

**ADDENDUM TO REPLACE
CHAPTER 3 OF THE
ROTORUA CIVIL ENGINEERING
INDUSTRY STANDARD (RCEIS)
2000 VERSION 2004**

2012

CHAPTER 3

GEOTECHNICAL REQUIREMENTS

1.1 OVERVIEW

Rotorua District contains land that is affected by a considerable number of natural hazards. It has an extremely young geology, high levels of seismic activity and highly active geothermal areas. While many hazards cannot be eliminated, they can be managed in such a way that they allow land and building development to take place.

There is a need for a systematic approach to the management of ground hazards within the subdivision, land use and building consent processes and for Council's own maintenance and capital works projects. The procedures are considered to be guidelines of best practice, rather than prescriptive requirements that must be rigidly followed.

It is essential that ground issues are assessed for all subdivision and building consents, particularly where no previous appropriate investigations have been undertaken. Requirements will vary between situations.

The Rotorua District Council has identified that there are areas within Rotorua District where the ground bearing capacity does not meet the 300kPa requirement for NZS3604:2011. In addition there are areas that may contain compressible soils, geothermal activity, historic lake and stream beds, high ground water tables and steep slopes of loose, uncompacted materials. The locations of some of these areas are not well defined, therefore geotechnical investigation will be required for all subdivision, land use and building consent applications and capital works projects.

1.2 POTENTIAL HAZARDS

Actual and potential hazards within the Rotorua District can be both natural and man made. A list of key hazards is given in Table 1 below. The list is not comprehensive and other hazards may be identified on site. Some hazards can interact to increase cumulative effects (eg liquefaction and geothermal). It is likely that some parts of Rotorua will experience liquefaction of hot areas.

Table 1 Potential Ground Hazards
• Inundation
• Subsidence
• Landslip
• Ground settlement due to compressible soils
• Slope instability
• Erosion – river , lakeshore, wind, etc
• Internal erosion, including tomo formation
• Collapsible soils
• Geothermal gas
• Geothermal eruptions
• Corrosive soils
• Volcanic eruption
• Groundwater flooding
• Soil contamination
• Ground rupture
• Ground shaking
• Liquefaction hazards, including settlement, bearing capacity failure and lateral spreading
• Post earthquake subsidence
• Old Geothermal bores
• Subsidence due to depressurisation of a geothermal aquifer
• Tectonic subsidence

• Fill material
• Land adjacent to watercourses, lakes or streams
• Historic lake or stream beds and lake terraces

1.3 SUITABILITY OF SITE FOR SUBDIVISION OR DEVELOPMENT

All applications for subdivision or development shall include sufficient detail to demonstrate that the site is suitable for the proposed activity having regard to the provisions of the Resource Management Act and the Building Act.

Subdivision design shall be carried out in accordance with NZS 4404:2010. NZS 4404:2010 contemplates a two stage approach:

- I. Preliminary site evaluation
- II. Geotechnical Completion Report

This approach is suitable in the Rotorua District. For clarification, **ALL** land use and subdivision consent applications shall include a Preliminary Site Evaluation unless otherwise stated in this addendum. Further, all applications for subdivision 224 (c) shall include a Geotechnical Completion Report .

1.4 LAND USE CONSENT AND BUILDING CONSENT REQUIREMENTS

1.4.1 Residential Buildings

Buildings requiring geotechnical investigation:

- All new habitable buildings excluding light weight sleepouts
- All relocated houses
- Substantial additions of more than 50% of original area
- Any additions to a building which shows signs of previous movement

Minor buildings, including sheds, garages, and swimming pools, may require geotechnical investigation depending on a risk assessment of the likelihood and consequence of the hazard identified. Retaining walls requiring a building consent will require certification by a Chartered Professional Engineer and consideration shall be given to the need for Geoprofessional review or certification depending on the location and potential hazards.

The exception to this requirement is where a building is proposed on land which has been certified as suitable to build on at the completion of the subdivision process. (Note: Any proposed cut or fill of a building platform over 600mm deep will still require investigation and design (PS1), inspection and certification (PS4) by a Chartered Professional Engineer with suitable experience. This is due to the probability that the previous earthworks will be nullified by the proposed earthworks.)

