

## III Glossary of terms and abbreviations

| Term                         | Meaning  |
|------------------------------|--|
| <b>A</b>                     |  |
| AAQNEPM                      | National Environment Protection (Ambient Air Quality) Measure  |
| Aboriginal cultural heritage | The tangible (objects) and intangible (dreaming stories, song lines and places) cultural practices and traditions associated with past and present day Aboriginal communities  |
| Aboriginal object            | Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW  |
| Aboriginal place             | Any place declared to be an Aboriginal place under section 94 of the <i>National Parks and Wildlife Act 1974 (NSW)</i>   |
| ABS                          | Australian Bureau of Statistics  |
| Abutment                     | A support structure at the end of a bridge   |
| Acid sulfate soils           | Naturally occurring soils, sediments or organic substrates (eg peat) that are formed under waterlogged conditions. These soils contain iron sulfide minerals (predominantly as the mineral pyrite) or their oxidation products. In an undisturbed state below the water table, acid sulfate soils are benign. However if the soils are drained, excavated or exposed to air by a lowering of the water table, the sulfides react with oxygen to form sulfuric acid |
| Acoustic louvre              | Equipment that provides ventilation and reduces noise from operational facilities  |
| ACTAQ                        | Advisory Committee on Tunnel Air Quality   |
| Acute exposure               | Contact with a substance that occurs once or for only a short time (up to 14 days)   |
| ADT                          | Average daily traffic  |
| AECOM                        | AECOM Australia Pty Ltd  |
| AFMP                         | Ancillary Facilities Management Plan   |
| AHD                          | Australian Height Datum<br>The standard reference level used to express the relative height of various features. A height given in metres AHD is the height above mean sea level   |
| AHIMS                        | Aboriginal Heritage Information Management System<br>A register of NSW Aboriginal heritage information maintained by the NSW Office of Environment and Heritage  |
| Airshed                      | A part of the atmosphere that shares a common flow of air and is exposed to similar influences   |
| Alignment                    | The geometric layout (eg of a road) in plan (horizontal) and elevation (vertical)  |
| Alluvium                     | Soil or sediment left by flowing water   |
| AM peak hour                 | Unless otherwise stated, this refers to vehicle trips arriving at their destination during the average one hour peak in the AM peak period between 7.00 am and 9.00 am on a normal working weekday   |
| ANZECC                       | Australian and New Zealand Environment Conservation Council  |

| Term                                   | Meaning  |
|--|--|
| Approved Methods                       | Updated Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW EPA 2016)  |
| Aquifer                                | A groundwater bearing formation sufficiently permeable to transmit and yield groundwater or water bearing rock   |
| Archaeological potential               | The likelihood of undetected surface and/or subsurface archaeological materials existing at a location   |
| ARI                                    | Average recurrence interval<br>An indicator used to describe the frequency of floods. The average period in years between the occurrence of a flood of a particular magnitude or greater. In a long period of say 1,000 years, a flood equivalent to or greater than a 100 year ARI event would occur 10 times. The 100 year ARI flood has a one per cent chance (ie a one-in-100 chance) of occurrence in any one year. Floods generated by runoff from the study catchments is referred to in terms of their ARI, for example the 100 year ARI flood |
| Arterial roads                         | The main or trunk roads of the state road network that carry predominantly through traffic between regions   |
| AS                                     | Australian Standard  |
| ASTER                                  | Advanced Spaceborne Thermal Emission and Reflection Radiometer   |
| At-grade                               | A road at ground level, not on an embankment or in a cutting   |
| ATN                                    | Active transport network   |
| AWT                                    | Average weekday traffic  |
| <b>B</b>                               |  |
| Background concentration (air quality) | Describes all contributing sources of a pollutant concentration other than road traffic. It includes, for example, contributions from natural sources, industry and domestic activity  |
| Background noise level                 | The ambient sound-pressure noise level in the absence of the sound under investigation exceeded for 90 per cent of the measurement period. Normally equated to the average minimum A-weighted sound pressure level   |
| BaP                                    | Benzo(a)pyrene   |
| Benefit cost ratio                     | A measure of the magnitude of net benefit to society derived from the capital investment in the project  |
| Bioretention facility                  | Landscaped depression designed to treat stormwater runoff to remove contaminants and sediment  |
| Blasting                               | Rock blasting is the controlled use of explosives and other methods such as gas pressure blasting pyrotechnics or plasma processes, to excavate, break down or remove rock   |
| BoM                                    | Australian Government Bureau of Meteorology  |
| Bore                                   | Constructed connection between the surface and a groundwater source that enables groundwater to be transferred to the surface either naturally or through artificial means   |
| BS                                     | British standard   |
| BTEX                                   | Benzene, toluene, ethylbenzene and xylenes   |
| BTEXN                                  | Benzene, toluene, ethylbenzene, xylenes and naphthalene  |
| BTS                                    | NSW Bureau of Transport Statistics   |

