




THAMES-COROMANDEL DISTRICT COUNCIL


Code of Practice for Subdivision and Development (Engineering Standards)

November 2013

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	<p style="text-align: center;">Section 1 General Requirements and Procedures</p>

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GENERAL

1.1.1 Functional Requirements and Performance Criteria

1.1.1.1 This Code of Practice for Subdivision and Development provides a means for producing Engineering plans, specifications and constructing the physical works that complies with the engineering aspects of the conditions set down in consents. Specific approval must be obtained from Council where an application does not comply with this Code of Practice.

1.1.2 Related Documents

- a. District Plan: sets out the objectives, policies and rules for subdivision and land development in the District.
- b. Standards: At all stages of design and construction reference shall be made in the first instance to this Code, and where applicable to the New Zealand Standards (its latest amendments). A list of relevant Standards is scheduled separately in Appendix C.

1.1.3 Precedence of the Code of Practice for Subdivision and Development


1.1.3.1 In general where there are conflicting requirements the documents shall have precedence in the following order:

- a. Resource Consent
- b. District Plan & Bylaw & Building Act (whichever is more stringent)
- c. Code of Practice
- d. New Zealand/Australian Standards
- e. New Zealand Infrastructure Management Manual (NAMS Group)

Note: Building Act requirements may take precedence in some cases.

1.1.4 Applicant's Representative

1.1.4.1 The developer/applicant shall appoint a single Applicant's Representative who shall be responsible for submitting information required for consent, preparing and submitting engineering plans, liaison with council, monitoring/supervising construction, and certifying the As Built information and the works. The Applicant's Representative shall be a Chartered Professional Engineer, Registered Surveyor, Registered Engineering Associate or a suitably qualified person experienced in Local Government Engineering and shall provide a

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copy of current indemnity insurance to the value of \$1,000 000. The developer/applicant can act as the Applicant's Representative.

1.1.4.2 The Earthworks and Land Stability investigation and completion reports shall be prepared by a Chartered Professional Engineer or a suitably qualified person experienced in geotechnical engineering with at least \$1,000,000 indemnity insurance.


1.1.4.3 The Applicant's Representative shall be available for a meeting on site within 2 working days of being requested by the Council or as agreed by the parties, except in the case of emergencies in which case an immediate response may be required.

1.2 APPROVAL AND COMPLETION PROCESS

1.2.1 Before Construction Commences

1.2.1.1 The following process is to be undertaken before construction can commence:

- a. Submission of engineering plans that adequately specify the works and Materials (note any variances to the Code of Practice for Subdivision and Development) and approval of these by Council.
- b. Any required consents/permits shall be obtained before construction can commence.

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1.2.2 **Compliance with the Approved Plans**

1.2.3 **Format of Plans**


1.2.3.1 Plans are to make use of computer aided draughting techniques. The end product of the draughting process is to supply Council with a drawing record of the construction process and result in a set of As-Built drawings and associated asset data compatible with Council processes. It is advantageous to the developer to initiate the draughting process with this in mind. The detail can be found in the Council's Asset Data Specification. Contact the Asset Database Manager for a copy.

1.2.3.2 **Basic Requirements**


All drawing work & annotation to be completed in "Model Space" and units of measure should be metres.

Drawing title blocks are to be completed in "Paper Space". The title block and/or an associated note in "Paper Space" shall include the following information:

- Contract/Sub division Number
- Date Drawn
- Street or Area Location
- Contractors Name
- Scale
- Surveyors Name
- Construction date
- Drawing amendment/issue number
- The words "As-Built Plans"
- Drawing sheet size
- Cadastral boundaries source note.

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- 1.2.3.3 The works shall be constructed in compliance with the approved plans.
- 1.2.4 **Before the issue of an Engineering Release**
- 1.2.4.1 The following shall be completed prior to the issue of an Engineering Release (final sign off of engineering conditions):
- a. Earthworks and bulk of top soiling exclusive of road reserves.
 - b. Full road construction including footpaths.
 - c. Street names and traffic signs.
 - d. Stormwater, wastewater and water reticulation; inspected, tested and arrangements in place for hook-up. Note that all valve and hydrant boxes must be in place and clearly identified.
 - e. Installation of electricity, street lighting and telecommunications where applicable.
 - f. Provision of and certification of as-built information.
- 1.3 **ENGINEERING PLAN APPROVAL**
- 1.3.1 **Engineering Plan Approval Process**
- 1.3.1.1 Engineering plans and specifications are checked for compliance with resource consents and the Code of Practice for Subdivision and Development. Approval of complying documents shall be given by the Council in writing. Any specific engineering plans that vary from the Code may be approved by Council.
- 1.3.1.2 If alterations to the submitted plans are required, the plans and documents will be returned with a request that updated plans be resubmitted. If amendments are required which are of a minor nature only, these will be endorsed on all copies of the plans.
- 1.3.1.3 One full set of engineering plans are required to be submitted with the application. Two complete sets of stamped approved plans and specifications will be returned to the Applicant's Representative. One copy of the approved plans and specifications shall be submitted with the 224(c) application.
- 1.3.1.4 During construction, a copy of the set of stamped approved plans shall be kept on site at all times, together with a copy of the resource consent.
- Preferred scales for engineering and services plans and long sections:

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Horizontal	1:1000	1:500	1:250
Vertical	1:200	1:100	1:50
Cross Sections - Horizontal and Vertical	1:100	1:50	

1.3.2 Required Drawings


1.3.2.1 The following drawings are required to be submitted with the application for engineering plan approval, where applicable, to indicate the full nature and extent of the proposed works:

- a. *Locality plan*: Showing location of work in relation to existing roads and features, to enable the site to be easily located.
- b. *Stage development plan*: Where a site is to be developed in stages, each stage must include a plan showing how the particular stage relates to the site as a whole and also to other stages. The proposed staging is to be clearly identified and shown in drawings at the resource consent application stage.
- c. *Setting out Plan*: Where source of survey information is shown and includes the setting out of any benchmarks in relation to the developed area.
- d. *General Roding Works Plan*: Plans showing proposed horizontal alignment, kerbs, benchmark positions, setting out data, co-ordinates etc.

1.3.2.2 Detailed plans with contours of intersections, cul-de-sac heads, parking bays.

1.3.2.3 Long-section showing at maximum 20m intervals: existing ground levels, proposed final levels, cuts and fills, grades, vertical curve details, horizontal curves and services.

- i. Any affected existing services shall be accurately located in the field by pot-holing or other buried service location techniques and shall be shown on cross sections.

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- ii. Street lighting layout: A separate plan showing location and Lux contours of each street light, plus location of cables.
- iii. Earthworks and silt control plan: Separate plan showing existing and final contours, areas of cutting and filling together with depths relative to original ground level.
- iv. Structural detail drawings.
- v. Ducting Plan: showing ducts for telecommunications, electricity, traffic lights, water connections etc.
- vi. Road signs and markings plan: including street names.
- vii. Pump station details.

1.3.3 Landscaping Plans

- 1.3.3.1 Refer to Parks and Reserves Section of this Code (Section 8) for details of requirements for landscaping plans and works on reserve areas.


1.3.4 Documentation

- 1.3.4.1 The following documentation (where applicable) is required to be submitted with the application for engineering plan approval:
 - a. Stormwater Catchment Plan and calculations: showing the catchment of each drainage system and over land flow paths, minimum floor levels for lots adjacent to flow paths, long sections and cross sections where necessary, as well as any likely downstream effects.
 - b. Wastewater catchment plan and calculations: if trunk wastewater mains are to be constructed, or if requested.
 - c. Existing drains: Where an existing private drain is to become part of the public system and the condition of the drainage line is in doubt, a video

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inspection and pressure test is required. Repairs or replacement shall be undertaken at the applicant's expense.

- d. Road pavement design calculations.
- e. Structural calculations.
- f. Geotechnical stability calculations.
- g. A design producer statement that states that all works have been designed in accordance with the appropriate standards and sound engineering practice (refer Schedule 1A NZS 4404:2010).
- h. Quality Plan: The Supervising Engineer shall submit an appropriate Quality Plan relevant to the nature of the application (eg. TQS 2 for roading work) and shall indicate a programme of inspection that should demonstrate an adequate level of inspection will be undertaken.
- i. Test results to support roading, pavement design, structural or geotechnical calculations.
- j. Written confirmation that the following items have or will be included in the physical works contract:
 - i. Construction management plan outlining methods to control dust and noise.
 - ii. Health and safety plan identifying any potential hazards and proposed measures of dealing with them.
 - iii. Copy of Earthworks and Silt Control plan submitted to the Regional Council.
- k. Identification of any work intended to be undertaken on other land owners' land e.g. where uncertified unsuitable fill or tree stumps are to be placed in reserves.


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- l. Identification on a plan of any proposal to open cut excavate in existing roads. A road opening permit must be obtained from the Thames Coromandel District Council.
- m. Contract Specifications.
- n. Any resource consents associated with the works.

1.4 CONSTRUCTION

1.4.1 Commencement of Works

- 1.4.1.1 Engineering works may not commence on any subdivision or land development unless resource consent (where applicable), engineering plan approval, and all other necessary consents or permits have been obtained.
- 1.4.1.2 A pre-construction meeting must be held with Council. Council will check that pre-constructions conditions have been met before work may proceed.
- 1.4.1.3 Council shall be given 5 working days' notice by the Applicant of the intention to commence work. A minimum of 2 working days' notice shall be given for pre-construction meetings, final inspections or other inspections.

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1.4.2 Supervision and Setting Out

1.4.2.1 The Applicant's Representative is to be engaged prior to commencement of any works, and shall supervise all engineering works and their setting out. The protection of any survey benchmarks during the duration of the works is mandatory.

1.4.2.2 In an urban or industrial environment where each development is consisting of more than 15 Lots or greater than 1 hectare in area, three survey benchmarks are to be established and registered with LINZ's (Land Information New Zealand) Geodetic network to an Order of 5 or better. Heights are to be published in the local MSL datum (Auckland Vertical Datum 1946, where appropriate) LINZ have advised they will process Order 5 marks within 5 working days provided their "Guidelines for Order 5 Survey Marks" is followed diligently. These benchmarks are to be protected and utilised throughout the course of the development.

1.4.3 Maintenance of Standards


1.4.3.1 It is the developer/applicant's responsibility, both directly and through his or her appointed representative, to ensure that all physical construction work carried out directly or by contractors or sub-contractors is at all times in accordance with the approved engineering plans.

1.4.4 Deviation from Approved Plans

1.4.4.1 Any deviations from the approved engineering plans, which may be necessary to meet particular circumstances, must be referred to Council for specific approval. A field amendment may be agreed to or an amended design may be requested. Such requests shall be documented and a variation issued.

1.4.5 Inspections


1.4.5.1 A Quality Assurance Programme indicating inspection procedure and self-audit compliance is to be agreed before commencement of the works. In addition Council will audit compliance with the conditions of consent by both site inspections and checking of associated documentation to the extent necessary, to ensure the work is completed in accordance with the approved engineering plans and specifications at to Council's standards. Council will undertake inspections and checking of conditions for a fee based on the hourly charge out rate for Council's representative carrying out the conditions auditing. The applicant shall notify Council at least two working days prior to

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commencing various stages of the works to enable audit inspections to be carried out.

1.4.5.2 Auditing of the site works shall be carried out as follows:

- a. Roding
 - i. Following shaping of roading and footpath subgrade prior to placement of sub base material.
 - ii. Following metalling up, prior to pouring of kerb and channel.
 - iii. Following completion of sub-base construction. This surface is to be tested with a Benkelman Beam, or other approved method, and the results submitted to Council for approval.
- b. Services
 - i. Testing of water, wastewater and stormwater mains and laterals.
 - ii. Following completion of required works. Disinfecting of water mains.
- c. Trenching
 - i. Prior to backfilling of service trenches.
- d. Footpaths
 - i. Prior to pouring of footpaths.
- e. Entrances/Rights of Way
 - i. On completion of construction (excavation/compacted fill) to subgrade.
 - ii. Following compaction of base course prior to final surfacing.

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- f. Additional Inspections: Where additional inspections are required due to faulty workmanship or work not being ready (contrary to the receipt of notification), such inspections will be carried out for an additional fee, for the additional hours required.

1.4.6 Emergency


- 1.4.6.1 If during construction works any situation arises whereby the security of the public or private property, or the operation of any public facility is endangered, Council may instruct the developer/applicant to carry out such remedial measures required to remove the danger. Any work so ordered to be done shall be at the expense of the developer/applicant.

1.4.7 Fencing

- 1.4.7.1 Temporary fencing shall be erected in accordance with the Health and Safety plan by the developer/applicant to protect the general public, particularly children, from all danger areas in the development including silt ponds. Signs shall be erected warning persons of the danger in the area.

1.4.8 Wastewater, Stormwater and Water Supply Connections

- 1.4.8.1 Connection to Council's water supply reticulation network can only be undertaken by Council's Utilities Operations and Maintenance Contractor. This connection is subject to formal application and payment of appropriate fees by the applicant. All planned connections require a Council Field Representative's approval.
- 1.4.8.2 Connection to Council's Wastewater or Stormwater reticulation network may be undertaken by a Council approved contractor. These connections are subject to formal application and payment of appropriate fees by the applicant. All planned connections require a Council Field Representative's approval. (see Appendix H2, H3 and H4). Every connection, upon completion, must be inspected and certified by Council's Utilities Operations and Maintenance Contractor.

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1.4.9 Testing

1.4.9.1 Any work requiring testing by or in the presence of Council should be pre-tested and proved satisfactory to the Applicant's Representative before any request for official testing.

1.4.9.2 Council shall be given at least two working days' notice of being required to witness or undertake inspections or tests. Note that in the event of tests for final acceptance being unsatisfactory, subsequent re-tests and re-inspection will result in additional charges to the developer.

1.4.9.3 Council, at their discretion, may require Close Circuit Television (CCTV) inspection of underground pipes laid in the course of the development. This will include but not be limited to wastewater and stormwater pipelines. Analysis of the CCTV results must be completed prior to final acceptance of the pipeline by the Council.

1.4.9.4 The cost of the CCTV operation and analysis of the results shall be at the expense of the developer.

1.4.9.5 Council does not monitor suppliers therefore supplier approval alone is not evidence that a product is satisfactory. In some cases products need to be checked for standards markings or certificate requested from the supplier (e.g. for elastomeric joint rings). In other cases testing is required (e.g. for basecourse metal).


1.5 COMPLETION

1.5.1.1 Prior to the issue of the Engineering release Certificate, As-Built information is required to have been provided and certified, and other certificates provided as per Appendix G.

1.6 MAINTENANCE BONDS

1.6.1 Responsibility of Maintenance


1.6.1.1 Unless specifically excluded by a consent decision, the developer/applicant shall be responsible for the maintenance of all subdivision or development works vested in Council for a period of 12 months following the date of issue of the Engineering Release Certificate.

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1.6.2 Maintenance Bond

1.6.2.1 A maintenance bond shall be lodged with Council for the maintenance period. If the subdivision or development is to be developed in stages the developer/applicant may apply to Council for approval for the maintenance bond to be deferred, provided any maintenance work required within the 12 month maintenance period is completed prior to the issue of an Engineering Release Certificate for the subsequent stage.

1.6.2.2 The maintenance bond shall be for a sum assessed as a percentage of the total cost of roading, wastewater and stormwater reticulation, water supply mains, and rights of way. The bond must be lodged in cash. The bond percentage shall be as determined from the following table:

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Value of Work	Bond
≤ \$50,000	10%
\$50,001 - \$100,000	8%
\$100,001 - \$250,000	6%
>\$250,000	5%

For example, for a total construction cost of \$135,000:

Up to \$50,000	@ 10% = \$5,000
\$50,001 to \$100,000	@ 8% = \$4,000
\$100,001 to \$135,000	@ 6% = \$2,100
<i>Total bond = \$11,100</i>	

1.6.2.3 A separate bond will be required for landscape maintenance for a period of 18 months (refer to the Parks and Reserves Section 8)

1.6.3 Definition of Maintenance


1.6.3.1 Maintenance shall include appropriate and regular mowing of grass and watering of all plants and trees together with the replacement of any dead specimens. The water is to be to the account of the applicant.

1.6.4 Maintenance Certificate

1.6.4.1 At the end of the maintenance period, and provided all maintenance matters and defects have been remedied, the Council will issue a Maintenance Certificate, following which any maintenance bonds will be released.


1.7 DEFECTS

1.7.1.1 Council's receipt and acceptance of As-Built plans does not absolve the developer/applicant of any responsibility for the plans' accuracy. In the event of a connection not being found where shown on the As-Built plan, Council will verify the As-Built information with the applicant and give the applicant 48

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hours to rectify the situation. If no action has been taken within 48 hours Council will arrange for another connection to be installed and charge the applicant accordingly.

- 1.7.1.2 When public drainage and water main systems have been connected to the live system, the maintenance and operation of these becomes the responsibility of Council. However the developer/applicant remains financially responsible for any defects.

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2.1 SCOPE

2.1.1 Requirements for the Geotechnical Reporting / General

2.1.1.1 This Part of the Code sets out the requirements for the geotechnical reporting on proposed building sites and earthworks, and for the carrying out of the earthworks or preparation for foundations, including:

- a. The assessment and protection of slope stability
- b. The excavation and filling of land to form new contours
- c. The suitability of both natural and filled ground for the founding of roads, buildings, services and other works
- d. The control of erosion, siltation and dust during and after earthworks.

2.1.1.2 Because of the wide range of soil types, physical conditions and environmental factors applying in different areas it is not possible to specify precise requirements which will be applicable in all situations. The precise geotechnical requirements shall be relevant to the specific site and in accordance with clause 2.1.3 Means of Compliance.

2.1.2 Performance Standards

2.1.2.1 All earthworks are to be carried out in a manner to avoid, remedy or mitigate damage to the natural and physical environment.

2.1.2.2 Modifications to the natural environment resulting from earthworks are to be avoided, remedied or mitigated in order to preserve existing landscape and habitat features as far as practicable.


2.1.2.3 Landform is to be stable.

2.1.2.4 Earthwork is to be carried out, as applicable, in accordance with NZS 4431 "Code of Practice for Earth Fill for Residential Development".

2.1.3 Means of Compliance

2.1.3.1 This section provides a means of compliance with the Thames Coromandel District Plan.


2.1.3.2 The document is presented with matching commentary where considered appropriate. The commentary is provided at the end of this section to provide an interpretation of Council's standard requirements.

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- 2.1.3.3 An allotment which has specific geotechnical requirements may be approved subject to restrictions which shall be registered on the title to the land by a consent notice or other means if required by the Resource Management Act 1991 (RMA), and recorded in the Council Property Information system as appropriate.
- 2.1.3.4 All earthworks and land stability investigation and completion reports shall be prepared by a currently Chartered Professional Engineer or Council approved person who is experienced in the practice of geotechnical engineering and registered with IPENZ (Institute of Professional Engineers of New Zealand), and with at least \$1,000,000 Professional Indemnity insurance cover.
- 2.1.3.5 Should the lot numbers on the final survey plan differ from the proposed lot numbers on the plan of proposed subdivision, then amended copies of the report and plans referring to the amended lot numbers and clearly distinguished from the originals by date and reference numbers shall be submitted.
- 2.1.4 **Site Investigation Requirements**
- a. The objectives of a site investigation are to:
 - i. Assess the suitability of a site for its proposed use
 - ii. Foresee construction difficulties
 - iii. Collect enough information for satisfactory design.

 - b. A site investigation should address the following factors:
 - i. Ownership
 - ii. Geology
 - iii. Groundwater
 - iv. Subsoil conditions, foundation conditions and stability (nature and extent of soils, rocks etc.)
 - v. Services
 - vi. Access

 - c. A review of the existing information is essential, and may include:
 - i. Geological maps and reports
 - ii. Data from adjacent sites - i.e. previous investigations
 - iii. Aerial photographs

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- iv. Performance of related and/or adjacent developments.
- d. Geotechnical investigation reports should generally cover, but not necessarily be restricted to, the following:
- i. Purpose - to investigate, examine and report on the suitability of a site for its proposed use including an evaluation of slope stability, foundation conditions, earthwork requirements, natural hazards and groundwater.
 - ii. Soils - Investigate and report on the geology and soil characteristics of the site with regard to foundation and construction conditions.
 - iii. Foundation Requirements - consider the types of building likely and their load requirements, and evaluate the foundation conditions for each allotment. Consider the type of road and evaluate the foundation at sub grade level.
 - iv. Effluent Disposal - in areas where sewage disposal is by means of on-site disposal, the report should also comment on the suitability of the site to accept on-site domestic effluent disposal systems and their influence on land stability, including an assessment of soil permeability.
 - v. Non-Engineered Fills - Identify the existence of previous filling activities on the site and comment on the quality and suitability of such fills for development purposes, with particular regard to settlement and stability.
 - vi. Slope Stability - Where appropriate, carry out a slope stability appraisal to determine whether the development will provide stable and accessible building sites.
 - vii. Water Table - The ground water table must be established in terms of MSL (Mean Sea Level) for both winter and summer conditions. In the case of land adjacent to rivers and streams, the ground water table must be established with reference to the average water level of the river or stream in winter.
 - viii. Natural Hazards - Evaluate the risk from natural hazards, including falling debris, earthquake, flooding, and tsunami.
 - ix. Liquefaction
 - x. Earthworks Development and Control - discuss earthworks aspects of the site and provide a specification for earthworks control and the installation of services.


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- xi. Conclusions and Recommendations - set out the findings of the investigation and provide recommendations for:
- Restrictions on use of the land if all or part of the land is unsuitable for some uses.
 - Suggested changes to a subdivision layout to achieve better use of the site, and/ or to minimise construction difficulties.
 - Control during construction.
 - Further investigation where required.
 - Regulation and control, or future action necessary to maintain suitability.

2.1.5 Phases of Site Investigation

2.1.5.1 Site investigation for all forms of civil engineering works, and particularly for large scale land development, requires a scheme methodology. The principle is as follows:

- a. Preliminary Exploration - A preliminary exploration is necessary to gain an initial appreciation of a site. In the case of land development, this is usually simply a visual appraisal. In some cases a visual appraisal is all that is necessary.
- b. Field Investigation - In most land development projects a preliminary exploration will be followed by a specific and detailed field investigation, with in situ and laboratory tests as appropriate. This investigation will yield the basis of the detailed geotechnical appreciation of the site and will provide guidelines for the development of the site, including limitations on that development. Generally, detailed design is likely to be progressing concurrently with reporting.
- c. Construction Observation - observation during construction is essential to verify the appreciation obtained from (a) and (b). It is not unusual for the appreciation to be modified as site development proceeds, resulting in further investigation and changes in design and/or constructions concepts.
- d. Performance Observation - Performance observation may be necessary where the earthworks design predicts post construction performance

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which is critical to the ultimate land usage - for example, the monitoring of the settlement of deep fills and fills underlain by highly compressible organic soils.

2.1.5.2 In summary, investigation in one form or another should be continued throughout construction, and may extend beyond the construction phase.

2.1.6 Slope Stability

2.1.6.1 A principal requirement of a site investigation for slope stability is to identify indications of past instability and to determine and recommend mitigating measures to provide an acceptable level of risk against future slope failure.


2.1.6.2 The evaluation of slope stability by the assessment of geological features, measurement of soil strengths and groundwater conditions, and the calculations of theoretical factors of safety needs to consider:-

- a. The range of parameters assumed to be applicable, given the present state of stability of a slope
- b. Presence of unique geological features such as remnant slick sided joints within hydro thermally altered geological formations
- c. Present and future groundwater levels
- d. The consequences of limitations on future site development
- e. Past history of the site, especially where mining operations have previously occurred
- f. High intensity rainfall events.

2.1.6.3 A preliminary appraisal can use site inspection, aerial photo interpretation and available geological and geotechnical records to provide a basis for the conceptual planning of a land development project. Preliminary appraisal should identify:

- a. Areas where previous slope failures have been positively identified
- b. Areas where it is suspected that slope failures may have occurred many years ago (e.g. historic features)
- c. Areas of surface soil creep
- d. Springs, swamps, or other areas of either poor drainage or high groundwater conditions.

2.1.6.4 Subsequent specific investigations should provide data on subsurface conditions and establish specific design criteria for such factors as maximum

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slopes, subsoil drainage, retention or establishment of vegetation, soakage to dispose of domestic effluent etc.

2.1.6.5 An acceptable concept for the investigation and assessment of the suitability of land developments in which natural slopes are intended to be left undisturbed provides for the delineation of building limits as follows:

- a. A **Building Line Restriction** which represents the closest proximity to a slope for any building development.
- b. A zone - defined as the **Specific Design Zone** - extending from the Building Line Restriction to the Building Line Limitation, within which building development requires specific design by a registered engineer experienced in, or with the assistance of an engineer experienced, in soil mechanics (particularly slope stability).
- c. A zone - defined as the **Non Specific Design Zone** - delineated by the Building Line Limitation and extending beyond the Specific Design Zone, in which building development can be carried out in accordance with the appropriate standards (e.g. NZS 3604: New Zealand Standard for Timber Frame Buildings) without risk from slope instability or the need for specific design.


2.1.6.6 The determination of the zones should be derived from an assessment of potential risk under varying site conditions. The start of the Non Specific Design zone, defined by the Building Line Limitation, would typically commence 3m to 5m (or possibly more) beyond the Building Line Restriction, and would assume a factor of safety against slope regression of 1.5 or greater. The respective zones are to be defined by a suitable diagram, which can be used to establish relevant ground control points.

2.1.7 Specific Requirements for Cutting/ Filling

2.1.7.1 The engineer/ investigator should, when initially considering a land development project, address at least the following to provide a preliminary assessment of potential difficulties or the need for specialist advice:

2.1.7.2 The present topography and any surface features such as hummocky ground, irregular land forms, rushes, and obvious geological features which might infer past or present instability.