For all residential buildings (and commercial buildings less than 110 m²) the potential for liquefaction should be considered against a risk matrix of consequence and likelihood. It is not necessary for every property to be investigated but it will be dependant on the building type, complexity and the potential for lateral spreading. In situations of low risk, foundations with enhanced performance over and above that of NZS 3604:2011 should be considered. In situations of high risk, appropriate investigation and analysis by a Geoprofessional will be required in order to identify suitable avoidance, remediation or mitigation.

Fault Line considerations shall be made in accordance with 1.5 below.

1.4.2 Commercial/ Industrial Buildings

All building consents for commercial/industrial buildings greater than 110m² and all tilt slab buildings regardless of size, shall require geotechnical investigation and include liquefaction testing in the form of electronic cone penetrometer tests (CPTs) and if required, engineer designed foundation or mitigation measures to account for settlement or movements (lateral spreading).

Commercial/ industrial buildings (not including tilt slabs) less than 110m² shall be in accordance with the same requirements as residential buildings.

Note: Allowance for consolidation settlement of soils from building loading and floor loadings shall be considered in the foundation/ floor slab design for all commercial/industrial buildings.

Fault line considerations shall be shall be made in accordance with 1.5 below.

1.5 FAULT LINE CONSIDERATIONS

The area to the south of Rotorua City and north of Taupo has the highest concentration of fault lines in New Zealand. Geological and Nuclear Sciences (GNS) have carried out investigations to identify these fault lines and suggest appropriate building offsets to allow for inaccuracies of data.

The number and proximity of faults in this part of the District is such that specific investigation shall be completed for all newly proposed house sites in order to confirm the absence of active faults in the vicinity of each house site. The recommendations of the Ministry for the Environment Guideline, Planning for Development of Land on or Close to Active Faults should be followed. The Guidelines define the type of buildings that are, or are not, allowed to be built close to an active fault line depending on fault activity. The Guidelines also recommend a minimum buffer zone of 20m either side of a known fault trace or likely fault rupture zone.

1.6 LEVEL OF COMPLEXITY

Ground assessments for subdivisions, land use consents and buildings consents are to be considered in terms of three broad levels of complexity:

Basic	No geotechnical input required.
Level 1	Land with low hazard and buildings with low risk. Investigation and reporting is to be verified by a Chartered Professional Engineer (CPEng) with a working knowledge of geotechnical and geothermal issues within the Rotorua District. The recommendations of the assessment report would normally be restricted to foundation design under NZS3604:2011 with relatively minor exceptions. The report would also consider overland flowpaths, areas of inundation and design of stormwater, sewerage and water disposal and reticulation.
Level 2	Land which is neither Level 1 nor Level 3. Investigation and reporting are to be undertaken by either a Geoprofessional or a CPEng with a peer review by a Geoprofessional. The assessing professional shall have a sound knowledge of the main ground hazards, as well as an understanding of the less common hazards and shall recognise instances where expert advice is required. All issues as required by either s106 of the RMA and / or s71 of the BA shall be addressed. For building consents a PS1 Design and a PS4 Construction Review will be required.

Level 3 Land with distinct hazard and risks, either for an individual hazard or a combination of factors. The assessment is to be undertaken by a Geoprofessional with an expert level of competency in geotechnical engineering and a detailed knowledge of local ground conditions.

For building consents a PS1 Design and a PS4 Construction Review will be required.

For sites of high complexity peer review at the applicants cost may be required.

Refer to Table 2 for a quick guidance check which references the increasing need for expertise and peer review against increasing complexity and risk.

1.7 COMPETENCY OF GEOPROFESSIONAL OR CHARTERED PROFESSIONAL ENGINEER

The Geoprofessional or Chartered Professional Engineer is required to self declare that they are competent to perform the specific scope of work in question and they have duly considered the subdivision, development and/or building in terms of Section 106 of the Resource Management Act and Sections 71-73 of the Building Act as appropriate.