| Term                                      | Meaning  |
|---|--|
| Bus lane                                  | A traffic lane dedicated to buses, but which can also be used by taxis, bicycles and motorcycles   |
| <b>C</b>                                  |  |
| Campbell Road civil and tunnel site       | A construction ancillary facility for the M4-M5 Link project at St Peters  |
| Campbell Road motorway operations complex | An area where operational ancillary facilities are established. Located within the St Peters interchange, south of Campbell Road at St Peters, on land occupied during construction by the Campbell Road civil and tunnel site   |
| Campbell Road ventilation facility        | Ventilation supply and exhaust facilities, axial fans, ventilation outlets and ventilation tunnels. Located at St Peters, within the St Peters interchange site  |
| Capacity                                  | The nominal maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or roadway in one direction during a given time period under prevailing roadway conditions   |
| CAQMP                                     | Construction Air Quality Management Plan   |
| Carcinogen                                | A substance that causes cancer   |
| Carriageway                               | The portion of a roadway used by vehicles including shoulders and ancillary lanes  |
| CASA                                      | Civil Aviation Safety Authority  |
| Catchment                                 | The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location   |
| CBD                                       | Central business district  |
| CEMP                                      | Construction Environmental Management Plan<br>A plan developed for the construction phase of the project to ensure that all contractors and sub-contractors comply with the environmental conditions of approval for the project and that the environmental risks are properly managed |
| CFMMP                                     | Construction Flora and Fauna Management Plan   |
| Chief Scientist                           | NSW Office of the Chief Scientist and Engineer   |
| CHMP                                      | Construction Heritage Management Plan  |
| Chronic exposure                          | Contact with a substance or stressor that occurs over a long time (more than one year) [compared with acute exposure and intermediate duration exposure]   |
| City Centre Access Strategy               | Sydney Centre Access Strategy (Transport for NSW 2013)   |
| Climate change                            | A change in the state of the climate that can be identified (eg by statistical tests) by changes in the mean and/or variability of its properties, and that persists for an extended period of time, typically decades or longer (CSIRO and BoM 2015)                                  |

| Term                              | Meaning   |
|-----------------------------------|---|
| Climate projection                | A climate projection is the simulated response of the climate system to a scenario of future emission or concentration of greenhouse gases and aerosols, generally derived using climate models. Climate projections are distinguished from climate predictions by their dependence on the emission/concentration/radiative forcing scenario used, which in turn is based on assumptions concerning, for example, future socio-economic and technological developments that may or may not be realised (CSIRO and BoM 2015) |
| CLM Act                           | <i>Contaminated Land Management Act 1997</i> (NSW)  |
| CNVG                              | <i>Construction Noise and Vibration Guideline</i> (Roads and Maritime, 2016)  |
| CNVIS                             | Construction Noise and Vibration Impact Statements  |
| CNVMP                             | Construction Noise and Vibration Management Plan  |
| CO                                | Carbon monoxide   |
| CO <sub>2</sub>                   | Carbon dioxide<br>A naturally occurring gas, also a by-product of burning fossil fuels from fossil carbon deposits, such as oil, gas and coal, of burning biomass, of land use changes and of industrial processes (eg cement production). It is the principle anthropogenic greenhouse gas that affects the Earth's radiative balance (CSIRO and BoM 2015)   |
| CO <sub>2</sub> -e                | Carbon dioxide equivalents  |
| Concept design                    | Initial functional layout of a road/road system or other infrastructure. Used to facilitate understanding of a project, establish feasibility and provide basis for estimating and to determine further investigations needed for detailed design   |
| Construction                      | Includes all physical work required to construct the project  |
| Construction ancillary facilities | Temporary facilities during construction that include, but are not limited to construction sites (civil and tunnel), sediment basins, temporary water treatment plants, precast yards and material stockpiles, laydown areas, workforce parking, maintenance workshops and offices  |
| Construction fatigue              | Impact on receivers in the vicinity of concurrent and/or consecutive construction activities  |
| CPI                               | Consumer price index  |
| CPTED                             | Crime Prevention Through Environmental Design   |
| CR                                | Community receptors   |
| CSELR                             | CBD and South East Light Rail   |
| CSIRO                             | Commonwealth Scientific and Industrial Research Organisation  |
| CSWMP                             | Construction Soil and Water Management Plan   |
| CTAMP                             | Construction Traffic and Access Management Plan   |
| Cul-de-sac                        | A street or road that is open for vehicular traffic at one end only   |
| Culvert                           | A structure that allows water to flow under a road  |
| Cumulative impacts                | Impacts that, when considered together, have different and/or more substantial impacts than a single impact assessed on its own   |
| Cut-and-cover                     | A method of tunnel construction whereby the structure is built in an open excavation and subsequently covered   |

| Term                                    | Meaning   |
|---|---|
| Cutting                                 | Formation resulting from the construction of the road below existing ground level, the material is cut out or excavated   |
| CWMP                                    | Construction Waste Management Plan  |
| <b>D</b>                                |   |
| Darley Road civil and tunnel site       | A construction ancillary facility for the M4-M5 Link project located at Leichhardt  |
| Darley Road motorway operations complex | An area where operational ancillary facilities are established. Located at Leichhardt, south of City West Link and the Inner West Light Rail line on land occupied during construction by the Darley Road civil and tunnel site   |
| dB                                      | Decibel - sound level measurement   |
| dBA                                     | A-weighted decibels<br>A-weighting is applied to instrument-measured sound levels in effort to account for the relative loudness perceived by the human ear, as the ear is less sensitive to low audio frequencies  |
| DECC                                    | NSW Department of Environment and Climate Change (now OEH)  |
| DECCW                                   | NSW Department of Environment, Climate Change and Water (formerly DECC, now OEH)  |
| Design speed                            | A nominal speed which determines the geometric design features of a road  |
| Detailed design                         | The phase of the project following concept design where the design is refined, and plans, specifications and estimates are produced, suitable for construction  |
| Detour                                  | An alternative route, using existing roads, made available to traffic   |
| Differential settlement                 | Small discrete areas of settlement which may impact the relative level of one component of a structure more than compared to a different component  |
| DIN                                     | German standard   |
| DIRD                                    | Australian Government Department of Infrastructure and Regional Development   |
| Discharge                               | The rate of flow of water measured in terms of volume per unit time, for example, cubic metres per second (m <sup>3</sup> /s). Discharge is different from the speed or velocity of flow, which is a measure of how fast the water is moving (eg metres per second (m/s)) |
| Do minimum                              | A model scenario that does not incorporate the proposed project infrastructure  |
| Do something                            | A model scenario that incorporates the proposed project infrastructure  |
| Do something cumulative                 | A model scenario that incorporates the proposed project infrastructure and other relevant project infrastructure  |
| DP&E                                    | NSW Department of Planning and Environment  |
| DPI                                     | NSW Department of Primary Industries  |
| DPI-Fisheries                           | NSW Department of Primary Industries (Fisheries)  |
| DPI-Water                               | NSW Department of Primary Industries (Water)  |
| Drainage                                | Natural or artificial means for the interception and removal of surface or subsurface water   |