- a. Any exposures of soil types, which might indicate potential difficulties for construction, e.g. sand, clay, rock

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- b. Existing drainage conditions and their relationship to the proposed development.
- c. The performance of similar engineering works (cut and fills) in adjacent areas.

2.1.7.3 The proper appreciation of the earthworks concepts for land development will identify:

- a. The suitability of the site for the concept, including the appraisal of aerial photos for larger sites and records of previous filling or mine workings.
- b. Particular engineering measures that will need to be incorporated in the engineering design.
- c. The influence of the earthworks concepts on slope stability, and mitigating design measures.
- d. Special measures that might be required for settlement considerations, depending on fill depths etc. (e.g. settlement monitoring, delays on building construction, preloading.)
- e. Building platform sites on each section designed to comply with Building Act requirements.
- f. A compaction control and quality assurance regime for earthworks.


2.1.7.4 All lots are to be reshaped to slope to the roadside kerb and channel or to the Right of Way serving each lot, or to an approved outfall. The minimum gradient shall be 1 in 500.

2.1.7.5 Reserves are to be shaped to the Council's requirements so that the areas are suitable for mowing and the control of stormwater.

2.1.7.6 All earthworks shall be in accordance with any appropriate standard (and incorporating all amendments) as listed in Appendix C. Where land filling is to be undertaken the areas affected shall be shown on the As Built plans with dimensions relative to the new property boundaries.

2.1.7.7 Any areas of fill or earthworks not certified in accordance with NZS 4431 shall be shown with sufficient dimensions to locate the feature in relation to property boundaries on the As Built plans. The presence of the feature on the site will be registered on the title by way of a consent notice.

2.1.7.8 The developer/ applicant shall take measures to control silt contaminated stormwater at all times during earthworks, roading development and

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installation of underground services. Details of the control works shall be submitted as part of the engineering plans and specifications.

2.1.8 Quality Assurance and Control

2.1.8.1 The quality control of earthworks is an essential phase of land development, and is aimed at providing for uniform construction in terms of engineering performance. Earthworks should be certified as to how they have been carried out and their suitability for their intended end use. The form of quality control will evolve from the earthworks appreciation and will generally be developed about:

- a. Adequate strength.
- b. Limited volume change.

2.1.8.2 The engineering performance of soils depends on their condition at the time of compaction and cannot be adequately reflected in a single parameter.

2.1.8.3 Quality control should be undertaken either by, or under the direct supervision of, an experienced geotechnical engineer and should involve:


- a. Visual inspection
- b. Quantitative testing by a Telarc Sai Ltd Registered Organisation.

2.1.9 Settlement

2.1.9.1 For land development works, the pre-development soils investigations should identify areas of risk, such as organic soils, swampy areas, etc. and the likely performance of the foundation under earth fills.

2.1.9.2 The consolidation settlement and elastic compression of fill are a function of time, albeit of long or short duration, thus in some cases it may be necessary to allow a period of time to elapse from the placement of fill to the commencement of building construction.

2.1.9.3 Consequently, the limits of earth filling and the variations in the depths of fills should be clearly identified on As Built drawings.

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2.1.10 Subgrade Design

2.1.10.1 The general principles of earthwork investigation, construction and control as outlined in this section also apply to road subgrades.

2.1.10.2 For subgrades in fill materials, it is usual to attempt to achieve a higher strength fill within the upper 1000mm to sub grade formation level. A minimum CBR (California Bearing Ratio) of 7 must be achieved within the subgrade layer.

2.1.10.3 Two principal methods of pavement design are currently used:

- a. CBR method
- b. Deflection method.

2.1.10.4 The CBR method is most commonly used and is based on laboratory or in situ tests and is dependent upon approval of the subgrade for uniformity and standard of construction. Proof rolling or in situ tests such as the dynamic cone (Scala) penetrometer may be used to assess uniformity.


2.1.10.5 The deflection method is based on end of service empirical performance criteria and requires the in situ testing of the subgrade by Benkelman beam (or other approved means) prior to placing the metal courses.

2.1.10.6 In general, cut ground may require more treatment for acceptance to road subgrade standards than a controlled earth fill. Undercutting and re-compaction is often a prudent course to follow on cut ground.


2.1.11 Earthworks and Land Stability Completion Report

2.1.11.1 An earthworks and land stability completion report should cover, but not necessarily be restricted to, the following:


- a. Purpose - To report on the development after completion of the works, with a view to recording construction information and extending the site investigation report if appropriate, and expressing an opinion on the suitability of all lots within the subdivision for their intended use.

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- b. Scope - The report should describe all activities from the preliminary site investigation to the completion of the physical works, including earthworks compaction control testing.
 - c. Requirements - The report should cover, and re-evaluate where necessary, the requirements of the Geotechnical Investigation Report, the requirements of NZS 4431: New Zealand Standards Code of Practice for Earth Fills for Residential Development where appropriate, and any requirements that are set out in the conditions of subdivision consent. Natural hazards and land contamination must be identified for the purposes of the Building Act.
 - d. Description - The description should include sufficient test results, site inspection data and other information to enable an independent assessment to be made as to the suitability of the development.
- 2.1.11.2 The emphasis of the report should be on stating what happened during construction, supported by detailed field notes, test results, and construction reports to provide an accurate detailed As Built record.
- 2.1.12 Peer Review of Soils Report**
- 2.1.12.1 The Engineer reserves the right to call for a peer review of the geotechnical report in cases of serious stability concerns or conflict between the findings of the soils report and previous reports held in the Council's Property Information system. The cost of the peer review shall be met by the developer/ applicant.
- 2.1.12.2 When the Engineer calls for a peer review of the geotechnical report, the geotechnical engineer or developer/ applicant, as appropriate, shall nominate a geotechnical Chartered Professional Engineer as peer reviewer. Acceptance of the nominated peer reviewer by the Engineer shall be obtained in writing before the peer review commences.
- 2.1.12.3 The peer review shall examine the appropriateness and completeness of the investigations and analyses applied in the geotechnical report with respect to the site and its environs.
- 2.1.12.4 The peer reviewer may recommend or request additional investigations and/or analyses to clarify or confirm any concerns, and these shall be addressed by the developer/ applicant's geotechnical engineer in writing to the Engineer and peer reviewer.

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- 2.1.12.5 The peer reviewer shall provide a written report to the Engineer on the matters set out in section 2.2.11.1 and any other matters pertinent to the safe development of the site. The report shall include a conclusion as to the adequacy of the conclusion and recommendations of the geotechnical report, and confirm the suitability of the land for development, subject to the recommendations of the geotechnical report and peer review.
- 2.1.12.6 The peer review report shall include the current legal description of the site (Lot and Deposited Plan (DP) numbers), clear reference to the report being reviewed, and shall be submitted in duplicate.
- 2.1.13 Summary**
- 2.1.13.1 In summary, engineering appraisal and design are required:
- a. Prior to detailed planning which usually involves some form of subsurface investigation
 - b. During the review of and advice on design concepts
 - c. During construction to ensure the adequacy of the bulk filling and the execution of the earthworks design
 - d. After construction, to provide certification and/ or define limitations of the works.
- 2.1.13.2 Geotechnical assessment guidelines are provided in the IPENZ (Auckland Branch) Code of Practice for Urban Land Development Control, and NZS 4404. Refer to Appendix C for a Schedule of Standards. These documents set out the areas in which the rational processes of engineering appraisal and design (site investigation) are necessary, and which require the involvement of a geotechnical (soils) engineer.
- 2.2 Commentary - Earthworks and Land Stability**
- 2.2.1.1 This commentary is to provide further information and guidance to designers. The section numbers cross-reference to the relevant sections of the Code.
- 2.2.1.2 A rational approach to site investigations for urban land subdivision is given in NZS 4404: New Zealand Standard for Land Development and Subdivision Engineering. Test sites for both scala penetrometer tests and bore holes should be selected as required in NZS3604:2011 clause 3.3.8 (Test sites). The scala penetrometer tests should be carried out in accordance with the

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procedure described in NZS4402. Any deviation from the above procedure must be approved by the Council's Planning Manager.

2.2.2 General

2.2.2.1 In almost all circumstances, it is likely to be prudent for the developer/applicant or their engineer to at least obtain an initial appraisal by a geotechnical engineer to provide input to the conceptual design.

2.2.2.2 In many circumstances (e.g. where the size of the development is sufficiently small), a visual appraisal will suffice. In most circumstances, however, some form of investigation will be required.

2.1.5 Phases of Site Investigation

One of the problems which has affected the orderly assessment of the suitability of land for development and building foundations has been a lack of uniformity of understanding between practitioners in their approach to the issues, and between practitioners and Council officers in their interpretation of these approaches.


It is recognised and accepted that no two engineers will approach any one problem in exactly the same way, nor will they reach entirely the same conclusion, or present their data and interpretations in exactly the same way.

A comparative lack of specialised knowledge or experience can act to hinder the rationalisation of these issues, usually at considerable cost to all parties involved, including the practitioner and the Council.

This Means of Compliance document provides a quality-management means of overcoming these issues of communication and understanding, within the framework of a generalised set of expectations.

In terms of a quality-management approach to the satisfaction of engineering criteria, it is necessary for a geotechnical engineer to consider his or her approach to an investigation with respect to:

- a. The end use of the site
- b. The liability consequences in the event of a wrong appreciation to:
 - i. The client and subsequent owners

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- ii. The engineer
- iii. The Local Authority.

The reality is that the backstop in terms of liability is:

- a. The engineer's own professional indemnity insurance
- b. The Local Authority's insurance.

A quality management approach then says that the process of site investigation is not complete until the construction aspects of the project are complete.

An incomplete or less than thorough approach to a site investigation is a waste of effort, inconclusive and fraught with risk.


The principles relating to geotechnical investigation for land development/subdivision purposes are the same, irrespective of whether an intensive urban subdivision or a rural subdivision is being considered. What differs is the extent of the process that needs to be followed. Often the methodology can be abbreviated if site conditions are appropriate. The important element is the provision for hazard assessment and risk mitigation.

2.1.6 Slope Stability

An increase in the slope angle of the land surface and/or a decrease in the shear strength of the slope materials cause most landslides. However a large number of interrelated factors apply.

Flowing water from rainfall is constantly changing the shape of the earth's surface. The water cuts out a channel and the side slopes of the resulting channel or valley are left over steep and subject to landslip, (i.e. marginally stable).

These side slopes gradually become less steep as the topography matures, and erosion and land slipping become less frequent. Steeper parts of the valley system may, however, remain in a state of only marginal stability and some incident, such as excavation or exceptionally heavy rain, can cause further land slipping to occur.

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It follows then that many slopes are potentially unstable in their natural state, and must therefore be considered unsuitable for residential development unless improved by properly designed engineering works.

A primary objective of land development engineering is to provide stable and accessible building sites. These considerations are particularly important in the case of residential land development, which is proceeding more and more into areas of marginal stability avoided in past years.

An experienced person can recognise previous landslip areas by stereoscope examination of pairs of aerial photographs. This is a fast and economical means for assessing the general slope stability characteristics of a large area.

Visual signs of ground instability include cracked or hummocky surfaces, crescent shaped depressions, crooked fences, leaning trees or power poles, swamps or wet ground in elevated positions, and water seepage.


The filling of gullies and flattening of hill slopes in subdivision development converts the young and potentially unstable slopes found in many parts of New Zealand to a more mature and stable land form. This achieves in a short timeframe what nature would otherwise achieve through landslips and erosion in many thousands of years.

In the situation where the concept of land development is to minimise earthworks and to leave the land in its largely undisturbed natural state, many problems are experienced between the practitioner and local authorities in determining acceptable slope stability criteria, levels of risk and reporting.

Traditionally, if a theoretical factor of safety of 1.5 can be achieved by analysis, then the slope is deemed to be stable. The problem arises in determining the correct parameters to use and the influence of subsurface conditions on the form of analysis, which is consequently dependent on the nature and level of investigation.

Cumulative experience suggests that the proper selection of a theoretical factor of safety for slope stability purposes is dependent upon a proper assessment of the level of risk.

Brand (1982), on analysis and design in residual soils, reports the established practice in Hong Kong (Geotechnical Control Office, 1979) in which the design factor of safety is related to the risk category. The risk category for a

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particular slope is assessed in terms of the likelihood of loss of life should the slope fail. Typical of high-risk slopes are high cut slopes immediately adjacent to schools and occupied apartment blocks. An example of a low risk slope is one which threatens only a secondary road.

Typical values of acceptable factors of safety in residual soils are given in Table 2.1. The design “standard” for slope safety (i.e. the probability of failure) is (logically) governed largely by the consequences of failure in terms of: loss of life, damage to property, and disruption of communications and services.

Table 2.1: Acceptable Solutions of Safety for Slope in Residual Soils (based on Brand, 1982)

Table 2.1	
Risk Category	Minimum Factor of Safety for Transient Condition (e.g. 1:10 Year Storm)
Low	1.2
Significant	1.3
High	1.4

It is noted that factors of safety adopted by engineers in geotechnical design have been developed to cover uncertainties in:

- the geometric accuracy (e.g. of the slope or retaining wall being designed)
- the soils strength (which is likely to vary from point to point even in the same soil “layer”)
- the method of analysis adopted (which is usually two dimensional and can have simplifications that may not accurately reflect the actual situation)
- the validity of assumptions made (e.g. depth to groundwater level, depth to rock or hard layer, etc.).

For these reasons, it is customary to adopt a factor of safety value of 1.5 for subdivisions or housing development. This factor of safety does not in every case assure safety from instability or slope movement. Based on references (1 to 3) noted below in Table 2.2, the average risk of failure for different factors of safety adopted is:


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Table 2.2	
Factor of Safety	Risk of Failure Per Annum
1.1	1:10
1.3	1:50
1.5	1:200
1.7	1:1000

References:

1. Meyerhof, G., Canadian Geotechniques, Vol. 7, No. 4 (11/70)
2. Wu, T.H., et al, ASCE, SM2 (3/70)
3. Sample, R.M., Ground Engineering (9/81)

2.1.8 Quality Assurance and Control

It is recommended that a full quality assurance system be developed to ensure that the end product, e.g. the completed house lot is suitable for its end purpose.

In addition to following guidelines set out in national publications (such as NZS 4431: New Zealand Standard Code of Practice for Earth Fill for Residential Development), it is recommended that progressive testing be carried out to avoid rework and to avoid unsuspected poor quality fill. Refer to Appendix C for the Schedule of Standards.


The fill needs to have sufficient checks (quality assurance procedure) at progressive stages of the works, all with clearly dated and surveyed test points:

- a. on completion of clearing and removal of unsuitable soils
- b. on completion of compaction of each fill layer until completion of the whole fill.

Corrective measures need to be specified and carried out where the target quality is not met.

The final fill control certificate provides a record of work done and tests carried out (quality control record).

Visual inspections should be made:

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- a. After stripping and prior to filling
- b. During the installation of drains
- c. Sufficiently often to check that:
 - Fill is not placed over soft or organic ground, unless provided for by design
 - Seepages and potential seepage areas are provided with drains
 - Unsuitable materials are not used as fill
 - Compaction operations are systematic and uniform
 - Conditions encountered are in keeping with those anticipated from the initial site investigation.

Quantitative testing should be related to the control criteria determined by the soil engineer. They should have a higher frequency (say about 500 to 1000m³ intervals) at the initial stages of earthworks to sort the operations out, with a lesser frequency as the fill progresses and the compaction criteria are being achieved, and when visual appraisal indicates the overall operations are satisfactory.


2.1.9 Settlement

Settlement of soils (consolidation) is a complicated natural phenomenon which is influenced by a number of factors including: the nature and mineralogy of the soil, the soil particle arrangement, whether the soil is undisturbed or remoulded, it's past stress history and the drainage conditions affecting the particular circumstances. Settlement will also occur within earth fills due to the self-weight of the fill.

Because of the variables in the theoretical appreciation of the likely magnitudes of settlement, monitoring of the actual settlement performance of earth fills can often expedite the release of the development.

The absolute magnitude of settlement, except when it is large, is often of lesser concern for most forms of construction than the magnitude of differential settlement and thus angular distortion. It is often overlooked that conventional analytical processes generally imply settlements of the order of approximately 25mm.

It is also often overlooked that seasonal moisture variations, and the associated swelling and shrinking of the soil, will occur with the associated

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likelihood of seasonal swell/ shrink movements of the order of at least 10mm. These natural effects may cause distortion of building frames, and may cause doors and windows to jam. In many instances, and as more difficult country is developed, earth filling of narrow gullies is occurring with considerable variations in fill thickness over short distances, and thus with the potential for differential settlement.

2.1.10 Subgrade Design

The earthworks and land stability report should address any specific design criteria perceived necessary for subgrade preparation (e.g. stabilisation, re-compaction, geotextile, drainage, etc.).


Not all soils will require the application of the Means of Compliance to the same degree. For example, a site with no obvious risks or identifiable hazards, and which has not been subject to earthworks or other engineering works such as the installation of services, may require a letter from a Council approved person re-affirming the suitability of the site for its intended purpose. This assessment should be reported in letter form to ensure continuity of record for the Quality Assurance audit trail.

2.2.11 Earthworks and Land Stability Completion Report

With most land development projects, the site investigation aspects of a project extend throughout the project and may require considerable flexibility during the construction phase, particularly if complex and varying conditions not anticipated from the formal phases of investigation are encountered.

The processes that have been outlined provide the means of achieving the objectives of sound foundation investigation for subdivision and land development purposes, being:

- a. Identifying any constraints on land use;
- b. Mitigating any risks;
- c. Reducing the potential liability of all parties involved in the processes, including:
 - the owner
 - the engineer
 - the local authority.


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These processes define the state of practice for subdivision and land development investigation, which when based largely on a common sense pragmatic approach to hazard identification and risk mitigation in conjunction with a good measure of practical down to earth experience, will ensure:

- a. A low risk outcome for all parties involved
- b. A product, which is readily understood by most local authority officers and which, through a logical process, should address their concerns
- c. As a consequence of (b), a relatively easy progression through the approval processes, which has a net benefit to a client in terms of minimal delays
- d. For a well engineered subdivision or land development project, a product which is readily marketed, as a consequence of identified and mitigated risks (with minimum uncertainties).


These processes have the underlying objective of communicating a technical appreciation of a site in a manner which addresses all the relevant issues, and in a manner which can be readily understood by all parties involved, including the lot purchaser/ future home owner.

The process may be subject to variation, depending on specific site circumstances. However, if followed rationally, the outcome should always be the same - a quality managed engineering product based on hazard identification and risk mitigation. The final report can vary from a one page letter through to a sizeable report, depending on the specific site circumstances.


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SCOPE

- 3.1.1. This part of the Code of Practice sets out the engineering requirements for the construction of new roads and associated infrastructure associated with land development projects, including performance standards, methods for design and construction and material specifications.


3.2. PERFORMANCE STANDARDS

3.2.1. General

- 3.2.1.1. Adequate levels of access, safety and convenience are to be provided for all road users including pedestrians and cyclists in the District, while ensuring acceptable levels of amenity, and protection of the environment from the impact of traffic.
- 3.2.1.2. Streets, service lanes and access ways are to be laid out to fit in with the general roading requirements of the locality in which they are situated, and to conform to any provision of the District Plan. The roading layout must provide for access to adjoining land where deemed necessary by Council.
- 3.2.1.3. Efficient provision is to be made for utility services, that is, water supply and reticulation, sewage reticulation and disposal facilities, stormwater and land drainage, electricity, street lighting, telecommunications, as well as landscaping and street trees.
- 3.2.1.4. Roads within any residential neighbourhood are to be designed to avoid functioning as through-traffic roads for externally generated traffic.
- 3.2.1.5. Allowance is to be made for sufficient width of carriageway and berm to allow roads to perform their designated functions within the road network. Where roads are to develop in stages adequate turning areas are to be constructed at the end of each unfinished road section. These turning areas are to be removed on completion of the road.
- 3.2.1.6. Allowance is to be made for all users of the road, including: adequate provision for traffic moving lanes, passing facilities and parking areas for vehicles; safety of and convenient movement of pedestrians and cyclists; aesthetically pleasing and functional landscaping and tree planting.

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- 3.2.1.7. The incorporation of features to provide for increased safety and reduced vehicle speeds within residential streets is encouraged.
- 3.2.1.8. Road geometry provision is to be consistent with the needs of the road classification, physical land characteristics, road use and safety.
- 3.2.1.9. Provision is to be made on the carriageway for two on-street parking areas for each lot. This may be reduced where alternative off-street parking is provided as part of the development work.
- 3.2.1.10. Satisfactory provision shall be made at cul-de-sac heads for the on-carriageway turning of service and delivery vehicles, including rubbish collection vehicles.
- 3.2.1.11. Road pavement and edge treatment is to be suitable for ensuring satisfactory containment and drainage of the roadway pavement, and in particular, is to use pavement materials suitable for the function of the road.
- 3.2.1.12. Roads are to be constructed to an appropriate strength to enable the carriage of the vehicles proposed to use the road at a minimum total cost to the community, both in initial construction and long term maintenance.
- 3.2.1.13. Road pavements are to be designed and constructed with a minimum design life of 25 years; except for vehicle pavement wearing surfaces which may have a lesser design life.
- 3.2.1.14. A pavement edge is to be provided that: is appropriate for the control of vehicle movements, performs any required drainage function and is structurally adequate.
- 3.2.1.15. The necessary underground street lighting cable, standards and fittings for all new roads, in accordance with the relevant New Zealand Standard as listed in Appendix C, are to be installed.
- 3.2.1.16. Standard street nameplates shall be erected by the developer at all street intersections on both streets. Street nameplates and mountings are to be in accordance with the Standard Drawings and are to include the words "No Exit" where applicable.

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3.2.1.17. All regularly used vehicle crossings (e.g. urban, residential, rural entrances) shall be formed, surfaced and drained to allow safe and effective vehicle access from the carriageway to the property boundary and in locations complying with the District Plan section 473.5 Table 1A. All surface water associated with vehicle crossings, driveways and access ways shall be controlled so that no adverse affect is placed on the adjacent road or other properties.

3.3. MEANS OF COMPLIANCE

3.3.1. The following are the minimum requirements for compliance; however where specific development plans vary from the Code of Practice for Subdivision and Development, these variations may be approved by the Council.


3.3.2. General

3.3.2.1. The road hierarchical system provides a clear distinction between each type of road in the District based on function. This hierarchy is detailed in the District Plan, and any subsequent Plan changes.

3.3.2.2. The width of the road reserve shall comply with Tables 1 & 2 of section 473.7 (Roading Standards) of the TCDC District Plan unless one or more of the following situations apply:

- a. The road reserve includes the entire road formation, footpaths and berms.
- b. Retaining walls are necessary for road stability only.
- c. There is a minimum clearance of 1.5m from:
 - i. The toe of fill batters
 - ii. The top of cut batters
 - iii. All drainage channels.

3.3.2.3. Where extra width is required to include these features, approval of the Council is required.

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3.3.2.4. Retaining walls shall not be built on the road reserve unless specifically approved by Council.

3.4. GEOMETRIC DESIGN

3.4.1. General

3.4.1.1. The design life/ period for all road pavements shall be not less than 25 years, for which projected traffic flows shall be calculated based on the traffic flows for the appropriate class of road.

3.4.1.2. The design speed value shall be generally determined in accordance with Austroads publications unless Council requests otherwise, except that the maximum design speed shall be in accordance with Table 3.1.

	Regional Arterial		District Arterial		Collector		Local		Short Cul-de-sac	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
	Km/hr	100	70	100	60	100	50	80	40	50

3.4.1.3. The publications referred to under Geometric Design in Appendix C shall be used for all items mentioned in this section.

3.4.2. Design Geometry

3.4.2.1. The road reserve/carrageway/sealed widths for Rural Roading in Tables 3.1A and 3.1B apply except where a specific design or development proposal has Council approval. The urban roading standards are shown in Table 3.1C.

3.4.2.2. Longitudinal gradients shall be generally determined in accordance with Austroads requirements but shall be no steeper than 12.5% (1V: 8H) and no flatter than 0.5% (1V:200H) unless approved by the Council.


