Resources and Mines database.
Regrowth vegetation	Defined under the <i>Vegetation Management Act 1999</i> (Qld) as any vegetation that does not reach 70% of the height of an equivalent community of undisturbed vegetation, or 50% of what would be undisturbed foliage cover and a mix of species represented in undisturbed communities.
Regulated dam	Means any dam in the significant or high hazard category as assessed using the 'Manual for Assessing Hazard Categories and Hydraulic Performance of <i>Dams</i> ' (2012) published by the Queensland Department of Environment and Resource Management.
Regulated waste	Refuse or other discarded material, whether treated or immobilised, listed in schedule 7 of the <i>Waste Reduction and Recycling Regulation 2011</i> (Qld).
Regulatory framework	System of regulations and the means to enforce them, usually established by a government to regulate a specific activity.
Rehabilitation	Returning the land to its pre-disturbance state or providing the foundations for the land to return to its pre-disturbance state
Relative humidity	The amount of water vapour in the air relative to the saturation point at a given temperature.
Remediation	Removal of pollution or contamination from the environment to restore to health; requires that impact is reduced to some acceptable level.
Remnant vegetation	Includes woody and non-woody vegetation. Woody vegetation is mapped as remnant vegetation where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy. Non-woody remnant vegetation is predominantly composed of grasses and/or other non-woody vegetation; extent is mapped according to time since cultivation and composition of the vegetation.

Term	Definition
Reserve (mineral)	The portion of an identified resource that can be economically extracted at the time of determination.
Reserve (tenure)	Land reserved by the Department of Environment and Heritage Protection for community or public purposes.
Residual impact	The effect remaining or left over following implementation of mitigation measures.
Revegetation	Establishment of suitable plant species to support the agreed post project land use and stabilise soils.
Reverse osmosis	A water-purifying technology by which a fluid moves under pressure through a semi-permeable membrane from a high solute concentration to a lesser concentration; used to remove salt and other impurities from water.
Reverse osmosis concentrate	The fluid that is produced during reverse osmosis treatment of coal seam water, which compartmentalises a large portion of the total dissolved solids into a waste stream.
Riffle zone	An area within a stream that is characterised by shallow water, rocky sediment and fast water flows.
Rilling	Type of erosion that removes soil by water from very small but well-defined, visible channels.
Riparian	Situated along or near the bank of a waterway.
Riparian land	Any land which adjoins, directly influences, or is influenced by a body of water. The body of water can be a creek or stream, a river, a lake or a wetland.
River improvement trust asset area	Means an area within a river improvement area declared under the <i>River Improvement Trust Act 1940</i> (Qld) that is or has been subject to restoration or flood mitigation works.
Riverine	Of or relating to a river.
Riverine area	The land confined to the flood-flow channel of a watercourse.
Road link	A section of public road, typically referring to a road excluding intersections.
Rudosol	Soil types with rudimentary pedologic organisation apart from a minimal A horizon.
Runoff	All surface and subsurface flow from a catchment, but in practice refers to the flow in a river i.e. excludes groundwater not discharged into a river.
Rural access road	Low-order road predominantly facilitating access to local land users.
Rural connecting road	Lower-order road facilitating connectivity between higher-order roads.
Saline	Presence of salts, in water or spoil, at concentrations greater than 3,000 milligrams of total dissolved solids per litre.
Saline water	Water that is generally considered unsuitable for human consumption or for irrigation because of its high content of dissolved solids.
Sanitation	The treatment and disposal of waste from the human body and grey water generated through household activity.
Scarp	A steep slope, ridge or escarpment of rock.
Scope 1 emissions	<p>A term used to define greenhouse gas emissions as a direct result of an activity, or series of activities (including ancillary activities) that constitute the facility. Examples of these would be:</p> <ul style="list-style-type: none"> <li>• Manufacturing processes, such as gas emitted while making cement</li> <li>• Transportation of materials, products, waste and people, such as a transport company burning diesel oil in its trucks</li> <li>• Fugitive emissions, such as methane emissions from coal mines.</li> </ul>