| Term                 | Meaning   |
|----------------------|---|
| Drawdown             | Reduction in the height of the water table caused by changes in the local environment   |
| DS                   | 'Do-Something' scenario   |
| DSC                  | 'Do-Something Cumulative' scenario  |
| <b>E</b>             |   |
| Earthworks           | All operations involved in loosening, excavating, placing, shaping and compacting soil or rock  |
| EB                   | Eastbound   |
| Ecological community | An ecological community is a naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat   |
| Egress               | Exit  |
| EIS                  | Environmental Impact Statement  |
| Embankment           | An earthen structure where the road (or other infrastructure) subgrade level is about the natural surface   |
| EMF                  | Electromagnetic field   |
| Emission factor      | A quantity which expresses the mass of a pollutant emitted per unit of activity. For road transport the unit of activity is usually either distance (ie g/km) or fuel consumed (ie g/litre)   |
| Emission rate        | A quantity which expresses the mass of a pollutant emitted per unit of time (eg g/second)   |
| Emissions scenario   | A plausible representation of the future development of emissions of substances that are potentially radiatively active (eg greenhouse gases, aerosols) based on a coherent and internally consistent set of assumptions about driving forces (such as demographic and socio-economic development, technological change) and their key relationships (CSIRO and BoM 2015) |
| Enabling works       | Works which are required to enable the commencement of the main construction works  |
| Entry ramp           | A ramp by which one enters a limited-access highway/tunnel  |
| Environment          | As defined within the <i>Environmental Planning and Assessment Act 1979</i> (NSW), all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings  |
| EOI                  | Expressions of interest   |
| EP&A Act             | <i>Environmental Planning and Assessment Act 1979</i> (NSW)   |
| EP&A Regulation      | Environmental Planning and Assessment Regulation 2000 (NSW)   |
| EPA                  | NSW Environment Protection Authority  |
| EPBC Act             | <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)   |
| EPL                  | Environment Protection Licence under the <i>Protection of the Environment Operations Act 1997</i> (NSW)   |
| Erosion              | A natural process where wind or water detaches a soil particle and provides energy to move the particle   |
| EU                   | European Union  |
| Exit ramp            | A ramp by which one exits a limited-access highway/tunnel   |

| Term   | Meaning  |
|--|--|
| Extreme rainfall                                   | There is no consistent global definition for extreme rainfall. It can be defined by either relative rainfall at a location (amount relative to averages), or absolute rainfall amounts (eg over 100 millimetres in a single day). In this report, an extreme rainfall event is defined as the wettest day in 20 years  |
| Extreme temperature                                | Definitions vary, however this report refers to extreme temperature as hot days (days above 35°C) and very hot days (days above 40°C)  |
| <b>F</b>   |  |
| F6 Extension (previously referred to as SouthLink) | A proposed motorway link between the New M5 at Arncliffe and the existing M1 Princes Highway at Loftus, generally along the alignment known as the F6 corridor. The project is being delivered by NSW Roads and Maritime Services and would be subject to separate assessment and planning approval  |
| FBA  | <i>Framework for Biodiversity Assessment</i> (Office of Environment and Heritage 2014)   |
| Feasible and reasonable                            | Consideration of standard or good practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. 'Feasible' relates to engineering considerations and what is practical to build. 'Reasonable' relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community expectations and nature and extent of potential improvements |
| Fill   | The material placed in an embankment   |
| Flood  | Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami   |
| Flood prone land                                   | Land susceptible to flooding by the probable maximum flood. Note that the flood prone land is also known as flood liable land  |
| Flood storage area                                 | Those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation. It is necessary to investigate a range of flood sizes before defining flood storage areas   |
| Floodplain   | Area of land which is inundated by floods up to and including the probable maximum flood event (ie flood prone land)   |
| Floodplain Risk Management Plan                    | A management plan developed in accordance with the principles and guidelines in the NSW Floodplain development manual (DIPNR 2005). Usually includes both written and diagrammatic information describing how particular areas of flood prone land are to be used and managed to achieve defined objectives  |
| FM Act   | <i>Fisheries Management Act 1994</i> (NSW)   |
| Form letter  | An identical standardised letter that is lodged by multiple people or groups (NSW Government 2017d)  |