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Table 3.1A: Guide for Rural Roading - Geometric Standards										Key: S = Seal M = Metal
GROUP	1			2			3			
Traffic Volume (AADT)										
Annual Average Daily Vehicle	Under 30			30 - 100			100 - 250			
Annual Average Heavy Vehicle	Under 10			10 - 40			40 - 80			
Topography	Level	Rolling	Mountainous	Level	Rolling	Mountainous	Level	Rolling	Mountainous	
Number of Traffic Lanes	1	1	1	2	1 or 2	1	2	2	2	
Design Speed (km/h)	As practicable			As practicable			80	70	50 or as practicable	
Sight Distance Minimum (m)	Refer to Table 3.6									
Traffic Lane(s): Width (m)	3.5	3.5	3.5	6	3.5/6	3.5	6	6	6	
Carriageway: Width (m)	5	5	5	7.5	5/7.5	5	7.5	7.5	7.5	
Road Reserve: Width (m)	20	20	20	20	20	20	20	20	20	
Bridge Widths (m)										
Under 6m long	3.7	3.7	3.7	8	8	8	8	8	8	
6m - 30m long	3.7	3.7	3.7	3.7	3.7	3.7	8	8	8	
Over 30m long	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	
Bridge Design Standards	Refer to NZTA Bridge Manual									
	M	M	M	S/M	S/M	S/M	S	S	S	


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Table 3.1B: Guide for Rural Roading - Geometric Standards							Key: S = Seal M = Metal
GROUP	4			5			
Traffic Volume (AADT)							
Annual Average Daily Traffic	250 - 500			500 - 2500			
Annual Average Heavy Traffic	80 - 150			Over 150			
Topography	Level	Rolling	Mountainous	Level	Rolling	Mountainous	
Number of Traffic Lanes	2	2	2	2	2	2	
Design Speed (km/h)	80	70	50 or as practicable	80/100	80	50 or as practicable	
Sight Distance Minimum (m)	Refer to Table 3.6						
Traffic Lane(s): Width (m)	6.8	6.8	6.8	7.5	7.5	7.5	
Carriageway: Width (m)	8.5	8.5	8.5	9.5	9.5	9.5	
Road Reserve: Width (m)	20	20	20	20	20	20	
Bridge Widths (m)							
Under 6m long	8	8	8	8	8	8	
6m - 30m long	8	8	8	8	8	8	
Over 30m long	8	8	8	8	8	8	
Bridge Design Standard	Refer to NZTA Bridge Manual						
Type of Surfacing	S	S	S	S	S	S	


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Table 3.1C: Urban Roading Standards								Key: h = houses m = metres NA = Not Applicable
Classification	Type of Street	Traffic Volume (VDP)	Area Served	Design Speed (Kph)	Min Street Width (m)	Recommended Carriageway Width		
						Parking	Traffic	Total
Secondary Streets:								
Local Streets	Residential							
	Short		<20		12	2.275m	2.275m	5.5
	Cul-de-sac		<100m	20				
	Long		>20h		15	2 x 3m	2 x 3m	6
	Cul-de-sac		>100m	20				
	Minor Access		<100h	20	15	2 x 3m	2 x 3m	6
Sub-collector	Industrial	<200	0	40	17	2 x 2.5m	1 x 3m	8
	Residential	200-1000	<150h	40	17	3 x 2.5m	2 x 3m	8
Collector	Industrial	200-1000	0	40	17	3 x 2.5m	2 x 3m	8
	Residential	800-3000	150-450h	50	20	2 x 2.5m	2 x 3m	11
Primary Streets	Principal	3000-7000	NA	50	22	2 x 3m	2 x 3.5m	13
	Arterial	Over 7000	NA	50		Specific Design		

Horizontal curves in urban areas shall generally be designed as simple circular curves in accordance with Austroads guidelines, but where the use of three centred compound curves are proposed approval must be gained from Council.

3.4.2.3. Vertical curves shall generally be parabolic with minimum lengths designed in accordance with Austroads guidelines where the change in grade is greater than 1%.

3.4.2.4. Super elevation on rural roads shall be applied in accordance with Austroads guidelines unless otherwise requested by the Council.

3.4.2.5. A crossfall between 2% and 3% from the crown is required on all sealed roads and a crossfall between 4% and 7% from the crown is required on all unsealed roads. Where a differential level between kerb lines is necessary, a lateral shift in the crown position of up to one quarter of the effective road width will be permitted.

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- 3.4.2.6. Sight distances shall generally be in accordance with Table 3.5 and 3.6.
- 3.4.2.7. Vehicle Tracking Curves of critical vehicle movements shall be used to determine or verify the suitability of proposed layout geometry. The following design vehicle options shall be used, dependent upon the applicability of the vehicle type to other service requirements or land use of the adjoining properties:
- a. single unit heavy commercial vehicle
 - b. semi trailer HCV
 - c. B-train HCV
 - d. Bus
- 3.4.2.8. A design vehicle shall be used of selected dimensions and turning characteristics representative of the 90 percentile vehicle (i.e. the vehicle for which only 10% of vehicles in its category have more critical dimensions).
- 3.4.2.9. For design, the minimum criteria are shown in Table 3.2.

Class of road	Vehicle Type	Minimum Turning Radius (metre)
Local	Single unit HCV	10.0
Major Collector	Semi trailer HCV	12.5
Minor Collector	Semi trailer HCV	12.5
Arterial	B Train	12.5

- 3.4.2.10. Slip-lane Merge/Diverge Tapers are shown in Table 3.3 for use on roads with low AADTs, with design speeds of up to 65 km/h.



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Table 3.3	
Movement	Horizontal Taper
Merge	1 in 30
Diverge	1 in 20


- 3.4.2.11. As traffic diverge movements can usually be undertaken more quickly than merge movements, provisions for slip lane geometry need to be adjusted to accommodate typical tracking for vehicles executing such manoeuvres.
- 3.4.2.12. For speeds above 65 km/hr specific design shall be undertaken based on Austroads Standards Part 5: Guide to Traffic Engineering Practice – Intersections at Grade: 2005.
- 3.4.2.13. For cut/ fill batters, batter slopes shall not be steeper than 1.5(V): 1(H) but generally should match any existing stable slope.
- 3.4.2.14. Flatter slopes integrated into the natural landscape are preferred. Where circumstances dictate a steeper slope is necessary a geotechnical assessment of the slope shall be provided together with specific designs.
- 3.4.2.15. The top edge of every fill shall extend at least 1.5m beyond the outside edge of the footpath. Where there is no footpath this dimension shall be measured from the back of the kerb or the edge of the surface water channel as applicable.
- 3.4.2.16. The toe of every cut shall extend at least 1.5m beyond the outside edge of the footpath. Where there is no footpath this dimension shall be measured from the back of the kerb or the edge of the surface water channel as applicable.
- 3.4.2.17. Threshold, speed control hump and Channelisation treatments shall be provided on the new urban streets in accordance with Table 3.4.

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3.4.2.18. **NOTES:**

- a. The Council has not established any standard designs for thresholds; rather the specific needs and requirements of each development should be the basis of each design and submitted to the Council for consideration accordingly.
- b. Thresholds shall only be placed on the lower precedence road except where a specific design requires otherwise.
- c. Speed control humps are to be designed in accordance with the standard drawings.
- d. Thresholds are not to incorporate vertical structures/ walls or raised planting boxes greater than kerb height within 1m of the carriageway. Beyond this distance planting boxes may be up to 500mm above the road edge (this includes the maximum final height of any plant unless Council grants otherwise) provided they comply with the Councils sight distance requirements .

Table 3.4: Threshold/Speed Control Hump/Channelisation Requirements				
Classification	Arterial	Collectors Residential	Local	Cul-de-sac
Arterial	S	T	R	R
Collector	T	S	R	R
Local Road	R	R	R	O
KEY:				
S	Specific Design required in accordance with Guide to Traffic Engineering Practice, Part 5 - Intersections at Grade			
T	Traffic Islands with Intersection Controls required			
R	Thresholds Speed Control required			
O	Thresholds Speed Control optional. Refer to RLTS Traffic Engineering Information Bulletin No. 2: Guidelines for the use and construction of speed control humps			
X	Thresholds Speed Control NOT appropriate			


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3.4.3. Intersections

- 3.4.3.1. Intersections are to be designed at right angles to the major road using Austroads publications (within a tolerance of $\pm 5\%$), with a minimum design radius of 15m for a semi-trailer.
- 3.4.3.2. Additional approach treatments shall be provided on local rural road developments in accordance with the standard drawings.
- 3.4.3.3. Mountable quadrant kerbs shall be provided at the intersections of all new roading with either existing or new roading. These kerbs shall extend around the corners between the tangent-points of the two roads. Lead-ins shall be provided to these sections of kerb - refer to the standard drawings.
- 3.4.3.4. The edge of seal radius at an intersection shall not be less than that specified in section 3.3.7 NZS 4404:2010, being all residential road intersections of collector class and below shall have a minimum kerb radius of 9m, and roads above collector class as well as in commercial and industrial zones shall have a minimum kerb radius of 13.5m.
- 3.4.3.5. Wherever practicable, the gradient within 30m of intersections should be less than 5%, and preferably less than 2%.
- 3.4.3.6. Where traffic islands are deemed necessary at intersections, these shall be specifically designed and shall be lit during the hours of darkness. Appropriate lighting shall also be specifically designed.
- 3.4.3.7. Intersections on curves, particularly on the inside of the curve, should be avoided.

3.4.4. Traffic Control

- 3.4.4.1. All intersections shall be designed in accordance with Table 3.4-
- 3.4.4.2. Where median islands are used the kerbing shall be either mountable or mountable with a flat channel.

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3.4.4.3. Flush medians are primarily intended for urban (50km/hr) and semi-urban (70km/hr) roads. Uses include right turning traffic interface with through traffic, and where pedestrians have difficulty crossing a busy road.

3.4.4.4. Roundabouts generally fall into one of the following 3 different types: Local, Collector or Arterial. Design standards are to comply with Austroads guidelines. Deflection criteria for entry and exit needs to be achieved, as well as the appropriate use of splitter islands.

3.4.5. Signage

3.4.5.1. All road signs shall comply with AS/NZS 1906:2007, MOTSAM (Manual of Traffic Signs and Markings), and the Council Policy on Street Name Blades.

3.4.5.2. In addition to regulatory signs the following shall be indicated by appropriate signage:

- a. Bridge ends not behind a kerb, to be indicated with Bridge End Markers.
- b. Culvert ends within the road reserve and not behind kerbs, to be indicated by the use of Hazard Markers. These shall be located at the ends of the culvert or no further than 2m from the edge of the road.
- c. Curves with design speed 15km/hr or more below the operating speed.
- d. Street name blades shall be supplied at all intersections on both the newly formed and existing roads.


3.4.5.3. Name blades shall conform to the Council's Guidelines for Street/Road Name Blades (Section 3.9.2 of this Code of Practice).

3.4.5.4. All roads shall have signage appropriate to the facility on that section of road.

3.4.6. Road Markings

3.4.6.1. All road markings must comply with MOTSAM and Council Standards as listed in Appendix C – Schedule of Standards.

3.4.6.2. In addition to these markings the following shall be marked:

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- a. All fire hydrants, which shall have a blue Raised Pavement Marker located in the centre of the road and be marked in accordance with MOTSAM.
- b. Centrelines, that shall be marked as per the MOTSAM manual.
- c. Limit lines for give way and stop controls, which shall be marked as per the MOTSAM manual.

3.4.7. Property Access, Entrancesways and Vehicle Crossings

- 3.4.7.1. Each property access is required to be formed in accordance with the design details in the standard drawings. Accesses are to be located in accordance with Tables 3.5 and 3.6.
- 3.4.7.2. Consent from Council is required for all vehicle crossings in the form of a vehicle crossing approval.
- 3.4.7.3. Where crossings may be expected to carry heavy traffic, these shall be specifically designed and the depth increased or reinforcing provided, or both, to the Council's satisfaction.

	Signposted Speed or Operating Speed Where Less ¹	Sight Distance ²	Location of Property Access Relative to Intersection ³	Distance Between Property Accesses ⁶
1.	100 km/hr	250 m	200 m	200 m
2.	80 km/hr	170 m	120 m	100 m
3.	70 km/hr	140 m	100 m	n/a
4.	60 km/hr	115 m	50 m	n/a
5.	≤ 50	85 m	30 m	n/a


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Table 3.6 - Minimum Sight and Separation Distances for Vehicle Crossings to All Roads (Excluding State Highways)


	Sign Posted or Operating Speed where less ¹	Sight Distance ²		Location of Vehicle Crossing Relative to Intersection		Distance Between Vehicle Crossings ⁶
				Distance on side road intersecting with Highway ⁴	Distance All Other Roads ^{5,3}	
1.	100 kph	250 m		60 m	60 m	200 m
2.	80 kph	170 m		60 m	60 m	100 m
3.	70 kph	140 m	85 m*	45 m	10 m	-
4.	60 kph	115 m	55 m*	30 m	10 m	-
5.	50 kph	85 m	40 m*	20 m	10 m	-
6.	40 or below	65 m	30 m*	20 m	10 m	-

3.4.7.4. The number of vehicle crossings allowed per property is shown in Table 3.7 below.

	Zone	Site Frontage	Number of Vehicle Crossings
1.	All	Less than 20 m	1
2.	All excluding Rural Production Zone and Coastal Zone	More than 20 m	2
3.	Rural Production and Coastal Zone	More than 20 m	No limit


3.4.8. Berms

3.4.8.1. On the completion of all other works, the berms shall be spread with a minimum lightly compacted base of 100mm depth top quality topsoil. The topsoil shall be graded to the kerb top and footpath edges and may be finished

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15mm high to allow for settlement except on the low side of the footpath where the topsoil shall be finished flush to prevent water ponding.

- 3.4.8.2. After top soiling the berms shall be sown with amenity type rye grass seed and fertilized.
- 3.4.8.3. Mowing of berms shall be the responsibility of the developer until the developed berm is vested in Council at the end of any maintenance period imposed by Council. After this period, the mowing of the berms is the responsibility of the property owner.
- 3.4.8.4. Crossfall on berms: The shape, slope and vegetation of berms shall be such as to provide for satisfactory stormwater runoff, maintenance, location of services and vehicle crossings to properties (unless acceptable alternative parking is provided). To achieve satisfactory drainage, the crossfall should be at least 2%.
- 3.4.8.5. The minimum width of berm shall be 4.5m measured from the kerb face. Alternative design may provide for lesser width provided that adequate surface is allowed for location of services within the road reserve.
- 3.4.8.6. Grassed areas for tree planting which are additional to the minimum berm width shall be specifically designed. In these areas, steeper gradients may be permitted to a maximum of 20% (1V:5H), provided the area can be mown and maintained.
- 3.4.8.7. All planting within the berm area must be approved by the Council prior to its installation. Trees of a similar type shall be planted to give uniform street appearance, and shall conform to the Tree Master Plan for the particular area.
- 3.4.9. **Cul-de-sac / No Exits**
- 3.4.9.1. Designs for urban and rural cul-de-sacs shall comply with the typical cross sections shown in the standard drawings.
- 3.4.9.2. Every cul-de-sac or no exit road, whether the end of the road is in its final position or otherwise, shall be provided with a turning area at the end of the useable road. The turning area shall have minimum useable roadway radius as shown on the standard drawings.

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3.4.9.3. Parking places may be provided off the traffic way as shown in the standard drawings.

3.4.9.4. Where no exit roads or cul-de-sacs are provided connectivity for pedestrians and cyclist must be ensured.

3.4.10. Right of Way/ Service Lanes

3.4.10.1. Right of Ways/ Service Lanes shall be constructed to comply with the standard drawings.

3.4.10.2. Where property access is by way of a right of way (ROW) the full length of the right of way shall be formed and sealed from the edge of the carriageway to the main body of each lot served.


3.4.10.3. Where a ROW is from an unsealed Council road, the ROW may be constructed as an unsealed ROW. However, if the vertical gradient is equal to or greater than 16.6% (1V:6H), then the ROW shall be sealed.

3.4.10.4. Adequate provision shall be made for the collection and disposal of stormwater from the ROW to a piped system, or other form of stormwater disposal as approved by the Council. The method selected on the particular site must be demonstrated to contain the 10% AEP storm event utilising Hirds V3 plus 20% global warming factor, runoff from the contributory catchment. This may mean the use of a kerb rather than a dish channel, particularly on steeper gradients.

3.4.10.5. Adequate turning area shall be provided on all ROW and service lanes, unless otherwise approved by the Council.

3.4.10.6. The maximum gradient for a ROW shall be 20% (1V:5H) as measured on the inside of any curve, and Transverse slopes shall be 2 - 3% where sealed and 4 -7% where unsealed. The minimum inside radius of curves shall be 9m.

Table 3.8A - Internal Access, Private Way Design Standards for Residential, Commercial and Industrial Areas					
Area Served	Max/Min Grade	Min Legal Width	Traffic Lane	TOTAL	Passing Bays

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1.	1 - 4 lots or dwellings	20% max 0.5% min	3.3 m	2.7 m	2.7 m	Passing bays must be provided at maximum 100 m intervals or on bends, whichever is the lesser distance
2.	5 - 8 lots or dwellings	16.7% max 0.5% min	6 m	2.7 m with passing bays	2.7 - 5.0 m	Passing bays must be provided at maximum 100 m intervals or on bends, whichever is the lesser distance.

Table 3.8B - Internal Access, Private Way Design Standards for Coastal and Rural Areas

Area Served		Max/Min grade	Min legal width	Traffic lane	TOTAL	Passing Bays
1.	1 - 4 lots	20% max with seal, 16.7% max without seal, 0.5% min	6 m	3.5 m	3.5 m	Passing bays must be provided at maximum 100 m intervals or on bends, whichever is the lesser distance
2.	5 - 8 lots	16.7% max 0.5% min	6 m	3.5 m with passing bays, seal required	3.5 - 5.0 m	Passing bays must be provided at maximum 100 m intervals or on bends, whichever is the lesser distance

3.4.11. Parking

- 3.4.11.1. Parking bays shall be constructed to the same standard as the adjacent road pavement. It is recommended that the surface of the parking bay be treated differently from that of the street to differentiate its use. A vee channel constructed in accordance with the standard drawings shall be used where the parking bay falls to the carriageway.
- 3.4.11.2. Public car parks shall be designed in accordance with the TCDC Drawing 3000/28 and 3000/29, or AS/NZS 2890.1:2004 Parking Facilities – Off-street car parking.
- 3.4.11.3. Turning movements need to be checked not just for cars but for the various types of vehicles likely to use the parking bay.

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3.4.12. Passing Bay

3.4.12.1. Passing Bays shall be constructed to comply with the standard drawings.

3.4.13. Pedestrian Accessways, and Walkways and Cycleways

3.4.13.1. Pedestrian accessways shall be as short and as wide as possible, with a clear line of sight through their length. Provision shall be made for disposal of stormwater flowing down the length of the accessway and across the road footpath. The minimum width shall be 3.5m. Alternative specific designs for both the path and fencing are encouraged to enhance the surrounding properties.

3.4.13.2. Pedestrian accessways and walkways shall be provided with traffic barriers/bollards at each end to prevent access by motorcycles and cars, but to allow access for prams and pushchairs.

3.4.13.3. Walkways shall be to the same standard as accessways except that they require the following items:

- a. Street trees shall only be required on wide walkways (those with a reserve width greater than 6m).
- b. Access for maintenance vehicles shall be provided at each end of all walkways by way of an approved lockable gate (or approved alternative arrangement).


3.5. PAVEMENT INVESTIGATION, DESIGN AND TESTING

3.5.1. Design Standards


3.5.1.1. Austroads guidelines shall be used as the basis for pavement design.

3.5.2. Geotechnical Investigations

3.5.2.1. Field-testing shall be undertaken to determine the existing site conditions, carriageway and pavement characteristics, ground stability and any other prospective foundation conditions, which may be anticipated at the proposed site.

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- 3.5.2.2. Field testing shall include, where appropriate, the following:
- a. Subgrade Scala Penetrometer tests on the alignment, starting at the top of the subgrade and carried to a depth of at least 1m.
 - b. Pavement test pits to log existing pavement material depths (where applicable), to the top of subgrade (as a minimum).
 - c. Pavement samples from each test pit for use in future laboratory tests.
 - d. Subgrade samples from each test pit for use in future laboratory tests.
 - e. Hand auger below the surface.
 - f. Benkelman beam tests to determine the deflection of the existing pavement (if requested by Council).
- 3.5.2.3. Additional tests may be required where the site conditions show that there may be problems with berms, embankment stability, and groundwater conditions associated with the roadway.
- 3.5.2.4. A full geotechnical appraisal report produced by a suitably experienced and qualified engineer shall be submitted to Council for approval with the final design, and shall include:
- 3.5.2.5. A detailed description of any pavement deficiencies and their relative position.
- a. Field test results including any photographs.
 - b. Any problems with associated services, berms, embankments, batter slopes or any other associated obstacles.
- 3.5.3. **Structural Design of Pavement**
- 3.5.3.1. Pavement categories down to and including Collector Routes shall be designed as "premium unbound flexible pavements", while Local Roads shall be designed as "*lower* grade unbound flexible pavements" in accordance with TNZ guidelines.

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3.5.3.2. In some locations pavement with certain suitable soil types may be stabilised with lime or cement.


3.5.3.3. Low strength subgrades may need additional excavation. The use of a specifically designed geotextile fabric of the appropriate specification, placed between the upgrade and the sub-base, may be approved by the Council.

3.5.4. Roading Pavement Materials

3.5.4.1. Material used in design for construction of Council roads shall generally comprise the following as appropriate and meet the standards identified:

- a. Earthworks construction to TNZ F/1.
- b. Sub-base material shall be constructed to TNZ B2 and TNZ M3.
- c. Basecourse shall comply in all aspects with the NZTA Specification TNZ M/4 and: TNZ B2 Specification for Construction of Unbound Granular Layers.
- d. If aggregate complying with TNZ M/4 is not available in an area, an alternative aggregate may be approved by Council subject to meeting TNZ B2 pavement strength requirements.

Location	Surfacing System
Urban streets (except Pauanui, and any cul-de-sac heads)	Two coat seal of Grade 5 over Grade 3
All industrial roads and cul-de-sac heads	Specific design depth asphaltic concrete over grade 4 chip seal
Urban cul-de-sac heads	25mm Mix 10 asphaltic concrete over Grade 4 chip seal
Arterial and Collector Roads and Streets	Two coat seal of Grade 5 over Grade 3
Urban streets (Pauanui)	Two coat seal of grade 5 over grade 3 McCullums red chip
Rural roads	Two coat seal of Grade 5 over Grade 3

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Urban/Rural high stress areas	Specific design depth Asphaltic concrete over Grade 4.
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The minimum surfacing treatment for new roads is detailed in Table 3.9 above.

iv. Other surfacing treatment.

Where other sealing systems are proposed they must meet the same or greater service life and impact of wheel noise as approved by the Council.

v. Chipseal

The selection of chip and binders shall generally comply with TNZ M/6 and Q/1, with reference to TNZ's Chipsealing in NZ Manual, for all new seal and reseals. Sealing shall be carried out generally in accordance with TNZ P/3: Specification for First Coat Sealing or TNZ P17: Specification for Resealing, P4, or as appropriate.

The penetration grade bitumen shall be 130/150 for 1st coat sealing, as per TNZ's Chipsealing in NZ Manual.

Particular attention to the approved quality plan and inspection requirements shall be able to be demonstrated. All chip sealed areas shall be swept of surplus chip, and the chip removed off site, twice before completion of the work. These sweepings shall occur at intervals of at least 1 month. This shall be included in the maintenance period.


vi. Asphaltic Concrete

Where required, Asphaltic Concrete shall be used to meet TNZ M/10 and laid in accordance with TNZ P/9.

vii. Slurry Seals (Micro emulsion mix)

Slurry Seals shall consist of bituminous emulsion, graded aggregate, water and additives, to be proportioned, mixed and uniformly spread to produce a homogenous layer which adheres securely to the entire surface, free of oversized stones.

Aggregates shall be supplied from a source known to be suitable for use with the bituminous emulsion binders used in slurry seal application. Where a proposed applicator has not had experience with the laying of slurry using the particular aggregate proposed, the engineer will require

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trial applications to be laid to prove the suitability of the material and mix proposed.


Mineral fillers and additives may be added as part of the mix design, to adjust the workability of the slurry and/ or setting and curing characteristics of the mix. The design mix shall be prepared and certified by an IANZ (International Accreditation New Zealand) accredited laboratory that has suitable experience in the design of emulsified bitumen slurry seal.

Prior to commencing, detail of the design mix shall be submitted to the engineer for information, complete with a schedule outlining:

- Locations where the same slurry mixes have been used
- Date when the applications were laid
- Name of client contact within organisations for whom slurry has been laid (for use by the Engineer in obtaining service and suitability references).

3.5.5. Quality Assurance Testing

- 3.5.5.1. All contractors undertaking road works shall have the minimum quality Transit standard TQS2. A quality plan shall be supplied to the Council for approval before construction can start (See Section 1 Conditions Auditing). Failure to comply with the approved quality plan may result in Council not issuing a 224 certificate for a subdivision.
- 3.5.5.2. Generally subgrade and pavement testing shall include as a minimum the tests and sample rates from NZS: 4402 or approved standard as instructed by Council.
- 3.5.5.3. All testing shall be undertaken prior to the placement of the materials on the road. Testing shall be undertaken of the exclusively supplied materials for the project. No production testing will be accepted.


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- 3.5.5.4. If the section of road fails to achieved the specified strength, the applicant shall remedy the failure. As a guideline to the testing of the subgrade formation, the quality plan shall include at least one of the methods in Table 3.10 below:

Table 3.10			
Test	Result	Minimum Frequency	
Density voids (nuclear densometer) test NZS 4402	Total voids shall be a maximum of 18% and a minimum of 12%	General rate of 1 test per 2000 m ²	
CBR (Scala Penetrometer) test Victoria County Roads test	CBR > 7	General rate of 1 test per 2000m ²	
Clegg Hammer test I	Value shall be greater than 10	General rate of 1 test per 1000 m ²	
Undrained shear strength test as measured by hand held field vane	Not less than 150 kPa and no single test less than 80 kPa	General rate of 1 test per 2000 m ²	

- 3.5.5.5. As a guideline to the testing of the finished pavement prior to sealing, the quality plan shall include at least one of the methods in Table 3.11.

Table 3.11			
Test	Result	Minimum Frequency	
Benkleman beam test TNZ T/1	No more than 5% of the tests may exceed the maximum design deflection for that category. No single result shall exceed the maximum by more than 50% for that category.	General rate of 1/20m on all wheel tracks as directed by the Council.	
Clegg hammer test	Value shall be greater than 35.	General rate of 1 test/200m ³ basecourse	
Density and voids (nuclear densometer) test NZS 4402	Average air voids not more than 8% with no single result 10% or more. Moisture content test as per NZS 4402 within 2% of	General rate of 1 test/100 m ³	

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	Optimum Moisture Content.	
CBR (Scala penetrometer) test Victoria County Roads method	CBR≥50	General rate of 1 test/200 m ³

- 3.5.5.6. Benkleman beam tests to be conducted in accordance with TNZ T/1, with deflections in accordance with Table 3.12.

