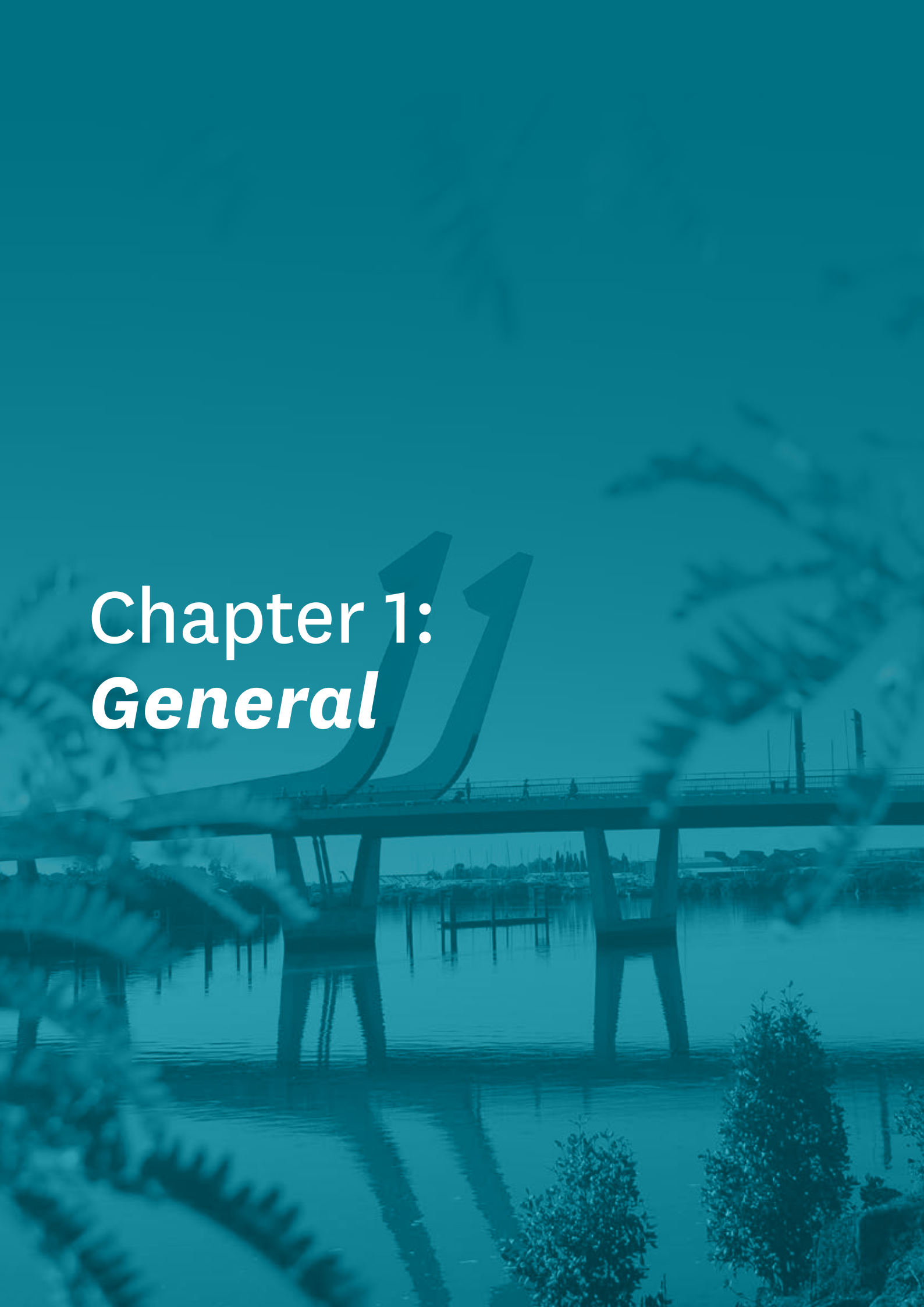


Chapter 1: *General*

1.1. Introduction

1.1.1. The Engineering Standards

The Whangārei District Council (WDC) Engineering Standards (ES) sets out the processes and standards that are expected to be followed and met whenever any development project is undertaken within the District. The ES recognises that WDC and other network operators will become the owners and operators of roads and other infrastructure, which are created and vested in the land development process.

It is important that WDC and the community has confidence that the infrastructure and associated systems are competently designed and constructed in a manner which ensures that they are fit for purpose and can be expected to last well into the future.

The ES is the WDC's minimum acceptable technical specification.

Any queries shall be directed to ESProject@wdc.govt.nz, unless otherwise specified in the ES.

1.1.2. Scope

Any person undertaking infrastructure design or construction within the District whether:

a. The WDC's capital and/or operational works contracts or professional services agreements,

b. Development works regardless of whether the infrastructure will be vested in WDC or remain in private ownership, or

c. Any other form of infrastructure development that will connect to the WDC's existing infrastructure network,

shall use the ES as the means of designing, constructing, testing and signing off the works.

If, for any reason, the ES requirements cannot be met or a design or method of construction outside the ES is more desirable, an Alternative Design (1.5.1.2 Alternative Designs) can be proposed.

The WDC acknowledges that the development of some infrastructure is not covered by the specific requirements in the ES.

Examples of such infrastructure are:

a. Water reservoirs,

b. Bulk watermains,

c. Trunk sewers,

d. Structures, (such as buildings, bridges, and retaining/palisade walls) and

e. Traffic signals.

These works shall be undertaken on a Specific Design basis involving the WDC's engineers and managers, relevant codes and standards and in accordance with accepted industry practice.

1.1.3. Overview

This section:

a. Introduces the philosophy and scope of the ES,
b. Provides referencing and definitions for the ES,
c. Identifies statutory requirements,
d. Describes the engineering design approval process, and
e. Provides generic guidance across all infrastructure groups for:
    i. As-Built Plans,
    ii. Working in the Transport Corridor,
    iii. Temporary traffic management, and
    iv. General forms and checklists for developments.

1.1.4. Reference Documents

The following documents are referenced in this Chapter:

Note it is the responsibility of the Developer to ensure the most up to date referenced document is sourced.

1.1.4.1 Statutory

Building Act 2004

Government Roading Powers Act 1989

Health and Safety at Work Act 2015

Local Government Acts 2002 and 1974

New Zealand Building Code

NRC Regional Plans

Operative District Plan and District Plan Map

Public Works Act 1981

Resource Management Act 1991

WDC Stormwater Management Bylaw 2014

1.1.4.2 New Zealand Standards

AS/NZS 1100.501:2002 - Technical drawing- Structural engineering drawing

NZS/AS 1100.301:1985 - Technical drawing- Architectural drawing

NZS/AS 110.301 Supplement 1:1986 – Technical drawing – Architectural drawing – Architectural drawings

NZS 4229:2013 - Concrete masonry buildings not requiring specific engineering design

NZS 4402.2.2:1986 – Methods of testing soils for civil engineering purposes – Soil Classification tests – Test 2.2 Determination of the liquid limit

NZS 4402.2.6:1986 – Methods of testing soils for civil engineering purposes – Soil Classification tests – Test 2.6 Determination of the linear shrinkage

SNZ PAS 4509:2008 - New Zealand Fire Service firefighting water supplies code of practice

1.1.4.3 WDC Documents

Appendix A- Health and Safety Requirements for Procurement Documents, November 2021 *(To be provided by WDC on request)*

Contractor Health and Safety Handbook *(To be provided by WDC on request)*

Health and Safety Considerations When Going Through Procurement Processes, November 2021 *(To be provided by WDC on request)*

Policy #0074 - Uncompleted Works Bond (2011) (*To be provided by WDC on request*)

Policy #0129 - Land Development Stabilisation 2018 and Land Development Stabilisation – Technical Design Requirements 2018

Public Utility Connection/Disconnection application form

Quality Assurance / Quality Control Manual for Vested Assets - Inspection and Handover Procedures (2010)

Road Assessment and Maintenance (RAMM) Data Collection Form

WDC Specification for Registered and Licensed Contractors for Waste & Drainage

WDC Specification for Registered and Licensed Contractors for Water Supply *(To be provided by WDC on request)*

WDC Urban Design Guidelines

1.1.4.4 Other Referenced Documents

ENZ Practice Note 01: Guidelines on Producer Statements - January 2014

ENZ Practice Note 02: Peer Review –Version 2, April 2018

ENZ Producer Statement – PS1 Design

ENZ Producer Statement – PS2 Design Review

ENZ Producer Statement – PS4 Construction Review

MfE - Users' Guide national Environmental Standard for assessing and Managing Contaminants in Soil to Protect Human Health 2012

New Zealand Asset Metadata Standards, August 2017

NZ Utilities Advisory Group: National Code of Practice for Utility Operators' Access to Transport Corridors - Updated Version 2, July 2019

Waka Kotahi Code of Practice for Temporary Traffic Management

Waka Kotahi Manual of traffic signs and markings (MOTSAM), August 2010

Waka Kotahi Road safety audit (RSA) procedures for projects, May 2013

Waka Kotahi Traffic Control Devices Manual (TCD Manual) (2008)

Water New Zealand; New Zealand Gravity Pipe Inspection Manual Fourth Edition, 2019

WorkSafe NZ – Health and Safety in Design: An Introduction, August 2018

1.2. Statutory Requirements

1.2.1. General

The Developer is responsible for obtaining all necessary consents, providing for the protection of other property from damage resulting from the development and complying with all statutes, regulations, by-laws, national, district and regional planning documents and subsequent revisions, amendments and updates at the time of consent application, including, but not limited to:

a. Building Act 2004

b. Electricity Act 1992

c. Health and Safety in Employment Act 1992

d. Fencing Act 1978

e. Land Drainage Act 1908

f. Land Transfer Act 2017

g. Land Transport Management Act 2003

h. Local Government Act 1974

i. Local Government Act 2002

j. New Zealand Building Code

k. Plumbers, Gasfitters and Drainlayers Act 2006

l. Public Works Act 1981

m. Reserves Act 1997

n. Resource Management Act 1991

o. Telecommunications Act 2001

p. Government Roading Powers Act 1989

q. Transport Management Act 2003

r. Water Services Act 2021

s. Regional Plan for Northland

t. Regional Coastal Plan for Northland

u. NZ Coastal Policy Statement

v. WDC Operative District Plan

w. WDC Stormwater Management Bylaw 2014

x. WDC Wastewater Bylaw 2014

y. WDC Water Supply Bylaw 2012

z. WDC Trade Waste Bylaw 2012

1.2.2. Relationship with the District Plan

Where a resource consent is required under the District Plan compliance with the ES may be specified in consent conditions that require infrastructure or other such engineering works.