| Term   | Meaning   |
|--|---|
| Freeboard  | A factor of safety typically used in relation to the setting of floor levels, levee crest levels, etc. It is usually expressed as the difference in height between the adopted flood planning level and the peak height of the flood used to determine the flood planning level. Freeboard provides a factor of safety to compensate for uncertainties in the estimation of flood levels across the floodplain, such as wave action, localised hydraulic behaviour and impacts that are specific event related, such as levee and embankment settlement, and other effects such as 'greenhouse' and climate change. Freeboard is included in the Flood Planning Level |
| Freight Strategy                                       | NSW Freight and Ports Strategy (Transport for NSW 2013b)  |
| <b>G</b>   |   |
| GDE  | Groundwater dependent ecosystem<br>Refers to communities of plants, animals and other organisms whose extent and life process are dependent on groundwater, such as wetlands and vegetation on coastal sand dunes   |
| Geotechnical investigation                             | Below ground investigation including soil and groundwater sampling and testing  |
| GHG  | Greenhouse gas  |
| Global Sydney  | As defined in A Plan for Growing Sydney (NSW Government 2014), Global Sydney includes the Sydney CBD, North Sydney CBD, Barangaroo, Darling Harbour, The Bays Precinct, Pyrmont-Ultimo, Broadway and Camperdown Education and Health Precinct, Central to Eveleigh, Surry Hills and City East   |
| GMA  | Greater Metropolitan Area   |
| GPS  | Global positioning system   |
| Grade  | The rate of longitudinal rise (or fall) with respect to the horizontal expressed as a percentage or ratio   |
| GRAL   | Graz Lagrangian (dispersion model)<br>An air quality modelling package  |
| GRAMM  | Graz Mesoscale Model  |
| Greenhouse gas   | Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of terrestrial radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. Water vapour (H <sub>2</sub> O), carbon dioxide (CO <sub>2</sub> ), nitrous oxide (N <sub>2</sub> O), methane (CH <sub>4</sub> ) and ozone (O <sub>3</sub> ) are the primary greenhouse gases in the Earth's atmosphere (CSIRO and BoM 2015)   |
| Groundwater  | Water that is held in rocks and soil beneath the earth's surface  |
| <b>H</b>   |   |
| ha   | Hectare   |
| Haberfield civil and tunnel site/Haberfield civil site | Construction ancillary facilities for the M4-M5 Link project located at Haberfield  |
| Habitat  | An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic component (OEH 2014a)  |
| HAMU   | Historical archaeological management unit   |
| HARD   | Historical archaeological research design   |



| Term                              | Meaning  |
|-----------------------------------|--|
| Hazard                            | A source of potential harm or a situation with a potential to cause loss of human life or damage to physical assets  |
| HCA                               | Heritage conservation area   |
| Heavy vehicles                    | A heavy vehicle is classified as a Class 3 vehicle (a two axle truck) or larger, in accordance with the Austroads Vehicle Classification System  |
| Heritage Act                      | <i>Heritage Act 1977</i> (NSW)   |
| Heritage Council                  | Heritage Council of NSW  |
| Heritage item                     | Any place, building or object listed on a statutory heritage register  |
| HGV                               | Heavy goods vehicle (truck)  |
| HHRA                              | Human health risk assessment   |
| HIA/HIS                           | Heritage impact assessment/heritage impact statement   |
| Hydraulic conductivity            | A characteristic of soil that describes how easily water moves through it  |
| Hydrogeology                      | The area of geology that deals with the distribution and movement of groundwater in soils and rocks  |
| Hydrology                         | The study of rainfall and surface water runoff processes   |
| <b>I</b>                          |  |
| IAQM                              | Institute of Air Quality Management  |
| ICAC                              | Independent Commission Against Corruption  |
| ICNG                              | <i>Interim Construction Noise Guideline</i> (NSW DECC 2009a)   |
| Impact                            | Influence or effect exerted by a project or other activity on the natural, built and community environment   |
| In situ                           | In the natural or original position. Applied to a rock, soil, or fossil when occurring in the situation in which it was originally formed or deposited   |
| Infiltration                      | The downward movement of water into soil and rock. It is largely governed by the structural condition of the soil, the nature of the soil surface (including presence of vegetation) and the antecedent moisture content of the soil |
| Ingress                           | Enter  |
| Inner West Council                | The amalgamation of the former local government areas of Ashfield, Leichhardt and Marrickville, proclaimed on 12 May 2016  |
| Inner West subsurface interchange | A subsurface interchange at Leichhardt and Annandale that would link the mainline tunnels with the Rozelle interchange and the Iron Cove Link  |
| INP                               | Industrial Noise Policy  |
| Interchange                       | A grade separation of two or more roads with one or more interconnecting carriageways  |
| IPCC                              | Intergovernmental Panel on Climate Change  |
| Iron Cove Link                    | Around one kilometre of twin tunnels that would connect Victoria Road near the eastern abutment of Iron Cove Bridge and Anzac Bridge   |
| Iron Cove Link civil site         | A construction ancillary facility for the M4-M5 Link project located at Rozelle  |

| Term                                       | Meaning   |
|--|---|
| Iron Cove Link motorway operations complex | An area where operational ancillary facilities are established. Located south of the realigned Victoria Road carriageway between Callan Street and Springside Street at Rozelle, on land occupied during construction by the Iron Cove Link civil site  |
| Iron Cove Link ventilation facility        | Ventilation supply and exhaust facilities, axial fans, ventilation outlets and ventilation tunnels. Located at Rozelle  |
| ISCA                                       | Infrastructure Sustainability Council of Australia  |
| <b>J</b>                                   |   |
| Just Terms Act                             | <i>Land Acquisition (Just Terms Compensation) Act 1991</i> (NSW)  |
| <b>K</b>                                   |   |
| KGRIU                                      | King Georges Road Interchange Upgrade<br>A component of the WestConnex program of works. Upgrade of the King Georges Road interchange between the M5 West and the M5 East at Beverly Hills, in preparation for the New M5 project   |
| kL   | Kilolitre   |
| kL/day                                     | Kilolitres per day  |
| km   | kilometres  |
| <b>L</b>                                   |   |
| L/s/km                                     | Litres per second per kilometre   |
| L <sub>A90</sub>                           | The “background noise level” in the absence of construction activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively. The LAeq(15minute) construction Noise Management Levels (NMLs) are based on the LA90 background noise levels |
| L <sub>Aeq</sub>                           | The ‘energy average noise level’  |
| L <sub>AFmax</sub>                         | The maximum fast time weighted noise level from road traffic noise occurring at a particular location   |
| LALC                                       | Local Aboriginal land council   |
| Landscape character                        | The aggregate of built, natural and cultural aspects that make up an area and provide a sense of place. Includes all aspects of a tract of land – built, planted and natural topographical and ecological features  |
| Landscape design                           | The design of the natural and built environment. Soft landscape design involves design using vegetative materials such as trees, shrubs, groundcovers. Hard landscape design involves design using hard materials such as pavement, walls and ramps   |
| Lane                                       | A portion of the carriageway allotted for the use of a single line of vehicles  |
| LCV  | Light commercial vehicle  |
| LCZ  | Landscape character zone  |
| LDV  | Light duty vehicle  |
| Leachate                                   | Liquid that ‘leaches’ (drains) from a landfill or stockpile   |
| LEP  | Local environmental plan  |
| LGA  | Local government area   |
| Local road                                 | A road or street used primarily for access to abutting properties   |
| LoS  | Level of service  |

