# Northern Corridor Improvements

## Guide to the Lodgement Documentation

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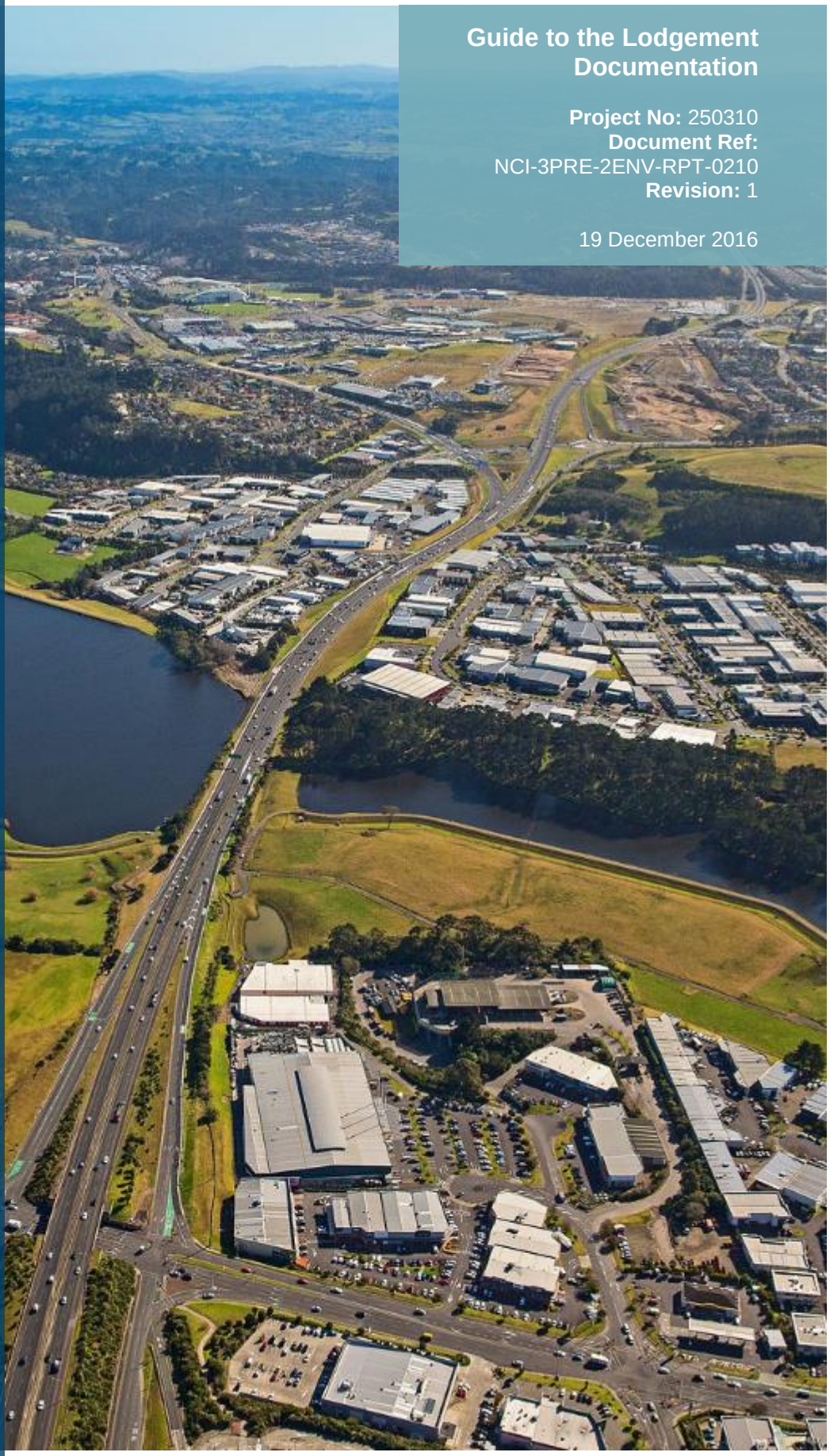

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# Contents



## Attachments



## Figures



## Tables

# 1 Contents and Structure of the Lodgement Documentation

The lodgement documentation for the Northern Corridor Improvements Project (the Project) is made up of five volumes and is structured as follows:

- Volume 1: Resource Management Act 1991 Forms;
- Volume 2: Assessment of Environmental Effects;
- Volume 3: Technical Assessments;
- Volume 4: Urban Design and Landscape Framework; and
- Volume 5: Scheme Plans and Drawings.

A full list of the contents of Volumes 1 to 5 is contained in **Attachment A** to this guide.

## 1.1 Volume 1: Resource Management Act 1991 Forms

The forms required under the Resource Management Act 1991 (RMA) for the Notices of Requirement (NoRs) and the resource consent applications are contained in Volume 1. These are forms relating to:

- The lodgement of matters with the Environmental Protection Authority (EPA) by the NZ Transport Agency;
- Notices of Requirement by the NZ Transport Agency; and
- Applications for resource consent by the NZ Transport Agency.