1.3. Abbreviations and Definitions

In the ES, the following abbreviations have been used:

AADT	Annual average daily traffic
AC	Asphaltic Concrete
ADT	Average Daily Traffic
ADWF	Average Dry Weather Flow (l/s)
AEP	Annual Exceedance Probability (refer to definitions below)
ARI	Average Recurrence Interval
BMF	Blue metal fines

CAR	Corridor Access Request
CC	Climate Change
CDP	Catchment Drainage Plan – historical documents title, may still be in use
CMEngNZ	Charted Member of Engineering NZ
CMP	Stormwater Catchment Management Plan or historical Catchment Drainage Plans
CN	Curve Number
CPEng	Charted Professional Engineer
DN	Nominal Diameter
EDA	Engineering Design Approval
ES	Engineering Standards (this document)
ETVP	Existing Tree and Vegetation Plan
EDV	Extended Detention Volume
HIRDS	High Intensity Rainfall Design System in the form of software produced by NIWA
Hu	Household Unit
HUE	Household Unit Equivalent
ID	Internal Diameter
ISO	International Standards Organisation
ITP	Inspection and Testing Plan
LDEng	Survey + Spatial NZ Certified Land Development Engineer
MOTSAM	Manual of traffic signs and markings, as published by the Waka Kotahi
MPD	Maximum Probable Development
NRC	Northland Regional Council
NZBC	New Zealand Building Code
NZGD	New Zealand Geotechnical Database
NZS	New Zealand Standard, as published by the Standards New Zealand (SNZ)

NZTA	Waka Kotahi - New Zealand Transport Agency (Previously LTSA and LTNZ)
OD	Outside diameter
OLFP	Overland Flow Path
OMM	Operation Maintenance Manual
ONRC	One Network Road Classification
PDWF	Peak Dry Weather Flow (l/s)
PE 100	Polyethylene type 100
PE 80B	Polyethylene type 80B
PF	Peak Flows
PN	Pressure nominal
PPM	Parts per Million
PWL	Permanent Water level
RAMM	Road Assessment and Maintenance Management
REA	Registered Engineering Associate
RMA	Resource Management Act
ROW	Right of Way (refer to definitions below)
RPSurv	Registered Professional Surveyor
RTS	Road and Traffic Standards (Published by the LTSA)
SCADA	Supervisory, Control and Data Acquisition
SISD	Safe Intersection Sight Distance
SMP	Stormwater Management Plan
SN	Stiffness number
SQEP	Suitably Qualified and Experienced Person(s)
SSA	Site Specific Assessment
TMP	Traffic Management Plan
TSS	Total Suspended Solids

vpd	Vehicles per day
WDC	Whangārei District Council

In the ES, unless inconsistent with the context, the following definitions shall apply.

Access (Low Volume)	Refer to Access (Road) below and Table 3-2.
Access (Road)	Roads not classified as arterial or collector, whose major function is to provide access to properties rather than provide routes for other traffic. See Table 3-2. Includes RoWs, vehicle crossings over a road, access lots and any private land area for the purpose of access
Accessway	Provides access to a specific destination
Alternative Design	Alternative design is considered a design proposal deviating from the ES.
Annual Exceedance Probability	The probability of exceedance of an event (generally a rainfall or flood) within a period of one year (e.g. 1% AEP is equivalent to 1 in 100-year storm).
Approved	WDC approval in writing
Arterial Road	Major roads with high traffic volumes or a significant component of through traffic. These include major roads into and through the District, and roads serving significant areas of development. Existing arterial roads are shown on District Plan Maps.
Attenuation	Temporary storing stormwater for a period with a controlled release to lessen the intensity/severity/effects of runoff to a defined value, generally to peak flows at pre-development level or lower.
Average Recurrence Interval	The average, or expected, value of the periods between exceedances of a given rainfall total accumulated over a given duration. Refer to Annual Exceedance Probability above.
Brownfield Development	Land area that has existing or legacy infrastructure, or land that has been contaminated.

Catchment/Catchment Area	The area over which surface water run-off will tend to flow under gravity towards a common point.
Carriageway Width	The road width normally traversed or occupied by vehicles. See **Sheet 2**
Collector Road	Roads that collect traffic from specific areas or link important roads or major traffic generators. Existing collector roads are shown on District Plan Maps.
Commercial and Industrial Area	As defined in the District Plan (WDC should be consulted beforehand to determine the standard that will be applied to a particular area if there is any doubt).
Community Sewerage System	A wastewater reticulation, treatment and disposal system, that serves two or more properties. This applies irrespective of whether or not it is maintained by WDC.
Consent Holder	See Developer
Contractor	The company engaged to undertake the physical works
Curve Number	An empirical parameter used in hydrology for predicting direct runoff or infiltration from rainfall excess. The run-off curve number is based on the area's hydrologic soil group, land use, surface treatment, gradient and hydrologic condition.
Cycleway	Part of the road carriageway (between kerb lines) which is legally only for cyclists. Either a painted cycle lane or a protected cycle lane with associated paint and signs.
Defects Liability Period	The period required by WDC, after the completion of the works, for which the Developer is responsible for repairing defects that may arise during this period, due to faulty materials and/or workmanship. WDC will normally require a bond to cover any necessary works. See Section 1.7.3.1 Defects Liability Period.

Design/Technical Review	A review of a specific part of an overall design or report by a suitably qualified and experienced professional. Refer to document ENZ Practice Note 02: Peer Review -Version 2, April 2018. The review can be done internally with WDC or externally. External reviews must be accompanied by a PS2- Design Review and associated documentation. Also see Peer Review.
Detention (hydraulic)	Temporarily detained water which enters a dry pond or tank, before being released slowly.
Developer	In relation to resource consents, is the applicant, owner, Trust, Company, person(s), or organisation or legal entity who have been granted consent to undertake the activities applied for.
Developer's Representative	See Section 1.4.1 Developer's Representative
District Plan	The operative and proposed plans for the District and any combination of them applicable to resource consent applications.
Drain	A pipe or channel that conveys sewage or stormwater flow. Drainage has a corresponding meaning.
Earthworks	Any modification to the shape of the land surface, removal of soil, excavation, infilling or re-contouring, including construction of any road, track, landing, overland flow paths, open drains and streams.
Engineering Design Approval	Any works that impact on WDC owned assets and/or proposed assets to be vested to WDC will require an EDA.
EDA Certificate of Completion	Any completion of works requires the developer to apply for an EDA Certificate of Completion from WDC.
Flooding	Refers to both ponding and overland flows.
Footpath	The part of a road that is laid out or constructed primarily for pedestrians. It may not include the associated edging and kerb.

Geo-Professional	A chartered professional engineer (CPEng) with a practice field in geotechnical engineering or an engineering geologist (PEngGeol), with recognised qualifications and experience in geotechnical engineering, and land development.
Good Ground	Is defined in B1 Acceptable Solutions and Verification Methods, and in NZS 4229:2013: as 'any rock or soil capable of withstanding an ultimate bearing capacity of 300kPa (i.e. an allowable bearing pressure of 100kPa using a factor of safety of 3), but excludes: Potentially compressible ground such as topsoil, soft soils such as clay which can be moulded easily in the fingers, and uncompacted loose gravel which contains obvious voids Expansive soils being those that have a liquid limit of more than 50% when tested in accordance with NZS 4402 Test 2.2 and a linear shrinkage of more than 15% when tested from the liquid limit in accordance with NZS 4402 Test 2.6, and Any ground which could foreseeably experience movement of 25 mm or greater for any one or a combination of land instability, ground creep, subsidence, seasonal shrinking and swelling, frost heave, changing ground water level, erosion, dissolution of soil in water, and effects of tree roots'
Gradient	The slope of a surface or object off horizontal generally described either as a percentage or as a ratio i.e. 1:4 is equivalent to 25% or 250 mm/m
Greenfield Development	Development on land that has not previously been developed.
Ground	The surface of the earth and below, whether soil or rock.
Heavy Vehicle	Any vehicle exceeding 3500kg gross laden weight.
Household Unit	A single self-contained household unit used principally for residential activities, whether by one or more persons, including accessory buildings. Where more than one kitchen facility is provided on the site, there shall be deemed to be more than one household unit.

Household Unit Equivalent	A measured 'unit of demand' relating to a development and used in calculating its development contributions.
Hydraulic	The static and dynamic behaviour of fluids.
Hydrology	The study of the movement, distribution, and quality of water.
Infill Development	Development within a previously developed area.
Invert	The bottom of a pipe, channel or cesspit.
Legal Width for Roads (Road Reserve)	For public roads, the width of the strip of land that has been declared road in accordance with Section 114 of the Public Works Act 1981.
	For private roads, private ways or easements (rights-of-way), the width of the strip of land over which the public, shared owners or landowners with dominant tenement are legally entitled to pass without the specific approval of any one landowner.
Licensed Contractor (Water Supply)	As defined in WDC Specification for Registered and Licensed Contractors for Water Supply See Public Utility Connection/ Disconnection application form for a list of Licenced contractors. (see also Registered Contractor)
Licensed Contractor (Wastewater & Stormwater)	As defined in WDC Specification for Registered and Licensed Contractors for Waste & Drainage Department See Public Utility Connection/ Disconnection application form for a list of Licenced contractors. (see also Registered Contractor).
Manhole	A chamber which provides access from the surface to an underground service.
Maximum Probable Development	MPD represent a maximum impervious area for an allowable land use by District and Regional Plans. It is used for hydrological/ hydraulics modelling scenarios.
Means of Compliance	A method by which the requirements of the standard may be complied with.

Modified Rational Method	A method to calculate the hydrograph from an empirical rational formula. Q = CIA, where Q = flow /discharge, C = dimensionless run-off coefficient representing land cover, I = rainfall intensity (for the critical duration), A = catchment area, where uniform rainfall intensity applied over a catchment area. There is no 'loss method' associated with the Modified Rational Method. The underlying assumption is that the peak intensity is maintained for a long enough duration to reach peak flow at the outlet of the catchment.
Network Utility Operator	Has the same meaning as given to it by Section 166 of the Resource Management Act 1991.
Outlet	The discharge point of a catchment associated with a fluid conveyance system for both a gravity or pumped fluid system.
Overland Flow Path	A path taken by stormwater run-off as a surface flow concentrates. An OLFP may act as either primary or secondary stormwater conveyance system.
Owner	Includes an owner of land, whether beneficially or as trustee, and their agent or attorney, and a mortgagee acting in exercise of power of sale. It also includes the Crown, the Public Trustee, and any person, local authority, board or other body or authority however designated, constituted or appointed, having power to dispose of the land or interest therein by way of sale.
Pavement	The layer(s) of a road or access structure above the subgrade, incorporating sub-base and/or basecourse crushed granular material whether chemically stabilised or not, or rigid material (such as concrete), but excluding any seal coat. See **Sheet 2** and **Sheet 3.**
Peak Flow (Q)	The maximum rate of surface flow at a point in a catchment for a given period of runoff and rainfall. It could be determined using various hydrological modelling software or by Modified Rational Method.

Peer Review	An overall review of a design or report by a suitably qualified and experienced professional. Refer to ENZ Practice Note 02: Peer Review - Version 2, April 2018. Also see Design/Technical Review.
Primary Stormwater System	The stormwater system comprising of pipes, watercourses, and other elements of built and natural drainage, that convey the flow of stormwater within the catchment for more frequent storm events and provide a primary protection from flooding to surrounding properties. Which may be owned by WDC or controlled by easements, Local Government Act and the WDC Stormwater Management Bylaw.
Principal Watermains	All water reticulation 100 mm inside diameter or greater, including associated valves.
Private Road	Any roadway, place or arcade laid out within WDC on private land intended for the use of the public.
Private Way/Private Accessway	A road or passage over private land that is not open or intended to be open to general public use. Also see District Plan definitions.
Private Stormwater	Any part of the stormwater system that is privately owned and includes on drainage from a private land to a receiving environment or up to the point of service connection with the public stormwater network, and includes pipes, gutters, downpipes, catchpits, swales, subsoil drains, stormwater treatment devices, rainwater tanks and any stormwater management device or redundant stormwater system.

Public Stormwater	Public stormwater network includes: Any stormwater pipe, channel, watercourse, land drainage or treatment facility, vested in or under the control of WDC. Any stormwater drain, drain, land drainage work or treatment facility declared by WDC to be a public drain under Section 462 of the Local Government Act 1974. The stormwater assets of other public entities such as Transport, KiwiRail, and the NZ Transport Agency are not considered “public” in the context of this document. They may be owned by a public entity but are not “public” assets in a context of stormwater services being accessible to anyone.
Receiving Environment	A water body, river, stream, lake or sea where a catchment runoff discharges.
Registered Contractor (Water Supply)	As defined in WDC Specification for Registered and Licensed Contractors for Water Supply. See the Public Utility Connection/ Disconnection application form for a list of Registered Contractors (see also Licensed Contractor).
Registered Contractor (Wastewater & Stormwater)	As defined in WDC Specification for Registered and Licensed Contractors for Waste & Drainage See the Public Utility Connection/ Disconnection application form for a list of Registered Contractors (see also Licensed Contractor).
Regulatory Review	As defined in ENZ Practice Note 02: Peer Review -Version 2, April 2018.
Retention (hydrology)	A volume of stormwater reaming in a wetland, pond or tank after detained water was released, the retained water may infiltrate ground, evaporates and be used by living organisms.
Rider Main	Water reticulation less than 100 mm inside diameter, including associated valves, that serves more than one property
Right of Way	A ROW is a private access.