Term	Definition
Scope 2 emissions	A term used to define greenhouse gas emissions associated with one or more activities that generate electricity, heating, cooling or steam that is consumed by the facility but do not form part of the facility. It is important to recognise that scope 2 emissions from one facility are part of the scope 1 emissions from another facility. For example, a power station burns coal to power its generators and in turn create electricity. Burning the coal causes greenhouse emissions to be emitted. These gases are attributed to the power station as scope 1 emissions. If the electricity is then transmitted to a car factory and used there to power its machinery and lighting the gases emitted as a result of generating the electricity are then attributed to the factory as scope 2 emissions.
Secondary aquifer	An aquifer in which water moves through secondary openings and interstices, which developed after the rocks were formed i.e. as a result of weathering, fracturing, faulting, etc.
Sediment	Particles derived from rocks or biological materials that have been transported by air or water.
Sedimentation	Deposition or accumulation of mineral or organic matter deposited by air or water.
Seep	A diffuse wetland area where interflow and groundwater emerges, usually at a slow rate or small volume, to become surface flow.
Semi-permanent camp	Semi-permanent facilities that will have an area of about 20 ha that are built to support the construction of large facilities. They will be adjacent to work areas and designed to provide more extensive services and facilities to larger workforces (about 400 people) for more long-term construction activities (two to three years).
Sensitive place or sensitive receptor	Area or structure sensitive to a predicted environmental impact (usually from air emissions or noise) such as a dwelling, a library, childcare centre, kindergarten, school, college, university or other educational institution; a hospital, surgery or other medical institution; a protected area or an area identified under a conservation plan as a critical habitat or an area of major interest under the <i>Nature Conservation Act 1992</i> (Qld); a marine park under the <i>Marine Parks Act 2004</i> (Qld); or a park or garden that is open to the public.
Shallow groundwater	Groundwater resources not deeper than 100 metres.
Significant project	A project declared as a 'significant project' by the Coordinator-General under section 26 of the <i>State Development and Public Works Organisation Act 1971</i> (Qld). The term 'significant project' has been replaced by the term 'coordinated project'.
Significantly disturbed land or significant disturbance to land	Means disturbance to land as defined in section 28 of the <i>Environmental Protection Regulation 2008</i> (Qld).
Siltstone	Consolidated silt; fine-grained sedimentary rock.
Social impact management plan (SIMP)	Document that details how social impact management strategies will be implemented.
Sodic	Of or relating to soils that have a high level of sodium.
Sodicity	The amount of sodium present.
Soil horizon	One of the series of distinct layers found in a vertical cross-section of any well-developed soil, grouped primarily into O, A, B, and C horizons.
Soil profile	Vertical section through all the constituent horizons, or relatively uniform layers, of a soil.
Sound	Vibration of the air, usually within the frequency range perceptible to normal human hearing but is (strictly) vibration of air at any frequency.
Sound pressure level – SPL [dB or dB(A)]	Sound pressure is the measure of the level or loudness of sound. Like sound power level, it is measured in logarithmic units. The symbol used for sound pressure level is SPL, and it is generally specified in decibels (dB). Zero decibels is taken as the threshold of human hearing.

Term	Definition
Spring	<p>Natural discharges of groundwater at the surface or within stream beds. Springs often have high conservation values as they may support endemic and/or listed ecological communities or species. Three types of spring are recognised for the purpose of this report:</p> <p>Recharge vent springs occur where rates of recharge are greater than rates of water infiltration; thus, 'rejection' of water causes seepage of water at the surface from exposed formations. Recharge springs are commonly an ephemeral feature in a local aquifer and not necessarily connected to the water table.</p> <p>Discharge vent springs occur where faulting or rapid thinning occur against basement highs disrupting lateral through-flow of groundwater or where water-bearing zones approach the ground surface and pressurised groundwater breaks through fractures in thin confining beds.</p> <p>Watercourse springs are a section of a watercourse where groundwater enters the stream from an aquifer through the streambed. These springs occur where an outcropping aquifer has been eroded to create a depression in the surface of sufficient depth to reach the water table.</p>
Stakeholder	Person or group affected by or concerned with an issue or enterprise. Also see: <i>affected person</i>
State forest	Land reserved by the Department of Natural Parks, Recreation, Sport and Racing for state forest purposes.
State land	Land held by the State of Queensland as Unallocated State Land and other areas vested in the State (or Crown) but not held in Fee Simple or as a lease issued under the <i>Lands Act 1994</i> (Qld).
State wildlife corridor	An area identified as a state wildlife corridor on a map certified by the chief executive of Queensland Department of Environment and Heritage Protection for the purposes of the <i>Vegetation Management Act 1999</i> (Qld).
State-controlled road	Road declared to be controlled by the Department of Transport and Main Roads, including all AusLink national roads in Queensland.
Statutory guideline	A document that provides direction for implementing the intent of legislation.
Sterile zone	Potentially hazardous zone to which uncontrolled entry is prohibited and that must be maintained free of combustible material; for example, the areas around the base of a flare stack.
Stock route network	The network of facilities established to provide for the movement of livestock on foot between grazing areas and markets. The network includes areas for stock to travel along (often within existing road corridors, adjacent to roadways) and areas for livestock to rest overnight, as well as watering facilities and holding yards.
Stockpile	Large supply of essential materials, held in reserve for later use.
Strata	Single bed of sedimentary rock, generally consisting of one kind of matter representing continuous deposition.
Strategic cropping area(SCA)	Lands specifically identified as suitable for cropping as an ongoing land use based on the criteria outlined within the <i>Regional Planning Interests Act 2014</i>
Stratigraphy	Branch of geology dealing with the classification, nomenclature, correlation and interpretation of stratified rocks.
Study area	Area defined by each of the relevant supporting studies and specific to the particular environmental aspect being considered for the purpose of environmental impact assessment.
Subgrade	The soil or rock levelled off to support the foundation of a structure.
Subsoil	The B horizon within the soil profile, which lies immediately below the topsoil, or A horizon; it is not enriched or is less enriched with organic material than the topsoil and may be subject to clay or salt accumulation.
Sulfur dioxide	Toxic gas found in the emissions of volcanoes and those of burning coal or petroleum; dissolves in water to form sulfurous acid and, in the presence of oxygen, sulfuric acid.
Temporary camp	Modular and relocatable facilities, less than 1 ha in area that provide basic amenities for up to 20 people for short-term activities such as drilling or installation of gathering lines. To support the drill camps, water tanks and modular sewage treatment plants will be provided.