In general, the forms provide a reference to where in the lodgement documentation the required information is located.

Supporting the forms, is a plan series called the Designation Plans. This series confirms those designations which exist in the Project area. It also shows the extent the alterations to State highway 18 (SH18) and State highway 1 (SH1) designations as well as the Constellation Bus Station designation which are sought as part of the Project and new designations for the Northern Busway extension and the new shared use path adjacent to SH1.

## 1.2 Volume 2: Assessment of Environmental Effects

This document covers all of the aspects required for the assessment of environmental effects (AEE) in support of the NoRs and the resource consent applications. Most of the technical information is from the technical assessment reports contained in Volume 3 and a cross-reference is provided to these reports where necessary.

The AEE report should also be read in conjunction with the Urban Design and Landscape Framework (UDLF) in Volume 4 and the scheme plans and drawings contained in Volume 5. A cross-reference to relevant plans is provided in the AEE report where necessary.

## 1.3 Volume 3: Technical Assessments

Technical assessments and supporting documents are contained in Volume 3. Each assessment report has been assigned a number for easy reference.

Some technical assessments refer to specific plans located in Volumes 4 and 5 as necessary. In addition, some reports should also be read in conjunction with specific plans (contained in Volumes 4 and 5).

Table 1 Relationship between Technical Assessments and Plans

| Assessment number | Assessment Name | To be read in conjunction with | |
|---|---|---|---|
| 4 | Assessment of Construction Water Management Effects | Conceptual Construction Water Management Plan | 250310-3PRE-3DES-DRG-1601-1621 Erosion and Sediment Control |
| 8 | Assessment of Landscape and Visual Effects | Urban Design and Landscape Framework | NCI-3PRE-1PLA-RPT-0104 |
| 10 | Assessment of Stormwater Management | Stormwater drainage and catchment drawings | 250310-3PRE-3DES-DWG-1401-1410 Stormwater Drainage<br>250130-3PRE-3DES-DWG-1451-1460 Stormwater Catchment Plans |
| 15 | Design and Constructability Report | General Arrangement drawings and plans | 250310-3PRE-3DES-DRG-0200-0210 General Arrangements<br>250310-3PRE-3DES-DRG-3001 Constellation Station General Arrangement<br>250310-3PRE-3DES-DRG-0301-0310 Typical Cross Sections<br>250310-3PRE-3DES DRG-0401-0418 Plan and Long Sections<br>250310-3PRE-3DES-DRG-1310-1375- Civil Structures |

## 1.4 Volume 4: Urban Design and Landscape Framework

The UDLF is contained in Volume 4 and is referenced by the Assessment of Landscape and Visual Effects report.

## 1.5 Volume 5: Scheme Plans and Drawings

All the main plans and drawings are contained in Volume 5 and referenced by other documents where necessary.

# 2 Terminology Used

A complete list of abbreviations is provided in **Attachment B** and a glossary of terms is provided in **Attachment C**. Each technical assessment contains its own list of abbreviations and glossary of terms to assist the reader.

## 2.1 Key Terms

Particular attention is drawn to the following key terms:

**Table 2 Key Terms Used in Project Documentation**

| Term | Meaning |
|---|---|
| Project Area | The Project area is the Project corridor and immediate surrounds. |
| Project Corridor | The Project corridor is the extent of works contained on SH18 between Albany Highway and Constellation Drive, and SH1 between Upper Harbour Highway interchange and 90 m north of the Oteha Valley Road interchange. The Busway component of the works extends from Constellation Bus Station to the Albany Bus Station at Oteha Valley Road. |
| The Project or NCI Project | The Northern Corridor Improvements Project including alterations to designations, new designations and activities requiring regional resource consents. |
| Western Ring Route (WRR) | A strategic State highway route which provides an alternative to SH1 as a regional route for traffic traversing greater Auckland. The WRR requires the completion of links and new lanes to combine the South-Western (SH20), North-Western (SH16) and Upper Harbour (SH18) highways into a continuous 48km motorway. The WRR will link the North Shore, West and South Auckland. |

# 3 Referencing Conventions

## 3.1 Position along the Main Alignment

The position of features along the main alignment is given as a station value (or chainage distance) from either the proposed connection between SH1 and SH18 for values along SH18, and from the most northern point of the Northern Motorway for values along SH1.

The chainage distance for the Project area along SH1 begins at 11850 to the north of Oteha Valley Road with the Project extent finishing at 16050 south of Constellation Drive.

The chainage distance along SH18 begins at the proposed new connection between SH1 and SH18 and heads wests.