Rising Main	Pressure reticulation between a pumping station and a non-pressurised junction or termination, including another pumping station, manhole, reservoir or treatment system.
Road or Street	Road means, subject to Sections 43(1), 51(1), 54(1) & 55(1b) of the Government Roading Powers Act 1989, any road as defined in Section 315(1) of the Local Government Act 1974, and roading has a corresponding meaning.
Run-off Coefficient (C)	Used to estimate the amount of rainfall run-off that will occur off any given surface. See Table 4-3.
Rural Area	As defined in the District Plan.
Safety in Design	Refers to the Health and Safety by Design concept of managing health and safety risks throughout the lifecycle of structures, plant, substance or other products as presented by WorkSafe NZ guidelines and framework (WorkSafe NZ Health and Safety by Design: An Introduction, August 2018).
Secondary Stormwater System	The path taken by stormwater runoff in excess of the primary design flow, (e.g. in excess of 20% AEP). The secondary stormwater system is comprised mostly of OLFP, and watercourses. The secondary system is vital for flood protection of surrounding properties.
Service Lane	Has the meaning given in Section 315 of the Local Government Act 1974.
Specific Design	A design that requires analysis, and/or calculation, as required by a method referenced in the ES, or outside of the scope of methods used in the ES. Specific Designs shall be prepared by a SQEP in accordance with sound and accepted engineering practice and principles and shall meet the objectives set out in the ES and/or the District Plan. The design shall comply with New Zealand Standard specifications and/or other nationally recognised procedures and systems. All specific designs must be accompanied by a PS1 Design and a PS4 Construction Review. WDC may require a PS2 Design Review to be provided.

Standard Design Vehicle	See **Sheet 26** for details
Stable Ground	Land that in the opinion of a suitably qualified and experienced Geo-Professional is in a state which is unlikely to settle, slip, erode or otherwise move, allowing for a suitable factor of safety to the detriment of superimposed buildings, services, roads or property.
Stormwater	Rainwater that turns into runoff and flows via primary and secondary stormwater systems into a receiving environment.
Stormwater Treatment Pond	A permanent pond, wetland or dry detention basin, designed to control peak stormwater flows and provide water quality treatment (see also Attenuation).
Sub-base	The material between the subgrade and basecourse aggregate.
Subgrade	The top 1 m layer of the road formation below the pavement. It includes any stabilisation, granular or non-granular material of a lower standard than quarry run aggregate.
Suitably Qualified and Experienced Person	WDC requires that the engineering, including other technical aspects of infrastructure, environmental land development projects that need an engineering design approval and a consent from WDC shall be undertaken, supervised and certified by a SQEP who is working within their level of competency. Generally the required level of competency and qualifications corresponds with the scale and type of the project and the overall risk (Refer to Section 1.5.1.3 Risk Based Assessment Framework).
Surcharge	A pipe running in excess of its gravity flow condition, above full and under a degree of pressure.
Survey Plan	As described in Section 2 of the Resource Management Act 1991.
Swale	A planted or grassed channel that conveys stormwater, generally at low, non-eroding velocities and provides water quality treatment and amenity.

Transport Corridor	For the purpose of the ES, includes all Road or Street as defined in this table, includes all land from boundary to boundary (including the Berm and Carriageway).
Tree Dripline	The area defined by the outermost circumference of a tree canopy where water drips from and onto the ground.
Urban Area	As defined in the District Plan.
Vehicle Crossing	A trafficable pavement created over a public road corridor in order to connect WDC's formed road to the boundary of private property.
Watercourse	A watercourse is part of the stormwater system and is a natural or man-made open channel where water collects and flows. It can be a river, stream, drainage channel, culvert or pipe that replaces a natural open channel etc.

1.4. General Engineering Requirements

WDC will undertake a review of a development application prior to issue of a resource consent, in order to establish suitable engineering consent conditions.

Typically, Engineering Approval consists of three phases:

a. Post-consent engineering design approval (pre-construction),

b. Works commencement, inspection and testing (during construction), and

c. Works completion and acceptance (post-construction).

The following sections detail the expectations of WDC and the information submission requirements for Engineering Design Approval (EDA).

Any works, whether they require land use; subdivision; building consent, that impact on WDC owned assets and/or include installation of new assets to be vested to WDC, will require an EDA.

1.4.1. Developer's Representative

The Developer shall nominate SQEP, in accordance with Section 1.5.1.3 Risk Based Assessment Framework, to be the Developer's Representative. This shall be submitted in writing to WDC.

Should the appointed SQEP change during the various phases of the work, WDC shall be notified in writing of the change, and provided with the contact details of the new SQEP.

The SQEP is to provide the following:

a. Compliance with Section 1.2 Statutory Requirements

b. All correspondence, investigations, calculations, design, construction work and supervision, certification of completed works, and provision of As-Built Plans of the approved works. See Section 1.4.4 Quality Assurance and Quality Control, Section 1.5.3.3 Investigation, Design and Certification and Section 1.7.2 As-Built Plans, Asset Information Schedules, Operation and Maintenance Manuals,

c. Ensure that SQEP is covered by professional indemnity insurance to the value of at least $1,000,000. See Section 1.4.3 Insurance, and

d. Ensure that the Developer's contractors hold adequate insurance cover for their activities, provide evidence of such insurance cover prior to commencement of work on the development, and maintain this cover throughout the works. See Section 1.4.3 Insurance.

All WDC correspondence relating to the conditions of consent shall be with the nominated SQEP.

1.4.2. Cost of the Work and WDC Contributions

The Developer shall pay all development contributions and other fees and charges set by WDC.

The Developer is responsible for all construction and associated costs of the development unless otherwise agreed in writing with WDC.

In certain circumstances WDC may contribute towards the cost of work in terms of an applicable policy, or as negotiated, with the basis and timing of payment of such agreements confirmed in writing by WDC prior to commencing work. Generally, such contributions would only cover the provision of services greater than required for the immediate proposal and is entirely at the discretion of WDC.

1.4.3. Insurance

Where work is carried out on a public road or reserve, on a WDC asset, or on land not owned by the Developer, the Developer shall ensure that the following insurance is in place prior to commencing work:

a. Public Liability Insurance in the name of the Developer for an amount of not less than $2,000,000.

Note: For developments where the value of work on public land or WDC asset is low, WDC may reduce the required value of the Public Liability Insurance to relate to the risk, but not less than 200% of the value of this work.

Note: The policy shall cover all insurable risks normally applicable to land development work until the end of the maintenance period. Such risks may include flooding due to burst watermains, property damage due to land slips, or contamination of natural water due to overflowing sewerage reticulation, and similar

b. The Developer's SQEP(s) shall separately be covered by suitable current Professional Indemnity Insurance of not less than $1,000,000.

   i. This Professional Indemnity Insurance shall cover all aspects of the works for which the professional is responsible. See Section 1.4.1 Developer's Representative and Section 1.5.1.3 Risk Based Assessment Framework.

c. The Developer shall ensure that its contractors also hold insurance cover adequate to cover their activities and these requirements, provide evidence of suitable insurance cover prior to the commencement of the work, and ensure that this insurance cover is maintained for the duration of the works.

1.4.4. Quality Assurance and Quality Control

The WDC QA/QC Manual 2010 sets out the minimum Quality Assurance/Quality Control requirements for developments incorporating assets that will be vested to WDC upon completion of the works. The Developer's Representative shall be responsible for the provision of inspection and testing services unless the ES requires the supervision and certification to be undertaken by a SQEP. The Developer's Representative shall however retain overall responsibility for ensuring that all inspection and testing services are completed in accordance with WDC's approved Inspection and Testing Plan (ITP) as per Section 1.6.3 Inspection and Testing Plan (ITP).

1.5. Design

1.5.1. General

1.5.1.1 Design Statement

All designs submitted to WDC shall be accompanied by a Design Statement (see Section 1.5.3.3.5 Design Statements and Engineering Drawings).

1.5.1.2 Alternative Designs

WDC supports and encourages innovation and designs which add value. Alternative Designs may be submitted provided that the Alternative Design meets or exceeds the ES and in particular the policies and performance standards that are set out in the respective infrastructure sections. The Alternative Design provided shall be described in the Design Statement and include all relevant supporting information to enable review and assessment by WDC.

Where a designer identifies a product that is not currently approved (refer to WDCs Approved Materials Lists), an application shall be made to WDC for the item to be considered. Application and discussions for alternative products should occur at an early stage in the design process.

Approval of an Alternative Design or product will be at the sole discretion of the WDC's relevant management team in accordance with their delegations, policies and performance standards. Such approval does not confer approval in general nor in

principle to any design criteria, construction technique or material forming part of the design. Any such approval should be obtained as part of the resource consent and/or EDA process well in advance of committing to construction, and in order to allow specific consent conditions to address the alternative, if any.

Any approval is based on the information provided and shall not relieve the Developer of the responsibility for compliance with WDC standards, established principles and carrying out the work in accordance with the industry best practice.

All alternative means of compliance shall be specifically set out in a separate “Schedule of Alternative Means of Compliance” with description of proposed departures from the ES and alternatives. All other aspects of the design shall comply fully with the requirements of the District Plan and relevant standards.

Any Alternative design must provide sufficient information, similar to that required by Specific Design.

1.5.1.3 Risk Based Assessment Framework

The WDC requires that the engineering, including other technical aspects of infrastructure, environmental land development projects that need an engineering design and a consent from WDC , including Resource Consent, Engineering Design Approval, Building consent or any other approval related to the proposed works, shall be undertaken, supervised and certified by ‘Suitably Qualified and Experienced Persons’ (SQEP).

Design work, and assessments required for resource consents and engineering design approval shall at a minimum be reviewed and certified by SQEP in accordance with Table 1-1, Table 1-2, Table 1-3, and Table 1-4 and as set out in the ES. SQEP can undertake work on designs and assessments classified above their Tier level, but the work must be reviewed and certified by a SQEP in accordance with these tables, before submitting to WDC for approval.

The level of competency and qualifications required from SQEP shall generally correspond with the scale and type of project and the overall risk. It is considered that the level of complexity varies under different environments, processes, and with each asset type. There are certain aspects of development designs that will require a higher level of expertise even when the development is of a small scale.

A cascading system of responsibility is listed below to identify the minimum qualifications/experience required to certify the work or development component that is being addressed:

a. **Tier 1:** Work can be certified by an experienced person within a suitable field of practice.

b. **Tier 2**: Work can be certified by a professional holding a NZQA Level 6 academic qualification or equivalent in an applicable field of engineering and accredited with one of the following: REA, LDEng, RPSurv, CMEngNZ (Engineering Technician).

c. **Tier 3:** Work can be certified by a professional holding a NZQA Level 7 academic qualification or equivalent in an applicable field of engineering

and accredited with one of the following: REA, LDEng, RPSurv, CMEngNZ, CMEngNZ (PEngGeol), CMEngNZ (Engineering Technologist).

d. **Tier 4:** Work can be certified by a Charted Professional Engineer (CPEng) accredited with the Charted Professional Engineer Council (CPEC).

Note: All designs that fall outside the scope of the simplified methods in the ES shall be certified by a Tier 4 SQEP.