Term	Definition
Terms of reference (ToR)	Written document developed by the regulatory authority (i.e. Queensland Coordinator-General) that provides the minimum expectations for the scope of an environmental impact statement.
Terrestrial	Relating to, consisting of, or representing the Earth; relating to the land as distinct from the water.
The Air Pollution Model	Three-dimensional prognostic meteorological model used for air pollution modelling developed by the Commonwealth Scientific and Industrial Research Organisation.
Threatened	A collective term used with reference to ecological communities, regional ecosystems or species that are critically endangered, endangered, vulnerable or near threatened as listed under the <i>Nature Conservation Act 1992</i> (Qld), the <i>Vegetation Management Act 1999</i> (Qld) or the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth). Also see <i>Nature Conservation Act 1992</i> (Qld) conservation significance, <i>Vegetation Management Act 1999</i> (Qld) conservation significance and <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Qld) conservation significance.
Threatened species	Generic term for a plant or animal species listed as critically endangered, endangered, vulnerable or rare under either State or Commonwealth threatened species legislation. The terms 'threatened' and 'conservation significant' are interchangeable in this context.
Threatening process	Processes that threaten, or have the capability to threaten, the survival or evolutionary development of species, populations, or ecological communities. According to the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth), a process can be listed as a key threatening process if it can: <ul style="list-style-type: none"> <li>• cause a native species or ecological community to become eligible for inclusion in a threatened list (other than the conservation dependent category)</li> <li>• cause an already listed threatened species or threatened ecological community to become more endangered</li> <li>• adversely affect two or more listed threatened species or threatened ecological communities.</li> </ul>
Triassic	The geological time period extending from ~250 to ~200 million years ago. It is the earliest period of the Mesozoic era and occurred between the Permian and Jurassic periods.
Tributaries	A tributary is a stream or river which flows into another river (a parent river) or body of water but which does not flow directly into the sea.
Trigger level	The point at which some form of action is begun, such as exceedence of guidelines.
Turbid	Opaque or muddy liquid with particles of extraneous matter.
Unconfined aquifer	An aquifer with no confining layer between the water table and the ground surface where the water table is free to fluctuate.
Unconsolidated aquifer	Strata such as sand that has not been turned into rock.
Value added	The difference between the sale price and the production cost of a good or service.

