

Appendix 9 - Engineering Performance Standards

A9.1 Introduction

A9.1.1

This Appendix contains standards that apply to the subdivision of land. It is referred to in the Subdivision Rules for each Environment. As well as standards, the Objectives in this Appendix will guide the assessment of resource consents, and conditions may be imposed on consents in regard to any of the matters mentioned throughout the Appendix.

A9.1.2

The standards are performance-based, with an emphasis on outcomes and effects. They are not a prescription of methods or materials, but are intended to permit flexible and innovative approaches or solutions, to engineering aspects of land development.

A9.1.3

Compliance with the Whangarei District Council Environmental Engineering Standards 2010, will be accepted as a means of compliance with this Appendix. [Link to Environmental Engineering Standards - Guidelines and Standards - Whangarei District Council.](#)

A9.2 Sewerage

A9.2.1

The sewage disposal system shall meet these objectives:

- a) Safeguard people's health and safety;
- b) Safeguard people from loss of amenity due to the presence of unpleasant odours, or the accumulation of offensive matter, resulting from sewage and foul water disposal;
- c) Safeguard the intrinsic values of ecosystems within the land being subdivided;
- d) Ensure that sanitary and industrial sewage is removed from the premises.

A9.2.2

Drainage systems for the disposal of sewage shall be constructed to:

- a) Convey foul water to an appropriate outfall or treatment system;
- b) Avoid the likelihood of blockage and leakage;
- c) Be supported, jointed and protected in a way that will avoid the likelihood of penetration of roots, or the entry of groundwater;
- d) Be provided with reasonable access for maintenance and clearing of blockages;
- e) Be ventilated to avoid the likelihood of foul air and gases accumulating in the drainage system and sewer, (provided that vents shall be positioned to avoid nuisances near existing buildings or likely future building sites);
- f) Be constructed to avoid the likelihood of damage from superimposed loads or normal ground movement;
- g) Be compatible with any existing network to which it is linked;
- h) Not unduly restrict the location of any future buildings;
- i) Use materials suitable for the intended use;
- j) Be sized to accommodate the foreseeable flows.

A9.2.3

Every allotment shall be provided with a piped gravity outfall connected to an existing council sewer, where a sewer is available, and have the capacity to carry the potential volume of sewage likely to emanate from the allotment following subdivision. (The capacity of the sewer means the capacity of the length of the sewer from the allotment to, and including, the treatment facilities). This rule does not apply in the Countryside or Coastal Countryside Environments.

A9.2.4

The connection to the sewer shall be made in a manner that avoids damage to the sewer, and that is to the approval of the network utility operator.

A9.2.5

Every allotment that is not connected to a reticulated sewerage system shall be capable of being provided with a means of treating and disposing of sanitary sewage (within the net area of the allotment), that meets the objectives and relevant construction standards above, and that ensures that there will be no contamination of downstream properties by sewage effluent.

A9.3 Trade Waste

A9.3.1

A trade waste disposal system shall meet these objectives:

- a) Safeguard people's health and safety, in regard to injury or illness caused by infection or contamination resulting from trade waste;
- b) Safeguard people from loss of amenity due to the presence of unpleasant odours or the accumulation of offensive matter resulting from trade waste disposal;
- c) Safeguard the intrinsic values of ecosystems within the land being subdivided;
- d) Ensure that sanitary and industrial sewage is removed from premises.

A9.3.2

Allotments that are likely to be used for activities generating trade waste shall be provided with adequate facilities for the safe and hygienic collection, holding, treatment and disposal of the waste.

A9.3.3

Facilities for the storage, treatment and disposal of industrial liquid waste shall be constructed:

- a) To dispose of wastes from allotments safely and hygienically;
- b) To avoid the likelihood of blockage and leakage;
- c) To avoid the likelihood of foul air and gases entering existing buildings, or likely future building sites;
- d) To provide reasonable access for clearing of blockages;
- e) With adequate capacity for the volume of waste and the frequency of disposal;
- f) To provide adequate vehicle access for collection, if required;
- g) To avoid the likelihood of contamination of any potable water supply;
- h) To avoid the likelihood of contamination of soils, ground water and waterways, except as permitted under a resource consent;
- i) From materials which are impervious both to the waste for which disposal is required, and to water;
- j) To avoid the likelihood of foul air and gases accumulating within, or entering into, buildings;
- k) To avoid the likelihood of unauthorised access by people;



- l) To permit easy cleaning and maintenance;
- m) From materials suitable for the intended use;
- n) Be compatible with any existing network to which it is linked;
- o) To ensure safety in operation.

A9.4 Water

A9.4.1

The water supply system shall meet these objectives:

- a) Safeguard people from illness caused by infection from contaminated water or food;
- b) Safeguard people from injury due to the explosion of a pressure vessel;
- c) Safeguard people from loss of amenity arising from a water supply that is offensive in appearance or odour;
- d) Provide adequate supply of potable water for the reasonably foreseeable consumption, health and hygiene needs of people using each allotment;
- e) Conserve water by avoiding leaks;
- f) Provide adequate water supply for fire fighting in urban areas.