The Geoprofessional or Chartered Professional Engineer is also required to declare that they have viewed Council's property files and all appropriate soils information sources for the site being reported on. The certification attached to this addendum allows for this. If standard producer statements are used, the above statements must be made in an accompanying report. Geotechnical reports are not to be submitted with qualifying statements in them that can be interpreted to restrict considerations and assessment to less than those required by the relevant legislation.

**TABLE 2
 ROTORUA DISTRICT COUNCIL
 GEOTECHNICAL INVESTIGATION AND REPORTING – QUICK GUIDANCE CHART**

<p>S106 RMA and S71 BA Applies</p> <p>S71-73 BA may apply</p>	<p>ALL PROFESSIONALS TO SELF DECLARE THEY ARE SUITABLY KNOWLEDGEABLE AND EXPERIENCED AND HAVE CONSIDERED S106 RMA AND S71 BA AS APPROPRIATE</p>	<p>INCREASING LEVEL OF EXPERTISE AND / OR PEER REVIEW</p> 	<p>Peer Reviews</p>	<p>Specialist design and mitigation of issues</p>	<p>Hierarchy of professional expertise expected</p>		<p>INCREASING COMPLEXITY AND RISK</p> 
			<p>External Peer Review Automatic</p>		<p align="center">Level 3</p> <p>Description: Land with High or Multiple Hazards Level of Professional Expertise: Expert Geoprofessional Building / Development Type: Any building, Subdivision Soils – Generic Description: Slopes, cuts, fills, multiple natural hazards identified and/ or geothermal activity Previous Certification: None expected</p>		
			<p>No Peer Review</p>		<p align="center">Level 2</p> <p>Description: General, neither Level 1 or Level 3 Level of Professional Expertise: Geoprofessional; or CPEng with appropriate level of expertise and peer review by a Geoprofessional Building / Development Type: Any building, Subdivision Soils – Generic Description: Slopes, cuts, fills, one individual hazard identified Possible certification of subdivision stage that will be nullified by proposed works or changes to Building Code</p>		
			<p>Peer Review Dependant on level of expertise and knowledge of Geoprofessional</p>		<p align="center">Level 1</p> <p>Description: Land with low Hazard and Risk Level of Professional Expertise: CPEng with appropriate level of expertise Building / Development Type: Garage/ dwelling/ commercial/ industrial (any building), major addition to existing building or low risk infill subdivision Soils – Generic Description: Flat, no natural hazard Previous Certification: None expected or previous subdivision certification</p>		
<p>Normally No Professional Engineering Involvement</p>	<p>No Peer Review Required</p>	<p>May require mitigation to normal foundation (E.g. NZS:3604)</p>	<p align="center">Basic</p> <p>Description: Land and Building of minimum Risk Level of Professional Expertise: No professional input Building / Development Type: Garage, light weight sleepouts, small addition to existing building, simple farm shed Soils – Generic Description: Flat, dry, no slopes, fill or cuts expected</p>				

1.8 TECHNICAL RESPONSIBILITIES

Where any land development involves the carrying out of bulk earthworks, the assessment of slope stability or the detailed evaluation of the suitability of natural ground for the foundations of buildings, roads, services or other works then a Geoprofessional or a Chartered Professional Engineer with suitable experience shall be appointed to carry out the following functions:

- a) Prior to detailed planning of any development to undertake a site inspection and such investigations of subsurface conditions as may be required.
- b) Before work commences, to review the drawings and specifications defining the earthworks proposed and submit a written report to the Council Engineer on foundation and stability aspects.
- c) Before work commences and during construction to determine the extent of further specialist soils engineering services required (including investigation and geological work).
- d) Before and during construction to determine the methods and frequency of construction control tests to be carried out, determine the reliability of the testing and to evaluate the significance of test results and field inspection reports in assessing the quality of the finished work.
- e) During construction to provide regular inspection (while a daily visit might be regarded as reasonable on earthwork construction on minor projects, inspection on a near full-time basis is often necessary).
- f) On completion to submit a written report to the Council Engineer attesting to the compliance of the earthworks with these standards and as to the suitability of the development for building construction.