Term	Definition
<i>Vegetation Management Act 1999</i> (Qld) conservation status	<p>Under the <i>Vegetation Management Act 1999</i> (Qld) (VM Act), regional ecosystems are assigned a conservation status of endangered, of concern and least concern/no concern present.</p> <p>Definitions of these terms under the Act are as follows.</p> <p><b>Endangered</b></p> <p>A regional ecosystem is listed as 'endangered' under the VM Act if:</p> <ul style="list-style-type: none"> <li>• Remnant vegetation is less than 10% of its pre-clearing extent across the bioregion, or</li> <li>• Between 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares.</li> </ul> <p>For biodiversity planning purposes a regional ecosystem is listed with a Biodiversity Status of 'endangered' if:</p> <ul style="list-style-type: none"> <li>• Less than 10% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss, or</li> <li>• Between 10 to 30% of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares, or</li> <li>• It is a rare regional ecosystem subject to a threatening process.</li> </ul> <p><b>Of concern</b></p> <p>A regional ecosystem is listed as 'of concern' under VM Act if:</p> <ul style="list-style-type: none"> <li>• Remnant vegetation is 10–30% of its pre-clearing extent across the bioregion or</li> <li>• More than 30% of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares.</li> </ul> <p>In addition to the criteria listed for an 'of concern' regional ecosystems under the <i>Vegetation Management Act 1999</i> (Qld), for biodiversity planning purposes a regional ecosystem is listed with a Biodiversity Status 'Of concern' if:</p> <ul style="list-style-type: none"> <li>• Between 10–30% of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.</li> </ul> <p><b>Least concern/no concern present</b></p> <p>A regional ecosystem is listed as 'least concern' under the VM Act if:</p> <ul style="list-style-type: none"> <li>• Remnant vegetation is over 30% of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares.</li> </ul> <p>For biodiversity planning purposes a regional ecosystem is listed with a biodiversity status of 'no concern at present' if:</p> <ul style="list-style-type: none"> <li>• The degradation criteria listed above for 'endangered' or 'of concern' regional ecosystems are not met.</li> </ul>
Vehicle kilometres travelled	Measure of traffic demand, calculated as the length of a section of road in kilometres multiplied by the annual average daily traffic on it. The yearly vehicle kilometres travelled is the daily vehicle kilometres travelled multiplied by the number of days in that year.
Vertosol	Soil type that is clayey and cracks when dry; its alternate shrinking and swelling produces gilgais.
Viewshed	Area, frequently bounded by a ridge of land that defines the extent of a GFD Project that is visible within the human field of view from a fixed vantage point. Synonymous with 'visual envelope' and typically represents the limit of the zone of theoretical visibility.
Visual character unit	Areas of landscape that have similar topographic, vegetation and land use features that create areas of similar visual character.
Visual effect	A measure of the visual interaction between the Project and the landscape setting within which it is located.
Visual impact	A measure of a joint consideration of both visual sensitivity and visual effect that considered together determines the visual impact of a development.
Visual sensitivity	Degree to which a change to the landscape will be perceived in an adverse way.
Volatile organic compound (VOC)	Any organic compound that participates in atmospheric photochemical reactions.

Term	Definition
Vulnerability	The extent to which a system, asset or organisation can cope with the negative impacts of climate change, variability and extremes. It is a function of risk and adaptive capacity.
Vulnerable	Designated as vulnerable under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) and/or <i>Nature Conservation Act 1999</i> (Qld). Refer to <i>Environment Protection and Biodiversity Conservation Act 1999</i> conservation status and <i>Nature Conservation Act 1992</i> conservation status for meaning of 'vulnerable' under these Acts.
Water gathering line	High-density polyethylene lines through which coal seam water flows from a wellhead under low or medium pressure to water transfer, storage and/or treatment infrastructure.
Water management facility	The collective term to refer to the major infrastructure components involved in water storage and treatment.
Water resource	Water, or the rights or other claims to water, which the water report entity either holds, or for which the water report entity has management responsibilities, and from which an individual or organisation that is a water report entity, or a group of stakeholders of a physical water report entity, derives future benefits (as defined in <i>Exposure Draft of Australian Water Accounting Standard 1 (2010)—Water Accounting Standards Board</i> ).
Water storage	Water storage is a regulated or unregulated structure that provides temporary storage and balancing of flow rates and quality characteristics between various points of water management infrastructure. To refer to a specific type of water storage facility, preface the descriptor before storage. For example: Brine storage; water management storage, coal seam water storage.
Water table	The surface in an unconfined aquifer or confining bed at which the pore water pressure is atmospheric; it can be measured by installing shallow wells extending a few feet into the zone of saturation and then measuring the water level in those wells.
Watercourse	A river, creek, or other stream, including a stream in the form of an anabranch or a tributary, in which water flows permanently or intermittently, regardless of the frequency of flow events: <ul style="list-style-type: none"> <li>• In a natural channel, whether artificially modified or not, or</li> <li>• In an artificial channel that has changed the course of the stream.</li> </ul> It also includes weirs, lakes and dams.
Waterlogging	The saturation of soil by soil water.
Watershed	Drainage basin.
Weeds	Plant species that invade native ecosystems and can adversely affect the survival of indigenous flora and fauna, often competing with indigenous plants for resources such as nutrients, moisture and light. They can prevent natural regeneration, reduce wildlife habitat, alter water flows, increase soil erosion, introduce poisons into the soil or poison animals, change fire behaviour and may introduce foreign genes into local plant populations. Weed species are not necessarily exotic non-indigenous species, but can also be non-endemic natives that are naturalised to areas outside of their natural distribution.
Well	A structure that is designed to bore through the earth's surface in order to extract resources.
Well lease	Area where a well and associated surface infrastructure is located.
Well stimulation	Well stimulation techniques are sometimes used to increase the recovery of gas resources by increasing the permeability of a natural gas reservoir. Well stimulation techniques include hydraulic fracturing, fracture acidising, and cavitation.
Wellhead	The components at the surface of an oil or gas well that provides the interface for production equipment.

