

Appendix B. Acronyms, terms and definitions

Glossary of abbreviations

Abbreviation	Definition
AADT	Average Annual Daily Traffic
ABM	Automatic Bat Monitoring device
ACDP	Auckland Council District Plan - Operative Rodney Section 2011
AEE	Assessment of Environmental Effects
AEP	Annual Exceedance Probability
ANZECC	Australian and New Zealand Environment Conservation Council
ARAQT	Auckland Regional Ambient Air Quality Targets
ARC	Auckland Regional Council (preceded the Auckland Council)
ARDS	The Department of Conservation's Amphibian and Reptile Distribution Scheme
ARI	Average Recurrence Interval
ARLTS	Auckland Regional Land Transport Strategy
ARP:ALW	Auckland Regional Plan: Air, land and water
ARP:C	Auckland Regional Plan: Coastal
ARP:SC	Auckland Regional Plan: Sediment Control
ARPS	Auckland Regional Policy Statement
ASCV	Area of Significant Conservation Value
BPO	Best Practicable Option
BS 5228-2:2009	British Standard BS 5228-2:2009 <i>"Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration"</i>
CAS	NZTA's Crash Analysis System
Ch	Chainage
CESCP	Construction Erosion and Sediment Control Plan
CHI	Auckland Council's Cultural Heritage Inventory
CMA	Coastal Marine Area
CO	Carbon monoxide

Abbreviation	Definition
CPA 1	Coastal Protection Area 1 (as defined in ARP:C)
CPA 2	Coastal Protection Area 2 (as defined in ARP:C)
DIN 4150-3:1999	German Standard DIN 4150-3:1999 " <i>Structural Vibration – Part 3: Effects of Vibration on Structures</i> "
DEB	Decanting Earth Bund
DoC	Department of Conservation
EEM	The NZTA Economic Evaluation Manual
EPA	Environmental Protection Authority
GIS	Geographic Information System
GLEAMS	Groundwater Loading Effects of Agricultural Management Systems
GPS 2012	Government Policy Statement on Land Transport Funding 2012/13-2021/22
Ha	Hectare(s)
HAIL	Hazardous Activities Industries List
HCV	Heavy Commercial Vehicle
HGMPA	Hauraki Gulf Marine Park Act 2000
HPA	Historic Places Act 1993
HSAPLU	Highly sensitive air pollution land uses
KiwiRAP	New Zealand Road Assessment Programme
kg	kilograms
Km	Kilometre(s)
Km²	Square Kilometres
LGAAA	Local Government (Auckland) Amendment Act 2004
LTMA	Land Transport Management Act 2003
m	Metres
m²	Square metre(S)
m³	Cubic metre(s)
mg/m³	Milligrams per cubic metre
mm	Millimetre(s)

Abbreviation	Definition
MAP	Mahurangi Action Plan
mBGL	Metres Below Ground Level
MCI	Macroinvertebrate Community Index
MfE	Ministry for the Environment
MHWS	Mean High Water Springs
MOU	Memorandum of Understanding
MSE	Mechanically Stabilised Earth
NAL	North Auckland Line (Railway)
NES	National Environmental Standards
NFDS	National Freight Demand Study
NGTR	Northern Gateway Toll Road
NIWA	National Institute of Water and Atmospheric Research Limited
NLTP	National Land Transport Programme 2012-2015
NO	Nitric oxide
NO₂	Nitrogen Dioxide
NO_x	Oxides of nitrogen
NOR(s)	Notice of Requirement(s)
NPS	National Policy Statement
NS 8176.E:2005	Norwegian Standard NS 8176.E:2005 " <i>Measurement of vibration in buildings from land based transport and guidance to evaluation of its effects on human beings</i> "
NTU	Nephelometric Turbidity Unit
NZAA	New Zealand Archaeological Association
NZCPS	New Zealand Coastal Policy Statement 2010
NZFFD	New Zealand Freshwater Fish Database
NZHPT	New Zealand Historic Places Trust
NZS 6801:2008	New Zealand Standard NZS 6801:2008 " <i>Acoustics – Measurement of environmental sound</i> "
NZS 6802:2008	New Zealand Standard NZS 6802:2008 " <i>Acoustics – Environmental Noise</i> "
NZS 6803:1999	New Zealand Standard NZS 6803:1999 " <i>Acoustics – Construction Noise</i> "