| Term                          | Meaning  |
|-------------------------------|--|
| LTADEL                        | Long term average annual extraction limits   |
| <b>M</b>                      |  |
| m                             | Metres   |
| m <sup>2</sup>                | Square metres  |
| m <sup>3</sup>                | Cubic metres   |
| M4 East mainline connection   | The underground connection between the M4-M5 Link mainline tunnels and the M4 East mainline stub tunnels   |
| M4 East mainline stub tunnels | Eastbound and westbound extensions of the M4 East mainline tunnel being built as part of the M4 East project (to connect with the M4-M5 Link)  |
| M4 East Motorway/project      | A component of the WestConnex program of works. Extension of the M4 Motorway in tunnels between Homebush and Haberfield via Concord. Includes provision for a future connection to the M4-M5 Link at the Wattle Street interchange |
| M4 Motorway                   | The M4 Motorway is a 40 kilometre motorway that extends from Concord in Sydney's inner west to Lapstone at the foothills of the Blue Mountains   |
| M4 Widening                   | A component of the WestConnex program of works. Widening of the existing M4 Motorway from Parramatta to Homebush   |
| M4-M5 Link                    | The project which is the subject of this EIS. A component of the WestConnex program of works   |
| M5 East Motorway              | Part of the M5 motorway corridor. Located between Beverly Hills and Sydney Airport (General Holmes Drive)  |
| M5 motorway corridor          | The M5 East Motorway and the M5 South West Motorway  |
| M5 South West Motorway        | Part of the M5 Motorway corridor. Located between Prestons and Beverly Hills   |
| Mainline tunnels              | The M4-M5 Link mainline tunnels connecting with the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters  |
| Median                        | The central reservation which separates carriageways from traffic travelling in the opposite direction   |
| mg/L                          | Milligrams per litre   |
| Mid-block                     | Section of road between two intersections  |
| MLALC                         | Metropolitan local Aboriginal land council   |
| Motorway                      | Fast, high volume controlled access roads. May be tolled or untolled   |
| MUSIC                         | Model for Urban Stormwater Improvement Conceptualisation   |
| <b>N</b>                      |  |
| NARCIIM                       | NSW/ACT Regional Climate Modelling   |
| NATA                          | National Association of Testing Authorities, Australia   |
| Naturalisation works          | Restoring the natural values of a river by works such as replacing concrete walls with natural looking banks made of rocks and native plants to improve health and natural character   |
| NCA                           | Noise catchment area   |
| NCG                           | <i>Noise Criteria Guideline</i> (Roads and Maritime, 2015)   |
| NEPC                          | National Environment Protection Council  |
| NEPM                          | National Environment Protection Measure  |

| Term                                    | Meaning   |
|---|---|
| New M5 mainline connection              | The underground connection between the M4-M5 Link mainline tunnels and the New M5 mainline stub tunnels                                       |
| New M5 mainline stub tunnels            | Northbound and southbound extensions of the New M5 mainline tunnel being built as part of the New M5 project (to connect with the M4-M5 Link) |
| New M5 Motorway/project                 | A component of the WestConnex program of works. Located from Kingsgrove to St Peters (under construction)                                     |
| NH <sub>3</sub>                         | Ammonia   |
| NHL                                     | National heritage list  |
| NHMRC                                   | National Health and Medical Research Council  |
| NMG                                     | <i>Noise Mitigation Guideline</i> (Roads and Maritime, 2015)  |
| NML                                     | Noise management level  |
| NO                                      | Nitric oxide  |
| NO <sub>2</sub>                         | Nitrogen dioxide  |
| Northcote Street civil site             | A construction ancillary facility for the M4-M5 Link project located at Haberfield  |
| NO <sub>x</sub>                         | Oxides of nitrogen  |
| NSW                                     | New South Wales   |
| NSW EPA                                 | NSW Environment Protection Authority  |
| NSW Health                              | NSW Department of Health  |
| NZ                                      | New Zealand   |
| <b>O</b>                                |   |
| O <sub>3</sub>                          | Ozone   |
| OEHL                                    | NSW Office of Environment and Heritage (Formerly DECCW)   |
| OEMP                                    | Operational Environmental Management Plan   |
| ONVR                                    | Operational Noise and Vibration Review  |
| OOHW                                    | Out-of-hours work   |
| Overbridge                              | Bridge that conveys another road, rail or pedestrians over the described road   |
| <b>P</b>                                |   |
| PACHCI                                  | <i>Procedure for Aboriginal Cultural Heritage Consultation and Investigation</i> (Roads and Maritime 2011)                                    |
| PAH(s)                                  | Polycyclic aromatic hydrocarbon(s)  |
| Palaeochannel/palaeovalley              | Ancient river systems eroded deeply into the landscape and infilled with saturated alluvial sediments   |
| PANS-OPS                                | Procedures for air navigation systems operations  |
| Parramatta Road corridor                | The area from Parramatta CBD to Sydney CBD, generally between the Main Western Rail line in the south and the Parramatta River to the north   |
| Parramatta Road East civil site         | A construction ancillary facility for the M4-M5 Link project at Haberfield  |
| Parramatta Road Transformation Strategy | <i>The Parramatta Road Corridor Urban Transformation Strategy</i> (UrbanGrowth NSW 2016a)   |