Term	Definition
Wetland	<p>Numerous definitions of wetland exist. Under the <i>Queensland Wetland Strategy</i>, wetland is defined as 'areas of permanent or periodic/intermittent inundation, whether natural or artificial, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 m'. Three types of freshwater wetland (excluding aquifers) are recognised:</p> <ul style="list-style-type: none"> <li>• Riverine wetlands, which are analogous to 'watercourses' used in this report</li> <li>• Palustrine wetlands, which are vegetated swamps. Many springs are also considered to be similar to palustrine wetlands</li> <li>• Lacustrine wetlands, which are areas of relatively deep, non-flowing water. Lakes, farm dams and large billabongs on floodplains are examples of lacustrine wetlands.</li> </ul> <p>As 'watercourse' is used to refer to 'riverine wetlands', use of the term 'wetland' more specifically refers to palustrine and lacustrine wetlands.</p>
Wildlife corridor	Habitat linked to other habitats (often remnant patches) to allow natural migration or movement of wildlife.
Work program	Program required under the <i>Petroleum and Gas (Production and Safety) Act 2004</i> (Qld) in which holders of or applicants for petroleum tenure are required to submit detailed information about the nature and extent of the activities to be carried out under the authority.
Z-Weighted	'Flat' or 'un-weighted' sound pressure levels designated as dB(Z).

## 29.2 Abbreviations

Abbreviation	Definition
AADT	Annual average daily traffic
AAPG	American Association of Petroleum Geologists
ABS	Australian Bureau of Statistics
ACH Act	<i>Aboriginal Cultural Heritage Act 2003</i>
AHD	Australian Height Datum
ALARP	As low as reasonably practicable
ALC	Agricultural Land Class
ANZECC	Australian and New Zealand Environment and Conservation Council
API	American Petroleum Institute
APIA	<i>Australian Pipeline Industry Association</i>
APLNG Project	Australia Pacific LNG Project
ARI	average recurrence interval
AS	Australian Standard
ASC NEPM	<i>National Environment Protection (Assessment of Site Contamination) Measure 1999</i>
ASGC	Australian Standard Geographical Classification
ATP	Authority to prospect
BAMM	Biodiversity Assessment and Mapping Methodology
BoM	Bureau of Meteorology
Bonn Convention	<i>Convention on the Conservation of Migratory Species of Wild Animals.</i>
BPA's	<i>Biodiversity Planning Assessments</i>
BSC	Banana Shire Council
CAMBA	China Australia Migratory Bird Agreement
CCA	Conduct and compensation agreement
CFMP	Chemical and fuel management plan

Abbreviation	Definition
CG	Coordinator-General
CGE model	Computable general equilibrium model
CH <sub>4</sub>	Methane
CHMP	Cultural Heritage Management Plan
CHRC	Central-Highlands Regional Council
CLR	Contaminated Land Register
CO	Carbon monoxide
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CWMS	Coal Seam Water Management Strategy
DAE-RGEM	Deloitte Access Economics Regional General Equilibrium Model
DAFF	Department of Agriculture, Fisheries and Forestry
DAMP	Decommissioning and abandonment management plan
DEWS	Department of Energy and Water Supply
DHPW	Department of Housing and Public Works
DIDO	Drive-in/drive-out
DLG	Department of Local Government
DNPRSR	Department of National Parks, Recreation, Sport and Racing
DNRM	Department of Natural Resources and Mines
DOE	Department of the Environment
DSDIP	Department of State Development, Infrastructure and Planning
EA	Environmental authority
EC	Electrical conductivity
EET	Emission estimation technique
EHP	Department of Environment and Heritage Protection
EHS	Environmental hazard standards
EHSMS	Environment, health and safety management systems
EIS	Environmental impact statement
EM Plan	Environmental management plan
EMR	Environmental Management Register
EP Act	<i>Environmental Protection Act 1994(Queensland)</i>
EPP (Air)	<i>Environmental Protection (Air) Policy 2008 (Queensland)</i>
EPP (Noise)	<i>Environmental Protection (Noise) Policy 2008 (Queensland)</i>
EPP (Water)	<i>Environmental Protection (Water)Policy 2009 (Queensland)</i>
EP Regulation	<i>Environmental Protection Regulation 2008 (Queensland)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>
EPC	Exploratory permit for coal
EPM	Exploratory permit for minerals
ERAs	Environmentally relevant activities
ERP	Emergency response plan
ESAs	Environmentally sensitive areas
ESCMP	Erosion and sediment control management plan
ESP	Exchangeable sodium percentage
EVs	environmental values
FIFO	Fly in/fly out
FMP	Fauna Management Plan