If there is any doubt as to the required/permitted level of SQEP involvement in any consent application, please contact WDC for clarification.

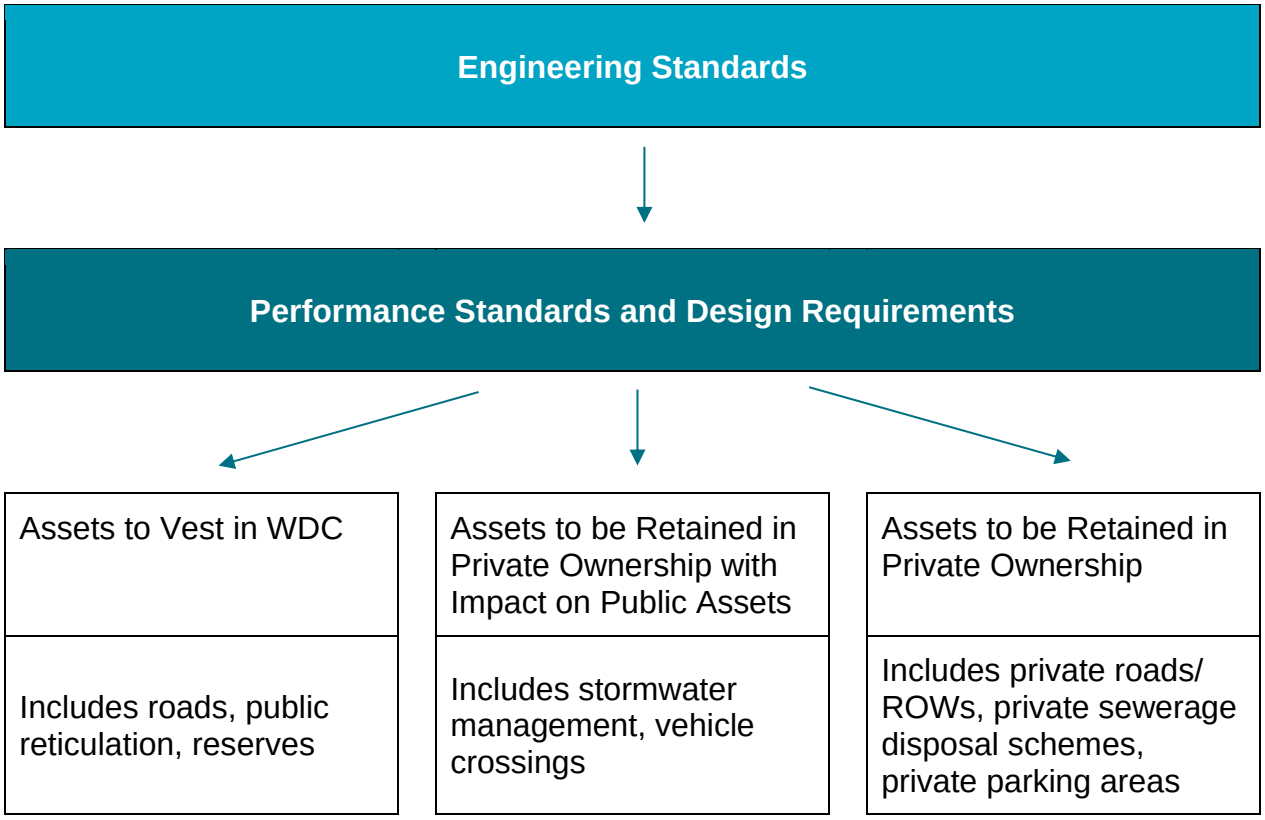
Regardless of what Tier the SQEP may be, all work and supporting documentation must be in accordance with the ES or follow the Specific Design requirements for alternative methods. Work requiring Specific Design shall be accompanied by detailed calculations, analysis, and reports and submitted to WDC for approval.

SQEP shall be covered by Professional Indemnity Insurance in accordance with Section 1.4.3 Insurance.

While compliance with this Section (1.5.1.3 Risk Based Assessment Framework) is required by the ES, it does not diminish the responsibility of any professional to exercise their professional/engineering judgement and devise appropriate solutions.

Figure 1-1 sets out the manner in which the ES will be used when considering engineering works associated with resource consents and outlines WDCs and SQEP involvement in various aspects of development.

Figure 1-1 Performance Standards and Design Requirements



• Conditions of consent identifying assets to vest. • Approval of EDA with relevant Producer Statement (PS1 Design). • Inspection and Test Plan in accordance with Section 1.6.3. • Inspections and testing in accordance with Inspection and Test Plan. • Final inspection undertaken in accordance with WDC QA/QC Manual 2010. • Relevant Producer Statement (PS4 Construction Review), documentation and as-built information provided. • Maintenance bond secured (where necessary). • Asset vests to WDC	• Conditions of consent identifying assets to be retained in private ownership with any ongoing maintenance requirements. • Approval of EDA with relevant Producer Statement (PS1 Design). • Schedule of required inspections by WDC included in plan approval. • Inspections undertaken in accordance with Schedule. • Final inspection undertaken by WDC with Developer. • Relevant Producer Statement (PS4 Construction Review), documentation and as- built information provided.	• Conditions of consent identifying assets to be retained in private ownership with any on-going maintenance requirements. • Approval of EDA with relevant Producer Statement (PS1 Design). • WDC notified of inspections/testing for optional observation. • Relevant Producer Statement documentation (PS4 Construction Review) and as-built information provided. • Works completed

Note: If there is any doubt as to the required/permitted level of SQEP involvement in any consent application or EDA, please contact WDC for clarification.

Table 1-1 Site Suitability (Geotechnical and Natural Hazards) Aspects that Require a SQEP

	Complexity of Site Suitability	
	Low risk or not identified in a hazard zone	*Medium/High Risk or identified within a hazard zone or unmapped in terms on land instability* ***(note 'risk' is in the context of all hazards)***
Geotechnical Assessment Report	Tier 3 (CMEngNZ, CMEngNZ (PEngGeol), CMEngNZ (Engineering Technologist) or REA)	Tier 4 Geo-Professional (including PEngGeol)
Report on other identified hazards, excluding flooding (e.g. Coastal erosion, mine zones, aggressive ground conditions)	Tier 3 (CMEngNZ, CMEngNZ (PEngGeol), CMEngNZ (Engineering Technologist) or REA)	Tier 4 Geo-Professional (including PEngGeol)
Flood Hazard and Coastal Flood Hazard Assessment	Tier 3	Tier 4
Geotechnical Design Report *(This includes all elements listed in Section 2.4.1 Geotechnical Design Report except for the Erosion and Sediment Control Plan, see SQEP requirements below)*	Tier 3* (CMEngNZ, CMEngNZ (PEngGeol), CMEngNZ (Engineering Technologist) or REA)	Tier 4 Geo-Professional (including PEngGeol)

	Complexity of Site Suitability	
	Low risk or not identified in a hazard zone	*Medium/High Risk or identified within a hazard zone or unmapped in terms on land instability* ***(note 'risk' is in the context of all hazards)***
Erosion and Sediment Control Plan	Tier 1	Tier 4*
Geotechnical Completion Report	Tier 4 Geo-Professional (including PEngGeol)	Tier 4 Geo-Professional (including PEngGeol)
Contaminated Site Validation Report	Suitably qualified and experienced Environmental Scientist or Engineer with relevant experience in the type of contamination and management. (See page 16 and 17 of Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health 2012 for further guidance)	

1. * This may require a higher level of sign off, dependent on complexity of works. i.e. Tier 4 Geo-Professional or a PS2 Design Review.

Table 1-2 Road and Access Aspects that Require a SQEP

	Complexity of the Development			
	Low complexity AND small subdivisions (Typically 0-2 Dwellings)	*Low complexity AND small to medium developments (Typically 3-8 Dwellings)*	*Low complexity AND medium to large developments (Typically 9-29 Dwellings)*	*Medium to high complexity AND/OR large developments (Typically 30+ Dwellings)*
All Design & Access Statements as per Section 3.2.2.2 Design and Access Statements for vested roads.	Tier 1	Tier 1	Tier 2	Tier 4
Integrated Transportation Assessment As required under the District Plan Rules - Section TRA-15	Tier 1			
Roadway Design for Private Accessways: • Geometric Design • Horizontal & Vertical Alignment • Cut/Fill Batters • Footpaths • Accessible Crossings • Cycle Facilities • Crossfall & Superelevation	Tier 1	Tier 1	Tier 2	Tier 4
Roadway Design for Roads to Vest based on District Plan Table TRA 13 - Transport Network Hierarchy:	Tier 2 (Only if low volume and access roads)	Tier 3 (Only if Secondary Collector)	Tier 4 (For Primary Collector, Arterial,	Tier 4 (For Primary Collector, Arterial,

	Complexity of the Development			
	Low complexity AND small subdivisions (Typically 0-2 Dwellings)	*Low complexity AND small to medium developments (Typically 3-8 Dwellings)*	*Low complexity AND medium to large developments (Typically 9-29 Dwellings)*	*Medium to high complexity AND/OR large developments (Typically 30+ Dwellings)*
• Geometric Design • Horizontal & Vertical Alignment • Cut/Fill Batters • Footpaths • Accessible Crossings • Cycle Facilities • Crossfall & Superelevation			regional & National Roads)	regional & National Roads)
Intersection Design - Based on District Plan Table TRA 13 - Transport Network Hierarchy For the intersection of two different classifications of roadway, qualification requirements will be based on the higher of the two roadway classifications.	Tier 2 (Only if low volume and access roads)	Tier 3 (Only if Secondary Collector)	Tier 4 (For Primary Collector, Arterial, regional & National Roads)	Tier 4 (For Primary Collector, Arterial, regional & National Roads)
Pavement Structural Design for Private Accessways	Tier 2	Tier 2	Tier 4	Tier 4
Pavement Structural Design for Roads to Vest	Tier 4			

	Complexity of the Development			
	Low complexity AND small subdivisions (Typically 0-2 Dwellings)	*Low complexity AND small to medium developments (Typically 3-8 Dwellings)*	*Low complexity AND medium to large developments (Typically 9-29 Dwellings)*	*Medium to high complexity AND/OR large developments (Typically 30+ Dwellings)*
Traffic Signal Design	Suitably qualified and experienced Engineering Technologist			
Lighting Design	Tier 1			
Traffic Signs & Line Markings	Tier 1			

Table 1-3 Stormwater Aspects that Require a SQEP

	Complexity of the Development		
	Low complexity AND small subdivisions (Typically 0-2 Dwellings)	*Low complexity AND medium to large developments (Typically 3-10 Dwellings)*	*Medium to high complexity AND/OR large developments (Typically >10 Dwellings)*
Stormwater Management Plan	Tier 2*	Tier 3*	Tier 4
Stormwater Mitigation Analysis	Tier 2*	Tier 3*	Tier 4

	Complexity of the Development		
	Low complexity AND small subdivisions (Typically 0-2 Dwellings)	*Low complexity AND medium to large developments (Typically 3-10 Dwellings)*	*Medium to high complexity AND/OR large developments (Typically >10 Dwellings)*
Stormwater Management Device Design: • Rainwater Re-use and/or Attenuation Tanks • Vegetated Swales • Bioretention Devices (including raingardens) • Pervious Paving (including porous or permeable paving) • Infiltration devices	Tier 3*		
Design details of ponds and constructed wetlands, including detention ponds, box culverts and major circular culverts sized ≥600 mm.	Tier 4		
OLFP Assessment (including conveyance of OLFP(s) from entry to exit through the development site).	Tier 2*	Tier 3*	Tier 4
Flood Hazard and Coastal Flood Hazard Assessment	Refer to Table 1-1		

	Complexity of the Development		
	Low complexity AND small subdivisions (Typically 0-2 Dwellings)	*Low complexity AND medium to large developments (Typically 3-10 Dwellings)*	*Medium to high complexity AND/OR large developments (Typically >10 Dwellings)*
Hydraulic calculations and gravity stormwater reticulation design requiring pipework including culverts.	Tier 2*	Tier 3*	Tier 3*

1. * This may require a higher level of sign off, dependent on complexity of works. i.e. Tier 4 or a PS2 Design Review.