A9.4.2

Every allotment shall be provided with a potable water supply sufficient for the likely use of the land following subdivision.

A9.4.3

Water supply systems shall be constructed to:

- a) Avoid the likelihood of potable water contamination within both the system and the water main;
- b) Provide water at flow rates which are adequate for the likely future land use on each allotment under normal conditions, (the minimum requirement shall be the flow rates required for a typical household containing 4 persons) and withstand anticipated pressures and loads;
- c) Avoid the likelihood of leakage;
- d) Allow reasonable access for maintenance of mechanical components;
- e) Allow the system and any backflow prevention devices to be isolated for testing and maintenance;
- f) Provide adequately for fire fighting, with accessible water supplies in public places, in all Environments other than the Countryside and Coastal Countryside Environments;
- g) Be compatible with any existing network to which it is linked;
- h) Use materials suitable for the intended use;
- i) Be clearly identified as such, if carrying non-potable water.

A9.4.4

Every allotment connected to the Council water supply system shall be equipped with an approved water meter assembly, located on the road side of a road boundary at a point where it is clear of vehicle and traffic movements and readily accessible for meter reading.

A9.5 Stormwater

A9.5.1

The stormwater disposal system shall meet these objectives:



- a) Safeguard people from injury or illness, from damage caused by surface water;
- b) Avoid adverse effects on downstream properties caused by surface water;
- c) Protect the environment from accelerated erosion or sedimentation, and from the effects of heavy metals in stormwater discharges and contamination of the receiving environment;
- d) Protect the outfalls of drainage systems.

A9.5.2

Buildings and siteworks shall be constructed in a way that protects people and other property from the adverse effects of surface water.

A9.5.3

Surface water, resulting from a storm having a 10% probability of occurring annually and which is collected or concentrated by buildings or site work, shall be disposed of in a way that meets the objectives in A9.5.1 and avoids the likelihood of damage or nuisance within the allotment or to other property.

A9.5.4

Drainage systems for the disposal of surface water shall be constructed to:

- e) Convey surface water to an appropriate outfall using gravity;
- f) Avoid the likelihood of blockages, leakages or penetration by roots, where pipes or lined channels are used;
- g) Provide reasonable and safe access for maintenance, and clearing of blockages;
- h) Avoid the likelihood of damage to any outfall, in a manner acceptable to the network utility operator; and
- i) Avoid the likelihood of damage from superimposed loads or normal ground movements;
- j) Deal with surface water in the catchment in which it falls;
- k) Adequately service each lot, road area or other land area falling to the point of entry into the drainage system;
- l) Be compatible with any existing drainage network to which it is linked;
- m) Use materials suitable for the intended use;
- n) Not unduly restrict the location of any future building.

A9.5.4

Every allotment shall be provided with a piped gravity outfall connected to a Council stormwater drain where one exists and where it has the capacity to carry the potential volume of stormwater likely to emanate from the allotment following subdivision. (The capacity of the drain means the capacity of the length of the drain from the allotment to, and including, its outfall to a water body or coastal water).

A9.5.5

Rule A9.5.5 does not apply in the Countryside or Coastal Countryside Environment, or Living 3 Environment where reticulation is not available.

A9.5.6

All systems shall be designed to accept the flow from upstream of the subdivision, and shall be of sufficient capacity to provide for maximum flows from possible future development areas, to the extent of development allowed as a permitted activity in the relevant Environment.

A9.6 Earthworks

A9.6.1



Earthworks shall meet these objectives:

- a) Safeguard people, property and the environment from the adverse effects of unstable land;
- b) Improve land utilisation;
- c) Avoid accelerated erosion or sedimentation;
- d) Be sympathetic to surrounding landscape values;
- e) Avoid, remedy or mitigate any adverse effect on the environment.
- f) Earthworks shall be constructed to:
- g) Remain safe and stable for the duration of the intended land use;
- h) Be geotechnically sound;
- i) Provide safe, stable and accessible building sites;
- j) Withstand, and remain stable under, anticipated loads;
- k) Provide for the adequate control of stormwater, and cater for the natural groundwater flows.

A9.7 Road Standards

A9.7.1

Roads shall meet these objectives:

- a) Ensure safe and efficient movement of people, vehicles and goods, with minimum adverse effect on the environment;
- b) Provide for network utilities, subject to objective (a).

A9.7.2

Roads shall be constructed to:

- a) Provide adequate vehicular access to each allotment, taking into account the potential number of residential units or other development on each allotment (refer A9.7.7);
- b) Link ,and be compatible with, the existing road network;
- c) Provide for the safe movement of both vehicular and non-vehicular traffic;
- d) Provide adequate access for emergency vehicles;
- e) Withstand the anticipated loads for the design life of the road;
- f) Transfer applied loads so as not to adversely affect the underlying subgrade or services;
- g) Contain materials suitable for the intended use;
- h) Maintain adequate surface smoothness;
- i) Protect the road, road users and adjoining land from the adverse effects of surface and ground water, as set out in the next paragraph.