Abbreviation	Definition
FTE	Full-time equivalent workers
GAB	Great Artesian Basin
GARID	<i>Guidelines for Assessment of Road Impacts of Development</i>
GDEs	Groundwater dependent ecosystems
GDMMP	Ground Deformation Monitoring and Management Plan
GDP	Gross domestic product
GES	General environmental significance
GFD Project	Gas Field Development Project
GFL	Gas field locality
GHG	Greenhouse gas
GIS	Geographical Information Systems
GLNG	Gladstone Liquefied Natural Gas
GQAL	Good quality agricultural land
GRP	Gross regional product
GSHAP	Global Seismic Hazard Assessment Program
GSP	Gross state product
GWP	Global warming potential
HDD	Horizontal directional drilling
HDPE	High density polyethylene
HSHS	Health and safety hazard standards
HV	Heavy vehicles
HVR	High Value Regrowth
IAS	Initial advice statement
IDAS	Integrated Development Assessment System
ILUA	Indigenous land use agreement
IRTM	Interactive resource tenure map
JAMBA	Japan Australia Migratory Bird Agreement
KOGAS	Korea Gas Corporation
LAA	Long Term Affected Area
LCZ	Landscape character zone
LGAs	Local government areas
LNG	Liquefied natural gas
LP Act	<i>Land Protection (Pest and Stock Route Management) Act 2002 (Queensland)</i>
LPG	Liquefied petroleum gas
LRMP	Land release management plan
ma	Million years ago
MAR	Managed aquifer recharge
MDL	Mineral development lease
MHF	Major hazard facilities
ML	Mining lease
MLA	Mining lease application
MNES	Matters of national environmental significance
MR Act	<i>Mineral Resources Act 1989 (Queensland)</i>
MRC	Maranoa Regional Council
N <sub>2</sub> O	Nitrous oxide

Abbreviation	Definition
NC Act	<i>Nature Conservation Act 1992 (Queensland)</i>
NEPM	National environmental protection measure
NFPA	National Fire Protection Association
NGA	National Greenhouse Accounts
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007 (Commonwealth)</i>
NGER Determination	<i>National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Commonwealth)</i>
NMP	Noise management plan
NNTT	National Native Title Tribunal
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Oxides of nitrogen
NPI	National Pollutant Inventory
NPV	Net present value
NRM	Natural resource management
NSW	New South Wales
NWQMS	<i>National Water Quality Management Strategy</i>
NZS	New Zealand Standard
OGIA	Office of Groundwater Impact Assessment
P&G Act	<i>Petroleum and Gas (Production and Safety) Act 2004 (Queensland)</i>
PAA	Priority agricultural areas
PAFSI	Possible are for supporting infrastructure
PALU	Priority agricultural land uses
PET	<i>Plectoptera, Ephemeroptera and Tricoptera</i>
PETRONAS	Petroleum Nasional Berhad
PFL	Petroleum facility licence
PHA	Preliminary hazard analysis
PL	Petroleum lease
PLA	Petroleum lease application
PLAs	Priority land areas
PM	Particulate matter
PPE	Personal protective equipment
PPL	Petroleum pipeline licence
PPV	Peak particle velocity
PRMS	<i>Petroleum Resources Management System 2007 (Queensland)</i>
PSL	Petroleum survey licence
PWMP	Pest and Weed Management Plan
QCLNG	Queensland Curtis LNG Project
QGEOP	<i>Queensland Government Environmental Offsets Policy</i>
QH Act	<i>Queensland Heritage Act 1992</i>
QHC	Queensland Heritage Council
QIMP	Queensland Incident Management Plan
Qld	Queensland
QPIF	<i>Queensland Primary Industries and Fisheries</i>
QWQG	<i>Queensland Water Quality Guidelines</i>
RBL	Rating background levels
RE	Regional ecosystems

Abbreviation	Definition
REMP	Receiving Environment Monitoring Plan
RFCHC	request for cultural heritage clearance
RIA	road impact assessment
RMP	Rehabilitation Management Plan
ROKAMBA	Republic of Korea Migratory Bird Agreement
ROPs	Resource operations plans
RPI Act	<i>Regional Planning Interests Act 2014</i>
SCA	Social Catchment Area
SCA	Strategic cropping area
SDPWO Act	<i>State Development and Public Works Organisation Act 1971 (Queensland)</i>
SEC	Securities and Exchange Commission
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities (obsolete: now Department of the Environment)
SIA	Social impact assessment
SIMP	Social impact management plan
SMU	Soil mapping unit
SO <sub>2</sub>	Sulfur dioxide
SO <sub>x</sub>	Oxides of sulfur
SP Act	<i>Sustainable Planning Act 2009 (Queensland)</i>
SPE	Society of Petroleum Engineers
SPEE	Society of Petroleum Evaluation Engineers
SPP	State Planning Policy
SSC	State suburb
SSMP	Significant Species Management Plan
Surat CMA	Surat Cumulative Management Area
TDS	Total dissolved solids
TECs	Threatened Ecological Communities
TEG	Triethylene glycol
TMR	Department of Transport and Main Roads
ToR	Terms of reference
Total	Total S.A
UCL	Urban centre locality
UWIR	Underground Water Impact Report
VM Act	<i>Vegetation Management Act 1999 (Queensland)</i>
VOCs	Volatile organic compounds
Water Act	<i>Water Act 2000 (Queensland)</i>
Water Supply (S & R) Act	<i>Water Supply (Safety and Reliability) Act 2008 (Queensland)</i>
WDRC	Western Downs Regional Council
WHS Act	<i>Work Health and Safety Act 2011 (Queensland)</i>
WMP	waste management plan
WMS	Water Management System
WPC	World Petroleum Council
WQGs	Water quality guidelines
WQOs	Water quality objectives
WRMP	Water Resources Management Plan
WRPs	Water resource plans