Table 3.12		
Benkleman Standards	Beam Deflection	Max. Design Deflection (mm)
Arterial		1.0
Collector Routes		1.0
Local Roads		1.5
Local Roads - Cul-de-sac		1.5


* Check deflection for suitability for asphalt surfacing

- 3.5.5.7. The contractor shall supply solutions to remedy any material that has been shown not to meet the minimum standards.

3.6. BRIDGES AND CULVERTS

3.6.1. Standards

- 3.6.1.1. All bridges and culverts on the roadway or right of way shall be designed in accordance with the TNZ Bridge Design Manual.
- 3.6.1.2. All bridges and culverts in urban areas shall carry the roadway and footpath/s at full width.
- 3.6.1.3. All bridges and culverts with waterway cross-sectional areas greater than 3m² or 1m deep (measured from the roadway to the invert) shall be fitted with handrails between the outside of the road or road/ footpath formation and the watercourse.
- 3.6.1.4. All bridges and culverts in urban areas shall be provided with footpaths.

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3.6.1.5. On strategic, arterial and collector roads, bridges or culverts in urban areas, footpaths shall be provided on both sides of the bridge or culvert. On all other urban road bridges or culverts, one footpath shall be provided.

3.6.1.6. Footpaths shall be vertically separated from the roadway by a standard kerb in urban areas or a minimum distance of 1m or a guardrail in rural areas.

3.6.1.7. All culverts shall have inlet and outlet control structures to protect the culvert from scouring where necessary and suitably designed for fish passage where required.

3.6.2. Building and Resource Consents

3.6.2.1. Resource Consents must be obtained from Waikato Regional Council for culverts and bridges over existing watercourses and/or drains as required.

3.6.2.2. Building Consents shall be obtained for all Bridges, and for culverts as required by the NZ Building Code.

3.6.2.3. Applicant to consult with Development Engineer regarding consents to be transferred to TCDC on completion

3.6.3. Safety Barriers


3.6.3.1. Safety barriers shall comply with all requirements of NZTA specification M23 and M23 notes.

3.6.3.2. In general safety barriers should be used on all structures including bridges and culverts and in positions on bends and embankments having a height of >1.5m below the carriageway.

3.7. ROAD DRAINAGE

3.7.1. Design and Disposal

3.7.1.1. Stormwater shall generally be reticulated to an existing public drain or natural watercourse approved by Council in advance.

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3.7.1.2. Where the discharge is into a natural watercourse, a Resource Consent to discharge the stormwater shall be obtained from Waikato Regional Council as required.

- a. This Resource Consent shall be obtained by the developer prior to the commencement of any work. In order that TCDC or their agents are aware of the conditions, TCDC shall be nominated as a dual applicant.

3.7.1.3. This Resource Consent shall be transferred to TCDC when the Council issues the 224 Certificate.

3.7.2. Standards

3.7.2.1. The design storm return period for a primary piped system shall be as required by the specific ward requirements for a primary piped system (refer to Section 6.4.20.1 Table 6.11).

3.7.2.2. The road carriageway may be used as a secondary flow path.


3.7.2.3. The maximum flow in any section of channel during a 10% design storm (plus 20% global warming factor) shall be contained within the cross section of the formed channel.

- a. The minimum catch-pit lead size is 225mm nominal internal diameter.
- b. All stormwater drainage pipes shall be located as shown in the standard drawings.

3.7.2.4. Stormwater pipe materials shall comply with Section 6 - Stormwater & Land Drainage. Stormwater pipes are to be a minimum 300mm nominal internal diameter for roads to be vested.

3.7.2.5. Where there is evidence of high ground water levels (to within 300mm of the lowest part of the surface of the new road/s) sub-soil cut-off drains shall be provided.

3.7.2.6. The road reserve shall not be used for the ponding or retention of stormwater.

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3.7.3. Surface Water Channels


- 3.7.3.1. In urban areas, where kerb and channel is defined as being required (see Specific Ward Requirements section 3.9.4.1, Table 3.10), kerbs and channels, hillside channels, vee and dish channels shall conform to the standard drawings.
- 3.7.3.2. Where ground conditions dictate or where Council requests it, effective sub-pavement drainage may be required in the form of an under channel subsoil drain placed under the kerb or channel.
- 3.7.3.3. Where scour is likely to the kerb and channel or bank, more frequent culvert discharge points or anti-scour devices may be required.
- 3.7.3.4. On gradients of 1:12 or steeper, concrete Hillside channels shall be used.
- 3.7.3.5. Where the contributory road is not kerbed the kerb and channel shall extend around the corner to the tangent point on the contributory road.
- 3.7.3.6. The kerb line shall be continuous over all bridges.
- 3.7.3.7. Kerb and channel shall be continuous over all culverts.
- 3.7.3.8. The concrete used shall have a 28 day compressive strength of at least 20 MPa.

3.7.4. Culverts and Flumes

- 3.7.4.1. Culvert location and sizing needs to minimise scour and any effects on the surrounding ground.
- 3.7.4.2. Flumes will need to be designed so as to be securely fixed and not contribute to any bank instability. Discharge may only be into an existing stable watercourse. A dissipater (e.g. rip-rap rock protection) may be used.

3.7.5. Rights of Way / Existing Buildings / Pedestrian Accessways

- 3.7.5.1. Stormwater run-off from private rights of way shall not discharge across the footpath or berm or onto adjacent property.

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3.7.5.2. Stormwater discharges from existing buildings that already discharge to the road reserve shall be connected to the new road drainage system.

3.7.5.3. Stormwater discharge from Pedestrian Accessways shall be provided so that the maximum “run of water” does not exceed 90m.

3.7.6. Kerb and Channel

3.7.6.1. All new roading shall be fully serviced in accordance with Ward Specific requirements (refer section 3.9.4.1, table 3.10). Standard Channel details are shown in the standard drawings. All disabled crossings must comply with any appropriate standard - refer Appendix C for Schedule of Standards.

3.7.7. Sumps

3.7.7.1. Standard designs for sumps are covered in Section 6 Stormwater & Land Drainage.

3.7.7.2. Catchpit sumps shall be located as per Section 6.

3.8. FOOTPATHS AND BERMS


3.8.1. Footpaths

3.8.1.1. Footpaths on each side of the road shall be provided on every road in residential or rural residential areas where required by the Specific Ward Requirements in section 3.9.4.1 Table 3.10.

3.8.1.2. Footpaths shall extend around the circumference of the turning area of cul-de-sacs. Normally, footpaths shall be 1.5m wide except outside schools, hospitals, shopping centres and other commercial or public facilities where a greater width will be required, dependent upon pedestrian volumes.

3.8.1.3. The surface shall be broom finished or similar, across the width of the footpath, to provide a non-slip surface.

3.8.1.4. Curves on meandering footpaths shall have inside radii no less than 10m and should be spaced at least 10m apart. Meandering footpath details and set out details are shown on the standard drawings.

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3.8.2. Pedestrian Planning & Design


- 3.8.2.1. It is the Council's intention to continually upgrade and improve pedestrian facilities. To achieve this purpose planners and designers should refer to the standards in the NZ Transport Agency's current 'Pedestrian Planning and Design Guide'.

3.8.3. Crossings

- 3.8.3.1. Disabled crossings shall be provided in areas where footpaths and kerb and channel exist, and any other positions required so as to provide a logical and safe crossing position, or where otherwise advised by Council. Pram crossings shall be in accordance with the standard drawings. All disabled crossings shall comply with any appropriate standards (refer listing Appendix C Schedule of Standards).
- 3.8.3.2. Guidelines and policies pertaining to general road crossings from Council's roads to property boundaries are available in Appendix 17

3.8.4. Services

- 3.8.4.1. The location of services within the road reserve shall be as shown in the standard drawings.
- 3.8.4.2. All reticulated services shall be laid underground except for power reticulation in rural areas unless otherwise approved by Council.
- 3.8.4.3. Where power and telecommunication cables are installed in ducts, power cable ducts shall be coloured orange and telecommunication ducts coloured green.
- 3.8.4.4. Service-lines/ ducts shall be placed and tested after construction of kerb and/ or channel and before formation of road-base.
- 3.8.4.5. Service-boxes and access-covers shall be flush with and parallel to the finished surface of the roadway berm or footpath as appropriate

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3.8.5. Landscaping

- 3.8.5.1. A Landscaping Plan pertaining to streets and berms must be produced for approval by Council's Area Manager and Roading Manager.
- 3.8.5.2. The Landscaping Plan must be produced to comply with Council's Tree Policy and associated Tree Master Plans for each community.
- 3.8.5.3. Landscaping must not compromise the safe use of the legal road reserve or affect structural integrity of the road.

3.9. STREET LIGHTING

3.9.1. General

- 3.9.1.1. The streetlighting system shall provide ongoing lighting in accordance with the resource consent and Appendix I3 and G6 of this Code of Practice.
- 3.9.1.2. A streetlighting plan is required as part of the engineering plan approval.
- 3.9.1.3. The developer's representative is required to certify that the streetlights have been installed in accordance with the approved plans.

3.9.2. Signs


- 3.9.2.1. All street signs shall comply with the following requirements:

a. Urban Street Signs

Minor Streets:

- i. Lettering Type: 'D' Series – 112mm lettering height (All Capitals).
- ii. Sign Size & Type: 215mm wide x 500mm min. to 1200mm max. in length (50mm min. border width).
- iii. Class 1 Reflectorised Colour Letters and Background as per Ward Specific requirements - refer table 3.10

Arterial Streets & Within 50-70 km/hr Speed Zones:

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- i. Lettering Type: 'D' Series – 150mm lettering height (All Capitals)
 - ii. Sign Size & Type: 250mm wide x 500mm min. to 1200mm max. length (50mm min. border width).
 - iii. Class 1 Reflectorised Colour Letters and Background as per Ward Specific requirements refer table 3.10.
- b. Rural Street Signs
- i. Lettering Type: 'D' Series – 150mm lettering height (All Capitals).
 - ii. Sign Size & Type: 250mm wide x 500mm min. to 1200mm max. length (50mm min. border width).
 - iii. Class 2 Reflectorised Colour Letters and Background as per Ward Specific requirements refer table 3.12.
- c. Sign Mounting
- i. Sign mounting shall comply with the Transit NZTA Manual of Traffic signs and Markings and LTSA Guidelines for Street Name Signs.

3.9.3. Road and Street Naming

- 3.9.3.1. Road and street naming shall be in accordance with the policy and procedures in Appendix I2.

3.9.4. Specific Ward Requirements

- 3.9.4.1. Each Ward of the TCDC has its own particular requirements as consulted with the relevant Community Board as follows:

WARD	MERCURY BAY	
COMMUNITY	FACILITY	REQUIREMENT
Hahei, Hot Water Beach, Ferry Landing, Kuaotunu/Grays	Street Lighting	Flag Lighting only
	Footpaths	Not required except where safety is an issue or required by a Traffic Management Plan.


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Table 3.13		
WARD	MERCURY BAY	
COMMUNITY	FACILITY	REQUIREMENT
/Rings Beach, Opito Bay and Otama	Kerb & Channel	Only on grades where stormwater would be an issue.
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.

Whangapoua	Coloured Road Pavement	Not permitted
	Street Name Theme	No theme adopted
	Street Name Blade colouring	Blue background, white lettering
	Street Tree Type	Recommended species only
	Commercial	Specific requirements applying

Cooks Beach	Street Lighting	Flag Lighting only. Corio blue colour.
	Footpaths	Required on one side only.
	Kerb & Channel	Only on grades where stormwater would be an issue.
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Not permitted
	Street Name Theme	Captain Cook
	Street Name blade Colouring	Blue background, white lettering
	Street Tree Type	Recommended species only
	Commercial	Specific requirements applying

Whitianga	Street Lighting	Required. Corio blue colour.
	Footpaths	Required on both sides.
	Kerb & Channel	Required.
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.


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Table 3.13		
WARD	MERCURY BAY	
COMMUNITY	FACILITY	REQUIREMENT
	Coloured Road Pavement	Not permitted
	Street Name Theme	Historical / Nautical
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	Recommended species only
	Commercial	Specific requirements applying

Matarangi	Street Lighting	Required. Hawthorn green colour.
	Footpaths	Required on both sides.
	Kerb & Channel	Only on grades where stormwater would be an issue, otherwise concrete edging strip.
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Permitted.
	Street Name Theme	Native trees
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	Recommended species only
	Commercial	Specific requirements applying

Coromandel	Street Lighting	Required. Option of Hawthorn green colour.
	Footpaths	Required on both sides.
	Kerb & Channel	Required
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Not permitted
	Street Name Theme	Historical.
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	Refer to the Tree Master Plan.
	Commercial	Specific requirements applying
All communities Within the Ward except	Street Lighting	Flag Lighting only
	Footpaths	Required both sides.
	Kerb & Channel	Only on grades where stormwater would be


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Table 3.13		
WARD	MERCURY BAY	
COMMUNITY	FACILITY	REQUIREMENT
Coromandel and Te Kouma		an issue
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice. Stormwater not to be directed to road without specific approval.
	Coloured Road Pavement	Not permitted
	Street Name Theme	Historical.
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	NZ Native or as otherwise approved.
	Commercial	Specific requirements applying
Te Kouma	Street Lighting	Flag Lighting only
	Footpaths	Required both sides.
	Kerb & Channel	Required
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice. Stormwater not to be directed to road without specific approval.
	Coloured Road Pavement	Not permitted
	Street Name Theme	Historical
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	New Zealand Native or as otherwise approved
	Commercial	Specific requirements applying
Thames Coast Puriri and other Urban Areas Outside of Thames Township and Kopu Thames Township and Kopu	Street Lighting	Required.
	Footpaths	One side only.
	Kerb & Channel	Required
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Not permitted
	Street Name Theme	No theme adopted
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	Approval Required
	Commercial	Specific requirements applying


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Table 3.13		
WARD	MERCURY BAY	
COMMUNITY	FACILITY	REQUIREMENT
	Street Lighting	Required
	Footpaths	Required both sides.
	Kerb & Channel	Required
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Not permitted
	Street Name Theme	No theme adopted except heritage zone.
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	Approval Required
	Commercial	Specific requirements applying including hot mix seal in CBD – refer to Thames Streetscape Plan.

Tairua	Street Lighting	Flag lighting only.
	Footpaths	Required both sides.
	Kerb & Channel	Required.
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	No permitted
	Street Name Theme	No theme adopted
	Street Name Blade Colouring	Green background, white lettering
	Street Tree Type	Approval required – consult the Tree Master Plan.
	Commercial	Specific requirements applying

Pauanui	Street Lighting	Flag lighting only.
	Footpaths	Required both sides.
	Kerb & Channel	Required or edge strip required
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Required
	Street Name Theme	No theme adopted
	Street Name Blade Colouring	Green background, white lettering
	Street Tree Type	Approval required – consult the Tree



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Table 3.13		
WARD	MERCURY BAY	
COMMUNITY	FACILITY	REQUIREMENT
		Master Plan.
	Commercial	Specific requirements applying
Whangamata	STREET LIGHTING	Required
	Footpaths	Required.
	Kerb & Channel	Required both sides.
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Not permitted.
	Street Name Theme	No theme adopted
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	As per the Tree Master Plan.
	Commercial	Specific requirements applying
Onemana & Opoutere	Street Lighting	Flag Lighting only
	Footpaths	Required both sides.
	Kerb & Channel	Required.
	Vehicle Crossing	Required for ROWs & pan-handled lots. Otherwise required at building consent stage and covered by consent notice.
	Coloured Road Pavement	Not permitted.
	Street Name Theme	No theme adopted
	Street Name Blade Colouring	Blue background, white lettering
	Street Tree Type	As per the Tree Master Plan.
	Commercial	Specific requirements applying

TCDC Council Policies - Road and Street Naming


1. The Council has the task of naming of new streets and/ or altering existing street names within the District.
2. New Street naming is to comply with the Council's procedure as shown in Appendix I2 of this Code of Practice.

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	Section 3 Roading

3. The Community Board or appropriate advisory groups will recommend the alteration of existing street names or new street names to the Council. The Council will invoke special order procedures for the purpose of altering existing street names.
4. Where a street is named for the first time, or a street name is altered, the District Land Registrar, the Chief Surveyor, NZ Fire Service, Telecom, Power NZ, United Networks, Land Information New Zealand, Land Information New Zealand, NZ Police, Civil Defence, Waikato Regional Council and Council's service provider are to be informed of the new name or change by the applicant.
5. Where an existing street is extended, the street extension will be the same name as that of the existing street.
6. Basic guidelines are set out in the NZ Geographic Board Road Naming Criteria; however the Council reserves the right to choose whichever name it wishes. See table 3.10 for Ward Specific Street Naming Themes.


3.10. CONNECTIONS TO SERVICES UNDER ROADS.

- 3.10.1. Work to connect a development to services located on or under an existing Council maintained road must be carried out in accordance with: The National Code of Practice for Utility Operators Access to Transport Corridors.

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	<p style="text-align: center;">Section 4 Water Supply</p>

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	Section 4 Water Supply

SCOPE

4.1.1. This part of the Code sets out the engineering requirements for the supply of water associated with land development projects, including performance standards, methods for design and construction, and material specifications.

4.2. PERFORMANCE STANDARDS

4.2.1. General

4.2.1.1. Council, with input from Community Boards, has developed and agreed on the Levels of Service to be provided for each water scheme. The applicant is to provide the performance standard as required by the Levels of Service adopted for that community.

4.2.1.2. A reticulation system that meets the requirements of the New Zealand Fire Service – Fire Fighting Water Supplies Code of Practice SNZ PAS 4509, is to be provided. The above Code shall be applied based on District Plan zoning. An example (this list is not complete) of the areas which shall comply with Class D requirements due to zoning are;


- a. Thames Town Centre
- b. Kopu Industrial Area
- c. Whitianga Town Centre

4.2.1.3. A successful pressure test is required prior to a watermain being allowed to be connected to the existing water supply system.

4.2.1.4. All through streets shall be serviced by a minimum of one fire fighting main in the berm.

4.2.1.5. All mains are to be provided with isolation valves to enable independent isolation of each berm main between carriageway intersections.

4.2.2. The reticulation system shall be designed and constructed for a functional design life of 50 years and for the full development potential of the land it


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serves. Domestic demand shall be taken as 250 litres per person per day, with an instantaneous peaking factor of 5.


- 4.2.3. In order to co-ordinate the supply network on an urban supply area basis, the Water Services group will undertake overall network analysis of the system. Information on the likely feeder main sizes within a supply district should be made available on request to the Water Services group.
- 4.2.4. All parts of the system shall be designed to satisfy the requirements of SNZ PAS 4509 and the following:
- 4.2.4.1. Fire flow as required by Performance Standards above
- 4.2.4.2. Peak hourly domestic flow with a minimum residual pressure of 200 kPa at the highest elevation in the supply area.
- 4.2.4.3. Minimum domestic flow with a maximum residual pressure of 1,200 kPa at the lowest elevation in the supply area as per table 4.1 below
- 4.2.4.4. 24 hours of storage at the peak flow (maximum daily flow).

Table 4.1		
Class of Pipe	Maximum Working Pressure	
	Metre/Head	kPa
PN12	120	1200
PN15	150	1500
PN16	160	1600


- 4.3. **MEANS OF COMPLIANCE**
- 4.3.1. **Properties**
- 4.3.1.1. Every residential property shall receive a normal minimum flow and service pressure as specified in SNZ PAS 4509.

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- 4.3.1.2. Every commercial and industrial property shall receive a minimum head and flow designed in accordance with specific approved parameters.
- 4.3.1.3. Developments in rural areas may be adequately served by individual rainwater tanks, or where an adequate aquifer exists, by individual privately owned bores or wells. Such systems must comply with the regional council consents.
- 4.3.2. **Reticulation Layout**
- 4.3.2.1. A water main (principal main) fitted with fire hydrants shall be laid in the road as shown on the standard drawings. To supply lots on each side of the road, a rider main shall be laid in the berm on the opposite side to the main. Rider mains down jointly owned accessways remain private.
- 4.3.2.2. The layout shall be designed so that as far as possible mains or rider mains shall normally be laid continually from one street intersection to the next, being supplied with water at each end, and will not be cross connected to the main in the street between these points. In the case of cul-de-sac roads, the rider mains will continue around the head of the cul-de-sac and up the other side of the road to the next road intersection.
- 4.3.2.3. Where construction is staged and mains are laid to a dead-end for any stage, with the intention of connecting to this dead-end in any subsequent stage, the end is to be fitted with an approved flushing device.
- 4.3.2.4. In the case of some main routes such as dual carriageways, two fire fighting mains are required.
- 4.3.2.5. All mains shall be located in the road as shown on the standard drawings, except at road intersections. The maximum out of alignment tolerance acceptable is 50mm on straights and 100mm on bends.
- 4.3.2.6. Where a dispensation is granted to install a main in a non-standard location, and on all road crossings, an approved metallic detection tape shall be laid along the pipe alignment.
- 4.3.2.7. The minimum cover to all mains from the finished ground level shall be 600mm in berm areas and 800mm under carriageways.

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- 4.3.2.8. Where the new reticulation is to connect to the existing system, careful consideration is to be given to the most appropriate point of connection to the existing reticulation. The depth of the existing system will need to be ascertained to ensure correct alignment with the new reticulation.
- 4.3.2.9. Where any pipe passes under a building or is required by the Rooding Network Utility Operator to be installed using a trenchless method, the carrier pipe shall be 50mm larger than the maximum dimension of the pipe, including collars.
- 4.3.2.10. Where any public main passes through privately owned residential, commercial or industrial property, then the main should be installed outside of the building envelope. An easement shall be provided in favour of the Thames-Coromandel District Council to allow for access and repairs to the main at all times.
- 4.3.2.11. Where any public main is laid within a private way, right of way, or private road, the water main is to be laid within the grass verge and a scour valve shall be provided at the end.
- 4.3.3. **Trunk Mains**
- 4.3.3.1. Trunk mains shall have a nominal internal diameter of not less than 100mm and shall be fitted with fire hydrants.
- 4.3.3.2. All trunk mains and fittings shall be designed and manufactured to working pressure (120m) or better.
- 4.3.3.3. Trunk mains construction materials and all fittings such as tees, hydrant tees, crosses, tapers, blank caps, bends and gibaults shall be as defined in the Council's Approved Materials Schedule. Approved uPVC fittings will be permitted where they are not in direct contact between two cast iron or ductile iron fittings.
- 4.3.3.4. Adjacent "specials" and fittings shall be flanged and bolted together to form a single unit. Stand-alone fittings shall be, where possible, socket jointed to avoid the use of "gibault jointing".

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- 4.3.3.5. All joints on pipes and fittings shall comply with the relative New Zealand standard.
- 4.3.3.6. Lubricants for all Rubber Ring Joints shall use and contain an anti-bactericidal agent for potable water use.
- 4.3.4. **Rider Main**
- 4.3.4.1. Rider mains for residential areas shall be 50mm internal diameter, serving up to 15 household units on a double-ended feed, and up to 7 household units for a single-ended feed. Rider mains and jointing material acceptable shall be as defined in the Council's Approved Materials Schedule.
- 4.3.4.2. The layout and valving of the rider mains shall allow for the flushing of the rider main through the nearest hydrant. Where this is not possible, a flushing point may be required to be installed.
- 4.3.5. **Bedding and Anchorage**
- 4.3.5.1. All mains installed by trenching shall be thoroughly bedded, haunched and surrounded in accordance with NZS 7643. Other forms of installation utilising trenchless technology will only be on a specific approval basis.
- 4.3.5.2. In all cases the manufacturer's recommendations for pipe storage, handling, protection and laying techniques shall be followed.
- 4.3.5.3. The entry of clay, bedding, runoff and other foreign material into the pipeline shall be avoided by the use of end caps, and diligence during the construction phase.
- 4.3.5.4. Cast in situ concrete anchor blocks shall be provided at all points where an unbalanced thrust occurs. Such anchors are to be designed according to the soil bearing capacity and installed so as not to impair access to bolts or fittings. All concrete shall be a minimum of 17.5 MPa at 28 days and shall never encase the fitting. Restrained joints in lieu of concrete anchor blocks may be acceptable if approved by the Council.

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- 4.3.5.5. All fittings and anchors shall be left exposed for inspection during the course of the acceptance test.
- 4.3.5.6. For pipelines laid at grades steeper than 10% (including service connections) the bedding and surround material shall be of a low grade weak concrete (not exceeding 5MPa). For lines exceeding 20% in grade, anchor blocks should be located at pipe joints, not exceeding 6m spacing.
- 4.3.5.7. For uPVC rider mains the anchor block shall extend for the length of the bend or tee and shall have a minimum 180 degree encasement of the pipe. There shall be an insulating membrane between the concrete and the pipe.
- 4.3.6. **Service Connections**
- 4.3.6.1. Service connections are required to be provided to the boundary at the time of the subdivision or development
- 4.3.6.2. A water connection consisting of a water meter box, a meter manifold and all associated fittings shall be provided to all connections. All fittings are to be as per the Council's Approved Materials Schedule.
- 4.3.6.3. Where water meters are required, meters shall be as per the Council's Approved Materials Schedule (refer to Council's Water Services Manager).
- 4.3.6.4. All industrial/ commercial service connections shall be provided with a water meter, as per the Council's Approved Materials Schedule.
- 4.3.6.5. Backflow prevention shall be provided at the point of supply with a low hazard, non-testable device suitable for domestic use on all domestic service connections.
- 4.3.6.6. Industrial/commercial connections shall include backflow preventers as specified in the Council's Approved Materials Schedule.
- 4.3.6.7. A 100mm duct shall be installed to traffic islands for an irrigation connection and shall terminate clear of future driveways.