Table 1-4 Water and Wastewater Aspects that Require a SQEP

	Complexity of the Development			
	0-6 Dwellings AND if extension is of the existing water or wastewater network.	*7-10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 63 mm watermains. Pump stations are excluded.*	*>10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 125 mm watermain. Pump stations are excluded.*	*40+ Dwellings or where design problems are complex and require broad spectrum or specialized engineering principles (includes work such as structural design, pump stations, process work or larger diameter pipework (225 mm and over)).*
Design Work (excluding those listed below)	Tier 1 (If detailed design work isn't required for service connections. The extension must be in accordance with the ES	Tier 2 (If no specialist input is required, such as structural design that cannot be taken directly from WDC ES standard	Tier 3 (There may be simple structural designs required for network components such as narrow stream	Tier 4

	Complexity of the Development			
	0-6 Dwellings AND if extension is of the existing water or wastewater network.	*7-10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 63 mm watermains. Pump stations are excluded.*	*>10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 125 mm watermain. Pump stations are excluded.*	*40+ Dwellings or where design problems are complex and require broad spectrum or specialized engineering principles (includes work such as structural design, pump stations, process work or larger diameter pipework (225 mm and over)).*
	without any deviation or amendment to the standard ES design drawing solutions. The EDA application must show the intended extension in detail)	design details i.e. requires Specific Design.)	crossings or slightly deeper services that can be deduced from design catalogues.)	
Gravity reticulation requiring pipework larger than 150mm ID	Tier 4			
Sewer pump stations and rising mains	Tier 4			
Suitability report for on-site disposal (using	Tier 2	Tier 3*	Tier 3*	Tier 4

	Complexity of the Development			
	0-6 Dwellings AND if extension is of the existing water or wastewater network.	*7-10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 63 mm watermains. Pump stations are excluded.*	*>10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 125 mm watermain. Pump stations are excluded.*	*40+ Dwellings or where design problems are complex and require broad spectrum or specialized engineering principles (includes work such as structural design, pump stations, process work or larger diameter pipework (225 mm and over)).*
Appendix B ES-SEW1 or similar)				
Community wastewater treatment systems	Tier 4			
Siphons and retaining structures.	Tier 4			
Low Pressure Sewer Systems	Tier 4 (Pressure sewer design must be reviewed by the proprietary product supplier)			
Water Booster pump stations	Tier 4			
Reservoirs	Tier 4			

	Complexity of the Development			
	0-6 Dwellings AND if extension is of the existing water or wastewater network.	*7-10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 63 mm watermains. Pump stations are excluded.*	*>10 Dwellings, where design problems are well defined AND network sizing limited to 150 mm wastewater mains and 125 mm watermain. Pump stations are excluded.*	*40+ Dwellings or where design problems are complex and require broad spectrum or specialized engineering principles (includes work such as structural design, pump stations, process work or larger diameter pipework (225 mm and over)).*
Pipe bridges and other structures	Tier 4			
Hydraulic design of reticulation	Tier 4			

1. * This may require a higher level of sign off, dependent on complexity of works. i.e. Tier 4 or a PS2 Design Review.

1.5.1.4 Review of Reports and Designs

The WDC undertakes review of information submitted to the WDC. Those reviews may take the form of one or more of the following:

a. Regulatory Review,

b. Design Review or Technical Review, or

c. Peer Review.

The Regulatory Review assesses the report or design for compliance with pertinent regulations, consent requirements and laws.

WDC at its own discretion may arrange for external regulatory reviews as part of the approval process where WDC staff do not have the necessary skills or capacity to assess.

Design or Technical Review checks assumptions, design method, arithmetical accuracy and conclusions drawn by the designer.

Peer Review involves a complete review of the overall proposal and design.

A full peer review may take place if, the proposal and supporting information appear to be deficient, or complex, or is an alternative design.

Regulatory, Technical/Design and Peer Reviews shall be undertaken generally as described by Engineering New Zealand (See ENZ Practice Note 02: Peer Review Version 2- April 2018).

All reviews will be undertaken by an independent specialist engaged by WDC, at the Developer's cost, and as a part of the consent application.

1.5.2. Information Requirements - Resource Consent Applications

The following minimum level of engineering information (where applicable) is required to be provided with a Resource Consent Application:

a. A suitable site plan detailing the overall proposed development and showing existing contours in areas proposed for development (e.g. building site, access, effluent disposal area) and any overland flow paths, rivers, wetlands, water bores etc which exist pre-development either in the subject property or in adjoining properties (where applicable).

b. Each proposed lot is to detail a building site, access route to the building site (taking into account natural hazards, emergency services) and an effluent disposal site (where applicable).

c. Site(s) that lie within the low instability hazard zone on WDC GIS hazard mapping; visual assessment (site walk-over) by a person experienced in geotechnical assessment. This assessment is to determine whether or not further geotechnical investigation is necessary i.e. local ground conditions do/do not qualify for a low instability rating. A professional statement will be required from this experienced person containing their recommendations

and the fact that they are suitably experienced and qualified to make this assessment.

d. Site(s) that lie within the moderate and high risk instability zones on WDC GIS hazard mapping; geotechnical assessment by a Geo-Professional. This assessment is to cover the areas proposed for development within the larger site (e.g. building site, access, effluent disposal site etc.). See Section 2.3 Geotechnical/ Hazard Assessment.

e. Site(s) that lie outside of WDC GIS hazard mapping; geotechnical assessment by a Geo-Professional. The content of the assessment will depend on whether the Geo-Professional considers the site(s) to be of low, moderate or high instability. See Section 2.3 Geotechnical/ Hazard Assessment.

f. Assessment of any other hazards affecting the site (flooding, coastal hazards, mine zones, tsunami zones etc.). In case of flooding and overland flow paths, an assessment of the extent and depth of the 1% AEP event shall be clearly shown on the plans.

g. Traffic assessment. This may only be an assessment of entrance sight lines but may involve a full report from a SQEP, depending on the proposal and the type of road accessing.

h. In WDC reticulated areas, an assessment that shows that the existing infrastructure has sufficient capacity to support the development (wastewater, water, stormwater) and consideration of elevation of each of the proposed lots to establish a service envelope where that lot is able to be serviced without the need for on-site pumping. Reference shall be made to any part of the lot that is outside the service envelope. This requirement does not cover development to be served by pressure sewers.

i. An outline of the proposals to provide electricity, telecommunications and gas networks.

j. For sites outside of the area of benefit of reticulated sewer, a completed on-site effluent assessment on form Appendix B ES-SEW1 to prove the ability of the site to effectively support disposal as per the NRC Regional Plans.

k. In reticulated area's an assessment of fire-fighting capability to provide compliance with SNZ PAS 4509:2008 showing:

   i. The position of nearest hydrant (existing or proposed) and distance to the existing or proposed dwelling site following a route along which a fire hose could be laid.

   ii. Flow/pressure available from hydrants compliant with standards and Section 6.2.4 Fire Service Requirements

Note: Hydrants shall be able to service all of the available buildable area shown in Living 1 & 2 and Business environments. Compliance with SNZ PAS 4509:2008 is required.

   iii. Should any proposed house site be positioned sufficiently far away from a hydrant or other suitable water supply such that a firefighting appliance

has to use the access route, then, unless an alternative is agreed to in writing by the fire services region manager, this route shall be:

- Capable of conveying a 20-tonne vehicle (maximum access gradients for fire appliance shall be considered)
- Capable of supporting a 20-tonne vehicle, and
- Formed to a minimum width as specified in Table 3-16 for 2-4 lots.

l. In non-reticulated area's an assessment of fire-fighting capability to provide compliance with SNZ PAS 4509:2008 showing:

   i. Proposed method of providing fire-fighting water supply (tanks/dam/river etc). Refer to SNZ PAS 4509:2008 for requirements.

   ii. An access complying with the requirements of SNZ PAS 4509:2008, unless an alternative is agreed to in writing by the fire services regional manager.

m. Existing services (private and public) on the land in question have been located and plotted.

n. Any roads, accessways, entrances (existing and proposed) comply with the minimum requirements of the ES.

o. Parking and manoeuvring, accessible parking etc. demonstrated as achievable.

p. Proof that any consents necessary from NRC have been applied for/obtained.

Depending on the complexity of any consent application, it may be necessary to produce full engineering construction drawings, calculations etc. for certain/all aspects of the proposal prior to consent approval being obtained so that appropriate conditions of consent can be applied. This would particularly apply in terrain which is unstable/steep/flood prone etc. and where Alternative or Specific Design are proposed.

Note: It is recommended that the Developer/SQEP have a pre-lodgment meeting with WDC to determine the level of information/design necessary.

1.5.3. Engineering Design Approval

The Developer shall provide sufficient information in support of their proposal and engage SQEP who will liaise with WDC staff throughout the EDA process and provide the following:

a. Clear interpretation and presentation of the Resource Consent, engineering design and other relevant details prepared by SQEP,

b. Engineering design drawings, calculations and reports,

c. Overseeing the physical works and certifying that the work has been completed to the required standards, and in accordance with the approved EDA, and

d. As-built plans and associated documentation.

Note: Consultation with WDC management teams on all infrastructure design and landscaping proposals at an early stage of the development is encouraged.

1.5.3.2 Information requirements

The following **minimum** level of engineering information is expected to be provided for EDA prior to construction, (where applicable):

a. Full Engineering Drawings with all calculations, investigations, analyses, reports etc., drawn in accordance with AS/NZS 1100.501:2002, NZS/AS 1100.301 Supplement 1:1986, and NZS/AS 1100.301:1985 and the ES. See Appendix F Drawing Standards.

b. Completion of the supporting information Appendix I Checklist for Supporting Information.

c. Drawings submitted for approval shall include the WDC's resource consent (if applicable), property legal description, and the Developer's name.

d. Complex and/or specialist designs are to be peer reviewed and a PS2 Design Review submitted with application.

e. It is recommended that a pre-lodgement meeting be held to determine the necessary detail for Engineering Drawings.

f. Any proposed changes to existing WDC assets are to be clearly identified (e.g. abandonment, removal, upgrading and relocation).

1.5.3.3 Investigation, Design and Certification

1.5.3.3.1. General Requirements

All specialist investigation, calculations, design, supervision and certification of the works described in the ES shall be carried out by or under the control of person(s) who is a SQEP. SQEP shall sign off technical documentation as per Section 1.5.1.3 Risk Based Assessment Framework.

1.5.3.3.2. Design

Designs may either conform to the ES, or be an Alternative Design (Section 1.5.1.2 Alternative Designs) as appropriate to a specific situation.

Note: Designers are reminded of their responsibilities to apply Safety in Design principles, particularly where the requirements of the Building Act 2004 and NZ Building Code may be more onerous than that required under the ES and the District Plan.

1.5.3.3.3. Design Life

The design life of assets shall be 100 years unless otherwise stated in the ES.

1.5.3.3.4. Certification

Design Stage

All works requiring design by a SQEP require certification in the form of a producer statement (design), PS1 Design. Specific Design and complex works may also need a PS2 Design Review.

Post Construction

Producer statements (construction) are required for all completed works that are covered by a producer statement (design) PS1 Design and shall be certified by a SQEP. PS4 Construction Review may be used for this purpose, or other form approved by the WDC.

1.5.3.3.5. Design Statements and Engineering Drawings

All Engineering Drawings shall be accompanied by a Design Statement which describes the proposed infrastructure and its relationship to the ES. Alternative Designs and any departure from the ES shall be described in the Design Statement.