Abbreviation	Definition
WRR Act	<i>Waste Reduction and Recycling Act 2011 (Queensland)</i>

## 29.3 Units

Term	Definition
%	Percent
<	Less than
>	Greater than
°C	Degrees Celsius
µg/L	Micrograms per litre
µg/m <sup>3</sup>	Micrograms per cubic metre
CO <sub>2</sub> e	Carbon dioxide equivalent
dB	Decibel ratio
dBA	Decibels – A – weighted
dBZ	Z-weighted decibels
GJ/m <sup>3</sup>	Gigajoules per cubic metre
Hz	Hertz
ha	Hectare
kg	Kilogram
kg CO <sub>2</sub> e/GJ	Kilograms of carbon dioxide equivalent per gigajoule
kg CO <sub>2</sub> e/kWh	Kilograms of carbon dioxide equivalent per kilowatt hour
kPa	Kilopascals
km	Kilometre
km <sup>2</sup>	Square kilometre
km/h	Kilometres per hour
kW/m <sup>2</sup>	Kilowatts per square metre
L	Litre
L <sub>A90</sub>	Background noise level
L <sub>A10(1hour)</sub>	The A-weighted sound pressure level which is exceeded for 10% of the measurement period (1 hour)
L <sub>A10(18 hour)</sub>	The arithmetic average of the L <sub>A10(1 hour)</sub> from 6:00 AM to 12:00 AM
L <sub>Aeq</sub>	A weighted equivalent noise level measure in decibels
L <sub>Aeq, adj, 15mins</sub>	A weighted equivalent noise level measured in decibels over a period of 15 minutes and adjusted for tonality
L <sub>Aeq(1hour)</sub>	A weighted equivalent noise level measured in decibels over a period of 1 hour and adjusted for tonality
L <sub>eq</sub>	Equivalent noise level measure in decibels
m	Metre
m <sup>2</sup>	Square metre
m <sup>3</sup>	Cubic metre
m/s	Metres per second
mg/L	Milligrams per litre
MJ/m <sup>2</sup>	Megajoules per square metre
ML	Megalitre
ML/d	Megalitre per day
ML/year	Megalitre per year

Term	Definition
mm	Millimetre
mm/s	Millimetre per second
mm/s PPV	Millimetre per second peak particle velocity
Mt	Million tonnes
MtCO <sub>2</sub> e	Million tonnes of carbon dioxide equivalent
Mtpa	Million tonnes per annum
MW	Megawatt
pH	The absolute value of the decimal logarithm of the hydrogen-ion concentration (activity), used as an indicator of acidity (pH less than 7) or alkalinity (pH greater than 7) or neutrality (pH 7)
PJ	Petajoules
PM <sub>10</sub>	Particulates with aerodynamic diameter less than 10 micrometres
PM <sub>2.5</sub>	Particulates with aerodynamic diameter less than 2.5 micrometres
ppm	Parts per million
t	Tonne
tCO <sub>2</sub> e	Tonnes of carbon dioxide equivalent
tCO <sub>2</sub> e/t	Tonnes of carbon dioxide equivalent per tonne of gas produced
TJ	Terajoules
TJ/d	Terajoules per day
TJ/hour	Terajoules per hour
tpa	Tonnes per annum
vpd	Vehicles per day