Abbreviation	Definition
NZS 6806:2010	New Zealand Standard NZS 6806:2010 " <i>Acoustics – Road traffic noise – New and altered roads</i> "
NZTA	NZ Transport Agency
NZTS	New Zealand Transport Strategy
NZUDP	New Zealand Urban Design Protocol
OGPA	Open Grade Porous Asphalt
ONL	Outstanding Natural Landscape
OPW	Outline Plan of Works
PPFs	Protected premises and facilities
PPV	Peak Particle Velocity
PM₁₀	Fine particulate matter less than 10 microns in diameter
PM_{2.5}	Fine particulate matter less than 2.5 microns in diameter
P-W	The Pūhoi to Wellsford Project Road of National Significance
PWA	Public Works Act 1981
P-Wk	Pūhoi to Warkworth section of the Pūhoi to Wellsford Road of National Significance Project
RDC	Rodney District Council (preceded Auckland Council)
RARP	Regional Arterial Road Plan
RMA	Resource Management Act 1991
RoNS	Roads of National Significance
SES	Site of Ecological Significance
SEV	Stream Ecological Valuations / Stream Ecological Value Assessment
SHx	State Highway (number)
SIA	Social Impact Assessment
SNA	Significant Natural Area
SO₂	Sulphur dioxide
SRP	Sediment Retention Pond
SSF	Super Silt Fence
TD	Permanent Stormwater treatment device

Abbreviation	Definition
TMS	NZTA's Traffic Monitoring System
TP10	AC Technical Publication Number 10: Stormwater Management Devices Design Guideline Manual
TP90	AC Technical Publication Number 90: Erosion and Sediment Control Guidelines for Land Disturbing Activities
TP108	ARC Technical Publication 108: Guidelines for Stormwater Runoff Modelling in the Auckland Region
TSS	Total Suspended Solids
ULDF	Urban and Landscape Design Framework
USEPA	United States Environmental Protection Agency
USLE	Universal Soil Loss Equation
VEPM	Vehicle Emissions Prediction Model (Version 5.1)
vpd	Vehicles Per Day
vph	Vehicles Per Hour
WHO	World Health Organisation
WSP 2004	Warkworth Structure Plan 2004

Glossary of Defined Terms

Term	Definition
Annual Exceedance Probability Storm Event	The probability of exceeding a given storm discharge or flood level within a period of one year. For example, equivalent return period terms 1% AEP = 1 in 100 year.
Allochthon	A large block of rock which has been moved from its original site of formation, usually by low angle thrust faulting.(colloquially known as "Onerahi chaos")
Ambient Air	The air outside buildings and structures. It does not refer to indoor air, air in the workplace, or to contaminated air as it is discharged from a source.
Ambient noise / vibration	The total noise or vibration existing at a specified point and time associated with a given environment, excluding the sound or vibration requiring control. It is a composite of all noise or vibration sources, near and far.
Amenity	Defined in section 2 of the RMA as those natural or physical qualities and characteristics of an area that contributes to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.
Archaeological site	Defined in section 2 of the Historic Places Act 1993 as any place in New Zealand that – <ul style="list-style-type: none"> (a) Either- <ul style="list-style-type: none"> • Was associated with human activity that occurred before 1900; or • Is the site of the wreck of any vessel where that wreck occurred before 1900; and (b) Is or may be able through investigation by archaeological methods to provide evidence relating to the history of New Zealand.
Average Recurrence Interval Event	The average time period between rainfall or flow events which equal or exceed a given magnitude.
Auckland Council	The unitary authority that replaced eight councils in the Auckland region as of 1 November 2010
Best Practicable Option (BPO)	Defined in section 2 of the RMA as, in relation to the discharge of a contaminant or an emission or noise, the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to— <ul style="list-style-type: none"> (a) The nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and (b) The financial implications, and the effects on the environment, of that option when compared with other options; and (c) The current state of technical knowledge and the likelihood that the option can be successfully applied.
Bore	Any hole that has been constructed to provide access to groundwater (for example, for monitoring of ground or groundwater conditions, taking of groundwater or the discharge of stormwater).
Broadleaved	Trees that produce flowers
Building Condition Survey	A survey (by a structural engineer) recording and documenting any damage to the building structure - including superficial damage. Used to track the occurrence or exacerbation of building damage over time to provide objective proof in the event of any damage claims.
Canopy	Tallest layer of the forest