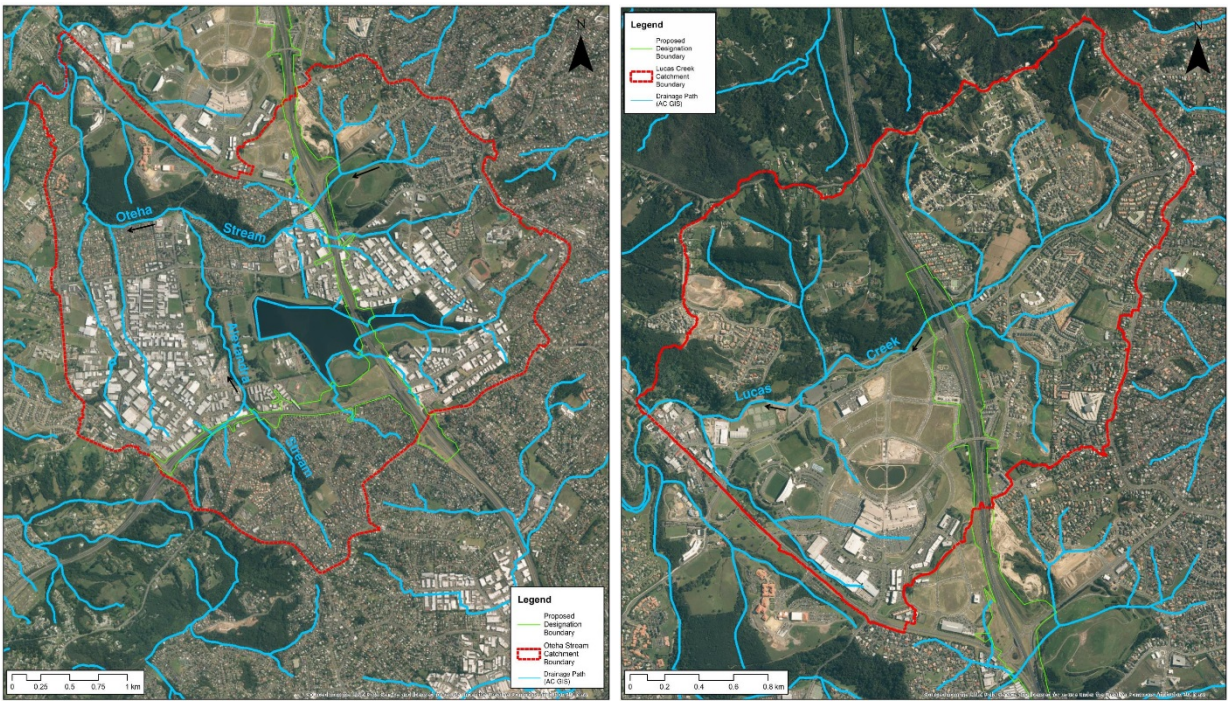
## 3.2 Hydrological Catchments and Watersheds affected by the Project

The Project involves work to various catchments throughout the Project area. The two main catchments shown in **Figure 1** are:

- The Lucas Creek catchment, which drains approximately 625ha to the confluence with Oteha Stream, some 2.5km downstream of SH1; and
- The Oteha Valley catchment, which is approximately 1,310ha to the confluence of Lucas Creek, some 4km downstream of SH1.

The catchments and sub-catchments are described further in Section 4.4.3.2 of the AEE Report in Volume 2 and in Section 2.3 of the Assessment of Stormwater Management Report in Volume 3.

**Figure 1 Oteha Valley and Lucas Creek Catchment Plans**




*Source: Aerial photography sourced from the LINZ Data Service and licensed by LINZ for re-use under the Creative Commons Attribution 3.0 New Zealand licence.*

## 3.3 Referring to Properties

Volume 1 also contains a list of properties, whether whole or in part which are required for the Project. This list is found in the NoR Property Information Table. It is accompanied by a plan series (NoR Plans) showing the properties required with each assigned a property number. The property numbers refer to a specific property, starting at 1 and finishing at 131.

## 3.4 Phases of the Project

The Project has progressed through several phases over the past few years during its development. These phases are referred to within the documentation as the concept and preliminary design phases. The concept phase has consisted of the development of the Project through the Indicative and Detailed Business Cases. The preliminary design phase consists of the development of the Project from the completion of the business cases until the Project enters the detailed design phase (after the BoI process has finished).