The construction control testing shall be carried out by an organisation with Telarc Registration in all relevant tests. (Minor testing using Scala Penetrometer or Pilcon Vane may be exempt from this requirement).

1.9 GUIDELINES FOR REPORTING

The requirements for reporting will vary with the nature of the proposed activity and the complexity of the site. The following list is a guide and is recommended:

- Descriptions of the soil units should follow the NZ Geotechnical Society Guidelines for Description of Soil and Rock
- The report should contain sufficient description to characterise the main features of the site without requiring significant prior knowledge on the part of the reader.
- The issues should be assessed in terms of the proposed activity which is being considered. Limitations on applicability should be stated.
- The likelihood of future variations should be addressed. For example, it is not sufficient to just state what the measured ground water level in the borehole was, the report should also consider existing variations and if there will be any effect from the proposed activity e.g. Some ground water level readings are very limited in their applicability.
- If considering buildings then, unless specified, the timeframe is usually "indefinite but not less than 50 years".
- Requirements for inspection, testing and other verification during construction shall be included.
- Reporting should not be qualified by statements that limit the assessment in terms of Section 106 of the Resource Management Act or Section 71 of the Building Act

Terminology within reports should include wording commensurate with legislation, particularly Section 106 of the RMA and Section 71 of the Building Act. Wherever possible, a statement of professional opinion should use the wording given in the legislation.

On completion of the works as built plans of any cut and/or filling will be required along with a Completion Report detailing the ground conditions encountered and certification of the works and the suitability of the finished site for building. (Refer to Certificate 1B, Appendix 1).

1.10 SITE INVESTIGATIONS

1.10.1 PRELIMINARY SITE EVALUATION

Prior to any detailed planning or design, the Geoprofessional or a Chartered Professional Engineer with suitable experience, as applicable, should undertake a preliminary evaluation of the general nature and character of the site in sufficient detail to determine the likely requirements for earthworks and/or the need for further investigations into the suitability of foundation conditions, and the stability of the natural ground. The preliminary evaluations should be carried out in the context of the total surroundings of the site and should not be influenced by details of land tenure, political or other boundary considerations. In simple cases a visual appraisal may be sufficient, but in other cases depending on the nature of the project, its locality the scale of development proposed and individual site characteristics, particular attention may need to be given to the following matters.

1.10.2 SLOPE STABILITY

Some natural slopes exist in a state of only marginal stability and relatively minor works such as trenching, excavation for roads or building platforms removal of scrub and vegetation or the erection of buildings can lead to instability and to failure.

Signs of instability include (but are not limited to) cracked or hummocked surfaces, crescent shaped depressions, crooked fences, trees or power poles leaning uphill or downhill, uneven road surfaces, swamps or wet ground in elevated positions, plants such as rushes growing on a slope and water seeping from the ground.

1.10.3 FOUNDATION STABILITY

A study of the general topography of the site and its surrounding areas may indicate areas which have previously been built-up as a result of natural ground movement or by the deliberate placing of fill material. Unless such fill has been placed and compacted under proper control, long term differential settlements could occur, causing damage to super-imposed structures, roads, services or other development works.

1.11 EROSION, SEDIMENT AND DUST CONTROL

Due to the increased rate of run-off brought about by the denuding of the ground of its natural growth in mass earthworks, particular care shall be taken to control stormwater and to ensure that it is permitted free entry to stormwater culverts at all times. The builder and/or contractor shall be responsible for ensuring that adequate grids or similar approved traps are constructed and maintained during the construction period of the work, and until such time as the land has become stabilised to the satisfaction of the Council Engineer. Any of Council's stormwater infrastructures blocked by silt shall be thoroughly cleaned by the contractor responsible or by Council at the contractors expense.

Builders and Contractors are reminded of the erodibility of pumice soils and the necessity to protect the whole of the works from erosion by surface water for the duration of the work, including the maintenance period.

Builders and Contractors are also reminded of the requirements of the Regional Councils with regard to excavation and the removal of ground cover. All necessary consents must be obtained prior to commencement of works.