| Term                                       | Meaning  |
|--|--|
| Parramatta Road ventilation facility       | A ventilation facility located on the south-eastern corner of the Parramatta Road/Wattle Street intersection (referred to as the Eastern ventilation facility in the M4 East project EIS). The facility is being built as part of the M4 East project. As part of the M4-M5 Link project, fitout works would be carried out on a section of this facility  |
| Parramatta Road West civil and tunnel site | A construction ancillary facility for the M4-M5 Link project at Ashfield   |
| PASS                                       | Potential acid sulfate soils   |
| Pavement                                   | The portion of a carriageway placed above the subgrade for the support of, and to form a running surface for, vehicular traffic  |
| PCT  | Plant community type   |
| PCU  | Passenger car unit   |
| pH   | Numeric scale ranging from zero to 14 used to specify the acidity or alkalinity of an aqueous solution. Solutions with a pH less than seven are acidic and solutions with a pH greater than seven are alkaline. Pure water has a pH of seven and is neutral  |
| PIARC                                      | Permanent International Association of Road Congresses   |
| PM   | (Airborne) particulate matter  |
| PM peak hour                               | Unless otherwise stated, this refers to trips travelling on the network during the average one hour peak period between 3pm to 6pm on a weekday  |
| PM <sub>10</sub>                           | Airborne particulate matter with an aerodynamic diameter of less than 10 micrometres (µm)  |
| PM <sub>2.5</sub>                          | Airborne particulate matter with an aerodynamic diameter of less than 2.5 micrometres (µm)   |
| PMF  | Probable maximum flood<br>The flood that occur as a result of the probable maximum precipitation on a study catchment. The probable maximum flood is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The probable maximum flood defines the extent of flood prone land (ie the floodplain) |
| POEO Act                                   | <i>Protection of the Environment Operations Act 1997 (NSW)</i>   |
| Pollutant                                  | Any measured concentration of solid or liquid matter that is not naturally present in the environment  |
| Portal                                     | The entry and/or exit to a tunnel  |
| Potential heritage item                    | Place identified in this report as potentially having heritage significance, which is not recognised on the heritage register  |
| ppb  | Parts per billion  |
| ppm  | Parts per million  |
| Pre-construction                           | All work prior to, and in respect of the State significant infrastructure, that is excluded from the definition of construction  |
| Priority List                              | Infrastructure Australia's <i>Australian Infrastructure Plan: The Infrastructure Priority List</i>   |

| Term                                  | Meaning  |
|---------------------------------------|--|
| Project                               | A new multi-lane road link between the M4 East Motorway at Haberfield and the New M5 Motorway at St Peters. The project would also include an interchange at Lilyfield and Rozelle (the Rozelle interchange) and a tunnel connection between Anzac Bridge and Victoria Road, east of Iron Cove Bridge (Iron Cove Link). In addition, construction of tunnels, ramps and associated infrastructure to provide connections to the proposed future Western Harbour Tunnel project would be carried out at the Rozelle interchange |
| Project footprint                     | The land required to construct and operate the project. This includes permanent operational infrastructure (including the tunnels), and land required temporarily for construction   |
| Property                              | Based on ownership, with the potential to contain more than one lot and DP   |
| Proponent                             | The person or organisation that proposes to carry out the project or activity. For the purpose of the project, the proponent is NSW Roads and Maritime Services  |
| Public transport                      | Includes train, bus (government and private), ferry (government and private) and light rail (government and private) services  |
| Pymont Bridge Road tunnel site        | A construction ancillary facility for the M4-M5 Link project at Annandale  |
| <b>Q</b>                              |  |
| <b>R</b>                              |  |
| RAP                                   | Remedial action plan   |
| RBL                                   | Rating background levels   |
| RCP                                   | Representative concentration pathways  |
| RDE                                   | Real driving emissions   |
| REF                                   | Review of environmental factors  |
| Representative concentration pathways | Scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases and aerosols and chemically active gases, as well as land use/cover (Dowdy et al 2015)  |
| Residual land                         | Acquired land not required during operation of the project   |
| Revegetation                          | Direct seeding or planting (generally with native species) within an area in order to re-establish vegetation that was previously removed from that area   |
| Riparian                              | The part of the landscape adjoining rivers and streams that has a direct influence on the water and aquatic ecosystems within them   |
| RLMP                                  | Residual Land Management Plan  |
| RNP                                   | Road Noise Policy  |
| Road reserve                          | A legally defined area of land within which facilities such as roads, footpaths and associated features may be constructed for public travel   |
| Roadheader                            | A commonly used machine for excavation in sandstone using picks mounted on a rotary cutter head attached to a hydraulically operated boom  |
| Roads and Maritime                    | NSW Roads and Maritime Services  |
| Rozelle civil and tunnel site         | A construction ancillary facility for the M4-M5 Link project located at Lilyfield and Rozelle  |