Table 1-5 contains details on the Engineering Drawings required to be submitted.

The Design Statement and Engineering Drawings shall be supported by the information summarised in Table 1-6.

Approval of Engineering documentation (plans, statements, drawings, calculations and reports) is required before construction commences.

The WDC may reject applications with incomplete design documentation.

Note: Staged submission of detailed Engineering Drawings may be considered where an overall preliminary documentation is provided with the initial application and is included in the resource consent conditions.

Note: Unless specifically stated otherwise, the approval of drawings does not supersede the requirements or obligations of the ES.

1.5.3.3.6. EDA Process

EDA is subject to the payment for assessment, approval and inspection fees. The approved plans shall be kept on site at all times during construction of the works.

The WDC will endeavour to process plans within 10 working days, however larger or more complex applications may take up to 20 Working Days.

Once EDA is granted, it does not constitute a right of access onto WDC or a third-party property to undertake works. A right of access must be obtained from the affected party in writing before works commence.

1.5.3.3.7. Request for Further Information

Prior to approval of EDA being issued, WDC may require further information to be submitted with results in necessity to amend drawings and reports.

The final engineering documentation (statements, drawings, calculations and reports) shall then be compiled by the Developer for EDA.

1.5.3.3.8. Changes to Approved EDA

It may also be necessary for an approved EDA to be amended due to unforeseen site conditions.

The approved drawings may only be amended after consultation with the WDC.

In all cases the changes shall be documented, and the amendments shown on the drawings submitted for further approval.

Where changes to the approved EDA documentation are proposed, the Developer shall not proceed until WDC approves the variation.

The Developer/contractor shall be aware that, any works constructed without approvals may not be accepted by WDC.

Table 1-5: Engineering Drawing Requirements

Type	Plan View	Long Sections	Other
Site Locality	• Major street names • Legal descriptions of the site and adjacent properties • Overall extent of the works • Relationship with works or services adjacent to the site • Clear identification of existing works that will be modified, removed or abandoned • Proposed house sites and access routes		• Other major features that assist locating the site • Effluent disposal sites (if applicable). • Location of services in berms and accessways in relation to other services and site boundaries
Geotechnical	• Positions of tests • Areas of noted instability (slip scarps, unstable ground etc) on or adjacent to the site • Proposed works required to mitigate the effects of geotechnical issues		

Type	Plan View	Long Sections	Other
Earthworks Scheme Plan	• Original contours • Final contours • Overland drainage pattern • Cuts and fills • Batter slopes • Erosion and Sediment Control proposals		

Type	Plan View	Long Sections	Other
Transportation	• Horizontal alignment of kerb and channel including traffic facilities • Horizontal alignment of footpaths • Horizontal alignment of cycleways • Location of vehicle crossings where known • Parking arrangements • Locations of ducts and other below ground features • Location, type and colour of streetlight columns (may be separate plan) • Traffic signal details • Location of landscaping areas and street trees; landscape plans to include underground services and street lighting • Location of all street furniture • Location of any reserves • Location and type of any stormwater treatment and detention device	• Existing ground levels at minimum of 15 m intervals • Proposed final centre line levels • Cuts and fills • Grades • Vertical curve information • Location of catch pits • Location of intersecting roads	Cross Sections • Proposed road • Existing ground contour extending at least 3.0 m into adjacent land Road Marking and Signage • Location and types of signage • Location and alignment of all road markings Construction Details, including • Road pavements • Kerb & Channel, side drainage • Footpaths, cycleways • Vehicle access crossings • Proposed planting Details of information signs shall include the full layout, including sign text and colours (all road markings and signs to comply with Waka Kotahi TCD Manual and/or MOTSAM as applicable)

Stormwater	• Horizontal alignment of all pipelines relative to property boundaries or kerb lines as appropriate and tie-in to existing services • Location of all pipes and nodes (manholes, inlets, outlets, catchpits, etc.) • Location of all stormwater treatment devices • Location of any watercourse • Position of all property connections relative to property boundaries and the depth at the property boundary • Secondary network to 1% AEP (+ CC 20%) with easements where required • Site plan showing property boundaries, finished land level contours (maximum one metre interval), catchment and sub-catchment boundaries used in stormwater flow calculations together with label annotations providing a reference to the stormwater runoff calculations. (Preferably show the stormwater network on the same drawing as well.) • Construction plan details for stormwater treatment and detention devices: plan view to include contours at minimum 0.5 metre interval and elevation view to show water levels	• Existing ground levels • Proposed ground levels • Pipe material, size, class, length, depth, inverts and grade • Location and depth of existing and proposed pipelines, cables and ducts crossing the alignment • Invert levels of all pipelines connecting to a manhole • Inlet, outlet and hydraulic information for all treatment and detention devices	Construction Details, including • Open drains and watercourses • Inlet/outlet structures, including scour protection, protective screens, etc • Stormwater treatment and/or attenuation devices

Type	Plan View	Long Sections	Other
Wastewater	• Horizontal alignment of all pipelines relative to property boundaries or kerb lines and tie-in to existing services • Location of all manholes and other access structures • Location of all structures (including pump stations, rising mains, air valves, odour control facilities etc) • Position of all property connections relative to property boundaries • Show finished land level contours (not greater than 1.0 m intervals – include RL labels on contours)	• Existing ground levels • Proposed ground levels • Pipe material, size, class, length, depth, inverts and grade • Location and depth of existing and proposed pipelines, cables and ducts crossing the alignment • Invert levels of all pipelines connecting to a manhole	• Pump Station (including Rising Main and Overflow) • Show all relevant details to enable the design to be audited and the structure constructed • Construction drawing of pump station structure • Rising main plan and long section • Water and electrical services to the pump station • Show the provision for pump station overflow in both plan and elevation views • Make and model of all pumps, valves and associated pump station equipment • Pipeline details including thrust blocks, special connections, pipeline bridges etc.

Type	Plan View	Long Sections	Other
Water	• Horizontal alignment of all pipelines relative to face of kerb (or boundary as appropriate) and tie-in to existing services • Location of all valves, bends and tees • Location of all hydrants and building sites to be provided with fire protection • Pipe material, size, length and class • Position of all property connections relative to property boundaries and the depth at the property boundary • Position of meters and boxes, backflow devices, etc • Location of all flushing valves	• Existing and proposed pipelines, cables and ducts crossing the alignment • Pipe depths where it is planned for the pipeline to be at a different depth to that specified in the ES. Long sections are required for pipelines of 250 NB and larger.	Construction Details • Details of connection into existing reticulation and other special connections • Special details, including pump stations, reservoirs • Pipeline details including thrust blocks, pipeline bridges etc • The make and model of all pumps, valves and other equipment • Nominal static pressure at the connection point and at the lowest point in the works, design pressure and maximum design pressure.
Landscaping	Landscaping plan with plant locations for reserve areas, including stormwater and recreational reserves.		

Type	Plan View	Long Sections	Other
Staging	Where the development is likely to be constructed in stages: • a plan showing the pattern and chronology of the land development The staging shall have been included as part of the resource consent application process and in the consent conditions.		
Utility Services	The depth and location of existing and proposed electricity and telecommunications, (including gas services where applicable).		

Table 1-6: Supporting Documentation for Approval

Type	Prior to Construction Commencing	During Construction	After Construction
Geotechnical Information	• Geotechnical Design Report	• Site Supervision	• Geotechnical Completion Report • Site Contamination Validation Report • Statement of Professional Opinion • Final contour plan identifying areas of fill

Type	Prior to Construction Commencing	During Construction	After Construction
Transportation	• Road pavement design calculations including results of preliminary soil testing. • Approval for sub-soil drainage discharge (if appropriate) • Signal Plans including design, traffic modelling and peer review • Pre-Construction Road Safety Audit (RSA) or RSA Exemption	• Site Supervision	• Producer Statement • As-built information • Post Construction RSA
Stormwater	• Detailed catchment runoff calculations including each sub-catchment input factors used in the calculations • Detailed pipeline flow capacity analysis. • For stormwater treatment and detention devices, detailed analysis demonstrating the design performance in respect of stormwater quantity and quality as appropriate • Proposed operations and maintenance manuals for stormwater treatment and detention devices • Proposed landscaping plan for stormwater treatment and detention devices, landscape plans to include any services and access requirements for future maintenance	• Site Supervision	• CCTV Inspection and Report • Final operations and maintenance manuals for stormwater treatment and detention devices • As-Built Plans

Type	Prior to Construction Commencing	During Construction	After Construction
Wastewater	• Wastewater flow estimates supported by the estimates of population equivalents for each catchment together with catchment boundaries and catchment areas • Pipe flow calculations showing pipe capacity and flow velocity for average dry weather flow, peak daily flow and peak wet weather flow • Pump station calculations justifying the selection of wet well size, pump selection and rising main hydraulics.	• Site Supervision	• CCTV Inspection and Report • As-Built Plans
Water	• Fire flow calculation	• Site Supervision	• As-Built Plans
Landscaping	• Statement of design intent and design objectives • Planting schedule • Existing tree and vegetation plan • Maintenance schedule for weeding and replacement planting during Defects Liability Period	• Site Supervision	• As-Built Plans

1.6. Construction

1.6.1. General

For Developments:

a. No construction works shall commence on any development until all necessary approvals (resource consent, engineering design approval, building consent, etc.) have been obtained.

b. The Developer has advised WDC of contact details of the Developer's Representative (Section 1.4.1 Developer's Representative).

c. The Developer has confirmed appropriate insurance is in place (Section 1.4.3 Insurance).

d. Any WDC contribution toward the cost of work, or other specific approval has been approved in writing.

e. A Construction Management Plan has been approved by WDC in accordance with Section 1.6.2 Construction Management Plan.

f. An Inspection & Testing Plan has been approved by WDC in accordance with Section 1.6.3 Inspection and Testing Plan (ITP).

The Developer's Representative shall give WDC 24 hours' notice of the intention to commence construction work, and advise WDC in writing; the name, address, and contact details of all contractors who will be carrying out work on the development.

Note: Any works undertaken prior to the approval of EDA will be at the Developer's risk. The WDC may reject such work, or request that the works be exposed and/or tested for compliance/suitability.

Dependent on the size or complexity of the development, a pre-start meeting may be required (see Section 1.6.4 Pre – Start Meeting).

1.6.2. Construction Management Plan

The Developer's Representative shall submit a Construction Management Plan, where required by the resource consent or EDA conditions, and receive written WDC approval prior to commencing work on site. The plan shall include the following information, (as applicable):

a. Details of when and how proposed works will be carried out,

b. All Particular Hazardous Work (Notifiable work),

c. A project execution plan, as applicable for complex projects,

d. Principal contractor and sub-contractors,

e. Names and telephone numbers of contract and supervisory staff,

f. Starting date, working days, hours of work, and estimated completion date,

g. Temporary Traffic Management Plan (TTMP),

h. Health and Safety plan,

i. Dust and sedimentation control, and

j. Confirmation of all insurance.

1.6.3. Inspection and Testing Plan (ITP)

The Developer's Representative and SQEP are to prepare an ITP identifying the following items:

a. Element of work,

b. Tests and checks required,

c. Quality requirements,

d. Frequency of testing,

e. Contractor's responsibility,

f. Developers Representative and SQEP responsibilities, and

g. Asset data recording requirements

Refer to Section 1.6.5.4 Site Inspections and Section 1.6.5.5 Testing for the content requirements of an ITP.

The ITP shall be approved in writing by WDC prior to the commencement of work on site.

1.6.4. Pre – Start Meeting

Following ITP approval, a pre-start meeting with WDC shall be held prior to the commencement of work. The Developer's Representative, contractor's representative, any relevant specialist consultants and WDC's representative shall attend the meeting.

Where construction proceeds in stages, a separate pre-start meeting shall be held for each stage.