# Attachments

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# Attachment A
## Contents of Volumes 1 to 5

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| Contents | Tab Reference |
|---|---|
| Assessment of Operational Noise & Vibration Effects | Technical Assessment 9 |
| Assessment of Social Effects | Technical Assessment 10 |
| Assessment of Stormwater Management | Technical Assessment 11 |
| Assessment of Surface Water Quality Effects | Technical Assessment 12 |
| Assessment of Terrestrial Ecological Effects | Technical Assessment 13 |
| Assessment of Transport Effects | Technical Assessment 14 |
| Design and Constructability Report | Technical Assessment 15 |
| **VOLUME 4: URBAN DESIGN AND LANDSCAPE FRAMEWORK** | |
| Urban Design and Landscape Framework | |
| **VOLUME 5: SCHEME PLANS AND DRAWINGS** | |
| Scheme Plans and Drawings | |

# Attachment B
## List of Abbreviations

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| Glossary of Abbreviations | |
|---|---|
| AAAQS | Auckland Ambient Air Quality Standards |
| AADT | Average Annual Daily Traffic |
| AAQG | Ministry for the Environment's Ambient Air Quality Guidelines |
| ABM | Automatic Bat Monitoring Boxes |
| AC | Auckland Council |
| ACDP:NS | Auckland Council District Plan North Shore Section |
| ACRP:ALW | Auckland Regional Plan: Air, Land and Water |
| ACRP:SC | Auckland Regional Plan: Sediment Control |
| ACRPS | Auckland Council Regional Policy Statement |
| ADP | Accidental Discovery Protocols |
| ADV | Acoustic Doppler Velocimeter |
| AEE | Assessment of Environmental Effects |
| AEP | Annual Exceedance Probability |
| AFGL | Above Finished Ground Level |
| AMA | Auckland Motorway Alliance |
| AMP | Rosedale Landfill Aftercare Management Plan |
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| AoC | Area of Concern |
| AQMP | Rosedale Landfill Air Quality Management Plan |
| ARC | Auckland Regional Council (superseded by the Auckland Council) |
| ARDS | Amphibian and Reptile Distribution Scheme |
| ARI | Annual Recurrence Interval |
| ART Model | Auckland Regional Transport Model |
| AS/NZS | Australia/New Zealand Standard |
| AT | Auckland Transport |
| ATMS | Advanced Traffic Management |
| AUP | Auckland Unitary Plan Operative in Part (15 November 2016) |
| BCR | Benefit Cost Ratio |
| BGL | Below Ground Level |
| BoI | Board of Inquiry |
| BPO | Best practicable option |
| BTEX | Benzene Toluene Ethylbenzene Xylenes |
| CAQMP | Construction Air Quality (Dust) Management Plan |
| CAS | Crash Analysis System |
| CAUs | Census Area Units |

| | |
|---|---|
| CBD | Central Business District |
| CCO | Council Controlled Organisation |
| CCTV | Closed-circuit Television |
| CEMP | Construction Environmental Management Plan |
| CESCPs | Construction Erosion and Sediment Control Plans |
| CH | Motorway Chainage |
| CHI | Auckland Council's Cultural Heritage Inventory |
| CLCLR | Closed Landfill and Contaminated Land Response team |
| CLMG | Ministry for the Environment Contaminated Land Management Guidelines |
| CMA | Coastal Marine Area |
| CNVMP | Construction Noise and Vibration Management Plan |
| CO | Carbon monoxide |
| $CO_2$ | Carbon dioxide |
| COD | Chemical Oxygen Demand |
| CoP | Code of Practice |
| CoPC | Contaminants of Potential Concern |
| CPTED | Crime Prevention Through Environmental Design |
| CSAs | Construction Support Areas |
| CSMP | Contaminated Site Management Plan |
| CTMP | Construction Traffic Management Plan |
| CVA | Cultural Values Assessment |
| CZ | Construction Zones |
| DBC | Detailed Business Case |
| DEB | Decanting earth bunds |
| DHC | Double Hollow Core |
| DMP | Dust Management Plan |
| DoC | Department of Conservation |
| DoT | Department of Transport (United Kingdom) |
| DRP | Dissolved Reactive Phosphorus |
| DSI | Detailed Site Investigation |
| EC | Electrical Conductivity |
| ECBF | East Coast Bays Formation |
| ED | Existing Development |
| EEM | Economic Evaluation Model |
| EPA | Environmental Protection Authority |
| EPT | Ephemeroptera, Plecoptera and Trichopter (three orders of insects) |