Term	Definition
Construction Runoff	Any runoff, sediment laden or otherwise, that flows as a result of the construction related activities. Typically results from rain events.
Crake	A type of wetland bird
Culvert	A pipe with an inlet from a watercourse and outlet to a watercourse, designed to convey water under a specific structure (such as a road).
dB	A decibel is a unit of sound level.
dBA	A measurement of sound level which has its frequency characteristics modified by a filter (A-weighted) so as to more closely approximate the frequency bias of the human ear.
Diversion of stormwater	The turning aside of stormwater from its natural course of flow; causing it to flow by a different route.
Earthworks	The disturbance of land surfaces by blading, contouring, ripping, moving, removing, placing or replacing soil or earth, or by excavation, or by cutting or filling operations.
Eastern Beaches	Beach communities located east of Warkworth including Leigh, Omaha, Sandspit, Snells Beach and Mahurangi East.
Ephemeral	Waterbody that only exists for short period of time following precipitation or snow melt
Erosion Control	Methods to prevent or minimise the erosion of soil, in order to minimise the adverse effects that land disturbing activities may have on a receiving environment.
Fish Passage	The movement of fish between the sea and any river, including up-stream or downstream in that river.
Flocculation	The process whereby fine particles suspended in the water column clump together and settle. In some instances this can occur naturally, such as when fresh clay-laden flows mix with saline water, as occurs in estuaries. Flocculation can be used to promote rapid settling in sediment retention ponds by the addition of flocculating chemicals (flocculants).
Groundwater	Natural water contained within soil and rock formations below the surface of the ground.
Heritage Site	A site that contributes to an understanding and appreciation of New Zealand's history and cultures. A heritage site can be derived from archaeological, architectural, cultural, historic, scientific and technological fields.
Highly sensitive air pollution land uses	A location where people or surroundings may be particularly sensitive to the effects of air pollution. These include residential houses, hospitals, schools, early childhood education centres, childcare facilities, rest homes, residential properties, premises used primarily as temporary accommodation (such as hotels, motels, and camping grounds), open space used for recreation, the conservation estate, marae and other similar cultural facilities.
Impervious Area	An area with a surface which either prevents or significantly retards the infiltration of water into the ground, thereby causing water to run off the ground surface in greater quantities or at an increased rate of flow than would occur under natural conditions
Indicative Alignment	A route and designation footprint selected after short-list and long-list development to enable consultation with the community. This development involved specialist work assessing environmental, social and engineering inputs. It is a preliminary design alignment that may be refined on detailed design within the designation boundary
Intermittent Stream	Any stream or part of a stream that is not a Permanent stream.

Term	Definition
L_{Aeq(t)}	<p>The time averaged noise level (on a log/energy basis). This is commonly referred to as the average noise level. The "A" represents A – weighting whereby the value has had its frequency characteristics modified by a filter so as to more closely approximate the frequency bias of the human ear.</p> <p>The suffix "t" represents the time period to which the noise level relates, eg (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent the period between 10 pm and 7 am.</p>
L_{Amax}	<p>The maximum sound pressure level measured during the sampling period.</p> <p>The "A" represents A – weighting as described for L_{Aeq(t)} above.</p>
Land Disturbing Activity	Any disturbance to the ground surface that may result in soil erosion through the action of wind or water.
Mechanically Stabilised Earth Walls	In-ground structures that improve the shearing resistance of foundation soils and usually involve deep excavations and the importation of engineered fill material.
Motorway	Motorway means a motorway declared as such by the Governor-General in Council under section 138 of the PWA or under section 71 of the Government Roading Powers Act 1989.
Noise Mitigation	An activity or structure which reduces/mitigates the impact or effect of noise.
NO_x	Oxides of nitrogen – a suite of gaseous contaminants that are emitted from road vehicles and other sources. Some of the compounds can react in the atmosphere and, in the presence of other contaminants, convert to different compounds (for example NO to NO ₂).
Overland Flow Path	The flow path of stormwater over the ground.
Peak Particle Velocity (PPV)	A vibration metric which has the unit millimetres per second (mm/s). A triaxial vibration measurement records PPV in all three axes and there is a separate PPV value for each axis.
Permanent Stream	<p>Downstream of the uppermost reach of a river or stream which meets either of the following criteria:</p> <p>(a) has continual flow; or</p> <p>(b) has natural pools having a depth at their deepest point of not less than 150 millimetres and a total pool surface area that is 10m² or more per 100 metres of river or stream bed length.</p> <p>The <i>boundary</i> between Permanent and Intermittent river or stream reaches is the uppermost qualifying pool in the uppermost qualifying reach.</p>
Perennial	Stream or river with continuous flow all year round.
Pier	Vertical support structure for a bridge.
Piezometer	A device used to measure groundwater pressure head at a point in the subsurface.
PM_{2.5}	Particulate matter smaller than 2.5 microns in diameter.
PM₁₀	Fine particulate matter with an equivalent aerodynamic diameter of less than 10 micrometres. Fine particulates are predominantly sourced from combustion processes. Vehicle emissions are a key source in urban environments.
Podocarp	Trees that produce cones: eg rimu, kahikatea, totara, tanekaha.