1.12 CONSTRUCTION PROCEDURES

Before any earthworks are commenced, areas of cut and fill should be clearly defined. Where necessary, sufficient fencing or barriers should be provided around trees or other features to be protected. All site activities including clearing, storage, cutting and filling must be kept away from the root zone of the trees. This zone can be best defined as the extent of the canopy projected onto the ground.

- a) Earthworks are to be carried out, as appropriate, in accordance NZS 4431.

1.13 EXEMPTION FROM FILL TESTING REQUIREMENTS

Where the volume of the fill does not exceed 50 cubic metres and the depth does not exceed 450mm the requirements for testing will not be enforced.

1.14 SUBDIVISION OF LAND OR BUILDING ON LAND SUSCEPTIBLE TO HIGH GROUND WATER LEVELS AND/OR FLOOD LEVELS

In the case of sites or buildings adjacent or in close proximity to rivers and streams, the ground water table must be established with reference to the average water level of the river or stream at maximum lake level as determined by the relevant Regional Authority. New subdivisions adjacent to major water courses i.e.: Utuhina Stream, Koutu Drain, Mangakakahi Stream, Ohau Channel, Puarenga Stream, Waiteti Stream, Ngongotaha Stream, Waiwhero Stream and the Waingaehe Stream shall be specifically designed to provide building platforms above the predicted 1% Annual Exceedance Probability (AEP) flood level.

In the case of sites or buildings in close proximity to lakes, the ground water level must be established with reference to the maximum operating lake levels as set by the relevant Regional Authority.

Filling to not less than 1.0m above mean water table level as established above and also above the 2% AEP flood level is required in order to provide a dry building platform.

Filling to achieve a dry building platform as listed above shall not result in the displacement of surface water off the site onto other properties.

Note: This requirement severely limits the ability to fill areas subject to potential inundation.

In reserve areas and other areas not required to support buildings or services, the Council may agree to lower standards than for the remainder of the earth fill. The extent of such low density fills shall be defined on the "As-Built" drawings and on the title, if appropriate.

1.15 PROTECTION OF PROPERTY FROM INUNDATION FROM SURFACE WATER

In accordance with Section 106 of the Resource Management Act 91 and Section 71 of the Building Act 91, Council shall not grant Subdivision or Building Consents if land or buildings are subject to inundation, unless satisfactory means of avoidance, remedial works or mitigation are carried out.

New Primary (normally piped) stormwater systems shall be capable of carrying surface water resulting from a storm having a 10% Annual Exceedance Probability (AEP), (1 in 10 year event).

Secondary flow (normally surface flow) paths and systems capable of carrying surface water resulting from a storm having a 2% AEP, (1 in 50 year event) shall be constructed to ensure that such surface water shall not enter buildings (refer also to clause 5.4.2. Protection from Flooding).

Low lying areas that are prone to inundation by a 2% AEP storm must be identified and restricted from building.

Any replacement or additions to habitable buildings on land subject to inundation will require building platforms filled to above the 2% AEP flood level where the building is located entirely within the existing building footprint.

Note: For replacement of like with like or minor additions to buildings, the displacement of water from the filled pond area onto other properties need not be considered.

To:
Group Manager Infrastructure
 Rotorua District Council
 Private Bag
ROTORUA

1A - STATEMENT OF PROFESSIONAL OPINION AS TO SUITABILITY OF LAND FOR SUBDIVISION

Subdivision: _____

Owner/Developer: _____

Location: _____

I, _____ of _____
 (Full Name) (Name & Address of Firm)

hereby confirm that:

I am a Chartered Professional Engineer/ Geoprofessional experienced in the field of geotechnical engineering and was retained by the owner/developer as the Geotechnical Expert on the above subdivision.

Site investigations have been carried out under my direction and are described in my report dated _____.

I am aware of the details of the proposed scheme of subdivision and of the general nature of proposed engineering works as shown on the following drawings:

(Insert reference to all drawings including dates of latest amendments)

I confirm that I have given consideration to the level of complexity as identified in the Rotorua Civil Engineering Industry Standard Chapter 3.