| | |
|---|---|
| ESC Team | Erosion and Sediment Control Team |
| ESL | Envirowaste Services Ltd |
| ESRS | Environmental and Social Responsibility Screen |
| FA | Fisheries Act 1983 |
| FFR | Freshwater Fisheries Regulations 1983 |
| FIDOL | Frequency, Intensity, Duration, Offensiveness and Location Factors |
| GLC | Ground Level Concentration |
| GPS | Global Positioning System |
| GPSLT | Government Policy Statement on Land Transport 2015/16-2024/25 |
| GRPA | Government Roading Powers Act 1989 |
| HAIL | Hazardous Activities and Industries List |
| HAZMAT | Hazardous Materials |
| HCV | Heavy Commercial Vehicles |
| HDD | Heavy-Duty Diesel Vehicles |
| HNZPTA | Heritage New Zealand Pouhere Taonga Act 2014 |
| HNZTP | Heritage New Zealand Pouhere Taonga |
| HUR | High Use Roads |
| IAIA | International Association of Impact Assessment |
| IAP2 | International Association for Public Participation |
| IBC | Indicative Business Case |
| IBI | Index of Biotic Integrity |
| IIG | Northern-Central Iwi Integration Group |
| IPENZ | Institute of Professional Engineers New Zealand |
| ITP | Integrated Transport Programme 2012-2041 |
| ITS | Intelligent Transport System |
| JMAC | Joint Modelling Applications Centre |
| LCMP | Landfill Construction Management Plan |
| LCS | Leachate Collection System |
| LFG | Landfill Gas |
| LFGTE | Landfill Gas to Energy |
| LHSP | Landfill Health and Safety Plan |
| LINZ | Land Information New Zealand |
| LRWP | Landfill Reinstatement Works Plan |
| LTMA | Land Transport Management Act 2003 |
| LTP | Auckland Long-Term Plan 2012-2022 |
| MAP | Ministry of Agriculture and Fisheries |

| | |
|---|---|
| MCA | Multi Criteria Assessment |
| MCI | Macroinvertebrate Community Index |
| MfE | Ministry for the Environment |
| MPD | Maximum Probable Development |
| MSE | Mechanically stabilized earth |
| NBC | National Business Case 2015 |
| NCI | Northern Corridor Improvements Project |
| NDC | Network Discharge Consent |
| NES | National Environmental Standard |
| $NES_{ETA}$ | NES for Electricity Transmission Activities |
| $NES_{AQ}$ | National Environmental Standards for Air Quality 2004 |
| $NES_{Soil}$ | Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 |
| NH2 | North Harbour 2 Watermain |
| NHHS | North Harbour Hockey Stadium |
| NIP | National Infrastructure Plan |
| NLTP | National Land Transport Programme |
| NMOC | Non-Methane Organic Carbons |
| NNBSPRP | The New Northern Busway Station and Park and Ride Project |
| NO | Nitric Oxide |
| $NO_2$ | Nitrogen Dioxide |
| $NO_X$ | Nitrogen Oxides |
| NOEC | No Observable Effect Concentrations |
| NoR | Notices of Requirement |
| NPS | National Policy Statement |
| $NPS_{ET}$ | National Policy Statement on Electricity Transmission 2008 |
| $NPS_{FM}$ | National Policy Statement for Freshwater Management 2014 |
| NSCC | North Shore City Council (superseded by Auckland Council) |
| NZAA | New Zealand Archaeological Association |
| NZCPS | New Zealand Coastal Policy Statement |
| NZMUGS | New Zealand (Transport) Modelling User Group |
| NZ Transport Agency | New Zealand Transport Agency |
| $O_3$ | Ozone |
| OF | Outfall |
| OGPA | Open Graded Porous Asphalt |
| OMMP | Ongoing Monitoring and Management Plan |
| OPW | Outline Plan of Works |

| | |
|---|---|
| ORP | Oxidation Reduction Potential |
| PAC | Polyaluminium chloride |
| PAH | Polyaromatic Hydrocarbon |
| PAUP | Proposed Auckland Unitary Plan decision version |
| PFA | Peak Flow Attenuation |
| PGAR | Preliminary Geotechnical Appraisal Report (Opus 2014) |
| $PM_{2.5}$ | Fine particulate matter |
| $PM_{10}$ | Fine particulate matter |
| PPE | Personal Protective Equipment |
| PPF | Protected premises and facilities in accordance with NZS 6806:2010 |
| PPV | Peak vehicle velocity |
| PRG | Project Reference Group |
| PRP | Rosedale Landfill Peer Review Panel |
| PSI | Preliminary Site Investigation |
| PWA | Public Works Act 1981 |
| RA | Reserves Act 1977 |
| RL | Reduced level |
| RLTP | Regional Land Transport Programme |
| RMA | Resource Management Act 1991 |
| RoNS | Roads of National Significance |
| RPTP | Regional Public Transport Plan |
| RTN | Rapid Transport Network |
| RWWTP | Rosedale Waste Water Treatment Plant |
| SAR | Scheme Assessment Report |
| SEA | Significant Ecological Areas |
| SEV | Stream Ecological Valuation |
| SRF | Site Record Forms |
| SH x | State Highway (number) |
| SHS | State Highway Strategy of 2007 |
| SIA | Social Impact Assessment |
| SMA | Stone Mastic Asphalt |
| SMAF | Stormwater Management Area - Flow |
| SOI | Statement of Intent 2015-2019 |
| SQEP | Suitably Qualified and Experienced Environmental Practitioner |
| SQMCI | Semi-quantitative Macroinvertebrate Community Index |
| SRP | Sediment retention ponds |