Term	Definition
Preliminary design for the statutory approvals	The notation used on the plans and drawings attached to this AEE in Volume 4 which show the designation boundary and a preliminary design alignment more commonly referred to as the "indicative alignment".
Portal	The entrance way to a tunnel starting where the road is completely uncovered to where it is completely covered.
Project Area	From the Johnstone's Hill tunnel portals in the south to Kaipara Flats Road in the north defined by the designation boundary
Receptors	Points specified within an area where the concentration of contaminants in air is specifically calculated by an air dispersion model.
Reclamation	Defined in the Auckland Regional Plan: Coastal as any permanent filling of an area previously inundated by coastal water either at or above mean high water spring mark, whether or not it is contiguous with the land, so that the filled surface is raised above the natural level of MHWS, and thus creates dry land, removed from the ebb and flow of the tide.
Relict	Trees that were part of the original forest of the area.
Rhytid	A type of land snail of the genus Rhytida.
Secondary forest	Not the original forest of the area; forest that has developed after human clearance of the original forest.
Sediment Control	Capturing sediment that has been eroded and entrained in overland flow before it enters the receiving environment.
Sediment Generation	That sediment that is generated on the site of earthwork activity prior to treatment through any sediment retention device.
Sediment Retention Pond	A detention structure that is utilised during the construction phase of earthworks activity to treat any sediment laden runoff and retain sediment.
Sediment Yield	That sediment which leaves the sediment retention devices and enters the receiving environment
Sensitive Receiver (vibration)	A building or building occupant that is sensitive to vibration. The majority for this Project are residences, but may also include other receivers that are either close to the alignment and/or particularly susceptible to vibration effects.
Settlement	The gradual sinking of the ground surface as a result of the compression of underlying material.
Shear Keys	In-ground structures that improve the shearing resistance of foundation soils and usually involve deep excavations and the importation of engineered fill material.
Specimen Design	A design for the Project, which includes detail sufficient for obtaining statutory approvals and the initial phase of the construction procurement process. Not a full detailed design.
Stormwater	Water that flows from impervious areas and completed areas of the motorway after the construction period.
Stormwater Pond	A stormwater management device which detains runoff, typically from a design storm, and then discharges it, usually at the pre-development peak discharge rate. It can also provide water quality treatment primarily through sedimentation. A stormwater pond can either be a dry pond which is normally dry between storm events, or a wet pond which has a standing pool of water.
Terrestrial	Land-based.

Term	Definition
Transmissivity	The rate at which water is transmitted through a unit width of an aquifer under a unit hydraulic gradient. Transmissivity is given in cubic metres per day through a vertical section of an aquifer one metre wide and extending the full saturated height of an aquifer under a hydraulic gradient of 1.
Triaxial	In three axes. This is a term used in vibration measurements (refer 'Peak Particle Velocity' and 'Axes')
Turbidity	Turbidity is a measure of water clarity or murkiness of a waterbody.
V_{w,95}	Vibration metric utilised by the Norwegian Standard NS 8176.E:2005 to assess human response to traffic vibration. It is the 5 th percentile of a measured velocity signal that has had a frequency weighting applied.
Wetland	Vegetated stormwater treatment device designed to remove a range of contaminants, providing superior water quality treatment to wetponds with increased filtering and biological treatment performance.