In my professional opinion, not to be constructed as a guarantee, I certify that the proposed works give due regard to land slope and foundation stability considerations and that the land is suitable for the proposed subdivision, providing that:

- a)
- b)
- c)

This professional opinion is furnished to the Council and the owner/developer for their purposes alone, on the express conditions that it will not be relied upon by any other person and does not remove the necessity for further inspection during the course of the works.

Signed: _____

Date: _____

- Council's property file/LIM has been viewed for relevant information.

To:
Group Manager Infrastructure
Rotorua District Council
Private Bag
ROTORUA

1B - STATEMENT OF PROFESSIONAL OPINION AS TO SUITABILITY OF LAND FOR BUILDING DEVELOPMENT

Development: _____

Owner/Developer: _____

Location: _____

I, _____ of _____
(Full Name) (Name and Address of Firm)

hereby confirm that:

- 1. I am a Chartered Professional Engineer/ Geoprofessional experienced in the field of geotechnical engineering and was retained by the owner/developer as the Geotechnical Expert on the above development.
2. The extent of my inspections during construction, and the results of all tests carried out are described in my report dated _____.
3. In my professional opinion, not be construed as a guarantee, I certify that:
*a) That earth fills shown on the attached Plan No. _____ have been placed in compliance with the Rotorua Civil Engineering Industry Standard.
*b) The completed works give due regard to the requirements of S71, S72 and S73 of the Building Act 2004.
*c) The filled ground is suitable for the erection thereon of buildings requiring/ not requiring specific design in terms of NZ Building Act 2004 and NZ Building Regulations 1992, and related documents, providing that:
i) _____
ii) _____
iii) _____
*d) The original ground not affected by filling is suitable for the erection thereon of buildings requiring/ not requiring specific design in terms of NZ Building Act 2004 and NZ Building Regulations 1992, and related documents, providing that:
i) _____
ii) _____
iii) _____
4. I confirm that I have given consideration to the level of complexity as identified in the Rotorua Civil Engineering Industry Standard Chapter 3.
5. This professional opinion is furnished to the Council and the owner/developer for their purposes alone on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any building.

Signed: _____ Date: _____

*Delete items not applicable.

Council's property file/LIM has been viewed for relevant information.

CHAPTER 1 - GENERAL

1.1 DEFINITIONS

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

CLEANFILL means material consisting of natural components such as clay, soil and rock and such other materials such as concrete, brick or demolition products (excluding asphalt), which are free of combustible and organic materials, free of voids and which are not subject to biological or chemical breakdown and shall not be capable of leaching chemicals or toxins into the environment.

COHESIONLESS SOIL means a non-plastic soil (sand, gravel) where the strength is derived primarily from cohesion between the solid particles.

CONCEPT PLAN means the plan of a proposed subdivision of land into more than 50 lots or a subdivision which, in the opinion of Council, will have special or unusual features.

DEVELOPMENT PLAN means such plans and reports showing information that is necessary to identify the effects of the development on the environment and to enable the assessment for Financial Contributions under the Resource Management Act 1991 and as identified by the Rotorua District Plan.

DRAINAGE means sanitary drainage and/or stormwater drainage and includes pipes, open drains and sewerage treatment plants, and "drain" has a corresponding meaning.

EARTHWORKS means the alteration to the contours, including the excavation and backfilling or recompaction of existing natural ground and the stripping of vegetation and topsoil.

ENGINEER means the Rotorua District Group Manager Infrastructure Services or any other Officer or other person appointed by the Council to control engineering work of the Council.

FOOTPATH means so much of any road as is laid out or constructed by authority of the Council primarily for pedestrians; and may include the edging, kerbing and channelling thereof.

GEO-PROFESSIONAL means a chartered professional engineer (CPEng) or an engineering geologist, with recognised qualifications and experience in geotechnical engineering and experience related to land development.

HOUSEHOLD UNIT OR DWELLING UNIT means any building or group of buildings or part thereof used or intended to be used principally for residential purposes and occupied or intended to be occupied by not more than one household.

LAND DRAINAGE SYSTEM refers to the flow of surface and ground water but concentrates mainly on peak surface discharges and their regulation under urban conditions.