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- 4.3.6.8. For servicing multi-unit or multi-lot developments the rider main shall be extended into the site in the following situations:
- a. Residential developments of 3 or more rear lots or units or 4 or more front lot units
 - b. Industrial and commercial developments with 3 or more units
 - c. In situations where by virtue of the layout of access and possible buildings, it is desirable to provide a public water supply.
- 4.3.6.9. Rider mains for multi-unit or multi-lot developments may be installed by means of a duct and access chamber system as per the standard drawings.
- 4.3.6.10. Multi-unit or multi-lot developments shall be serviced by individual meters. Meter banks may be utilised with specific approval by the Council. Otherwise, each unit shall have an individual connection from the watermain located in the public road reserve.
- 4.3.6.11. All subdivision connections shall be located:
- a. Adjacent to each other for front lots wherever possible
 - b. At least 100mm clear of other utility connections
 - c. At least 300mm clear of any future driveways
 - d. At least 300mm clear of, but close to, the projection of the side boundary
 - e. 500mm from the front boundary, inside the road reserve.
- 4.3.7. Hydrants
- 4.3.7.1. All mains shall be provided with hydrants for fire fighting, air release, charging and emptying the system for maintenance purposes.
- 4.3.7.2. Hydrants shall be clockwise closing, screw down, standard pattern with a screwed outlet and comply with NZS/BS 750. The stem gland shall have PTFE packing or "O" ring seals and the sealing cup washer shall be made of Polyurethane as specified in the Council's Approved Materials Schedule.

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- 4.3.7.3. Hydrants shall be mounted on an approved type socketed hydrant tee, with risers if necessary, so that the top of the spindle of the valve is between 100 and 250mm from the finished surface level.
- 4.3.7.4. Hydrants shall be located to comply with the following:
- a. Maximum spacing in residential areas – 135m
 - b. Maximum spacing in industrial areas – 90m
 - c. Maximum distance from the end of a terminating street – 135m from the centre of the farthest building site measured along the route of a fire hose, or not more than 65m from the end of the road, whichever is the least.
- 4.3.7.5. If a hydrant is at the end of a line the hydrant shall be positioned at least 6m or 1 pipe length - whichever is the greater - from the end of the line that shall be capped.
- 4.3.7.6. Where any residential private way is more than 65m long, a hydrant shall be sited at the road end of the private way, or on the other side of the road immediately opposite the entrance.
- 4.3.7.7. If necessary, a 100mm diameter (ID) principal main shall be constructed and a hydrant placed within the private way in order to ensure that the rear of any site is within 135m of a hydrant.
- 4.3.8. Hydrants must be readily accessible for fire appliances and should generally be positioned near road intersections, and no closer to any building than 6m.

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4.4. VALVES

4.4.1. Valves shall be located in accordance with Table 4.2.

4.4.2.


Table 4.2	
Type of Main	Valving
Trunk mains and 100mm and greater	<p>Shut off valves shall be provided at each junction no more than 500m apart, and shall be capable of isolating no more than 50 dwellings.</p> <p>Scour valves may be required at the lowest elevation in the system subject to having a suitable discharge location.</p> <p>All valves to NZS/BS 5163.</p>
Rider mains	Globe on stop valves to NZS/BS 5152.
Service connections	Grade 316 stainless steel globe or stop valves to NZS/BS 5152.

4.4.2.1. Air release valves and scour valves shall be either a hydrant or a suitably sized ferrule. A permanent cover is required for the latter. Automatic air release valves shall be provided where required by the Council, and positioned so that ground water can not enter the main at negative pressure.

4.4.3. Surface Boxes and Markers

4.4.3.1. All valves shall be provided with an approved surface box in accordance with Table 4.3 and a section of 150mm diameter PVC ducting pipe from the valve bonnet to 80mm below the finished surface. The duct pipe shall be supported so as not to transfer any loads to the main.

4.4.3.2. All hydrants shall be provided with an approved surface box, set on approved precast concrete sections down to the level of the hydrant base flange, placed so as not to transfer loads to the main.

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Type of Main/Valve	Surface Box
Trunk main or valve in road	Cast iron top capable of carrying Class 1 vehicles with either "FH" or "V" marked on it
Rider mains in berm or path	Round or square aluminium or PVC with a minimum of 200mm one way and 300mm the other way with positive capture lid
Service connections	Round or square PVC with a minimum of 200mm one way and 300mm the other way with positive capture lid

4.4.3.3. The tops of all surface boxes shall finish flush with the final ground surface. Valve boxes shall be blue. Hydrant boxes shall be yellow. Where the hydrant is located off the roadway a yellow arrow and a blue cats-eye adjacent to the arrow is required (as per MOTSAM (Manual of Traffic Signs and Markings)).


4.4.3.4. All valves shall be identified with a V cut into the top surface of the kerb pointing to the valve.

4.4.3.5. All hydrants shall be identified with an H cut into the top surface of the kerb.


4.4.4. **Pipe Bedding**

4.4.4.1. Water main pipes shall be bedded on suitable fine granular material. All water mains under the carriageway shall have sand or fine granular bedding and surround. The requirement for bedding and surrounding of uPVC pipe is set out in NZS 7643.

4.4.4.2. The same bedding and surround shall also be used in rock country or where the trenching has brought out hard lumpy clay. There shall be no sharp stones or large clay lumps in the bedding or surround. Each pipe shall be laid so that the barrel of the pipe is supported for 60 degrees to 90 degrees of its circumference along its entire length. The bottom of the trench shall be cut out to sufficient size to permit jointing of the pipes, and all pipes shall be supported upon their barrels only.

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- 4.4.4.3. All mains installed by trenching shall be thoroughly bedded, haunched and surrounded as detailed on the standard drawings. Other forms of installation utilising trenchless technology will be considered on a specific approval basis only. In all cases the manufacturer's recommendations for pipe storage, handling, protection and laying techniques shall be followed.
- 4.4.4.4. When a main is to go under an existing road, trenchless installation methods shall be used unless a Street Opening Notice is issued (refer to Appendix F7 for application form).
- 4.4.4.5. The entry of clay, bedding, runoff and other foreign material into the pipeline shall be avoided by the use of end caps, and diligence during the construction phase.
- 4.4.5. **Booster Stations**
- 4.4.5.1. Booster stations are to be avoided where possible, however where they are absolutely necessary and where approved by the Council, all stations are to be constructed to the standards required by TCDC. Particular attention is to be paid to the electrical controls and ancillary equipment which is to be designed in a similar fashion to other Council station installations.
- 4.4.6. **Testing**
- 4.4.6.1. Before fittings and anchors are covered, each section of main together with all fittings shall be visually inspected and pressure tested by the developer/ applicant or their representative in the presence of the Council Representative. The test shall be carried out, and all necessary apparatus supplied, by the developer/ applicant.
- 4.4.6.2. Field hydrostatic pressure testing must be carried out as described in NZS 4404:2010 Appendix C3.
- 4.4.6.3. All pipes, valves, house connections and other fittings shall be disinfected using a method approved by the Council.

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4.4.7. Connection to Council's System

4.4.7.1. Only the Council Water Services Operations and Maintenance Contractor may make the connection to the existing Council water reticulation.

4.4.7.2. Water connections direct to any raw water pipelines prior to treatment works is not permitted.

4.4.8. Acceptability of Pipe Materials

4.4.8.1. Asbestos cement pipes are not permitted.

4.4.8.2. Concrete lined steel pipes may be required in potentially unstable ground, for lengths of exposed pipe or in other special cases, and should be the subject of specific design. Except where corrosive ground conditions exist, concrete lined steel pipes may be laid under road carriageways and access to industrial and commercial premises.

4.4.8.3. Galvanised steel pipes shall not be used.


4.4.8.4. Ductile Iron (Cast iron) pipes may be appropriate for lengths of exposed pipe, or in other special cases. Their use shall require specific approval by the Council. All cast iron pipes or fittings shall be concrete or epoxy lined.

4.4.8.5. PVC, and uPVC pipes of not less than PN12.

4.4.8.6. The installation shall be to AS 2032 and AS/NZS 2566 with particular attention to the anchoring of valves, hydrants and bends against displacement in operation.

4.4.8.7. Polyethylene (PE) pipes shall be to AS 4130. PE pipes for in ground installation shall be blue in colour unless permitted otherwise by the Engineer.

4.4.8.8. The use of uPVC, mPVC and MDPE pipe may not be permitted in the following situations:

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- a. Principal mains larger than 200mm
- b. Crossings of road carriageways that are 12.2m wide or greater
- c. Reticulation in fully paved areas
- d. In close proximity to service stations.
- e. In industrial/ commercial locations where there is a likelihood of large amounts of a product being used or produced that may infiltrate through the pipe wall (e.g. solvents).

4.4.9. **Backfilling and Reinstatement**

4.4.9.1. Carriageways and Driveways


- a. In general open cutting of existing paved carriageways and existing paved driveways will not be permitted where pipes can be horizontally bored or thrust under them. Paved surfaces include chipseal, asphalt, concrete and paving stones.
- b. If open cutting cannot be avoided, saw-cuts shall be made along both edges of the trench in continuous lines parallel to the pipeline. Areas surfaced with paving stones will require careful dismantling and reinstatement. Trenches shall be reinstated using GAP65 from immediately above the pipe surround and compacted in layers not exceeding 150mm in depth. The depth of basecourse and type of seal shall conform to the standard of the existing road construction and to the Engineer's requirements.

4.4.10. **Berms**


- 4.4.10.1. Pipe trenches under grass berms and footpaths shall be backfilled in accordance with the requirements of the standard drawings.

4.4.11. **Trenchless Installation of Pipes**

- 4.4.11.1. Trenchless installation methods include guided boring, directional drilling, impact moling and ramming, pipe jacking and micro-tunnelling.
- 4.4.11.2. Trenchless techniques shall be carried out by appropriate specialists using means approved by the Council.


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- 4.4.11.3. Trenchless installation shall be carried out in such a manner as to give as little disturbance as possible to tree roots.

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SCOPE

5.1.1. This part of the Code sets out the engineering requirements for the provision of wastewater reticulation associated with land development projects, including performance standards, methods for design and construction.

5.2. PERFORMANCE STANDARDS

5.2.1. General

5.2.1.1. Council, with input from Community Boards, has developed and agreed on the Levels of Service to be provided for each wastewater scheme, which are within the Council's Areas of Benefit. The applicant is to meet the performance standard as required by the Levels of Service adopted for that community.

5.2.1.2. A wastewater reticulation system is to be provided which is adequate for the maintenance of public health, minimises the ingress of stormwater and groundwater, and avoids the occurrence of system surcharging or overflows.

5.2.1.3. Industrial and commercial wastewater reticulation and wastewater disposal systems are to be designed in accordance with specified approved parameters for the development.


5.3. MEANS OF COMPLIANCE

5.3.1. General


5.3.1.1. Connections to Council's existing live system may only be made by an approved contractor under the direct supervision of the Council. The Council will invoice the Developer for the cost of any such supervision. All such connections require a Council permit (refer Appendix F3 for application form) and must be approved by Council.

5.3.1.2. Self-cleansing velocities (0.65m/s) are to be maintained within reticulation systems.


5.3.1.3. The reticulation and pumping system is to be designed and constructed to allow the passing of 75mm solids unless grinder or cutter pumps are used.

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- 5.3.1.4. The reticulation and disposal system is to be designed and constructed for a functional design life of 50 years.
- 5.3.1.5. Unless otherwise approved, the wastewater reticulation system shall be designed to cater for a peak flow without surcharge of 0.60 litres/second/gross ha for residential and industrial developments (based on 50 persons/gross ha, 250 litres/person/day and peak flow factor of 4 times average flow). This shall be based on a “Colebrook- White” pipe roughness coefficient of $k_s=1.50\text{mm}$.
- 5.3.1.6. All 150mm diameter lines may be assumed to flow at a minimum of half full. However, branch lines at the head of a catchment area should be steepened to a grade of 1% where practical.
- 5.3.1.7. The reticulation system shall provide, as a minimum, a connection of 100mm diameter gravity to each lot at a depth capable of servicing the entire building site, terminating a minimum of 1.0m within each site, providing a suitable outlet to an approved means of wastewater disposal.
- 5.3.2. Gravity Mains Reticulation Layout**
- 5.3.2.1. The primary wastewater drainage reticulation system shall consist of pipelines of minimum internal diameter of 150mm laid to a true grade and line between access manholes.
- 5.3.2.2. Each Branch line shall join the main line at a manhole junction.
- 5.3.2.3. Access manholes are to be located at each change of direction, grade and diameter.
- 5.3.2.4. Manhole spacings shall not exceed 100m.
- 5.3.2.5. Where any public main passes through privately owned residential, commercial or industrial sites, then the main should be installed inside the yard setback of the site. An easement shall be provided in favour of the Council to allow for access and repairs to the main at all times.
- 5.3.3. Manholes**
- 5.3.3.1. Manholes shall be located on all pipelines and at the end of all terminal lines greater than 50m in length.

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- 5.3.3.2. All wastewater manholes shall be constructed as detailed on the standard drawings.
- 5.3.3.3. Outlet pipes from manholes shall have a soffit level 20mm lower than that of the lowest incoming lines, plus 5mm per 10 degrees of angle change between the two lines.
- 5.3.3.4. Where a branch line is less than 50m in length and has a maximum of four service connections it may be terminated with a 150mm blank cap adjoining the terminating 'Lunden Junction' or similar.
- 5.3.3.5. Each line connecting to a manhole structure shall have two approved flexible joints within 750mm of the manhole wall.
- 5.3.3.6. The throats of all manholes shall be painted red with a suitable paving paint. The covers can remain unpainted.
- 5.3.4. Manhole Safety Grille**
- 5.3.4.1. Council, at their discretion, may require the fitting of a Hynds Caliber safety grille (or a Council approved equivalent) within new and existing wastewater manholes.
- 5.3.5. Service Connections**
- 5.3.5.1. No more than one lot may be served by a single 100mm connection.
- 5.3.5.2. Where two or more lots are to be served by the same connection to the main, a sub-main shall be installed with a minimum diameter of 150mm terminating with a manhole. This sub-main shall become part of the public reticulation.
- 5.3.5.3. All service connections to the site boundary shall form part of the public system. The Council shall be responsible for the maintenance and operation of the laterals to either the boundary of the lot or to the last public manhole.
- 5.3.5.4. The connection point of the laterals to each lot shall be sited, where possible, on the low side of any proposed sites that have a cross fall greater than 1.0m.
- 5.3.5.5. The cover to all pipes from finished ground level shall be a minimum of 600mm or as per the pipe manufactures specifications, which ever is the


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greater. Where this minimum cover cannot be achieved an approved concrete cover slab or other approved measures may be authorised by the Council.

- 5.3.5.6. If a connection point between 600 and 1200mm depth (in relation to the building site) cannot be obtained beyond the designer's control due to contour and available pipe grade, the restriction shall be identified by way of a Consent Notice on the Title, and the appropriate floor level shall be stated.
- 5.3.5.7. Any service connections shall be laid true to line and grade at right angles to the main line, and may be connected as specified in the standard drawings. Where manholes are conveniently located, service connections shall be directed to them. The maximum length of service connections shall be 6.0m from the main line to the site boundary.
- 5.3.5.8. Service connections shall be brought to between 600mm and 1200mm of the final ground surface. For sites where substantial improvements can be made to the drainage alignment by the deletion of the Lunden Junction at terminal ends of lines, a level invert connector may be authorised for use in lieu of a Lunden Junction.
- 5.3.5.9. Where the main line is deeper than 4.0m, service connections will not be permitted directly to the line.
- 5.3.5.10. Service connections direct to pumpstation pressure rising mains are not permitted.

5.3.6. Bedding and Protection

- 5.3.6.1. The pipe bedding shall be in accordance with the *Concrete Pipe Selection & Installation Guide* by the Concrete Pipe Association of Australasia and the manufactures guide to installation of PVC pipes.
- 5.3.6.2. All drainage lines shall be designed and constructed to withstand all the likely loads they will be subject to during the life of the system. The load carrying capacity in relation to their installation conditions shall be calculated in accordance with the relevant Standards.
- 5.3.6.3. For drainage lines laid at grades steeper than 10% (including service connections) the bedding and surround material shall be of a low-grade weak concrete. For lines exceeding 20% in grade, anchor blocks shall be located at pipe joints, not exceeding 6m spacing.

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5.3.6.4. Where public mains are located within rights of way or private access legs all other utility services such as power, telephone and gas shall be located at least 300mm clear of the pipe.

5.3.7. Pipe Materials

5.3.7.1. All public pressure mains and fittings shall be designed and manufactured to Class D (PN12) working pressure or better, unless otherwise approved. Any rising main will be subject to specific design consideration, which are required to be submitted to Council for review.

5.3.7.2. Wastewater main construction material shall be as defined in Council's Approved Materials Schedule.

5.3.7.3. All pressure fittings such as tees, tapers, blank caps, bends and gibaults shall be manufactured of Cast or Ductile Iron to the relevant standard with approved external protection. Approved uPVC fittings will be permitted when not in direct contact between two cast iron or ductile iron fittings. Refer to the Council's Approved Materials Schedule (Appendix J - AM6).

5.3.7.4. Adjacent "specials" and fittings shall be flanged and bolted together to form a single unit. Stand-alone fittings shall be, where possible, socket jointed to avoid the use of gibault jointing".

5.3.7.5. All joints on pipes and fittings shall comply with the Council's Approved Materials Schedule.

5.3.7.6. The minimum radius on which pressure mains may be installed shall be in accordance with the manufacturer's recommendation.


5.3.8. Pump Stations

5.3.8.1. All pump stations shall be in accordance with Appendices I4.


5.4. TESTING AND ACCEPTANCE

5.4.1. On-site Wastewater Disposal Design and Construction

5.4.1.1. On-site wastewater disposal systems must be designed and constructed in accordance with Waikato Regional Council rules and either ANZS 1547:2012 or Auckland Regional Councils Technical paper 58 (TP58).


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- 5.4.1.2. Properties within the area of influence must connect to the Council's reticulated wastewater system unless an on-site wastewater dispersal system is approved by the Council's Manager of Water Services.
- 5.4.1.3. Before new work is connected to the existing public wastewater system it shall be inspected and tested by the applicant's engineer in the presence of the Council's Service Provider.
- 5.4.1.4. The developer/ applicant shall supply all necessary testing apparatus.
- 5.4.1.5. Prior to the acceptance test, the applicant's representative shall supply the Council with As Built drawings of the work to be tested. Final certification of the work will be required prior to the issue of the TCDC Engineering Release Certificate.
- 5.4.1.6. All pipes shall pass a low-pressure air test and require approval by Council. Field low pressure testing must be carried out as described in NZS 4404:2010, Appendix C2.
- 5.4.1.7. QA documentation confirming testing shall be included with the As Builts.
- 5.4.2. Pressure Test Criteria**
- 5.4.2.1. Before fittings and anchors are covered, each section of main together with all fittings shall be visually inspected and pressure tested by the developer/ applicant or their representative in the presence of the Council Representative. The test shall be carried out, and all necessary apparatus supplied, by the developer/ applicant.
- 5.4.2.2. Field hydrostatic pressure testing must be carried out as described in NZS 4404:2010 Appendix C3.

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6.1. SCOPE

- 6.1.1.** This part of the Code of Practice sets out the engineering requirements for the stormwater drainage associated with subdivision and land development projects, including performance standards, methods for design and construction, and materials specifications. The criteria are to be used irrespective of whether the network created on a site is to be accepted as part of the public network or to remain under private ownership and control.


6.2. PERFORMANCE STANDARDS

6.2.1. General

- 6.2.1.1. A stormwater reticulation and disposal system shall be provided that can be economically maintained and is adequate to safeguard people from injury or illness and to protect property and the natural environment from damage caused by surface water shall be provided.
- 6.2.1.2. Council, with input from Community Boards, has developed and agreed on the Levels of Service to be provided for each stormwater scheme, which are within the Council's Areas of Benefit. All urban areas shall discharge as specified by the Levels of Service for each community (refer to Table 6.11).
- 6.2.1.3. Stormwater generated by a property is required to be disposed of within the boundary of that property unless there is sufficient capacity within the network and discharge to the network is specifically authorised by Council.
- 6.2.1.4. Stormwater disposal through soak pits is permitted provided the applicant can demonstrate that:
- a. They can be economically maintained
 - b. The long-term soakage capacity is adequate
 - c. Soak pits are assessed and designed as per NZ Building Code E1/VM1 or as otherwise consented by Council's Development Engineer.

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- 6.2.1.5. A stormwater disposal system which incorporates detention ponds to minimise the impact of surface water runoff is permissible where authorised in Ward Specific Requirements (refer Table 6.11), provided alternative arrangements do not satisfy the requirements, and that these details are included in the resource consent application.
- 6.2.1.6. Stormwater Detention Basins are to be self-draining without the use of pumping equipment and are not permitted to permanently hold water or be used as a water feature. Detention basins are to be adequately landscaped and constructed to be economically maintained unless specifically approved otherwise.
- 6.2.1.7. Stormwater Retention Basins are not permitted unless demonstrated to be deemed necessary and shall be constructed with a controlled engineering outflow. Retention basins are to be adequately landscaped and constructed to be economically maintained.
- 6.2.1.8. All stormwater reticulation and disposal systems are to be constructed to convey surface water to an approved outfall, by means of gravity flow wherever possible.
- 6.2.1.9. Where pipes or lined channels are used, the systems shall avoid the likelihood of blockages, leakage, erosion, and penetration by roots or the entry of groundwater and shall be located to avoid the likelihood of superimposed loads of normal ground movements.
- 6.2.1.10. Self-cleansing velocities (minimum of 0.65m/s) are to be maintained within reticulation systems.
- 6.2.1.11. Surface flows on carriageways are to be controlled in order to enable safe and comfortable vehicle and pedestrian access across and along road reserves.
- 6.2.1.12. Stormwater systems shall be designed and installed to cater for full development in the catchment upstream of the subject site. Downstream effects are to be fully addressed.

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6.2.1.13. Where any public main passes through privately owned residential, commercial or industrial complexes then the main should be installed outside the building envelope. An easement shall be provided in favour of the Council to allow access and repairs to the main at all times.

6.3. MEANS OF COMPLIANCE

6.3.1. General

6.3.1.1. All primary land drainage systems shall be piped (where required by the Specific Ward requirements) unless otherwise approved, or where the runoff constitutes an existing natural perennial stream.


6.3.1.2. The design events for which the stormwater systems shall be designed are specified in Table 6.11.

6.3.1.3. The stormwater system shall be constructed in accordance with Table 6.11, with the freeboard to habitable floor as in Table 6.1:

Table 6.1 Freeboard to Habitable Floor

Catchment	Minimum Freeboard
Less than 1 hectare	150mm
1 to 5 hectares	200mm
5 to 20 hectares	300mm
Greater than 50 hectares	500mm


6.3.1.4. The design of the stormwater system shall generally be in accordance with the runoffs derived from the Rational Method for catchments less than 500 hectares and by the Modified Rational Method for catchments greater than 500 hectares. Other methods may be used to verify the results from the Modified Rational Method.

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- 6.3.1.5. Stormwater Management Plans for some areas have been prepared. Rainfall data and design parameters are to be consistent with these plans. Refer to Council's Water Services Manager for these Plans.
- 6.3.1.6. Systems shall be designed to cater for the peak design flow, without surcharge, based on a "Colebrook - White" pipe roughness coefficient $K_s = 1.50$ for pipes up to and including 1000mm diameter: and $K_s = 0.60$ for larger piped systems.
- 6.3.1.7. Lined channels shall be designed with the following Mannings 'n' as in Table 6.2:

Table 6.2 Lined channel/Mannings 'n'

Lining Material	Mannings 'n'
Dressed timber, joints flush	0.011
Sawn timber, joints uneven	0.014
Cement plaster	0.011
Concrete, steel troweled	0.012
Concrete, timber forms, unfinished	0.014
Untreated gunite	0.015 - 0.017
Brickwork or dressed masonry	0.014
Rubble set in cement	0.017
Earth, smooth, no weeds	0.020
Earth, some stones and weeds	0.025.025 - 0.0300.033 - 0.040
Natural river channels:	0.075 - 0.150
Clean and straight	0.075
Winding, with pools and shoal	0.090 - 0.120
Very weedy, winding and overgrown	0.150


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6.3.2. Resource Consents

- 6.3.2.1. Resource consents may be required from Waikato Regional Council for the diversion and/or discharge of stormwater. The applicant is responsible for making the necessary application and obtaining such consents before TCDC will accept the completed works. The applicant shall consult with TCDC's Development Engineer prior to lodging such consent applications.
- 6.3.2.2. All developments within catchments where TCDC have discharge resource consents will need to comply with any of the conditions that may apply to the proposed drainage system. In addition, any Catchment Management Plans' recommendations must be adhered to.

6.3.3. Gravity Mains Reticulation Layout

- 6.3.3.1. The cover to all pipes from finished ground level shall be a minimum of 600mm or as per the pipe manufacturer's specifications, whichever is the greater. Where this minimum cover cannot be achieved an approved concrete cover slab or other approved measures may be authorised by Council.
- 6.3.3.2. All inlets (other than service connections) to the primary piped reticulation in urban areas where the pipe is greater than 450mm, shall be either through a sump, or a headwall with a vertical grating.
- 6.3.3.3. Outlets may be through a headwall with a hinged horizontal grating and appropriate energy dissipation for the outlet so that no soil erosion will take place. Outlet grates shall be hinged in urban areas where the pipe is greater than 450mm to allow flow pressures to open if the grates become blocked. Care is needed to ensure flows will not surcharge upstream of blocked grates.
- 6.3.3.4. Flood gates shall be provided on the downstream end of all pipes discharging into the ocean, tidal channels or natural waterways where backflow is a potential problem or where the discharge pipe is 600mm diameter or greater.

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6.3.3.5. Secondary overland flowpaths shall generally be aligned alongside the road network and reserve areas. Where such flowpaths are required to cross private property an appropriate easement in favour of the Council shall be provided to ensure its protection. It is preferred that secondary flowpaths on private property should be on accessways.