Items to be considered at this meeting will include but not be limited to the following:

a. The WDC's construction requirements.

b. The process for monitoring compliance and auditing (ITP).

c. Management of environmental impacts and significant issues, including NRC Consents (if applicable).

d. Commissioning and decommissioning requirements of existing infrastructure and facilities (where applicable).

e. Erosion & Sediment Control measures.

WDC may require the Developer to undertake specific work prior to the pre-start meeting in order to clarify the extent of works and highlight potential construction issues. Such work may include set-out of roads, investigations etc.

If the pre-start meeting highlights any issues that may result in the works not being able to comply with the requirements of the EDA and other consents, then WDC may require a design amendment. Design amendments shall be in accordance with Section 1.5.3.3.8 Changes to Approved EDA.

1.6.5. Site Works, Site Inspections and Approvals

1.6.5.1 Health and Safety

All work carried out on WDC assets or public land shall strictly comply with the WDCs health and safety policies and procedures.

Where WDC is not the Principal (e.g. work is carried out by a Developer), all contractors working on public land and/or on WDC assets are required to meet the following requirements:

a. Comply with WDC's Appendix A- Health and Safety Requirements for Procurement Documents,

b. Ensure they can meet the minimum requirements outlined in the current WDC Contractor Health and Safety Handbook,

c. Comply with Appendix 1, where applicable, of WDC's Health and Safety Considerations When Going Through Procurement Processes,

d. Comply with all traffic management requirements, including providing a Traffic Management Plan in a format that is consistent with Waka Kotahi Code of Practice for Temporary Traffic Management, where work will be carried out within a road.

No work on WDC assets or on any public land shall proceed before the above has been complied with and approved by WDC. WDC may refuse to allow a contractor to carry out work on WDC assets or on public land where in the opinion of WDC, the contractors may not comply with all Health and Safety requirements.

In the case of work being carried out on private land that requires work in WDC Road Reserves (e.g. vehicle crossing, water connection etc.), the Developer/contractor shall apply for a Corridor Access Request (CAR) and submit a Traffic Management Plan for approval **before** any work may take place in the public area.

Note: It is important to note that approval of EDA does not constitute a right of access onto WDC land to undertake works. Separate approval is required from WDC before access can be allowed and works commence, to ensure health and safety obligations are met.

1.6.5.2 Noise and Hours of Work

Noise resulting from any activity shall comply with the noise rules of the District Plan.

Unless otherwise stated in the District Plan, construction work shall be restricted to the hours of 7.00am to 7.00pm Monday to Friday and 7.30am to 6.00pm on Saturdays and exclude Sundays and public holidays, unless otherwise approved all work shall be undertaken during daylight. (For the purpose of this section daylight is defined as the period commencing at the official time of sunrise and ending at the official time of sunset).

Operating hours for emergency work and necessary maintenance work shall be at the discretion of WDC.

1.6.5.3 Registered Contractors and Licensed Contractors

For some infrastructure services, WDC maintains a list of contractors that are permitted to construct or work on WDC assets, or assets that will be vested to the WDC. Contractors on such a list may be either Registered Contractors or Licensed Contractors, both of which are defined in Section 1.3 Abbreviations and Definitions.

1.6.5.4 Site Inspections

Where assets are to vest, the Developer's Representative shall notify WDC 24 hours prior to requiring site inspections. WDC will confirm the minimum required inspections at EDA stage, but the critical points for which inspections will always be required are:

a. Completed earthworks and prepared subgrade (stripped ground and completed earthworks to be inspected),

b. Verification of construction to approved plans on-site prior to backfilling piped services, and similar,

c. Finished basecourse prior to the commencement of sealing,

d. Prior to pouring any concrete,

e. On completion of any service connections/disconnections prior to backfilling, and

f. At completion of all works when As-Built Plans have been submitted and the site left neat and tidy.

Note: WDC may inspect any incomplete WDC approved works during daylight hours.

As described in Section 1.5.1.3 Risk Based Assessment Framework, works that are to remain in private ownership, and which have no impact on WDC assets, may be inspected/tested by a SQEP. WDC is still to be informed 24 hours in advance of when such inspections/tests taking place so that a WDC officer may observe if so desired.

All works that impact on WDC assets, may require WDC representative to be present when inspections/testing take place. WDC will not undertake such inspections/testing unless the Developers Representative responsible for the works is present.

Full documentation related to such tests, measurements and outcomes of inspections shall be provided to WDC, along with a producer statement (construction) PS4 Construction Review. Producer statements without the test results etc. will not be acceptable.

Note: In most situations' images shall be provided to further back up the documentation.

1.6.5.5 Testing

All inspecting and testing for developments incorporating assets that will be vested to WDC upon completion of the work shall be undertaken in accordance the WDC QA/QC Manual 2010 and relevant standards applicable to the type of inspection or test being undertaken.

Inspecting and testing shall be fit for purpose and may include as necessary:

a. Material testing,
b. Fill compaction testing,
c. CBR testing of road subgrade,
d. Nuclear Densometer testing of compaction of road construction layers,
e. Clegg Hammer testing of pavement,
f. Confirmation of pavement depth (using lift pegs, string lines etc.),
g. Pressure testing of pipelines,
h. PE pipe weld testing, including: Calibration Certificate/Welders Registration, Joint tensile testing,
i. Welding data-log records,
j. CCTV inspection of all wastewater and stormwater pipelines.
k. Disinfection testing of watermains,
l. Hydrant flow testing,
m. Benkelman Beam tests, and
n. Other testing as directed by WDC.

The Developer shall pre-test all works before requesting an inspection by WDC.

If the work does not meet the standard when inspected by WDC, then a fee will be charged for the second and any subsequent visit to re-measure or retest the work.

Relevant sections of the ES set specific testing requirements for each asset group. Subsequent work dependent on a satisfactory test result shall not proceed until compliance has been achieved.

1.6.5.6 Colour of Pipes and Ducts

Pipelines and ducts installed shall comply with the requirements of the Network Utility Operator. In order to identify in-ground services, pipes with the external colours in Table 1-7 shall be used for the relevant services. Other services shall not use pipes with these colours (including the colour of stripes on pipes, and particular requirements for detection tapes identifying WDC services).

The internal colour of wastewater and stormwater pipes shall be suitable for video inspection (black will not be approved).

Any pipes laid not complying with these colours will need prior approval in writing from WDC and shall be clearly marked with a detection tape that identifies the service.

Table 1-7: Pipe Colours

Pipe Use	Colour
Wastewater - Gravity	White
Wastewater - Pressure	Black with white stripe
Stormwater	Grey
Potable Water	Blue
Non-Potable Water	Lilac
Gas	Yellow
Power	Orange
Telecommunications	Green

1.6.5.7 Connection to Existing Services

Upon successful testing of the reticulation, and written approval to connect to WDC owned services, the Developer shall arrange for the connection to be made. The connection shall only be made by a Licensed Contractor (Water) or Licensed Contractor (Wastewater and Stormwater).

A WDC representative shall inspect connections prior to backfilling.

Where a connection shall be made within a property not owned by the Developer, it is the Developer's responsibility to obtain a right of access approval in writing and provide a copy to the WDC.

1.6.5.8 Protection and Remediation of Existing Trees, Services, and Roads

The Developer and/or contractor shall take every care to protect existing public trees, services, and private property from damage as a result of its operations. To this end:

a. Excavations, filling, accessways, and retaining structures, shall be outside affected tree root and dripline areas,

b. Flat steel tracked machines shall only be permitted to run on sealed road carriageways with prior WDC approval if appropriate protection is provided,

c. Ribbed steel-tracked machines shall only be permitted to run on sealed road carriageways if appropriate protection, such as rubber mats, is provided. Otherwise, rubber tyre or flat tracked machines are required, and

d. The contractor shall consult all Network Utility Operators as to the location of buried services and take appropriate action to protect those services.

The Developer/Contractor shall be liable for the repair of any damage caused by the works and shall satisfy WDC that they have made the proper reinstate. The WDC or affected Network Utility Operator may issue a written instruction to repair any damage and if remedial work is not commenced within 48 hours of the written instruction (or sooner if the circumstances warrant it) and completed as soon as practicable, WDC may carry out the work at the Developer's cost. This provision includes the removal of mud and debris from existing roads and drains, which may be required daily in the interest of traffic and pedestrian safety.

Developer(s) and contractor(s) shall hold appropriate insurance to cover themselves in the event of their operations damaging existing property and services and shall indemnify WDC against any claims associated with the works, whether during or after construction. See 1.4.3 Insurance.

1.6.5.9 Soil Disturbance and Dust Control

The Developer is responsible for compliance with Northland Regional Council requirements and consents. See Section 2.2.1 Northland Regional Council Requirements.

1.6.5.10 Emergency Procedures

If during the course of construction, a situation arises which may endanger the security of public or private property or the operation of a public facility, WDC may instruct the Developer or contractor to undertake such remedial measures as considered necessary to alleviate the danger and secure the site. Any such work or supply of materials will be at the Developer's expense.

Where WDC has to carry out emergency work on behalf of the Developer, the cost of the work will be recovered from the Developer.

For development's the following shall apply:

a. Developers shall ensure that works are to a standard acceptable to WDC.

Note: Developers are advised to retain the services of a suitable qualified or professional person(s) to certify works as per 1.5.1.3 Risk Based Assessment Framework.

b. Developers shall carry out regular audits of the construction and maintain a record of these audits which will be submitted to WDC on application for 224(c) or works acceptance.

Note: In addition to the audits carried out by the Developer, WDC may also audit the works.

Auditing requirements for types of works are covered in the various sections. WDC may enter the work site at any time for auditing, inspecting or checking purposes, while following the requirements under the Health and Safety at Work Act 2015.

1.6.5.11 Standard Audits

The following are key milestones that the Developer shall notify WDC to enable any audit to be carried out if required:

a. Commencement of work,

b. Prepared earthworks and subsoil drainage prior to filling,

c. Completed earthworks and prepared subgrade,

d. Commencement of stormwater, wastewater (including pump stations) and/or water reticulation,

e. Finished basecourse, and

f. Prior to commencement of carriageway surfacing.

Note: Audits will be carried out within one working day of notification if practicable.

Work shall not proceed until the audit has been satisfactorily completed. When work has been interrupted or delayed, WDC shall be notified before it is recommenced.

1.6.5.12 Quality of Work

For developments the following shall apply:

a. The Developer is responsible for ensuring that the engineering works constructed by their Contractors are carried out according to the approved EDA and to best work practices.

b. The Developer is responsible for quality assurance.

c. General procedures/requirements and Quality Assurance forms are provided for use during construction, however, WDC will accept Developers/Contractors/Agents own Quality Assurance forms that convey similar information.

1.6.6. Construction within Road Corridor

1.6.6.1 Corridor Access Requests

Any civil works, activity or intended occupancy of a transport corridor that will have a more than `minor' impact for users of a transport corridor requires a CAR approval from the Road Controlling Authority.

"More than minor effect" means an activity that disrupts or alters the normal safe use of the transport corridor for pedestrians, motorists or cyclists: or may affect traffic signal operations: or Council road maintenance activities or that of Utility companies: or restrict a

planned event to be held by Public or Private Organisations including Sporting Bodies or others approved to occupy a section of transport corridor.

All excavation and trenching work carried out within the road corridor shall be carried out in accordance with the National Code of Practice for Utility Operators' Access to Transport Corridors -Updated Version 2, July 2019 published by the NZ Utilities Advisory Group.

Note: Fees may be applicable for applications from Utility Operators for access to the transport corridor within the Whangārei District in accordance with the National Code of Practice for Utility Operators' Access to Transport Corridors -Updated Version 2, July 2019. The latest schedule of charges is available from WDC website along with the Corridor Access Request form.