| | |
|---|---|
| SUP | Shared Use Path |
| SVOC | Semi Volatile Organic Compounds |
| SWP | Stormwater Pond |
| TKN | Total Kjeldahl Nitrogen |
| TP10 | AC's Stormwater Treatment Devices: Design Guidelines Manual |
| TP90 | Technical Publication 90: Erosion and Sediment Control Guidelines for Land Disturbing Activities |
| TP108 | Auckland Council Technical Publication No. 108 (1999) |
| TPH | Total Petroleum Hydrocarbons |
| TR2013/035 | Auckland Council Technical Report 2013/035 (2013) |
| TSMS | Total Stormwater Management System |
| TSP | Total Suspended Particulate |
| TSS | Total Suspended Solids |
| UC | Universal Column |
| UDLF | Urban Design and Landscape Framework |
| UHH | Upper Harbour Highway |
| USC | Unconfined Compressive Strength |
| USEPA | United States Environmental Protection Agency |
| USLE | Universal Soil Loss Equation |
| UV | Ultra Violet |
| VEPM | Vehicle Emissions Prediction Model |
| WA | Wildlife Act 1953 |
| WQ | Water Quality |
| WQV | Water Quality Volume |
| WRR | Western Ring Route |
| WSL | Watercare Services Limited |

# Attachment C
## Glossary of Terms

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| Terms | Definitions |
|---|---|
| 75% TSS Removal | 75% TSS removal on a long-term average basis in accordance with TP10. |
| A-weighting | The process by which noise levels are corrected to account for the non-linear frequency response of the human ear. |
| Airshed | An area designated by regional councils for the purpose of managing air quality and gazetted by the Minister for the Environment. |
| Alignment | The route or position of the proposed motorway, Busway and/or SUP. |
| Alpurt | Albany to Puhoi Realignment (of the Auckland Northern Motorway). |
| Alpurt A1 | Sector A1 of Alpurt, the southern 7km of the 1990s extension of the Auckland Northern Motorway between Greville Road and Silverdale. |
| Ambient air | The air outside that reflects the cumulative effect of all activities both human induced and natural. It does not refer to indoor air, air in the workplace, or to contaminated air as it is discharged from a source. |
| Ambient noise | The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source. |
| Amenity | As defined in section 2 of the RMA, amenity values means those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes. |
| Archaeological Site | As defined in Part 2 of the Heritage New Zealand Pouhere Taonga Act 2014: Any place in New Zealand that -<br>(a) Either-<br>Was associated with human activity that occurred before 1900; or<br>Is the site of the wreck of any vessel where that wreck occurred before 1900; and<br>(b) Is or may be able through investigation by archaeological methods to provide evidence relating to the history of New Zealand: |
| Artificial Watercourse | Has the same meaning as Chapter J of the AUP: Constructed watercourses that contain no natural portions from their confluence with a river or stream to their headwaters. |
| Assessment Area | For the purposes of the Assessment of Landscape and Visual Effects, the 'Assessment Area' includes both the Project area and surrounding environment from which the Project may result in landscape and visual effects. |
| Auckland Council | The unitary authority in terms of the Local Government (Auckland Council) Act 2009 and the Local Government (Auckland Transitional Provisions) Act 2010 which replaced the eight existing councils in the Auckland Region as of October 2010. |
| Aurecon | Aurecon New Zealand Ltd |
| Best Practicable Option | Defined in Section 2 of the Resource Management Act 1991. In relation to a discharge of a contaminant or an emission or noise, this means the best method for preventing or minimising the adverse effects on the environment. |
| Bicarbonate | Sodium Bicarbonate ($HCO_3^-$) |
| Busway | The Northern Busway |

| Terms | Definitions |
|---|---|
| Chemical Oxygen Demand | A measurement of the oxygen required to oxidise soluble and particulate organic matter in water. |
| Chloride | A compound of chlorine with another element or group, especially a salt of the anion CL- or an organic compound with chlorine bonded to an alkyl group. |
| Constructor | For the purpose of technical reports, the term 'Constructor' refers to the alliance responsible for delivery (detailed design and construction) of the future stage of the Project. |
| Contamination | The presence of a substance at concentrations in excess of background. Note this is distinct from the definition of 'Contaminated Land' in the Resource Management Act 1991. |
| CS-VUE | A web based software database containing resource consent and legal information. CS-VUE has been used extensively on the Project to obtain and assess existing resource consent information relating to stormwater management conditions and compliance requests. |
| Culvert | A pipe, designed to convey water under an embankment |
| dB | Decibel. The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of Pr=20 μPa i.e. dB = 20 x log(P/Pr) |
| 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. |
| Design Year | 10 to 20 years after the opening of the new or altered road. |
| Designation | Defined in Section 2 and Section 166 of the RMA as provision made in a district plan to give effect to a requirement made by a requiring authority under section 168 or section 168A or clause 4 of Schedule 1. |
| Detention | Detention (temporary storage) with a drain down period of 24 hours for the difference between the pre-development and post-development runoff volumes from the 95$^{th}$ and 90$^{th}$ percentile (for SMAF 1 and SMAF 2 respectively), 24 hour rainfall event minus the retention volume for all impervious areas. |
| Digests | Preservative placed in sample bottles in order to maintain the integrity of the sample. |
| Discharge | An activity that results in a contaminant being emitted deposited or allowed to escape. |
| Dissolved Calcium | Calcium in dissolved form. |
| Dissolved Magnesium | Magnesium in dissolved form. |
| Dissolved Oxygen | Oxygen that is dissolved in water. |
| Dissolved Potassium | Potassium in dissolved form. |
| Dissolved Reactive Phosphorus | Phosphorus in dissolved form. |
| Dissolved Sodium | Sodium in dissolved form. |
| Diversion of Stormwater | Redirecting stormwater from its existing course of flow; causing it to flow by a different route. |