6.3.3.6. Primary stormwater shall be piped.

6.3.3.7. Building over public pipe systems is prohibited.

6.3.4. Open Drainage Systems


6.3.4.1. Where natural open stream systems or formed drainage channels are to be incorporated in the land drainage system, they shall be of sufficient width to contain the full design flood flow together with the freeboard given in Table 6.1 and to ensure protection from unacceptable scouring. Sufficient access for maintenance shall be provided.

6.3.4.2. Open drainage systems may be subject to Waikato Regional Council resource consents.


6.3.4.3. The flow characteristics of natural open stream systems shall be based on the likely long term stream condition. Consideration shall be given to the density and suitability of vegetation and due account shall be taken of blockages under peak flood conditions.

6.3.5. Manholes

6.3.5.1. Accessible inspection chambers are to be provided at all changes of grade, direction and pipe size, and shall not exceed 90m spacing for pipelines up to 1000mm diameter. For pipelines of 1000mm diameter or greater, the spacing of manholes may be extended up to 200m. Each branch line shall join a main line at a manhole junction.

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- 6.3.5.2. Manholes shall be located on all drainage lines and at the end of all terminal lines greater than 50m in length.
- 6.3.5.3. All stormwater manholes shall be constructed as detailed on the standard drawings.
- 6.3.5.4. Outlet pipes from manholes shall have a soffit level 20mm lower than that of the lowest incoming line, plus 5mm per 10 degrees of angle change between the two lines. Specific hydraulic design may be required for pipes where head losses are critical.
- 6.3.5.5. Manholes are to be pre-cast concrete conforming to NZS 4058 for concrete pipe construction minimum Class I with an internal diameter of 1050mm. These may be installed on pipelines up to 600mm diameter except for diameters over 500mm where the pipelines deviate more than 20° from the centre line of the outgoing pipeline. In those cases specific design of the benching may be required to ensure full efficiency of the outgoing pipeline. Alternatively, with pipelines with large angles of deviation, approval may be given for the manhole to be sited on a straight outlet with a series of factory-made mitred bends immediately downstream and are to be used on pipelines up to and including 600mm diameter.
- 6.3.5.6. All wall joints in manholes shall be epoxy mortared on both sides. A rubber/bitumen sealing strip shall be applied between the concrete faces. The joint between the wall and concrete lid shall be sealed with an epoxy mortar or as approved by the Engineer. The mixing and application of the epoxy mortar shall be in conformity with the manufacturer's directions to provide a watertight and root proof structure to the satisfaction of the Engineer.
- 6.3.5.7. Manholes up to 2400mm deep shall be constructed of a single riser where possible. A single 300mm riser may be used to make up final ground levels where necessary. Where manholes exceed 2400mm in depth, the base riser shall be a 2400mm riser topped with a single riser to final ground level. Where manholes exceed 5000mm in depth, they shall be built using two 2400mm risers topped with a single riser to final ground level.

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6.3.5.8. Manholes shall be fitted with precast externally flanged bases. Where approved by the Engineer a cast in situ base using pre mixed 25 MPa concrete (with concrete support) may be used instead. The riser must penetrate a minimum of 75 mm into the wet concrete. The concrete is to be compacted using a mechanical insertion vibrator.

6.3.6. Deep Manholes

6.3.6.1. Any manhole in excess of 4000mm deep shall require specific approval of the Engineer. All such manholes shall be a minimum of 1200mm diameter, fitted with step irons, holding clamps and 600mm opening lid covers and frames. The benching shall be so arranged as to permit easy access of the bottom step by maintenance staff. Where the diameter of the outgoing pipeline exceeds 450mm diameter, steps and hand-holds may be required to be provided to access the invert of the pipe.


6.3.7. Stormwater Manholes on Larger Pipelines

6.3.7.1. Manholes on stormwater pipelines 600mm or greater shall be specifically designed. Particular care is to be paid to the issue of entry, outlet, and bend losses in the manhole.


6.3.8. Hydraulic Flow in Manholes

6.3.8.1. In addition to the normal pipeline gradient all manholes shall have a minimum drop of $20 + 5\text{mm per } 10^\circ$ of the angle of change of flow within the manhole. Manholes on pipelines greater than 1000mm diameter shall have the drop through the manhole designed to compensate for the energy lost due to the flow through the manhole at the design radius. Pipe inlets should at least match soffits with the outlet at manholes.

6.3.8.2. Drop connections on stormwater manholes up to and including 450mm diameter may have an open 'cascade' inside the manhole provided the height of drop does not exceed 1000mm and benching is hard finished 40 MPa concrete.

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- 6.3.8.3. Drops through stormwater manholes of more than 450mm diameter shall be avoided if possible, and if unavoidable shall be subject to specific design and approval. Cascade falls may be permitted subject to the benching being hard finished 40 MPa concrete rather than plaster, and flow into the manhole is directed through a deflector unit.
- 6.3.8.4. Specific design may be required for situations where pipe velocities are high, or downstream conditions will limit exit velocity from the manhole, and where manhole depths are relatively shallow.
- 6.3.9. Connections to Manholes**
- 6.3.9.1. Connections to manholes shall be effected by the use of power drills or saws. **The practice of smashing holes in the liner using hammers is prohibited.** All entry points shall be kept to a minimum diameter to accommodate the incoming manhole short. All holes shall be restored using epoxy mortar, not ordinary sand cement mortar.
- 6.3.9.2. Catchpits should be piped directly to a manhole, except that if the stormwater drain is greater diameter than 1200mm and a manhole is not conveniently located, the Catchpit leads may be saddled direct to that drain. A direct connection of the Catchpit lead to a stormwater drain with a diameter between 600mm and 1200mm diameter will only be permitted in exceptional circumstances, and at the Council's discretion.
- 6.3.9.3. Branch lines 300mm diameter and smaller may be saddled on to pipelines 1200mm diameter or larger, providing a manhole is supplied on the branching line within 5m of the main line.
- 6.3.9.4. The saddle shall be effected by use of drilling or power saw cutting of the principal pipe at a point no more than 30 degrees of arc below the soffit of the pipeline. An approved saddle with a root proof seal is to be carefully epoxied onto the main pipe and the inside bore of the principal pipe wiped smooth. No epoxy is to be dropped and allowed to remain on the invert of the principal pipeline.

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6.3.10. Manhole Lids, Covers and Frames


- 6.3.10.1. Standard manhole covers and frames shall have a nominal 510mm opening, be heavy duty, manufactured from a strong and durable material and be of a design approved by the Engineer.
- 6.3.10.2. Grilled manholes, flat or domed, may be installed in low areas to catch surface water. Domed lids are preferred as they have fewer tendencies for blockage. Where a grilled cover is used, a sump with a minimum depth of 500mm is required to trap coarse sediment.
- 6.3.10.3. Heavy duty lids and frames are to be used in all instances.
- 6.3.10.4. The throats of all manholes shall be painted blue with a suitable paving paint. The covers can remain unpainted.

6.3.11. Manholes in Soft Ground

- 6.3.11.1. Where a manhole is to be constructed in soft ground, the area under the manhole shall be undercut down to solid and back-filled with suitable hardfill to provide an adequate foundation for the manhole base.

6.4. CATCH-PITS

- 6.4.1. Catch-pits (including back entry catch-pits) shall be constructed as on the standard drawings. Single and double catch-pits only shall be installed. Catch-pits shall be fitted with grates and frames.
- 6.4.2. The maximum capacity of a single sump shall be taken as 301/s and that of a double sump as 501/s.
- 6.4.3. Catch-pits shall be designed to take at least the 10% AEP design runoff.
- 6.4.4. Catch-pits shall generally be located as follows:

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- a. On roads having a carriageway width up to and including 10m, a maximum channel run of 125m. On all roads with a carriageway width greater than 10m, a maximum channel run of 90m.
- b. At all valley positions a double side entry sump is required.
- c. As required for catchment areas.

6.4.5. Catch-pits shall be connected to the primary stormwater system by a pipe of at least 225mm diameter to an adjacent manhole.

6.4.6. Super Modified Catchpits

6.4.6.1. Super Modified Catchpits shall be installed where the gradient exceeds 1 in 20 or where there is a high possibility that a double catchpit is unable to manage the inlet flows equivalent to a 10% AEP event (refer to the standard drawings).


6.4.7. Service Connections

6.4.7.1. Where service connections are approved, each residential lot shall include a lateral of at least 100mm diameter, which shall be extended from the main reticulation system to terminate at a minimum distance of 10m within the main body of the lot. Larger diameter service connections may be required for multi-unit for industrial.


6.4.7.2. Service connections shall be laid true to line and grade at right angles to the main line in a manner acceptable to Council.

6.4.7.3. The connection point of the laterals to each lot shall be sited, when possible, in a location that will not reduce the building area available.

6.4.7.4. The connection point of the laterals to each lot shall be sited, when possible, on the low side of proposed sites having a cross fall greater than 10m.


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- 6.4.7.5. Service connections shall be brought to between 0.6m and 1.2m of the final ground surface. Connections should be marked with stakes - either tied with detector tape or stakes in contact with the end caps, or with an identified concrete slab.
- 6.4.7.6. When the line is deeper than 4m, service connections will not permitted directly to the line.
- 6.4.8. Inlet and Outlet Structures**
- 6.4.8.1. Approved structures shall be constructed at the inlets and outlets of pipelines. Structures shall be specifically designed to fit in with their natural surroundings.
- 6.4.8.2. Gabions and rock lined structures or driven or drilled piles and whalers may be acceptable provided that the structure has the necessary structural strength to meet long term durability.
- 6.4.8.3. Inlets shall be designed and constructed to provide efficient entry to the pipeline, minimise damage to surrounding ground and provide adequate and safe access for maintenance staff in the event of blockage. In particular instances, the Council may require pedestrian or even equipment access to the inlet to be provided and the installation of platforms across the inlet to permit cleaning under storm conditions.
- 6.4.8.4. Where a culvert is used across a watercourse to provide private vehicular access - driveway, private way or joint owned accessway - the whole structure shall remain a private asset.
- 6.4.8.5. Secondary overland flowpaths from all inlet structures shall be provided for flows greater than 200l/s.
- 6.4.8.6. All inlets to pipelines greater than 600mm diameter in urban areas require a galvanised steel safety grille with a maximum clear gap of 100mm. Inlet grilles shall be fitted at a flat grade to promote self-cleaning under high flow

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conditions. They shall have sufficient weight to prevent children lifting them aside. Where required by the Council, the grille shall be fitted with a lockable entry gate contained within the grille.

- 6.4.8.7. Inlet grilles shall be designed so that the grille bars are laid on the vertical plane and the exterior of the grille presents a smooth surface to permit easy cleaning either by hand or machine. Bar spacing shall not exceed 100mm. The supporting structure shall be contained on the inside of the grille to avoid it being damaged during cleaning. Web type grilles will not be permitted. Where required by the Council, the inlet shall be fitted with a secondary vertical inlet to facilitate operation of the inlet in the event of grille blockage.
- 6.4.8.8. In some cases, where the Council deems that the upstream flows may carry high loads, a tertiary and secondary screen may be required upstream to minimise debris loadings on the primary screen within the inlet structure. Such screens shall be specifically designed. Where the screens are to be located in a public reserve the screens are required to be designed and constructed to reflect safety, hydraulic and aesthetic considerations.
- 6.4.8.9. For outlets, provision must be made for energy dissipations unless it is demonstrated by the developer/applicant that outlet velocities and soil conditions are such as to make this unnecessary. The design shall achieve the minimal outlet velocity to preclude downstream scour of the channel and side banks, and address protection of the outlet around the outlet and the opposite bank.
- 6.4.8.10. Specific consideration must be given to provision for adequate fish passage where necessary.
- 6.4.8.11. The direction of the discharge shall be aligned with the natural downstream flow so as to prevent erosion of the opposite bank.

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6.4.9. Bedding and Protection

- 6.4.9.1. The pipe bedding shall be in accordance with the Concrete Pipe Selection & Installation Guide by The Concrete Pipe Association of Australia and the manufactures guide to installation of PVC pipes.
- 6.4.9.2. All drainage lines shall be designed and constructed to withstand all the likely loads they will be subject to during the life of the system. The load carrying capacity in relation to their installation conditions shall be calculated in accordance with NZS/AS 3725:1989 Loads on Buried Concrete Pipes and AS 2566:1998 Buried Flexible Pipelines, where appropriate.
- 6.4.9.3. For drainage lines laid at grades steeper than 10% (including service connections) the bedding and surround material shall be of a low-grade (7MPa) weak concrete. For lines exceeding 20% in grade, anchor blocks shall be located at pipe joints, not exceeding 6m spacing.
- 6.4.9.4. Where public drains are located within rights of way or private access legs, all other utility services such as power, telephone and gas shall be located 300mm clear of the pipe.

6.4.10. Pipe Materials

- 6.4.10.1. Land drainage reticulation construction material shall be as defined in the Council's approved Materials Schedule.
- 6.4.10.2. All public stormwater pipes shall have a minimum diameter of 300mm with the exception of catch-pit leads which may be 225mm.
- 6.4.10.3. All joints on pipes and fittings less than 1050mm in diameter shall be factory made flexible type complying with the Council's approved Materials Schedule.

6.4.11. Connection to Council's System

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6.4.11.1. Only an approved contractor under Council supervision may make connections to Council's system with the appropriate approvals in place.

6.4.12. Testing and Acceptance

6.4.12.1. Prior to acceptance of the completed stormwater system, the applicant's representative shall have supplied the Council with As-Built drawings as per the Section 1 requirements of this document, including any overland flowpaths and open channel systems together with certification.


6.4.12.2. The tests for stormwater systems shall be a visual inspection of manholes and lines, inspection of secondary flowpaths, and a check on open water courses at the upstream and downstream boundaries.

6.4.12.3. The Council may require each manhole structure to be tested in accordance with NZS 4452.

6.4.12.4. The effectiveness of the channels and sump shall be tested with flooding. Any ponding of water in the channel greater than 3mm under a 3m straight edge shall render the work unacceptable.

6.4.12.5. All pipelines 225mm and greater internal diameter shall be inspected internally with CCTV using pan and tilt cameras and the results recorded on DVD. This shall be done in accordance with the current version of the NZ Pipe Inspection Manual. A copy of the DVD is to be provided to Council along with the As-Builts in accordance with Council's requirements. Pipelines of 1200mm and greater internal diameter may be inspected manually, at the discretion of the Council.

6.4.12.6. Final testing will not be carried out until approved As-Builts have been received.

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6.4.13. Counterfort and Bored Subsoil Drains

6.4.13.1. Counterfort and/or bored drains that are installed for stability reasons shall be constructed in such a manner as to provide satisfactory access for future maintenance purposes. Unless required otherwise at the time of Building Consent, these drains shall terminate at a manhole incorporating a sediment trap and be connected to and form an integral part of the reticulated public system. The drains shall be detailed on the As-Builts.

6.4.13.2. In the case of counterfort drains, the upper end of the perforated pipe shall be returned to the ground surface terminating in a removable screwed cap, and marked, to facilitate future flushing.


6.4.13.3. Where the Engineer determines that the counterfort and/or bored drains will have no effect beyond the immediate site in which they are installed, the future maintenance shall be the responsibility of the site owner, and this shall be recorded on the Title by a Memorandum Encumbrance.

6.4.13.4. All other subsoil drains and drains behind retaining structures shall terminate in a catchpit or approved cleanable sediment trap before connection to the public system.

6.4.14. Coastal and Cliff-top Discharges

6.4.14.1. Stormwater from roofs, driveways and any impermeable surfaces shall not be discharged over the top of cliffs. Discharge from impermeable surfaces on cliff top sections shall be disposed of by one of the following procedures:

- a. Discharging into a formal Council stormwater system where available.
- b. Discharging into an existing open channel system that does not discharge over a cliff face.
- c. Discharging through a lined inclined bore discharging to an energy dissipating structure at the base of the cliff.

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d. An alternative method approved by Council.

6.4.14.2. Where piped/inclined bore discharges at coastal cliff faces are to be utilised, pipe liners shall be polyethylene SDR 17. The energy dissipater/outfall at the base of the cliff shall be constructed to blend in with the natural character of the coastline and shall be located on a low use area of foreshore where there is minimal risk of erosion from the discharge. The developer/applicant shall obtain any necessary consent from Waikato Regional Council.

6.4.14.3. Stormwater discharge onto or through all council-owned or controlled reserves shall be prohibited.

6.4.14.4. Construction of private discharge systems shall be subject to a Building Consent; the Building Consent application must include the following:


- a. Cross-sectional drawings extending at least 15m beyond the proposed pipe inlet and outlet positions
- b. Confirmation from a Geotechnical Engineer that the site is suitable in relation to cliff and land stability, and also that the proposed outfall will not cause scour or instability in the vicinity of the outfall.
- c. Design details and calculations for peak flows and pipe capacity, including any allowances for pipe inlet and outlet losses.
- d. Written approval of the owner and any other land affected by the alignment of the pipeline and in the case of an Esplanade Reserve or other land vested in the Council, the written approval of Council's relevant Area Manager.
- e. Sufficient details, including photographs, of the cliff face and shoreline at the outfall to show whether the outfall will have a visual or any other impact at and below the outfall.

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6.4.15. Detention and Treatment Devices

6.4.15.1. General

- 6.4.15.1.1. Ponds, wetlands, rain gardens and riparian planting shall provide for public amenity and wildlife habitat as well as for stormwater detention and/or treatment. Stormwater treatment devices will not be treated as stand alone pieces of infrastructure but are considered as an integral part of the social and environmental community. Features such as irregular pond shapes, islands, bird perching logs, shorelines which have a natural appearance and recreation facilities such as boardwalks will all help in achieving this aim. It is essential that the matter of pond design be dealt with as early as possible in the development process. This is to ensure that provision is made for the appropriate size of utility reserve to incorporate a pond or other device complying with this document and Stormwater Treatment Devices (TP 10).
- 6.4.15.1.2. Stormwater detention and treatment devices shall be designed for minimum long-term maintenance requirements, including provision for forebays and sumps for coarse sediment settling and a separate gross pollutant trap for floatables.
- 6.4.15.1.3. The design shall generally be in accordance with the requirements of the Auckland Regional Council Technical Publication 10 - "Stormwater Treatment Devices" (TP 10) except as amended below.
- 6.4.15.1.4. Where the requirements of TP 10 and those detailed below are not practicable, application may be made to the Council to vary those requirements.
- 6.4.15.1.5. A complete set of stormwater device calculations and design drawings shall be submitted for approval prior to construction.
- 6.4.15.1.6. A geotechnical report addressing general ground stability of the device under all operational conditions, slope and necessity for lining to prevent piping may be required by the Council. When required it shall be carried out by an Engineer proficient in Geotechnical Engineering.

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6.4.15.1.7. Where ponds, wetlands and other devices are to be included by Council as part of the public network they shall be sited on separately titled utility lots vested in Council. In some cases these lots may be co-joined to recreation reserves but shall not be included as part of the reserve for any purpose.

6.4.15.2. **Ponds and Wetlands**

6.4.15.2.1. The use of retaining walls either above or below the normal operating level of the pond or wetland will not generally be approved by the Council, as the use of retaining walls outside the normal operating level of the pond is not considered consistent with the values set out above.

6.4.15.2.2. The maximum water level resulting from the operation of the pond or wetland must be contained completely within the drainage reserve area unless otherwise approved by the Council.


6.4.15.2.3. The external slopes of the pond shall be at a maximum gradient of one vertical to four horizontal (1:4).

6.4.15.2.4. The maximum permanent water depth shall be no more than 1500mm. The maximum depth of any pond shall not exceed 2000mm and no more than 10 percent of the pond area may exceed 1500mm in depth.

6.4.15.2.5. A planted shelf with a slope of one vertical to ten horizontal (1:10) shall be provided around the perimeter of the pond. The shelf shall be a minimum of two metres wide, extending for one metre above and one metre below the normal water level of the pond.

6.4.15.2.6. Internal pond slopes shall be at a maximum gradient of one vertical to three horizontal (1:3).

6.4.15.2.7. At least one sign shall be erected at all stormwater treatment devices, with the location, type and number of signs to be determined in consultation with the Council.

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6.4.15.3. Inlet, Outlet and Manhole Details

6.4.15.3.1. Treatment device inlets, outlets and manholes shall comply with the stormwater inlet, outlet and manhole details.

6.4.15.3.2. Low flow splitters shall generally comprise two manholes: the first to dissipate energy and the second to split the flow. Variations are required to be specifically approved by the Council.

6.4.15.3.3. Outlets shall be located to allow safe access from the bank of the pond without the need for boats. Access to the outlet manhole shall be by way of a secured grille dome of approved size and design.


6.4.15.3.4. Orifice outlets shall be designed with reverse slopes to protect the outlet from floatables.

6.4.15.3.5. Suitable measures for maintenance shall be installed to allow the pond to be de-watered using gravity through the outlet manholes. Manholes shall, as a minimum, have de-watering outlets at 600mm below the normal operating level and at the base of the pond.

6.4.15.3.6. De-watering pipes in the manhole shall comprise short lengths of SN 16 uPVC pipe with a puddle flange on the exterior of the manhole wall and a screwed cap on the inside of the manhole. The cap shall protrude no more than 150mm into the manhole.

6.4.15.4. Manhole Safety Grille

6.4.15.4.1. Council, at their discretion, may require the fitting of a Hynds Caliber safety grille (or a Council approved equivalent) within new and existing stormwater manholes.

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6.4.16. Planting

- 6.4.16.1. Site specific planting plans and specifications are to be submitted for approval, and planting carried out, in accordance with the requirements of Section 8 of this Code - Parks and Reserves.

6.4.17. Fencing and Maintenance Access

- 6.4.17.1. Access shall be provided for maintenance of any stormwater treatment device including the removal of sediment. This applies particularly to the forebay of a pond wetland which may require more frequent access by excavation equipment. Refer to standard drawings.


- 6.4.17.2. The width and gradient of the vehicle access routes shall be adequate for maintenance vehicles and machinery to reach the treatment device base and immediate environs.

- 6.4.17.3. Vehicle access routes shall have adequate measures against vehicle erosion of the surfaces. This may be achieved by the use of appropriate erosion matting below the surface of the grass or reinforced grass.

- 6.4.17.4. The engineer design plans shall detail the location of maintenance access points and routes.

- 6.4.17.5. Fencing shall be installed where required for health and safety reasons as directed by the Council. The criteria used in the determination shall include the following:

- a. proximity to dwellings
- b. proximity to schools, kindergartens, child care centres and similar
- c. proximity to walkways or roadways
- d. pond use

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- e. pond depth
- f. gradient of approach slopes

Council prefers to have complying unfenced ponds rather than non-complying fenced ponds.

6.4.17.6. Gates are to be provided for access to any fenced treatment device. The overall width of the gateway shall allow for access of maintenance vehicles and shall have a minimum opening width of three metres.

6.4.17.7. Fencing and gates shall be hot dipped galvanised.

6.4.17.8. Gates are to be fitted with hasp and latch and a standard padlock.


6.4.18. Maintenance Manuals

6.4.18.1. A specific maintenance manual is required for each stormwater device. A draft maintenance manual is to be submitted with the final design for approval. The maintenance manual shall include at least the following:

6.4.18.2. General Information:

- i. Location plan
- ii. Site plan
- iii. Construction plans
- iv. Planting plan
- v. Data and calculations summary
- vi. Resource consents
- vii. Geotechnical report from Engineer specialising in geotechnics
- viii. Fencing details
- ix. Bond information (terms and conditions) for maintenance
- x. Lists of any assets such as parks furniture and signs

6.4.18.3. Maintenance Requirements:

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- i. Proposed frequency of maintenance
- ii. Maintenance log
- iii. Estimated O&M costs (dated) at the time of the manual being written
- iv. Pond de-watering method
- v. Planting maintenance - timing and methods
- vi. Weed maintenance and control
- vii. Sediment removal timing and methods
- viii. Structural maintenance
- ix. Inlet and outlet maintenance
- x. Pest inspections and control


6.4.18.4. The approved final maintenance manual is to be submitted on completion of the pond construction and shall include As-Built details in addition to those items listed above.

6.4.19. Approvals

6.4.19.1. On completion of the stormwater works an As-built plan conforming to the Council requirements is to be prepared.

6.4.19.2. The following checklist shall be used as part of the sign-off process for treatment devices:

- a. Inspection After Completion of Earthworks: - On completion of earthworks and prior to landscaping and the construction of any fences a site meeting shall be held between the Developer/Applicant's Representative and the Council's Representative. The purpose of this meeting is to confirm adherence to the submitted landscaping plans and to agree on any amendments.
- b. On completion of construction the land/pond shall be vested in or have an easement in favour of the Council and the following shall be confirmed / provided:

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- i. Device constructed in accordance with the construction plans and specifications.
 - ii. Planting carried out in accordance with plans and specifications, or where planting has not been affected, planting plans submitted and approved with proposed planting time and a performance bond covering the work lodged.
 - iii. Geotechnical certification in the form of producer statements (if required).
 - iv. As-Built plans and maintenance manual submitted and approved by Council.
 - v. Legal documentation of vesting completed where applicable.
- c. On completion of the maintenance period, which shall be 18 months for pond planting (unless otherwise approved by the Council) the following shall be confirmed/provided:
- i. Maintenance logs submitted for maintenance period.
 - ii. Planting established and maintained in accordance with planting plans.
 - iii. Details for consent sign-over confirmed where applicable.
 - iv. Waikato Regional Council final approval.

6.4.20. Specific Ward Requirements

- 6.4.20.1. Specific Ward requirements for Stormwater & Land Drainage as shown in Table 6.3. These requirements are a minimum and may be increased at the Councils discretion.