## 29.4 Legislation and regulations

Title – first use	Abbreviation
<i>Aboriginal Cultural Heritage Act 2003 (Qld)</i>	ACH Act
<i>Australian Heritage Council Act 2003 (Cth)</i>	AHC Act
<i>Back on Track species prioritisation framework (Qld)</i>	Back on Track
<i>Biodiversity Planning Assessments (Qld)</i>	BPA's
<i>Clean Energy Act 2011 (Cth)</i>	Clean Energy Act
<i>Coal Seam Gas Water Management Policy 2012 (Qld) (EHP, 2012)</i>	CSWMP
<i>Direct Action Plan</i>	DAP
<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>	EPBC Act
<i>Environmental Protection (Air) Policy 2008 (Qld)</i>	EPP (Air)
<i>Environmental Protection (Greentape Reduction) and Other Legislation Amendment Bill 2012 (Qld)</i>	Greentape Reduction Bill
<i>Environmental Protection (Noise) Policy 2008 (Qld)</i>	EPP Noise
<i>Environmental Protection (Waste Management) Policy 2000 (Qld)</i>	EPP Waste
<i>Environmental Protection (Waste Management) Regulation 2000 (Qld)</i>	Waste Regulation
<i>Environmental Protection (Water) Policy 2009 (Qld)</i>	EP (Water)
<i>Environmental Protection Act 1994 (Qld)</i>	EP Act
<i>Environmental Protection Regulation 2008 (Qld)</i>	EP Regulation
<i>Fisheries Act 1994 (Qld)</i>	Fisheries Act
<i>Forestry Act 1959 (Cth)</i>	Forestry Act
<i>German Standard DIN 4150-3 1999 Structural Vibration – Part 3: Effects of vibration on structures</i>	German Standard DIN 4150-3 1999



Title – first use	Abbreviation
<i>Guidelines for Assessment of Road Impacts of Development</i> (Department of Main Roads, 2006)	GARID
German Standard DIN 4150-3 1999 <i>Structural Vibration – Part 3: Effects of vibration on structures</i>	German Standard DIN 4150-3 1999
<i>Land Act 1994</i> (Qld)	Land Act
<i>Land Protection (Pest and Stock Route Management) Act 2002</i> (Qld)	LP Act
<i>Marine Parks Act 2004</i> (Qld)	MP Act
<i>Major resource projects housing policy: Core principles to guide social impact assessment</i>	MRPHP
<i>Mineral Resources Act 1989</i> (Qld)	MR Act
<i>National Environment Protection Measure</i> (Cth)	NEPM
<i>National Environment Protection Measures (Implementation) Act 1998</i> (Cth)	NEPM Act
<i>National Greenhouse Accounts Factors</i> (Department of Climate Change and Energy Efficiency, 2013) and the <i>National Greenhouse and Energy Reporting (Measurement) Determination 2008</i> (DCCEE 2008) (NGER Determination)	NGA NGER Determination
<i>National Greenhouse and Energy Reporting Act 2007</i> (Cth)	NGER Act
<i>Native Title Act 1993</i> (Cth) (NT Act) together with the <i>Native Title Act 1993</i> (Qld)	NT Act
<i>Nature Conservation Act 1992</i> (Qld)	NC Act
<i>Petroleum Act 1923</i> (Qld)	Petroleum Act
<i>Petroleum and Gas (Production and Safety) Act 2004</i> (Qld)	P&G Act
<i>Petroleum and Gas (Production and Safety) Regulation 2004</i> (Qld)	P & G Regulation
<i>Queensland Government Environmental Offsets Policy</i> (Qld)	QGEO
<i>Queensland Heritage Act 1992</i> (Qld)	QH Act
<i>Queensland Resources and Energy Sector Code of Practice for Local Content</i> (Queensland Resources Council, 2013)	Code of Practice for Local Content
<i>Queensland Water Quality Guidelines</i> (Department of Environment and Heritage Protection, 2009)	QWQG
<i>Regional Planning Interests Act 2014</i> (Qld)	RPI Act
<i>Road Traffic Noise Management: Code of Practice</i> (Department of Transport and Main Roads, 2008)	DTMR Code of Practice
<i>Social impact assessment guideline</i> (Department of State Development, Infrastructure and Planning, 2013)	SIA Guideline
<i>State Development and Public Works Organisation Act 1971</i> (Qld)	SDPWO Act
<i>State Planning Policy</i>	SPP
<i>Strategic Cropping Land Act 2011</i> (Qld)	SCL Act
<i>Sustainable Planning Act 2009</i> (Qld)	SP Act
<i>The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance</i> (ICOMOS, 1999)	Burra Charter
<i>The Greenhouse Gas Protocol</i> (World Resources Institute, 2005)	GHG Protocol
<i>Vegetation Management Act 1999</i> (Qld)	VM Act
<i>Waste Reduction and Recycling Act 2011</i> (Qld)	WRR Act
<i>Waste Reduction and Recycling Regulation 2011</i> (Qld)	WRR Regulation
<i>Water Act 2000</i> (Qld)	Water Act
<i>Water Supply (Safety and Reliability) Act 2008</i> (Qld)	Water Supply (S&R) Act
<i>Work Health and Safety Act 2011</i> (Qld)	WHS Act