| Term                                     | Meaning  |
|--|--|
| Rozelle East motorway operations complex | An area where operational ancillary facilities are established. Located at the western end of the Rozelle Rail Yards on land occupied during construction by the Rozelle civil and tunnel site   |
| Rozelle interchange                      | A new interchange at Lilyfield and Rozelle that would connect the M4-M5 Link mainline tunnels with City West Link, Anzac Bridge, the Iron Cove Link and the proposed future Western Harbour Tunnel and Beaches Link  |
| Rozelle Rail Yards                       | The Rozelle Rail Yards is bound by City West Link to the south, Lilyfield Road to the north, Balmain Road to the west, and White Bay to the east. Note that the project only occupies part of the Rozelle Rail Yards site  |
| Rozelle ventilation facility             | Ventilation supply and exhaust facilities, axial fans, ventilation outlets and ventilation tunnels. Located at the Rozelle Rail Yards, the ventilation supply facility is located at the Rozelle West motorway operations complex and a ventilation exhaust facility at the Rozelle East motorway operations complex |
| Rozelle West motorway operations complex | An area where operational ancillary facilities are established. Located at the central/eastern end of the Rozelle Rail Yards, on land occupied during construction by the Rozelle civil and tunnel site  |
| RPAH                                     | Royal Prince Alfred Hospital   |
| RTA                                      | NSW Roads and Traffic Authority (now NSW Roads and Maritime Services)  |
| Runoff                                   | The amount of rainfall that ends up as streamflow, also known as rainfall excess   |
| RWR                                      | Residential, workplace and recreational<br>This term refers to all discrete receptor locations along the project corridor, and mainly covers residential and commercial land uses  |
| <b>S</b>                                 |  |
| s  | Second   |
| S170                                     | State Agency Section 170 Heritage and Conservation Register. Section 170 of the <i>Heritage Act 1977</i> (NSW) requires NSW Government agencies to keep a register of heritage items/assets owned, occupied or managed by that government agency   |
| Salinity                                 | The concentration of dissolved salts in water  |
| SB                                       | Southbound   |
| SCATS                                    | Sydney coordinated adaptive traffic system   |
| Scour                                    | Removal of sediment such as sand and gravel from around bridge abutments or piers caused by moving water   |
| SEARs                                    | Secretary's Environmental Assessment Requirements<br>Requirements and specifications for an environmental assessment prepared by the Secretary of the NSW Department of the Planning and Environment under section 115Y of the <i>Environmental Planning and Assessment Act 1979</i> (NSW)                           |
| Sediment                                 | Material, both mineral and organic, that is being or has been moved from its site of origin by the action of wind, water or gravity and comes to rest either above or below water level  |

| Term                        | Meaning  |
|-----------------------------|--|
| SEIA                        | Socio-economic impact assessment   |
| SEIFA                       | Socio-Economic Index for Areas   |
| Sensitive receiver/receptor | Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), child care centres, passive recreation areas (including outdoor grounds used for teaching), active recreation areas (including parks and sports grounds), commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, retail spaces and industrial premises) |
| SEPP                        | State Environmental Planning Policy  |
| SEPP 19                     | State Environmental Planning Policy No. 19 – Bushland in Urban Areas   |
| SEPP 33                     | State Environmental Planning Policy No. 33 – Hazardous and Offensive Development   |
| SEPP 55                     | State Environmental Planning Policy No. 55 – Remediation of Land   |
| Settlement                  | Refers to how ground can move due to the construction of new infrastructure  |
| SHFWDCP                     | Sydney Harbour – Foreshores and Waterways Area Development Control Plan: Ecological Communities and Landscape Characters and Wetlands Protection Map   |
| Shotcrete                   | The spraying of concrete and mortar onto a surface at high velocity  |
| Shoulder                    | The portion of the carriageway beyond the traffic lanes adjacent to and flush with the surface of the pavement   |
| SHR                         | State Heritage Register  |
| Smart motorway operations   | A Smart Motorway uses technology to monitor, provide intelligence and control the motorway to ease congestion and keep traffic flowing more effectively. Technology, including lane use management signs, vehicle detection equipment, CCTV cameras and on-ramp signals, allows road operators to manage, in real-time, traffic entering, exiting and traversing the motorway  |
| SMC                         | Sydney Motorway Corporation  |
| SO <sub>2</sub>             | Sulfur dioxide   |
| Socio-economic              | Involving combination of social and economic matters   |
| Soil salinity               | Salt content of soil   |
| Spoil                       | Surplus excavated material   |
| SREP 26                     | <i>Sydney Regional Environmental Plan No. 26 – City West</i>   |
| SSI                         | State significant infrastructure   |
| SSIAR                       | State significant infrastructure application report  |
| St Peters interchange       | A component of the New M5 project, located at the former Alexandria Landfill site at St Peters. Approved and under construction as part of the New M5 project. Additional construction works proposed as part of the M4-M5 Link project  |