A9.7.3

The road surface and ground water control system associated with any road surface shall:

- j) Adequately convey water to an approved discharge point;
- k) Avoid the likelihood of leakage and infiltration and the penetration of roots;
- l) Avoid the likelihood of blockages;
- m) Provide reasonable access for maintenance.

A9.7.4



All services in roads should avoid cross intersections, and extend to property boundaries in a manner that will ensure the efficient use and development of any adjoining land, having regard to the provisions of this Plan.

A9.7.5

Road, carriageway, footpath widths and standards shall be sufficient to ensure the efficient use and development of any adjoining land, having regard to the provisions of this Plan.

A9.7.6

Sufficient additional road reserve width shall be provided to:

- a) Accommodate any retaining structure or slope necessary to support the road or adjacent property;
- b) Achieve a complying horizontal alignment;
- c) Accommodate any turning area required by these standards.

A9.7.7

In residential areas, the number of potential residential units shall be based on the minimum allotment size allowed as a controlled activity in the relevant Subdivision Rules, or the actual number of residential units proposed, whichever is the greater.

A9.7.8

Passing bays shall be constructed on any single lane access, where necessary, having regard to topography of land, sight distances and usage.

A9.7.9

Street lighting shall be provided to ensure the safety of road users and pedestrians.

A9.8 Other Utilities

A9.8.1

Other utilities (e.g. telecommunications, energy) shall meet these objectives:

- a) Safeguard health and safety;
- b) Provide an adequate supply of the service or commodity to each allotment;
- c) Not conflict with the operation or maintenance of the services mentioned above.

A9.8.2

The layout of any utility reticulation network shall be constructed to:

- d) Adequately service each allotment, development or road area;
- e) Be compatible with any existing network to which it is linked;
- f) Be compatible with other utility systems;
- g) Avoid the likelihood of contamination or leakage;
- h) Accommodate the anticipated demand, and withstand the anticipated pressures and loads in its locality;
- i) Be from materials suitable for the intended use;
- j) Be clearly identified;
- k) Ensure safety in operation;
- l) Not be visually intrusive.

A9.9 System Development

A9.9.1

This section applies to assessment of the effects of any activity or subdivision on Council stormwater, sewerage and water supply systems, arising from the proposed means of management of stormwater sewerage or water supply at the site.



A9.9.2

Where this section applies, stormwater, sewerage or water supply proposals shall be assessed by the following criteria, in addition to the other provisions of this Plan.

- a) Effects on adjacent sites, including development potential;
- b) The relationship of the proposed new works to the pattern, and timing of development of the District as a whole;
- c) Any economies of scale available from alternative designs that would cater for greater or lesser areas of land, either within or outside the site;
- d) The capacity, availability and accessibility of the existing Council service, and the effects of any new system to which it is linked;
- e) The effects of any stand alone system, including effects on the long term development potential, efficiency and cost effectiveness of an existing or future Council system;
- f) The effects of any temporary system, where the capacity of any, Council service is not adequate, but is programmed by the Council for upgrading in the future;
- g) The long-term maintenance and operating costs of the proposed system.

A9.9.3

Where the method proposed to manage stormwater, sewerage or water supply complies with, or is consistent with, any Strategic Plan or long-term strategy published by the Council for the development of the District, the effects on the Council stormwater, sewerage or water supply system will be acceptable for the purposes of this section.

A9.10 Construction Monitoring

A9.10.1

The objective of monitoring construction is to provide verification that the construction has been carried out and completed in accordance with the design, and to achieve the environmental results set out above.

A9.10.2

The functional requirement of construction monitoring is to provide a level of monitoring appropriate to the nature of the project, an independent assessment of the compliance of the construction with the design, and to ensure that any adverse effect on the environment is minimised or remedied.

A9.10.3

The performance criteria are that the monitoring of construction shall:

- a) Be undertaken by a suitably experienced and qualified person;
- b) Be appropriate to the size, importance and complexity of the project;
- c) Be appropriate to the potential adverse effects on the environment of the project;
- d) Be appropriate to the experience, in the class or classes of work, of the contractor or person directly in charge of the project.

Revision and Sign-off Sheet

Changed Record

Date	Author	Paragraph	Changed Reference	Decision Date
12 Oct.2011	FP		Approved Plan Change 76 Environmental Engineering Standards	12 October 2011 Operative 26 October 2011
20 June 2012	LB	A9.1.3	Inserted link to Environmental Engineering Standards	

Editor France Prévost (FP)
 Lisa Blagrove (LB)
Author Position Team Administrator Policy Division

Approved By Paul Waanders (PGW)
Position Policy & Monitoring Manager