LOOSE SOIL means cohesionless soil (having a Standard Penetration resistance of less than 10 blows per 300mm). Also refers to uncompacted or poorly compacted fill.

OWNER in relation to any land or interest therein, includes an owner thereof, whether beneficially or as trustee and his agent or attorney and a mortgagee acting in exercise of power of sale; and 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 and may include the owner's representative.

POST CONSTRUCTION SETTLEMENT means the settlement of the ground surface which takes place after completion of the construction of the earthworks.

PRIMARY DESIGN FLOW is the estimated stormwater runoff selected to provide a reasonable degree of protection to the surrounding land. In most cases this flow will be piped or contained within relatively narrow confines under public control and be protected by a reserve or easement. Generally, design is for a predicted 10% AER storm event.

PRIVATE ROAD means any roadway, place or arcade laid out within the district on private land by the owner thereof but intended for the use of the public generally.

PRIVATE WAY means any way or passage whatsoever over private land within the district, the right to use which is confined or intended to be confined to certain persons or classes of persons and which is not thrown open or intended to be open to the use of the public generally.

SANITARY DRAINAGE means drainage primarily for the reception and discharge of pollutants and wastewater.

SCHEME PLAN means a scheme plan of a proposed subdivision in terms of Section 218 of the Resource Management Act 1991.

SECONDARY FLOW PATH refers to the path taken by stormwater runoff in excess of the primary design flow and should be capable of producing a reasonable degree of protection to the surrounding buildings.

A freeboard above the secondary flow level is required when determining allowable floor levels. This is to cater for flood surface undulation, tolerance for flow estimation methods and for possible failure of the primary system.

“**SHALL**” indicates a requirement that is to be adopted in order to comply with the Standard, while the words “should” or “may” indicate a recommended practice.

SOFT SOIL means cohesive soil having a low shear strength (less than 25kpa).

SOIL means the heterogeneous aggregation of particles comprising either peat, clays, silts, sands, gravel's, crushed and re-orientated rock fragments or a mixture of any of the above. The term excludes rock that is intact rock masses whether highly jointed or not.

SOIL ENGINEER means a person who is currently entitled to practice as a Registered Engineer and has experience in soils engineering acceptable to the Council or such other person as the Council may specifically approve as being competent.

STABLE GROUND means ground existing in a state which can be shown by a Soils Engineer is unlikely to settle, slip, erode or otherwise move to the detriment of superimposed buildings, services, roads or property generally.

STORMWATER means water or other runoff resulting from precipitation (rain, hail, snow) and does not include trade Waster or Domestic Sewage.

STORMWATER DRAINAGE means a drain primarily for the reception and discharge of stormwater.

STREET has the same meaning as “road” as defined by Section 315 of the Local Government Act 1974.

SURFACE WATER – stormwater runoff in excess of the primary design flow.

SURVEY PLAN has the same meaning as in the Resource Management Act 1991.

TRADE WASTE DISCHARGE is any liquid with or without matter in suspension or solution that is or may be discharged from a trade premises in the course of any trade or industrial process or operation or in the course of any activity or operation of a like nature but does not include stormwater or domestic sewage.

URBAN AREA means an area which is used or intended to be used solely or principally for residential, commercial, industrial or any other similar urban purposes or any two or more such purposes and includes rural residential areas.

WASTEWATER means water or other liquid, including waste matter in solution or suspension discharged from a premises.

1.2 APPLICATION

- A. This document forms the Rotorua Civil Engineering Industry Standard.

This Standard applies to all Engineering works and services constructed by or on behalf of Council, all Works and Services vested in Council as a result of Subdivision or Development and all Works and Services required by Subdivision or Resource Consent under the Resource Management Act 1991. It also includes geotechnical requirements for the above works and for private development.

It is essential that compatibility of design, construction and materials is achieved in order to minimise long term costs and disruption.

While allowing for the implementation of thoroughly researched and investigated innovative ideas, the aim is to ensure that the alteration or extension of infrastructure within the Rotorua District is carried out with minimum long term costs to the community.

- B. All Codes and Standards referred to herein are deemed to include any subsequent amendments as well.