In conjunction with the Corridor Access Request a Traffic Management Plan shall also be submitted for approval.

Where works are proposed that affect roads from an adjoining WDC or a State Highway, the Developer/Contractor shall obtain additional approvals from that authority.

1.6.6.2 Council Local Conditions

The Local Conditions apply to all Work Access Permits issued by WDC in accordance with the National Code of Practice for Utility Operators' Access to Transport Corridors - Updated Version 2, July 2019.

Note: Local Conditions can be found via the Council's on-line CAR application

1.6.6.3 Traffic Management Plan (TMP)

A Traffic Management Plan shall be required for any works undertaken within the Transport Corridor for which a Corridor Access Request is required to be made to the Road Controlling Authority. The WDC may choose to randomly audit any site to which a TMP applies to ensure compliance with the TMP and the safety of all road users.

1.7. Completion of Works

The Developer shall apply for an EDA Certificate of Completion upon completing the works, and the 224(c) Certificate if related to a subdivision consent, only when satisfied that the work is finished to the required standard. This includes the submission of the complete and accurate As-Built Plans and asset data.

The following clauses relate to the requirements of WDC post construction with respect to asset information, operation and maintenance manuals, bonds and the Defects Liability Period.

1.7.1. General

On completion of the works, the Developer shall provide the supporting information required by Table 1-6 and the following (where applicable):

a. Post-construction geotechnical reports and associated plans, including locations of filling, and limitations on development of the properties e.g. Appendix C ES-PO1,

b. Post-construction survey of attenuation and water quality ponds to demonstrate design volumes have been achieved,

c. As-Built Plans. See Section 1.7.2.2 As-Built Plans and Asset Data Formats,

d. Results of all testing, video inspection records of all wastewater and stormwater network,

e. Evidence that all works relating to the utilities not owned by WDC have been completed to the satisfaction of the Network Utility Operator,

f. Certified design and completion certificates from the SQEP, PS1 Design and PS4 Construction Review,

g. Operation and maintenance manuals required by WDC. See Section 1.7.2.4 Operation and Maintenance Manuals,

h. Asset information schedule. See Section 1.7.2.5 Asset Information Schedule,

i. RAMM information for public roading assets. See Section 1.7.2.3 RAMM Data Requirements, and

j. Any bonds in terms of Section 1.7.3.2 Bonds and Section 1.7.3.3 Uncompleted Works Bond are in place.

1.7.2. As-Built Plans, Asset Information Schedules, Operation and Maintenance Manuals

The requirements for As-Built Plans, Asset Information and Operation and Maintenance Manuals apply to the installation or modification of all WDC assets.

As-Built Plans, Asset Information Schedules, and Operation and Maintenance Manuals shall be provided on completion of construction work in compliance with the following sub-sections.

Written acceptance of the works (if required in accordance with WDC QA/QC Manual 2010) shall be provided on completion of construction work.

1.7.2.1 Resource Consents

Asset Information Schedules, As-Built Plans and Operation and Maintenance Manuals shall be provided and accepted by WDC before a section s224(c) certificate can be issued and/or a performance bond released.

Where a final on-site inspection has been carried out more than three months prior to a request to issue the Section 224 certificate, WDC may re-inspect all works on-site to ensure all assets remain fit for purpose and have not been damaged, destroyed or otherwise adversely affected.

1.7.2.2 As-Built Plans and Asset Data Formats

As-Built Plans shall be provided in electronic formats, to the following requirements:

a. Drawing standards shall be as detailed in Appendix F Drawing Standards. Plans shall not include aerial photographs.

b. A full set of approved construction plans updated to include As-Built information. This shall include all sheets whether or not they have been amended since the application, such as Index Sheets, Locality Plans, Earthworks, Long Sections, Cross Sections, Coordinate Sheets, Details etc.

c. Long Sections are to be provided on As-Builts.

d. As-Built Plans shall include non-physical details such as the extent of overland flow paths.

e. All 'Asset Information Schedule Requirements' as per Appendix H Asset Attributes and the example in Appendix G Example As-Built Drawings.

f. Specific requirements in the particular sections of the ES, and all plans required by the statutory consent authorities in the consent approval(s).

As-Built Documentation (including plans, schedules and OMM) shall:

a. Be adequately labelled and dated,

b. Reference the WDC's approved consents (EDA sub-division or contract number),

c. Include the name and contact details of the principal contractor that completed the work,

d. Show what has actually been constructed, including all approved changes and items removed or decommissioned,

e. Label roads with WDC approved road names, and parcels with legal descriptions and house numbers (where available), and

f. Have accurate position and depth of all existing services exposed during construction works.

Refer to Appendix G Example As-Built Drawings for examples of appropriate As-Built Plans.

The SQEP shall certify the as-built plans and documentation, as appropriate.

Location and level data for plans and asset schedules shall be to the co-ordinates and level requirements of Appendix F Drawing Standards, to the following accuracy:

a. Levels (z ordinate) accurate to ±10mm.

b. Locations (x,y co-ordinates) accurate to ±100mm.

1.7.2.3 RAMM Data Requirements

RAMM data is required as set out below for all roads or other assets such as car parks constructed or altered by Developers which shall be maintained by WDC. RAMM data requirements are as set out in WDC RAMM data forms (Refer to WDC Road Assessment and Maintenance (RAMM) Data Collection Form).

1.7.2.3.1. Resource Consents

The WDC assess RAMM data capture for WDC maintained road(s) and parking assets.

Developers shall provide all information required to enable RAMM data capture, which includes:

a. All pavement details, including aggregate types, depths and sources of aggregate,

b. Typical sections and plan views,

c. Top surface and sealing data,

d. Dates that each pavement layer, surfacing etc. are constructed,

e. Details of all road signs,

f. Footpath construction details,

g. Streetlighting details,

h. Crossings, features and minor structures,

i. Details of subsurface drainage, geotextile layers, and all other buried features,

j. Information on all structures, including bridges, retaining structures etc., and

Note that culverts with a watercourse area greater than 3.4 m^2 are regarded as bridges in terms of the Waka Kotahi Bridge Manual.

k. For roads, accessways and access lots serving 5 or more lots or household units, which are intended to be named but not maintained by WDC, the Developer shall supply the carriageway length, width, road name and street name blade, pole and fixing/mounting data only.

This information shall be available with the as-built data.

1.7.2.4 Operation and Maintenance Manuals

Operation and Maintenance Manuals shall be provided in .pdf format for all mechanical equipment and installations, including sewer pump stations, water supply booster pumps, actuated valves, air valves, odour control and treatment facilities, water quality treatment devices, stormwater attenuation and treatment assets, outlets, and similar, including As-Built Plans:

a. Equipment List, with make, model and serial numbers,

b. Equipment supplier details,

c. Pump curves, with design flow/head identified,

d. Electrical layout,

e. Control logic,

f. As-built levels of control switches,

g. Maintenance schedules, and

h. Technical Specifications.

1.7.2.5 Asset Information Schedule

Asset Information Schedules shall be provided in .pdf and .xlsx formats with the electronic version of the As-Built Plans.

The schedule shall consist of a full inventory list of all assets that have been constructed and all assets that have been removed, or decommissioned. The Asset Information Schedule shall be cross-referenced with the As-Built Plans using a simple sequential numbering system. Cross-reference numbers on As-Built Plans shall be underlined to distinguish them from other numbers. The Asset Information Schedule shall adhere to the relevant New Zealand Asset Metadata Standards, August 2017 and include:

a. Component Type/Description,

b. Unit Type,

c. Installation Date,

d. Expected Life,

e. X and Y coordinates (in NZTM) for:

   i. Point asset – at the point,

   ii. Line assets - the ends, junctions and bends

   iii. Areas: at 20 m centres and the perimeter, sufficient that the area can be drawn in GIS,

f. Public (WDC owned) or private, and

g. Asset specific information as per Appendix H Asset Attributes.

See example schedules in Appendix G Example As-Built Drawings.

1.7.3. Contractual Matters

1.7.3.1 Defects Liability Period

The Developer shall be responsible for the performance of all works provided by the Developer that will become WDC assets.

The Defects Liability Period for bonded engineering works shall commence from the date that the final inspection is approved, or the date that the resource consent or an EDA Certificate of Completion is issued, whichever is the latter, and shall be for a minimum period of 12 months for all assets to be vested in the WDC.

Note: Resource consents and/or EDA's related to landscape planting may require a Defect Liability Period and associated bond for a period of up to 24 months, where WDC considers it would be appropriate.

1.7.3.1.1. Remedying of Defects

The Developer shall remedy any defects and damage in the bonded works resulting from defective workmanship or materials that arise before the end of the Defects Liability Period. The WDC shall, during the Defects Liability Period or within 5 working days thereafter, give notice in writing to the Developer of any defects or damage to be remedied. The Developer shall remedy any such defects or damage within 5 working days of receipt of WDC notice or within such other reasonable time agreed by the WDC.

If the Developer fails to carry out any work in the specified time frame, WDC may, after giving 5 working days' further written notice to the Developer, direct others to undertake the work. The reasonable costs of the work undertaken by others shall be recoverable by WDC from the Developer. As soon as practicable after the completion of the work WDC shall notify the Developer of the work undertaken and the cost.

The taking of any action by WDC under this clause shall not relieve the Developer of any of their obligations.

The Developer shall not be liable for fair wear and tear during the Defects Liability Period.

1.7.3.2 Bonds

The relevant WDC policies shall be consulted to establish the full conditions for the bond. The following WDC Bond requirements shall also be met, where applicable:

a. The bond shall be an agreed cash deposit, or at the WDCs discretion where sound reasons for not providing a cash bond are demonstrated, a bank bond from a New Zealand based Trading Bank,

b. WDC will pay no interest on bond monies,

c. The bond amount shall be a minimum of 150% of the estimated value of the bonded works, including GST, if any, or as otherwise approved by WDC,

d. Defects/maintenance bonds shall be a minimum of 5% of the estimated value of the bonded work, including GST, if any; or as otherwise approved by WDC. A defect/maintenance bond will only cover works for which there are no known pre-existing defects at the time of bonding. Any works with known defects will be assessed at full replacement value with the bond set at a minimum of 150% of the estimated value of the works,

e. The Developer is responsible for providing all necessary documentation, and shall pay all processing fees, legal costs and disbursements relating to the bond,

f. WDC may require the bond to be registered against the title(s) of the property,

g. The bond for outstanding or defect/maintenance work is refundable upon confirmation of final inspection and acceptance by WDC following completion of the works, and payment of all associated fees,

h. Bond payments and refunds shall include GST, where applicable, in the bond value approved by WDC.

The WDC's decision as to whether a bond will be requested and refunded is final.

1.7.3.3 Uncompleted Works Bond

All requests for Uncompleted Works Bonds will be considered against the WDC Policy #0074 - Uncompleted Works Bond.

1.7.3.4 Requirements for Final Completion

Prior to final acceptance at completion of the Defects Liability Period, the Developer shall satisfy all consent and EDA conditions to the satisfaction of WDC.

1.7.3.5 Vesting and Easements

The Developer's Representative shall ensure that all WDC requirements are satisfied prior to requesting the transfer of constructed assets to WDC ownership. (As required in accordance with WDC QA/QC Manual 2010). See Section 1.4.4 Quality Assurance and Quality Control.

Roads, stormwater, water, wastewater and parks infrastructure and land shall be vested or protected by easements in favour of WDC as specified in the conditions of resource consent, or as otherwise approved, at the Developer's expense.

Easements in favour of WDC are required for all public reticulation located in private property regardless of sizing, except where the reticulation is contained within the side boundary restrictions, specified in the District Plan or as otherwise directed by resource consent conditions. Easements may be required for access to maintenance structures.

Unless otherwise specified, all assets shall vest in WDC at the date of issuing of the Section 224 certification.

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