| Terms | Definitions |
|---|---|
| Do Minimum | Term used in the context of a comparison between the effects of a project and the effects that would occur if the project was not undertaken (i.e. for the comparative evaluation of the effects 'with and without' the project). |
| 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. |
| Electrical Conductivity | A measure of how well water accommodates the movement of an electric charge. |
| 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. |
| Extended Detention | Runoff from a rainfall event of 34.5mm stored and released over a 24 hour period to minimise potential for stream channel erosion. This has been replaced by detention in the AUP. |
| Extent of Refuse | The footprint or area of the landfill site within which refuse was deposited. |
| g/v.km | Grams per Vehicle Kilometre. |
| Grade Separated Interchange | The layout of roads where one road crosses over/under the other at a different height. |
| HEC-HMS | The Hydrologic Modelling System used to simulate and assess hydrologic processes flood risk for the Project. |
| 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 investigations. |
| High Use Roads | A road, motorway or State highway that carries more than 5,000 vehicles per day, excluding cycle lanes, footpaths and ancillary areas that do not receive stormwater runoff form the road carriageway. |
| HY-8 | The Culvert Hydraulic Analysis Program used to assess culvert capacity for the Project. |
| Hydrology | The branch of science concerned with the properties of the earth's water. |
| Joint Modelling Applications Centre | The joint modelling team set up by the NZ Transport Agency, Auckland Transport and Auckland Council. The team is responsible for running the regional transport models and for running or overseeing sub-regional models. |
| $L_{Aeq\ (t)}$ | The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level. |
| $L_{A90\ (t)}$ or $L_{A95\ (t)}$ | The A-weighted noise level equalled or exceeded for 90% or 95% of the measurement period. This is commonly referred to as the background noise level. |
| $L_{A10\ (t)}$ | The A-weighted noise level equalled or exceeded for 10% of the measurement period. This is commonly referred to as the average maximum noise level. |
| $L_{Amax}$ | The A-weighted maximum noise level. The highest noise level which occurs during the measurement period. |
| Landfill | Auckland Council's Rosedale Landfill |

| Terms | Definitions |
|---|---|
| Landfill Gas | Gas generated as a result of decomposition processes or biodegradable materials deposited in a landfill. It consists principally of methane and carbon dioxide, but includes minor amounts of other components. |
| Landfill Subgrade | Liquid that has percolated through or emerged from solid waste, and that contains dissolved and/or suspended liquids and/or solids and/or gases. |
| Leq | The time averaged sound level (on a log/energy basis) over the measurement period (normally A-weighted). |
| Midden | A type of archaeological site consisting of deposits of food waste (predominantly shell, but also fish, bird and animal bone), often mixed with charcoal and burnt stone. |
| Motorway | As defined in Part 2 of the Public Works Act 1981: A motorway declared as such by the Governor-General in Council under section 138 of this Act; and includes all bridges, drains, culverts, or other structures or works forming part of any motorway so declared; but does not include any local road, access way, or service lane (or the supports of any such road, way, or lane) that crosses over or under a motorway on a different level |
| New Northern Busway Station and Park and Ride Project | An Auckland Transport led project which includes a bus station and Park and Ride facility which is excluded from the Northern Corridor Improvements approvals package. |
| Nitrate-N | Nitrogen is present as nitrate. |
| Nitrate-N + Nitrite-N | The sum of nitrogen present as nitrate and nitrogen present as nitrite. |
| Noise | A sound that is unwanted by, or distracting to, the receiver. |
| Noise Mitigation | An activity or structure which reduces/mitigates the impact or effect of noise. |
| NZS 6801:2008 | New Zealand Standard NZS 6801:2008 *"Acoustics – Measurement of environmental sound"* |
| NZS 6802:2008 | New Zealand Standard NZS 6802:2008 *"Acoustics – Environmental Noise"* |
| NZS 6803:1999 | New Zealand Standard NZS 6803: 1999 *"Acoustics - Construction Noise"* |
| NZS 6806:2010 | New Zealand Standard NZS 6806:2010 *"Acoustics - Road-traffic noise - New and altered roads"* |
| Overflow | A discharge from a combined sewer or wastewater network resulting from the flows being greater than the conveyance capacity within the network. |
| Overland Flow Path | The natural flow path of stormwater over the ground. |
| Oxidation Reduction Potential | A measure of the tendency of a chemical species to acquire electrons and thereby be reduced. |
| Paul Matthews Road Interchange | A new interchange inclusive of the reconfiguration of the existing Caribbean Drive intersection, a new eastbound off-ramp from SH18 and a direct connection of Paul Matthews Road to Upper Harbour Highway via a new bridge structure. |
| Peak Flow Attenuation | Reduction of peak flows form extreme rainfall events (2 year ARI, 10 year ARI and 100 year ARI) to pre-development levels, typically achieved through the use of wetlands and dry ponds. |
| Pedestrian/Cycleway | A dedicated facility for the shared-use of pedestrians and cyclists. |
| pH | A measure of how acidic/basic water is. |