| Term                                  | Meaning  |
|---------------------------------------|--|
| Staging                               | Refers to the division of the project into multiple contract packages for construction purposes, and/or the construction or operation of the overall project in discrete phases  |
| State Infrastructure Strategy         | State Infrastructure Strategy 2012–2032 (Infrastructure NSW 2012)  |
| STM                                   | Strategic Traffic Model  |
| Stockpile                             | Temporary stored materials such as soil, sand, gravel, spoil/waste   |
| Strata                                | Geological layers below the ground surface   |
| Stub tunnel                           | Driven tunnels constructed to connect to potential future motorway links   |
| Surface water                         | Water flowing or held in streams, rivers and other wetlands in the landscape   |
| Sustainable development               | Development which meets the needs of the present, without compromising the ability of future generations to meet their own needs (Brundtland 1987)   |
| SVOC                                  | Semi Volatile Organic Hydrocarbons   |
| Sydney Gateway                        | A high-capacity connection between the St Peters interchange (under construction as part of the New M5 project) and the Sydney Airport and Port Botany precinct  |
| Sydney Harbour Catchment SREP         | <i>Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005</i>  |
| <b>T</b>                              |  |
| The Bays Precinct Transformation Plan | <i>Transformation Plan: The Bays Precinct, Sydney</i> (UrbanGrowth NSW 2015)   |
| The Blue Book                         | <i>Managing Urban Stormwater – Soils and Construction Volumes 1 and 2</i> (NSW Government 2004 and 2006)   |
| The Crescent civil site               | A construction ancillary facility for the M4-M5 Link project located at Annandale  |
| Threatened ecological community       | Threatened ecological community<br>A naturally occurring group of native plants, animals and other organisms living in a unique habitat at risk of extinction and listed under the EPBC Act and/or <i>Threatened Species Conservation Act 1995</i> (NSW) |
| TMC                                   | Transport Management Centre  |
| Topography                            | Surface features in an area of land  |
| Total concentration (air quality)     | The sum of the background, surface road and ventilation outlet concentrations. It may relate to conditions with or without the project under assessment  |
| Toxicity                              | The degree of danger posed by a substance to human, animal or plant life   |
| TPA                                   | Transport Performance Analytics  |
| TPH                                   | Total petroleum hydrocarbons   |
| Transport for NSW                     | NSW Government Department Transport for NSW  |
| TRH                                   | Total recoverable hydrocarbons   |
| Truck-and-dog construction vehicle    | A vehicle with 20 cubic metre capacity and maximum length of 19 metres   |

| Term                                | Meaning  |
|-------------------------------------|--|
| TSC Act                             | <i>Threatened Species Conservation Act 1995</i> (NSW)  |
| Tunnel boring machine               | An excavation machine that 'bores' through soil or rock to create a tunnel with a circular cross section (as opposed to drilling and blasting methods)                 |
| Turbidity                           | A measure of light penetration through a water column containing particles of matter in suspension   |
| Typical cross section               | A cross section of a carriageway showing typical dimensional details, furniture locations and features of the pavement construction                                    |
| <b>U</b>                            |  |
| UDLP                                | Urban Design and Landscape Plan  |
| UDLP land                           | Project land that has been identified as subject to the UDLP   |
| UDRP                                | Urban Design Review Panel  |
| UFP                                 | Ultrafine particles  |
| UHI                                 | Urban heat island  |
| Ultrafines/Ultrafine particles      | Particulate matter below 0.1 microns in diameter   |
| Urban design                        | The process and product of designing human settlements, and their supporting infrastructure, in urban and rural environments   |
| <b>V</b>                            |  |
| V/C                                 | Volume to capacity ratio   |
| Ventilation facility                | Facility for the mechanical removal of air from the mainline tunnels, or mechanical introduction of air into the tunnels. May comprise one or more ventilation outlets |
| Ventilation outlet                  | The location and structure from which air within a tunnel is expelled  |
| Ventilation outlet concentration    | Describes the contribution of pollutants from tunnel ventilation outlets   |
| VHT                                 | Vehicle hours travelled  |
| VIA                                 | Visual impact assessment   |
| Victoria Road civil site            | A construction ancillary facility for the M4-M5 Link project located at Rozelle  |
| Visual amenity                      | Pleasantness or attractiveness of a place or area  |
| VKT                                 | Vehicle kilometres travelled   |
| VMS                                 | Variable message signs   |
| VOCs                                | Volatile organic compounds   |
| VTTS                                | Value of travel time savings   |
| <b>W</b>                            |  |
| WARR Act                            | <i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW)  |
| Water table                         | The surface of saturation in an unconfined aquifer at which the pressure of the water is equal to that of the atmosphere   |
| Waterway                            | Any flowing stream of water, whether natural or artificially regulated (not necessarily permanent)   |
| Wattle Street civil and tunnel site | A construction ancillary facility for the M4-M5 Link project located at Haberfield   |

| Term   | Meaning  |
|--|--|
| Wattle Street interchange                                | An interchange to connect Wattle Street (City West Link) with the M4 East and the M4-M5 Link tunnels. Approved and under construction as part of the M4 East project. Additional construction works proposed as part of the M4-M5 Link project   |
| Wayfinding   | This refers to navigation signage or roadway markers such as in the tunnels or along surface roads   |
| WDA  | WestConnex Delivery Authority (now Sydney Motorway Corporation)  |
| WestConnex program of works                              | A program of works that includes the M4 Widening, King Georges Road Interchange Upgrade, M4 East, New M5 and M4-M5 Link projects   |
| Western Harbour Tunnel and Beaches Link program of works | The Western Harbour Tunnel and Beaches Link program of works includes the proposed future 'Western Harbour Tunnel and Warringah Freeway Upgrade' project (the Western Harbour Tunnel project), and the proposed future 'Beaches Link and Gore Hill Freeway Connection' project (the Beaches Link project). Both projects are currently in the early planning and design stage. |
| Wetland  | Wetlands are areas of land that are wet by surface water or groundwater, or both, for long enough periods that the plants and animals in them are adapted to, and depend on, moist conditions for at least part of their lifecycle   |
| WHO  | World Health Organization  |
| WQO  | NSW Water Quality Objectives   |
| WQO  | Water quality objective  |
| WRTM   | WestConnex Road Traffic Model  |
| WSA  | Western Sydney Airport   |
| WSUD   | Water sensitive urban design   |
| <b>Other</b>   |  |
| mg/m <sup>3</sup>  | micrograms per cubic metre   |
| µg   | microgram  |
| µm   | micrometres  |

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