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Table 6.3

Specific Ward requirements for Stormwater & Land Drainage		
Community	Function	Requirement
All communities	Ward	
	Properties	<p>Stormwater generated on a property will be disposed of in a managed manner and authorisation of disposal will be required in each case.</p> <p>The on-site system must be capable of carrying a 1 in 10 year rain event and must be maintainable.</p>
All communities	Ward	
	Stormwater Retention Ponds	Permitted. Any pond used as a retention pond or water feature will be subject to Management Plan approval.
	Open Water Courses	Permitted. Subject to Design Constraints and Management Plan approval.
	Kerb Discharge	Not permitted. Unless otherwise specifically permitted.
	Existing stormwater reticulation	Conditional. On existing system's capacity and resource consent conditions.
	New Discharges	Subject to meeting Council's requirements relating to resource consent conditions.
	Proposed Reticulation Design	<p>Primary piped system in all urban areas capable of carrying 5 year (20% AEP) rain event.</p> <p>Culvert in all areas capable of carrying a 20 year (5% AEP) rain event.</p> <p>Open channels and overland flow-path capable of carrying a 50 year (2% AEP) rain event to ensure that such surface water shall not enter buildings.</p> <p>Bridges capable of withstanding a 100 year (1% AEP) rain event.</p>
Global Warming Factor	All stormwater calculation will be subject to a global warming factor of 20%	

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7.1. PERFORMANCE STANDARDS

7.1.1. General

7.1.1.1. Electricity and telephone supplies shall be made available to the main body of each lot.

7.1.1.2. All electrical and telephone reticulation systems are to provide an adequate connection point as recommended by the Network Utility Operator for that service.

7.2. MEANS OF COMPLIANCE

7.2.1. General

7.2.1.1. The design parameters specified in this Standard provide for minimum acceptable system performance over the life of the installation. Detailed designs of networks are to be approved by the relevant Network Utility Operator.


7.2.1.2. Electrical and telephone reticulation systems in new residential subdivisions shall be installed underground.

7.2.1.3. In order to co-ordinate the supply network, the Network Utility Operator shall undertake overall network analysis and approval of the system and, where required, alter the main feeder cable capacities and configurations required for a proposed development.

7.2.2. Electrical Reticulation Layout

7.2.2.1. The point of supply is deemed to be the service pillar, which is usually on the road reserve boundary of the lot.

7.2.2.2. The Network Utility Operator shall determine the point of supply and show it on the Drawings.

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7.2.2.3. Where there is cabling down a jointly owned accessway or a private way, the point of supply is deemed to be the low voltage pillar on the road reserve boundary of the accessway. Any cable or service pillars in this accessway shall be protected by way of easement.

7.2.2.4. Substations and other fixed plant must be installed on unencumbered, obstruction-free sites, and must be located off-street. Where off-street sites are not available, substations may be located on street sites, subject to the approval of the Council.

Substation sites shall be clear of other utility services, such as water, sewerage, stormwater and telecommunications.


7.2.3. Testing and Acceptance

7.2.3.1. The location of cables within the road reserve shall be recorded and kept up to date and be made available for persons working in the road reserve. Scaled As Built drawings for the installed reticulation, including street lighting, shall be submitted to the Council for record purposes upon completion of installation work.

7.2.3.2. In existing roads and vehicle crossings the contractor shall inform the network owner prior to the laying of ducts, so that a record can be made of duct location and depth.


7.2.3.3. Before allowing the new work to be connected to the existing reticulation system, it shall be inspected and tested in the presence of a representative of the Network Utility Operator.

7.2.3.4. Upon completion of the installation work the Network Utility Operator shall forward a written statement to the Council certifying that reticulation is available to the main body of each lot within the completed subdivision. The identity of the network owner/s and operator/s of the new system and the system being connected to (if different) shall be identified.


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8.1. SCOPE

This section of the Standards sets out the engineering requirements for landscape works carried out within reserves and streetscape areas and associated land development projects. This includes all street frontages, parks and reserves, and other public amenity areas. It provides the relevant criteria for performance, specification for design, construction and materials.

This section provides:

- a. The relevant criteria for Council goals and objectives.
- b. Specifications for design, construction and materials.
- c. Details of standard designs.
- d. Developer maintenance details and requirements.

8.2. COUNCIL GOALS AND OBJECTIVES


The Council's objective is to plan for, and provide a network of parks, reserves, beach areas, road berms and road corridors in a manner that meets community needs. All works will:

- a. meet all standards and criteria of the District Plan and any Regional Plan;
- b. meet Health and Safety requirements; and
- c. provide for future development.

8.2.1. Legislative Framework

8.2.1.1. The legislative framework that controls the management of the Council's reserves and streetscapes include the following:

- a. Resource Management Act 1991
- b. Local Government Act 2002
- c. Reserves Act 1977

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- d. Public Works Act 1981
- e. Building Act 1991
- f. Health and Safety in Employment Act 1992
- g. Health and Safety Regulations 1995.
- h. The requirements of this legislation shall be adhered to in any development or works in reserves and streetscapes.

Note: further legislative requirements are detailed in the Appendices of this section.

8.3. LANDSCAPE SPECIFICATIONS


8.3.1. Objective

8.2.1.3. All landscape design of reserves and streetscapes will provide community desired settings that are aesthetically pleasing, safe and enjoyable, incorporating existing natural features, and compliment the district and environment.

8.3.2. General

8.3.2.1. Landscape design for reserves and streetscape spaces is required at all levels of the subdivision and development process, in order to promote the social, economic, environmental, and cultural well-being of communities, in the present and for the future. The landscape component of any subdivision is an integral component and is required to ensure new development is designed to:

- a. enhance and compliment the character and amenity of each development and surrounding neighbourhood;
- b. provide recreation opportunities;
- c. increase the region's biodiversity;
- d. provide areas for social interaction;
- e. contribute to the character, shape and form of the district's townships and surrounding environments.


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8.3.3. Environmentally responsive design

- 8.3.3.1. All landscape developments should seek to optimise long-term community and environmental benefits whilst minimising ongoing maintenance costs, in order to provide for the safe use and enjoyment of the public assets.
- 8.3.3.2. Establish the overall objectives for the landscape design, such as wildlife corridors, the provision of reserves, the connection of open spaces, access to and location of watercourses and wetlands and protection of existing valued vegetation, at the outset and incorporate them into the initial concept for the development. Ensure the subsequent engineering design and works are compatible with these objectives.
- 8.3.3.3. The designer of all reserves and streetscapes that are to be developed as Thames Coromandel District Council assets must possess both experience and qualifications that are relevant to the scope of the project.
- 8.3.3.4. The Design Report must include a design statement that:
- a. shows an understanding of the inherent characteristics and values of the site (e.g. social, cultural, environmental / ecological, economic, historic, recreational), including the existing landform and vegetation;
 - b. outlines the design philosophy and intent;
 - c. confirms compliance with the infrastructure design standards;
 - d. follows safe environmental design outlined in the Crime Prevention Through Environmental Design (CEPTED) guidelines.
- 8.3.3.5. Consideration of where a reserve or streetscape space is proposed should also take into consideration existing land features.

A: Waterways and Wetlands

Where possible the retention and enhancement of natural waterways and wetlands should be an integral part of any development. This provides for opportunities such as; walkways and cycleways along their banks, specific planting themes, and designing streetscapes that feature them.

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Consideration should be given to:

- a. ensuring sufficient space is provided in wetland areas to enable ease of access for pedestrians, cyclists and maintenance machinery.
- b. provision of adequate drainage of paths and grassed areas in these environments.

B: Vegetation


The Council may:

- a. undertake an inspection of existing vegetation on land to be subdivided at the time of the application for subdivision consent,
- b. require that some trees and other existing vegetation deemed to be of ecological importance or significant amenity value e.g. vegetation that provides a visual screen, be protected and retained.
- c. All existing vegetation should be marked on the engineering drawings, including notable examples of trees, the plotting and extent of all tree canopies, out to their drip lines.
- d. All potentially notable/historic trees shall be identified for consideration of retention and protection. Details of these trees and any particular protection measures during construction will be identified.
- e. A Council approved and qualified arborist must undertake any arboricultural maintenance. Any trenching, excavation and filling within the drip line of an identified historic / notable / protected tree must be undertaken by the on-site supervision of a qualified arborist.

C: Historic & Cultural

Identification of, including and where required the protect and/or retention of;

- a. culturally significant areas,

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- b. historic areas,
- c. objects and buildings protected under the District Plan or by other formal/legal means,
- d. those features of importance to the community,
- e. monuments and memorials.
- f. The treatment of archaeological remains discovered during any development or exploration must be in accordance with the requirements of the Historic Places Act and Antiquities Act and any accidental discovery protocol.

D: Natural landforms


Where practicable, protect natural landforms as they not only convey the natural heritage of the site, but also provide landscape features that add to the sense of place and local identity.

8.3.4. Reserves – including Parks and Open Space

- 8.3.4.1. Council has developed reserve management categories which are in use throughout the district.

The categories are;

- a. **Community Open Space** – reserves that serve the wider community, providing unique assets and settings, developed and maintained to a high standard.
- b. **Active Recreation Areas** – primarily designed and managed for a variety of sports and recreational activities, including sports fields, ball courts, skate and youth facilities, or other built recreation facilities, which are maintained to a high standard.

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- c. **Neighbourhood Open Space** – providing open space within neighbourhoods for small-scale ball games, children’s and / or family play.
- d. **Historic / Scenic / Forest / Cultural Reserves** –reserves that have unique features relating to one or more of these points. Access may be limited to walking only, with open space dependent upon the setting.


Full definition of these reserve management categories are detailed in the Reserve Management Plans for each area.

8.3.5. Streetscapes – including Street Plantings and Berms

- 8.3.5.1. Streetscapes applies to grassed areas and street plantings (including trees), in berms and in traffic islands and other planting areas within the public road and public access. It also covers landscaping structures.
- 8.3.5.2. Streetscape design shall have regard for any Council policy on urban design.
- 8.3.5.3. All new and existing designs shall be considered against Council’s criteria on the basis of all options being available to the designer.
- 8.3.5.4. Opportunities for streetscape design are diverse, ranging from specimen tree planting within the standard or altered road berm to planting associated with traffic calming devices and specific landscape features within the development.
- 8.3.5.5. In instances where a road reserve is to be developed and vested in Council the relevant minimum requirements and means of compliance outlined in section 3 of this Code shall apply in addition to the requirements of this section where landscape works are proposed within the road reserve.

a. Minimum Requirements

Streetscape plans shall conform with the requirements of this Code and with New Zealand Transport Agency (NZTA) requirements where the works are adjacent to any Crown owned land administered by NZTA, and any land within a site designated by NZTA in accordance with the Resource Management Act 1991, unless otherwise agreed with the relevant Area Managers.

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8.4. DESIGN PHASE

8.4.1. Objective

8.4.1.1. All design details will ensure that community needs are met, accessibility is enhanced, protection of existing features, low levels of maintenance and the provision of safe and enjoyable settings are provided.

8.4.2. General considerations

8.4.2.1. For all proposed works affecting existing or proposed parks, reserves and beach areas, such as developments, subdivisions and landscaping works, approval is required from the Area Manager.

8.4.2.2. The developer may be required to engage a Landscape Architect and discuss reserve and streetscape concepts with the Council, to ensure that the provision of these areas will satisfy all requirements. It is preferable for this process to begin at a pre-application meeting before applying for resource consent. The need for the engagement of a landscape architect may be determined at the pre-application meeting or at a later stage.


8.4.2.3. The requirements for each reserve and streetscape area may be specific and will depend on what has generally been agreed between the Council and the developer. Refer to the Council's Tree Masterplans.

8.4.2.4. A developer who wishes to contribute to the early development of recreation facilities and/or landscape features on a proposed reserve or streetscape should refer to the Developers Contribution policy in the District Plan.

8.4.2.5. Any reserve or streetscape will only be vested in Council once;


- a. the area is developed to the agreed level;
- b. the 224(c) certificate is signed off although maintenance responsibilities will not be transferred to Council until the maintenance period is completed.

The Council will if necessary carry out further landscape development as and when capital funding becomes available.

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8.4.3. Design Details

- 8.4.3.1. Landscaping plans will be submitted for approval at the same time as other plans, e.g. engineering plans. These shall generally be at a scale of 1:500 for general design and 1:250 for planting and irrigation designs, and show all pertinent information such as the finished levels of the reserve, trees, pathways, playgrounds and other structures, drainage/swales including dewatering areas adjacent to stormwater ponds/marshes, accessways, etc. The location of existing services must also be detailed.
- 8.4.3.2. Landscape plans shall ensure that future maintenance requirements [both short (two summer establishment period) and long term] have been considered when designing layouts to minimise ongoing costs.
- 8.4.3.3. A Landscape Implementation Plan will be submitted outlining methodology, scope of works, features, timing and details of the proposed landscape plans.
- 8.4.3.4. Scale drawings of playgrounds, structures and any other proposed asset not detailed in this Standard will be submitted for approval by the Area Manager.
- 8.4.3.5. Planting plans must have a plant list. This should detail:
- a. both botanical and common names,
 - b. PB and grade size at planting, suitable size dependent on location.
 - c. quantity of individual species,
 - d. staking, planting medium and other planting requirements.
 - e. the source of the plants for revegetation projects
- 8.4.3.6. Planting programs will be developed to optimise growing conditions for plants and trees. Planting is to occur between April and September, wherever possible to maximize plant establishment. Consideration may be given to planting earlier or later depending on seasonal conditions. Approval to plant outside of this timeframe must be obtained from the Area Manager and may require bonding. Refer to 8.12.2.

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8.4.4. Design Considerations

8.4.4.1. Council will use the following assessment criteria when evaluating reserve and streetscape layouts and designs:

- a. Community -The provision of recreational assets that cater for the needs of the surrounding community, as identified by the Council in Activity Management Plans / LTCCP and through analysis of local demographics, residential densities, and activity and leisure trends.
- b. Accessibility -The provision of logical, safe and attractive access from the surrounding community and good linkages within and between reserves and community facilities.
- c. Existing features – protection of existing features (natural, cultural, heritage, vegetation, water).
- d. Use and enjoyment -The provision of assets which are safe, function efficiently, have high aesthetic appeal, and do not cause unjustified nuisance for adjoining landowners.
- e. Maintenance -The provision of durable assets whose on-going maintenance and eventual replacement will not place a disproportionate burden on Council resources.

The following factors should also be considered when designing reserves and streetscapes:


- a. The suitability of the site for its intended purpose;
- b. The extent and nature of the topsoil and subsoil, including their fertility, structure, moisture-holding capacity and drainage;
- c. Existing and proposed levels and their relationship to the levels of the surrounding land and to the provision of underground services;
- d. The presence of contaminants and/or imported materials and how any adverse effects can be accommodated and/or mitigated;

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- e. The stability of the site and how any instability can be accommodated and/or mitigated;
- f. Opportunities for shared use of the land for both recreational and infrastructural purposes, such as drainage easements and stormwater retention in an extreme event (20 year return period or greater), provided the main purpose of the reserve is not unduly compromised;
- g. Access through the area for pedestrians and cyclists;
- h. The relationship of one reserve to another, to avoid duplication.

8.4.5. Utilities on Reserves and Streetscapes

- 8.4.5.1. Any proposed primary utility lines and structures located on reserves or streetscapes must be shown accurately and to scale on the landscape drawings.
- 8.4.5.2. Aboveground structures, such as power kiosks and pump stations, must not be located on recreation reserves. Where there may be hazards created by the placement of utilities on reserves e.g. gas storage, these will have adequate physical separation from recreation reserves.
- 8.4.5.3. Utilities should only be located on other types of reserve where they do not reduce the use of the reserve for its prime purpose or interfere with pedestrian and cycle paths.
- 8.4.5.4. The Area Manager must approve the location of any above-ground structure and underground utilities in any reserve. Wherever reserves are to be provided, the developer shall supply a water connection as specified in the resource consent conditions and show this on the reserve development plan. This shall be installed over the legal boundary into the reserve and to the specified location.

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8.5. CONSTRUCTION AND MAINTENANCE

8.5.1. Objective

8.5.1.1. The construction and maintenance phase will ensure that best practice and principals are adhered to, too provide a finished setting that is healthy, safe, appears and functions with high aesthetic appeal.

8.5.2. Consents and Inspections

8.5.2.1. Generally, applicants shall apply for consents in their own name rather than on behalf of Council. It is the responsibility of the applicant to ensure all necessary approvals have been obtained and submitted with the application for consent.

8.5.2.2. The Area Manager or nominee may from time to time inspect works to ensure the plans submitted in the design phase and the requirements of this Standard are fully complied with. Inspections may occur during the earthworks stage, to check contours, topsoil quality and plant stock health during the construction and planting stages.

8.5.2.3. The Landscape Implementation Plan as in Section 8.3.2: will be referenced to determine the timing of inspections.


8.5.3. Earthworks

8.5.3.1. Where earthworks are to be undertaken, contours will be shaped to eliminate ponding in grass areas and promote good drainage.

8.5.3.2. Grassed batter slopes that will require mowing are to be no steeper than 1 vertical to 5 horizontal (1 in 5).

8.5.3.3. Batters steeper than 1 in 5 shall be densely planted and mulched. Batters that have been planted should include edging, terracing or horizontal timber strips to avoid the movement of mulch down the slope.

8.5.3.4. Heavily compacted soils shall be ripped, preferably during the summer period, to a depth of 300mm, with rip lines 1m apart, then rolled with a sheep foot roller or similar, before any laying of topsoil is undertaken.

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8.5.3.5. Lightly compacted soils shall be scarified or disced to a depth of 100mm, with balancing fertilizers as indicated by soil tests applied at this point. Rolling with a sheep foot roller or similar should be undertaken before any laying of topsoil.

8.5.3.6. All heavy topsoils may be amended by the addition of compost or sand. Stony soils can be lightly machined with a cultivator or similar piece of equipment.

8.5.4. Topsoil

Table 8.1: Topsoil Depths for landscape purposes

	Minimum settled depth (mm)
Grass Areas	100
Amenity Plantings	300

Refer to NZS 4404: Pt 7.4, p 186.


8.5.4.1. Topsoil shall be sourced from an original surface layer of grassland or cultivated land and be clean, highgrade and free flowing. Imported soil shall be approved before application on site. Soil arising from reclaimed land, industrial sites, or which has been used for the disposal of any industrial, domestic or agricultural wastes shall not be used.

8.5.4.2. Topsoil shall exhibit the presence of biological activity as evidenced by adequate aggregation and organic matter content. The material shall be acceptable for growing all of the appropriate turf grass species given adequate management and be stone, weed and debris free.


8.5.5. Irrigation

8.5.5.1. The approval of the Area Manager is required prior to the installation of any permanent or semipermanent irrigation system. Where required a duct for a water connection shall be provided to amenity or garden planting areas. The applicant shall apply and pay for a metered water connection and water costs for irrigation purposes where required for maintenance purposes. Permanent irrigation is dealt with on a case by case basis.

8.5.5.2. All materials used in the installation of any irrigation system shall be constructed of quality materials.


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- 8.5.5.3. Irrigation of trees will be required during the first summer season, (1 December to 30 April of the following year) or when conditions dictate. Irrigation of amenity plantings and grass areas will also be required during the following two summer periods following establishment. The developer shall comply with any Council water restrictions.
- 8.5.5.4. The Council's long-term goal is efficient and sustainable use of the District's water supply. The reliance on irrigation should therefore be minimised by matching plant species to the local site conditions.
- 8.5.5.5. Generally permanent irrigation in streets and reserves will be necessary in order to overcome difficulties with local site conditions that could prevent the reasonable establishment and growth of amenity tree and shrub plantings. Pop up irrigation for maintaining a green sward in summer may be required especially in reserves in high profile locations. Once the maintenance period is completed, the Council will require the developer to demonstrate the successful, fault free operation of the system prior to hand over of ownership and maintenance of the installed irrigation system.
- 8.5.5.5.1. Revegetated and restored sites are not to be watered unless extreme drought conditions prevail during establishment.
- 8.5.6. Protection of existing trees / plantings**
- 8.5.6.1. All identified bush areas and trees shall be cordoned off to protect the rootzone and vegetation, prior to commencement of works and remain until completion. Root zone is defined as area 1 metre out from the canopy drip-line of any vegetation, or as determined by a qualified professional. Protection is to be provided by erecting visibility barriers – High visibility plastic or steel mesh fencing to minimum height of 1 metre.
- 8.5.6.2. If excavation is required within the root zone, a Council approved arborist shall be onsite during the project to supervise works. Resource consents for work within this zone shall be obtained. If excavations are necessary, these shall be limited to use of hand held tools.
- 8.5.6.3. Exposed surface roots shall be covered by materials such as sandbags, track metal, planking, old carpet or mulch, to prevent scuffing and abrasion.

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- 8.5.6.4. All attempts will be made to retain all roots over 35mm in diameter uncovered by excavation. All roots exposed shall be kept damp, covered from direct sunlight and protected from damage by a suitable material such as Hessian or shade cloth. When a root greater than 35mm is consented for removal, the arborist shall only prune back to the excavation face by the use of hand held tools and the root shall be immediately covered to protect from desiccation and further damage. The excavation face shall be covered with geotextile mat and weed cloth, and pinned into place until backfilling occurs, upon which it shall be removed.
- 8.5.6.5. No storage of construction materials/machinery/equipment/spoil/waste shall occur within 3 metres of the rootzone, or where there is a risk of spills or runoff reaching and damaging the rootzones.
- 8.5.6.6. No operation of machinery shall occur within 3m of the cordoned off rootzone without prior approval from the Area Manager. If machinery has to operate within this zone a temporary geotextile mat and mulch layer shall be laid over the ground to protect the tree roots from compaction and root damage.
- 8.5.6.7. Silt protection shall be undertaken as outlined within Waikato Regional Council requirements.
- 8.5.7. Pest Control**
- 8.5.7.1. Weeds shall be controlled within the streetscape / reserve areas in accordance with the Waikato Regional Council Plant Pest Management Strategy. Note: Some pest plants may require repeat applications to eradicate. All large woody weed and seed sources debris will be removed from site.
- 8.5.7.2. Any weed spraying shall be undertaken in accordance to the manufacturer's recommendations and Growsafe Standards¹.

¹ Anyone who uses weed or pest sprays for commercial purposes is required to hold a standard GROWSAFE certificate. This course trains people to apply agrichemicals safely and accurately in accordance with the Agrichemical Users' Code of Practice

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8.5.7.3. The applicant shall also be responsible for animal pest control during the defects liability period, which will be undertaken to Waikato Regional Council Pest Control Standards of operation.

8.5.8. Litter Control

8.5.8.1. All areas once established shall be kept free of litter and debris, including paper, plastic, stones, bricks, bottles, glass, cans, tree branches and other forms of inorganic and organic matter.

8.5.8.2. The Developer or contractor shall arrange for the disposal of litter and debris, which shall be removed to an appropriate disposal site.

8.6. GRASS AREAS

8.6.1. Objective


8.6.1.1. A healthy sward of grass with a strike rate of 95% per square metre.

8.6.2. Requirements

8.6.2.1. All grass lawn areas and berms must have gradients that ensure that surface water drains to a suitable area or outlet. Wherever gradients are flat the subsurface must have sufficient free drainage to ensure that water does not pond or settle, to maintain grass growth and health and to ensure that use of the area is not compromised. Areas that may be inundated by water regularly or for long periods are not appropriate for lawns. Consider establishing a wetland area instead.

8.6.2.2. Provide access for mowers to all lawns and berms. Lay out lawns in reserves so that the tractor-mounted or ride-on mowers typically used by maintenance staff can mow them. This will require a minimum width clearance of 2.5 metres to all grassed areas that will be mown by ride on mowers.

8.6.2.3. All grass slopes must be no steeper than a 1 vertical to 5 horizontal (1 in 5). On mounds, or where there is a significant change in gradient, design and construct lawns to avoid mowers scalping the ground surface.

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8.6.3. Selection of Grass Species

Table 8.2: Grass Species for Reserves and Streetscapes

	Preferred Grass Mix
Urban Turf and Berms	60% (0.6 kg) Turf Perennial Ryegrass - high endophyte 20% (0.2 kg) Chewings Fescue 20% (0.2 kg) Brown Top
Rural Clay banks and berms	40% (0.4 kg) Turf Perennial Ryegrass 30% (0.3 kg) Creeping Red Fescue 10% (0.1 kg) Browntop 10% (0.1 kg) Cocksfoot 10% (0.1 kg) Plantain

8.6.3.1. Grass seed mix for berms and reserves shall be as detailed in Table 8.2 or an approved turf species blend. Other special purpose varieties may be used with prior approval of the Area Manager.

8.6.3.2. All ryegrass seed used shall have an endophyte level of greater than or equal to 80%, a purity of greater than or equal to 99% and a germination final count of greater than or equal to 95%.


8.6.4. Site Preparation

8.6.4.1. The ground area shall be presented in a level uniform manner, free of hollows and humps. The ground surface area shall either:

- a. Follow contour of land, and/or
- b. Be formed with a maximum gradient of 10° to assist with water run-off and/or drainage. All grass areas are to be levelled prior to fertilising and seeding.

8.6.5. Inspection Traps, Grates, etc.

8.6.5.1. Topsoil shall be level with the top edges of kerbs, grates, inspection portals and any other ground level structural edge that is located in parks, reserves or on road reserve areas. Suitable silt traps should be placed at grates and inspection portals to avoid silt blockage until turf cover is established.