| Terms | Definitions |
|---|---|
| Pier | Vertical support structure for a bridge. |
| PM10 | Fine particulate matter with an equivalent aerodynamic diameter of less than 10, 2.5 or 1 micrometres respectively. Fine particulates are predominantly sourced from combustion processes. Vehicle emissions are a key source in urban environments. |
| Project Area | The Project area is the Project corridor and immediate surrounds. |
| Project Corridor | The Project corridor is the extent of works contained on SH18 between Albany Highway and Constellation Drive, and SH1 between Upper Harbour Highway interchange and 90 m north of the Oteha Valley Road interchange. The Busway component of the works extends from Constellation Station to the Albany Station at Oteha Valley Road. |
| The Project or NCI Project | The Northern Corridor Improvements Project including alterations to designations, new designations and activities requiring regional resource consents. |
| Project Team | For the purpose of the technical reports, the term 'Project team' means the multidisciplinary team engaged on the Project. |
| Project Works | All proposed activities associated with the Project. |
| $Q_{100}$ | Design flow during an ARI 100 year rainfall event. |
| Refuse | For the purpose of the technical reports, the term 'refuse/urban refuse' means the municipal solid waste deposited at the Rosedale Landfill during its operating life. It includes non-hazardous, solid, degradable waste from a combination of domestic, commercial and industrial sources. |
| Sediment control | Capturing sediment that has been eroded and entrained in overland flow before it enters the receiving environment. |
| Subtitle C | United States Resource Conservation and Recovery Act (RCRA Subtitle C Hazardous Waste. |
| Sulphate | A salt or ester of sulphuric acid. |
| Sum of Anions | The sum of negative ions in solution. |
| Sum of Cations | The sum of positive ions in solution. |
| Total Alkalinity | A measure of water's resistance to change in pH. |
| Total Antimony | Total antimony including dissolved and particulate forms. |
| Total Arsenic | The sum of arsenic in both organic and inorganic forms. |
| Total Boron | Total boron in a solution, including boric acid and borate. |
| Total Cadmium | Total cadium including dissolved and particulate forms. |
| Total Chromium | Total chromium including dissolved and particulate forms. |
| Total Copper | Total copper including dissolved and particulate forms. |
| Total Hardness | The concentration of calcium and magnesium ions. |
| Total Kjeldahl Nitrogen | The sum of organic nitrogen, ammonia and ammonium. |
| Total Lead | Total lead including dissolved and particulate forms. |
| Total Mercury | Total mercury including dissolved and particulate forms. |

| Terms | Definitions |
|---|---|
| Total Nickel | Total nickel including dissolved and particulate forms. |
| Total Suspended Solids | The dry weight of particles trapped by a filter. |
| Total Zinc | Total zinc including dissolved and particulate forms. |
| (t) | The suffix “t” represents the time period to which the noise levels relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measured time between 10pm and 7am. |
| T2 Lane | Transit lane allowing only trucks, buses |
| V/C Ratio | Volume to capacity ratio. |
| Vibration | When an object vibrates, it moves rapidly up and down or from side to side. The magnitude of the sensation when feeling a vibrating object is related to the vibration velocity. Vibration can occur in any direction. When vibration velocities are described, it can be either the total vibration velocity, which includes all directions, or it can be separated into the vertical direction (up and down vibration), the horizontal vibration (side to side) and the horizontal longitudinal direction (front to back). |
| Western Ring Route (WRR) | A strategic State highway route which provides an alternative to SH1 as a regional route for traffic traversing Greater Auckland. The WWR requires the completion of links and new lanes to combine the South-western (SH20), North-western (SH16) and Upper Harbour (SH18) highways into a continuous 48km motorway. The WWR will link the North Shore, West and South Auckland. |
| $WL_{100}$ | Modelled water level (excluding freeboard) during an ARI 100 year rainfall event. |

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