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8.6.6. Ground Preparation

- 8.6.6.1. Soil pH shall be brought to a range suitable for grass growth by the addition of lime and a starter fertiliser.
- 8.6.6.2. The area for seeding shall be free of all weed species (such as kikuyu, couch grass, gorse, and blackberry).
- 8.6.6.3. Grass seed for lawn areas shall be under and oversown at a rate of 400 kg/ha. Seeds should be under sown for better strike and reduced loss to birds. Broadcast of grass seed is acceptable for areas where the soil is too wet for tractors.
- 8.6.6.4. All newly grass seeded areas are to be rolled with a Cambridge roller (or similar roller to minimise compaction) after seeding.

8.6.7. Grass Establishment

- 8.6.7.1. First mowing of newly sown grass areas can be undertaken using a rotary mower when 50% of the grass coverage has reached a height of 100mm.
- 8.6.7.2. Irrigation may be required at the direction of the Area Manager.
- 8.6.7.3. The grassed area shall be maintained for a minimum period of 12 months after sowing to ensure dense, even turf coverage has been established. 95% grass coverage is required for all grass areas and 99% weed free at the time of handover.


8.7. SPECIMEN TREES

8.7.1. Objective


- 8.7.1.1. All trees of good form and health with a single dominant stem.

8.7.2. Tree Selection and Placement

- 8.7.2.1. Selection of reserve and street trees is to be in accordance with the Council's Tree Policy and Tree Masterplans.
- 8.7.2.2. Landscape plans should specify reserve and street trees including species, size at planting and grade, to be approved by the Area Manager.

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- 8.7.2.3. Trees will not be planted during summer months or during drought conditions.
- 8.7.2.4. Locate trees to minimise ongoing pruning requirements and maintenance costs. Tree placement is to be in accordance with the following guidelines, with prescribed planting offsets from boundaries with residential properties, utilities services, sightlines to and from vehicles, or from hard surfaces like kerbs, footpaths and cycleways.
- 8.7.2.5. Trees or other tall growing vegetation shall not be planted closer to the structures listed than the following minimum distances.
- a. Power poles carrying 400/230 volt lines 6.0 metres
 - b. Taller trees may be planted to the side of low voltage overhead lines
 - c. Power poles carrying 11,000 volt plus lines 10.0 metres
 - d. Overhead lines - for planting under 400/230 volt lines use low growing trees that will only grow to 3 metres in height.
 - e. Under 11,000 volt lines – trees no more than 3 metres in height.
 - f. Power pylons and 66,000 volt lines or greater– no planting of trees directly beneath lines, low vegetation only. Trees species planted to the side must not exceed a size in maturity that if falling towards the pylons or lines, will encroach no closer than 3.5 metres of them.
 - g. Street light poles – tree planting distance - 6.0 metres
 - h. Traffic signals and sign posts - tree planting distance – 6.0 metres
 - i. Pedestrian crossings – tree planting distance 6.0 metres
 - j. Sewer and stormwater mains and laterals - 3.0 metres
 - k. Driveways - business, (right side when exiting) distance 6.0 metres
 - l. Driveways – business (left side when exiting) distance 3.0 metres
 - m. Driveways – residential, rightside when exiting distance 6.0 metres
 - n. Driveways – residential, left side when exiting distance 2.0 metres
 - o. Berms – wider than 1.5m wide. Where the berm is under 2.0m width, carefully consider the relationship between the final tree trunk size and

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the clearances required.


- 8.7.2.6. Alternative location and design proposals will be encouraged, such as: boulevards, the provision of trees in a dedicated “non-services” berm on either side of a footpath; meandering footpaths; trees placed in specialised tree planting pits within the carriageway but outside of the live lane. Provide protection for trees planted within the carriageway from vehicles being parked.
- 8.7.2.7. Variation of the boundary lines along streets can create spaces for trees to be planted in groups and can help accentuate road perception, particularly at intersections. Strategically placed grouped plantings of trees may have more impact than individual trees placed outside each house. Where road alignment runs east to west, planting proposals on the southern berm will be discouraged.
- 8.7.2.8. Placement of trees shall consider:
- a. landscape and amenity views from adjoining boundaries,
 - b. placement at boundary intersections
 - c. mature height and spread to limit shading
- 8.7.2.9. All trees should be of good form with a single dominant stem.
- 8.7.2.10. Native plantings are to be eco sourced where possible.

8.7.3. Tree Planting and Establishment


- 8.7.3.1. Requirements for tree plantings are detailed in Table 8.3

Table 8.3: Specimen Tree Planting Requirements

	Greater than 2m tall
Weed free circle / mulching	Undertake spraying out of planting sites, for weed and grass species at least two weeks prior to commencement of planting - min 1 m wide area
Hole size (minimum)	6 x diameter of PB and 2x depth of PB, backfilled with 50/50 topsoil compost mix

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	Greater than 2m tall
Planting level	Trees shall preferably be bowl planted particularly in light sandy soils of the east coast.
Topsoil	Topsoil shall be free of stones and other inorganic matter. Compost shall be well decomposed, pH neutral and shall not contain organic matter with a particle size greater than 10mm.
Fertiliser	A 200 gram application of slow release fertiliser is to be applied to each tree during the planting process or 4 fertiliser tablets spread around the hole. Additional fertiliser is to be applied to each tree in September of each year. This fertiliser shall be in the form of a balanced slow release fertiliser which has a 12-month release period.
Staking Posts (size)	50x50 mm stake or 70mm peeler post
Staking Posts (length)	2.4m, buried 800mm depth
Staking posts	3 posts— triangle formation to maintain and assist their form for the first three to five years. Regular bimonthly maintenance of specimen trees must include checking of the ties and stakes to maintain proper form on 2 posts diametrically apposed.
Ties	Minimum 1 tie per post
Ties Type	Semi permanent 50mm jute webbing, set up in a figure 8 configuration between stake and tree. Bicycle inner tubes can also be used.
Tree protectors	Where required specimen trees may need be protected and supported during any maintenance works with tree surrounds/ protectors as detailed by Area Manager.
Irrigation Coil	Irrigation (drainage) coil of no less than 50 mm diameter to be installed into and below each rootball to assist with irrigation purposes (refer to diagram). Perforated for heavy soils and non-perforated light soils.
Watering	Trees shall be watered within 2 hours of planting to assist in the bedding in of the plant. Trees shall be watered to maintain healthy vigorous growth throughout the summer season. At least 40 litres of water will be fed to each tree per visit in a manner that ensures full soakage of the rootball.
Mulching	A minimum one metre weed free area shall be maintained around unprotected trees, or the whole area inside tree surround. Mulching shall be maintained to a 75-100mm thickness when settled. The mulch shall be graded away from the trunk of the tree to minimise any trunk burn. Edge surrounds when used shall be kept full of mulch and weed free. The Developer shall maintain the level of mulch around the trees during the defects liability period. Mulching around specimen trees encourages water retention and controlling weed growth.

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8.7.4. Pruning

- 8.7.4.1. Any pruning shall be approved by the Area Manager, and carried out to maintain healthy and sustainable tree specimens.
- 8.7.4.2. All pruning shall be undertaken by a Council approved arborist, a list of which may be obtained from the Council.

8.7.5. Replacement Trees

- 8.7.5.1. Plants damaged, vandalised, and stolen or dead shall be replaced as required to maintain the original numbers, grades and species as per the approved plans.
- 8.7.5.2. Any trees damaged or in poor form shall be replaced at the Developer's expense. These replacement plants shall be subject to a defects liability period for a further two growing seasons.

8.8. AMENITY PLANTINGS

8.8.1. Objective


- 8.8.1.1. All amenity plantings will provide a 100% ground coverage within 2 years of planting, compliment the character of the development and provide for a low level of maintenance.

8.8.2. Amenity Gardens


- 8.8.2.1. Amenity gardens require significant horticultural management and as such will be generally restricted to town centres and major arterial collectors. The high cost of establishment and maintenance of such gardens may make them unsuitable for most streets and reserves. Approval for any amenity garden proposal will only be given by the Area Manager.

8.8.3. Selection of Planting Type and Design

- 8.8.3.1. All plans for the development or landscaping of reserves or streetscapes should have regard for all the desirable plant attributes stated in 8.2 of this Section.

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- 8.8.3.2. Specify shrubs or groundcovers with minimum grades and sizes of amenity plantings to be approved by Area Manager.
- 8.8.3.3. Select and space shrubs and groundcover plants to achieve good form and coverage of the planted site within 2 to 3 years and to grow healthily for a design life of 7 to 15 years depending upon species without unduly compromising services, safety or amenities, or causing unacceptable shading.
- 8.8.3.4. Planting must not result in congestion that requires removal, pruning or thinning in the short to medium term. Shrub and groundcover placement is to be in accordance Section 8.8 and prescribed planting offsets from residential boundaries, sightlines to and from vehicles, or from hard surfaces like kerbs, footpaths and cycleways.
- 8.8.3.5. Plant low maintenance shrubs and/or groundcovers in medians, traffic islands and other places where grass mowing would be difficult. Planting in busy medians is to be discouraged.
- 8.8.3.6. All shrubs and/or groundcovers should be grouped together in mulched plant beds that are designed to minimise maintenance requirements.
- 8.8.3.7. The edge definition may be a boundary fence, footpath, kerb, timber batten synthetic material or informal trench margin. Informal trench margins are not appropriate in sandy soils.
- 8.8.3.8. Amenity planting designs shall allow for 3m spacing between mulched plantings and other assets for maintenance and mowing purposes.
- 8.8.3.9. All plantings shall have densities that achieve 100% coverage of soil within 2 growing seasons (except re-vegetation plantings where 3 growing seasons is acceptable).
- 8.8.3.10. In anticipation of plant dieback, all amenity plantings shall be over planted at a minimum of 5%, depending on the plant grade used.
- 8.8.3.11. All plants should be of good form with side branches evenly spaced and less than 1/3 of the diameter of the main stem in size. Plants should be hardened off to cope with climatic conditions of the site and be free of pests and disease. Plant root system shall show no evidence of 'spiralling' or being root bound. .


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8.8.4. Site Preparation and Planting


8.8.4.1. Requirements for tree plantings are detailed in Table 8.4

Table 8.4: Amenity Planting Requirements

	Less than 2m tall
Weed free circle	Undertake spraying out of planting sites, for weed and grass species at least two weeks prior to commencement of planting
Plant preparation	Rootballs shall be saturated prior to planting and roots loosened if appropriate.
Hole size (minimum)	Planting holes shall be 2x rootball diameter in width and 1-1.5 x rootball height. The bottom and sides of the planting holes are to be roughened to encourage root movement into the surrounding soil. Soil removed from the planting hole shall be amended with 30% fresh topsoil and fertiliser before planting/fertiliser tablet per plant is required.
Planting level	Plants shall be set slightly lower to the surrounding soil to avoid wicking, and the planting hole is to be backfilled in 150mm layers and consolidated so as to remove air pockets. Surplus planting material from the holes shall be spread evenly over the surrounding area (leaving no soil on top of the mulch layer) taking care not to cover the surface of the newly planted rootballs with additional fill.
Topsoil	Topsoil can be mounded in amenity planting areas. Topsoil shall be friable have a mix of organic matter, free of stones and other inorganic matter.
Fertiliser	An 80 gram application of slow release fertiliser, or 1 fertiliser tablet is to be applied to each plant during the planting process. Additional fertiliser is to be applied to each plant in September of each year. This fertiliser shall be in the form of a balanced slow release fertiliser which has a 12-month release period.
Staking Posts (size)	Where required, specimen shrubs and plants shall be staked after planting to provide support during their establishment as follows. Under 1 m at planting 25x25 mm – 1 stake per plant Over 1 m height at planting – 25x25 mm – 2 stakes per plant Note: For plants over 2m high, refer to staking requirements for trees and specimen trees in Table 8.3: Specimen Tree Planting Requirements.
Staking Posts (length)	1.8m, buried 400mm depth

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	Less than 2m tall
Staking posts	Shrubs – 1 post Grasses / flaxes – no posts required
Ties	Minimum 1 tie per post
Ties Type	Semi permanent 20mm jute webbing, set up in a figure 8 configuration between stake and tree.
Plant protectors	Where plants may be susceptible to animal damage during the establishment period, plant surrounds may be used on individual plants to protect shrub or plant species, as detailed by Area Manager.
Weed mat	Permanent weed mat is not permitted in any amenity plantings on parks, reserves and streetscapes. Biodegradable weed mat may be used if approved.
Watering	Plants shall be watered within 2 hours of planting to assist in the bedding in of the plant. Plants shall be watered to maintain healthy vigorous growth throughout the summer season. At least 20 litres of water will be fed to each plant per visit in a manner that ensures full soakage of the rootball. The use of saturaid for amenity plantings may be undertaken as per the manufacturer's instructions and guidelines.
Mulching	Shrub beds shall be mulched to suppress weed growth and maintain soil moisture levels. Mulch type should ensure a consistent size material and type not prone to being scattered or blown about i.e. consolidates and binds together well. Mulching shall be maintained to a 75-100mm thickness when settled. The Developer shall maintain the level of mulch around the plantings during the defects liability period. Mulching around amenity plantings encourages water retention and controlling of weed growth. Where the gradient exceeds 1:4 in re-vegetation plantings, shredded pine mulch or similar Area Manager approved mulch shall be used to encourage mulch retention on the slopes. Hard mulches such as shell and stone chip will only be allowed where approved by Area Manager. These shall be applied to a settled depth of between 75-100mm.
Edging	All planted areas shall have a maintained edge. An edge is typically comprised of a minimum vertical cut of 100mm deep on the bed perimeter, with soils pulled back into the bed from the cut to provide a smooth, rounded and defined edge. All curved edges shall be smooth and regular. Where the edge is straight, a

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	Less than 2m tall
	string line must be used in order to ensure a true straight line.
	All edging will be maintained by the developer during the defects liability period

8.8.5. Re-vegetation Plantings

8.8.5.1. Re-vegetation plantings shall provide a variety of species that complement the neighbouring forest or scrub areas. Plantings shall include those native plants that provide food sources for native bird populations.

8.8.5.2. Native re-vegetation projects shall include district-sourced species.

8.8.5.3. Re-vegetation plantings in open areas shall be planted at a density and size of plant that achieves 100% coverage of soil in 3 growing seasons. Beds shall be over planted to compensate for plant dieback at a minimum of 10%. Plants shall be of a minimum of root trainer grade.

8.8.5.4. Plants shall be spaced unevenly in the planting layout to encourage a natural appearance and setting.


8.8.6. Replacement Plants

8.8.6.1. All plants damaged, vandalised, stolen or dead shall be replaced to maintain numbers and unity of the display. Plants and planting standards shall be of the same quality as specified in Section 8.8: Amenity Plantings.

8.9. RIPARIAN AREAS (Swales, Raingardens, Lakes, Ponds & River Edges)

8.9.1. Outcome

8.9.1.1. Riparian areas will provide for the passage and/or storage of water with minimal maintenance requirements.


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8.9.2. General Design and Layout

- 8.9.2.1. Lakes, ponds raingardens and swales within open space and street berm areas shall be designed and constructed in accordance with Section 6: Stormwater and Land Drainage.
- 8.9.2.2. As detailed in Section 8.3: watercourses shall remain in a natural state wherever possible. This includes retention of the natural topography and vegetation.
- 8.9.2.3. Riparian streams, swales, pond and lake zones shall be protected, preserved or revegetated. Revegetation plantings shall be undertaken when the slope is higher than 1 vertical to 5 horizontal (1 in 5) and as deemed appropriate by the Council.
- 8.9.2.4. All streams on reserves shall be planted with native plants to a minimum width of 3.0 m from the edge of the stream.
- 8.9.2.5. Access shall be provided to any ponds or lakes for maintenance, such as future removal of sediment. Vehicle access routes shall have adequate means against vehicle erosion of the surfaces. This may be achieved by the use of appropriate erosion matting or reinforced grass surface areas.

8.9.3. Planting Design and Species

- 8.9.3.1. All riparian areas are to be planted except where access strips are required and where the slope is minimal and it is appropriate to have a maintained grass edge.
- 8.9.3.2. Any planting of riparian areas shall be designed for minimum long-term maintenance requirements and high water quality outflow.
- 8.9.3.3. The plants shall be New Zealand native species; district sourced, and shall be appropriate to and tolerant of the particular site conditions.
- 8.9.3.4. Plantings should be carried out to achieve a minimum 1.0m spacing along stream and pond banks. Swales shall be planted at densities in relation to the plant size to achieve a 100% cover in after the second year following planting.
- 8.9.3.5. Site-specific plantings plans are to be submitted to the Area Manager for approval at the design phase.


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8.9.4. Swales

- 8.9.4.1. Vegetated swales have a variety of objectives and designs. In general the objectives are to slow stormwater flows, capture some contaminants and allow for some reduction in the total volume of runoff.
- 8.9.4.2. Swales shall be constructed as detailed in Section 6 Stormwater and Land Drainage. Site specific planting plans shall be submitted to the Area Manager for approval at the design phase.
- 8.9.4.3. The preparation for planting shall be undertaken as follows.
- 8.9.4.4. Hard clay layers shall be aerated by deep ripping to a depth of 500mm then rolled with a sheep foot roller or similar, before any laying of topsoil is undertaken.
- 8.9.4.5. Weed species are to be sprayed out at least two weeks prior to planting.
- 8.9.4.6. Swales shall have at least 100mm of friable topsoil as per 8.4.
- 8.9.4.7. All plant holes shall be a minimum of 2x width of PB and 1.5x height (depth) of PB. Hole is to be backfilled with 50/50 mix of topsoil and compost.
- 8.9.4.8. An approved time-release fertiliser shall be applied to all plants.
- 8.9.4.9. All plants shall be watered in within two hours of planting to assist with plant establishment.
- 8.9.4.10. Swale areas shall not be blanket sprayed with herbicide for any more than 10% of every 100m length of swale area. Broadleaf targeted sprays may be used following approval from the Area Manager.

8.9.5. Raingardens

- 8.9.5.1. Raingardens allow for the temporary ponding of stormwater, which then can be absorbed through ground soakage. Run-offs from storm events can overflow into a swale system including raingardens.
- 8.9.5.2. The design of raingardens shall follow the requirements of Section 4: Stormwater.

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8.9.5.3. The Council will approve the appropriateness of raingardens at each location.

8.9.6. Ponds and Lakes

8.9.6.1. The design of constructed ponds and lakes in reserve and berms shall be in accordance with those specified in ARC Technical Publication No.10.

8.9.6.2. Ponds may be classified either as stormwater detention and treatment ponds or as an amenity landscape feature, depending upon the primary function of the pond. Dry ponds are not permitted on parks, reserves and beach areas.

8.9.6.3. Rock weirs may on occasions be required to prevent scouring of streams. A culvert head wall may be needed around culverts entering ponds and lakes, appropriate safety fencing shall be provided around headwalls to ensure public safety.

8.9.6.4. The perimeter shelf of any pond is to be planted in dense wetland species. Pond and lake banks are generally to be planted in native revegetation plantings, with access points provided for future maintenance. Grass areas may be permitted if the slope is appropriate and it is desirable to have visual access to the water.

8.9.6.5. The external slope of the pond shall be at a maximum of 1 vertical to 4 horizontal (1 in 4).


8.10. BUILT ASSETS

8.10.1. Objective

8.10.1.1. Built assets will be of standard Council design must be robust, low-maintenance, and safe for use by the public, and appropriate to the setting and locality.

8.10.2. Asset Requirements

8.10.2.1. The design and model of reserve assets shall require the approval of the Council. The life-span of built assets should be considered, to reduce the frequency of renewing or replacing such assets in the future.

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8.10.2.2. Assets will be of a standard Council design, including colour and construction materials and fit within the appropriate setting and locality.

8.10.2.3. Note that the developer is responsible for gaining all necessary building consents and Code of Compliance Certificates required under the Building Act. These will be applied for and granted to the developer as the applicant and owner of the asset at the time of construction/installation.

8.10.3. Playgrounds and play structures

8.10.3.1. The Council's objective is to provide and develop interesting and exciting playgrounds that meet the needs of the local community and, in the case of district facilities, the needs and aspirations of the wider community. Not all sites will be suitable for playgrounds.

8.10.3.2. Approval shall be obtained from the Council for any play equipment within a reserve, including the types and style of equipment. This prevents oversupply or duplication of play facilities in other reserves nearby.


8.10.3.3. It is important that any proposal integrates the formal and informal play equipment into the entire landscape design for the reserve. The use of natural features in conjunction with formal play structures is desirable. Provide structures which cater for a wide range of ages and abilities that are challenging and provide learning opportunities for children.

8.10.3.4. All play facilities must comply with:

- a. NZS 5828:2004 Playground equipment and surfacing;
- b. Reserves Activity Management Plan
- c. The Building Act
- d. Reserve Management Plan.

8.10.4. Recreational hard surfaces, ball courts and skate-boarding facilities

8.10.4.1. Recreational hard surfaces are designed to be suitable for many different uses such as skateboarding, rollerblading or handball games.

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8.10.4.2. Approval must be obtained from the Council for any recreational hard surfaces, ball courts and skateboarding facilities within a reserve, including the types and style of equipment. This prevents oversupply or duplication of these facilities in other reserves.

8.10.5. Structures

8.10.5.1. Structures where desired, will only be approved at the discretion of the Council. These include: pergolas, bridges, jetties, boardwalks, barbeques and internal walls, fences, entrance walls/features and screens.

8.10.5.2. The design of structures must fulfil both functional and aesthetic requirements.

8.10.5.3. They must be durable and vandal resistant and not require a high level of maintenance.

8.10.5.4. Where building consents are required these will be applied for and final inspections undertaken with Code of compliance certificate issued in the name of the developer prior to Council taking ownership of that asset.

8.10.6. Artworks and sculptures

8.10.6.1. The Council will consider any requests to install sculptural or other artworks on their merits.


8.10.6.2. The Council will only accept artworks that are durable and do not require a high degree of maintenance.

8.10.6.3. Any artwork must be acceptable to the majority of the public, appropriate to the character of its setting and other structural features.

8.10.6.4. Integrated or functional artworks are preferred, such as bridges, light standards and seats.

8.10.7. Signs

8.10.7.1. Any Reserve signage required will be installed by the Council following vesting of the reserve.

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8.10.8. Seats and picnic tables

8.10.8.1. The installation of proposed seating and tables must be consistent with the character of the reserve and its locality.

8.10.8.2. The proposed seating and tables must be robust, low-maintenance and safe for use by the public. Council has details on preferred styles and designs. Variation of these styles will require prior approval from Council.

8.10.9. Drinking fountains and litter bins

8.10.9.1. These items must be durable, vandal-resistant and consistent with other proposed site furniture and the overall character of the reserve. The Council must approve the design and installation of these items.

8.10.10. Boundary fencing


8.10.10.1. Fencing covenants are required as a condition of consent for new reserves, including drainage reserves. The developer should co-ordinate fence designs around any reserve or waterway before the subdivision is completed and sections are sold, in order to establish a consistent character.

8.10.10.2. The Council encourages the use of open frontages onto reserves, where acceptable to the residents. This concept ranges from no fence, so that private gardens merge with the reserve landscaping, to a low fence up to 1.2m high, pool type fences are encouraged. Hedges, climbers on trellis and other “green living” barriers are encouraged up to this height.

8.10.10.3. Where required, reserves bordering road frontages shall be fenced with one of the following:

- a. Parks wooden bollard and chain fence, (pre-drilled, maximum spacing 1.8m apart, with 30mm galvanised chain).
- b. Parks wooden bollards, (maximum spacing 1.2m apart).

8.10.10.4. A 300mm wide x 100mm thick mowing strip shall be provided under the road frontage fence for the full length of a solid fence, or where bollards are used concrete mowing surrounds shall be installed.

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8.10.11. Gates

- 8.10.11.1. Vehicular maintenance accessway gates shall be provided in all road frontage fences, adjacent to the Vehicle Accessways.
- 8.10.11.2. Gates shall be in keeping with the selected fence style.

8.10.12. Other Park Furniture

- 8.10.12.1. The design, style and positioning of all other park furniture (not detailed in this section) that is proposed for parks, reserves or beaches shall be approved by Council.


8.11. PEDESTRIAN ACCESSWAYS, CYCLEWAYS AND STRUCTURES

8.11.1. Objective

- 8.11.1.1. Walking paths, tracks and cycleways will provide alternative easy access between different locations and reserves

8.11.2. Vehicle Access and Parking

- 8.11.2.1. Access points to reserves are required for vehicles to undertake mowing, waterway management, rubbish collection, general maintenance, and for emergency vehicles. Consider the location of the vehicle access points as part of the overall design.
- 8.11.2.2. Vehicle access points must be large enough to allow the entry of heavy machinery to clear dangerous vegetation and blocked waterways during storm events and fire fighting equipment wherever structures or planting present a potential hazard.
- 8.11.2.3. Access roadways and off-street parking may be required for reserve areas such as the starting points of tracks. Consult the Council to ensure that adequate parking areas are provided.
- 8.11.2.4. Where removable barriers are considered necessary by Council to prevent unauthorised vehicles from damaging the reserve, the design of barriers must be consistent with other design elements in the reserve and be located to best achieve their purpose.

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8.11.2.5. The design and construction of roadways, parking areas, vehicle crossings and cut downs must comply with Section 3: Rooding.

8.11.3. Design, Construction and Maintenance

8.11.3.1. The design, layout and location plan for any rooding and/or parking within a reserve area shall be submitted to the Council for approval.

8.11.3.2. Disabled parking shall be provided for in accordance with NZS 4121 and NZMP 4122.

8.11.3.3. The use of permeable or semi-permeable surfaces shall be used where possible for parking and low traffic areas. Drainage swales /filter strips shall be used where ever possible as an alternative to concrete kerbing and channelling for parking and roads to receive and assist in the treatment of stormwater. Refer to Section 3: Rooding and Section 6: Stormwater and Land Drainage for further guidance and direction.

8.11.3.4. Carparks, roads or other paved or metalled areas are to be constructed in accordance with Section 3: Rooding, and the Council District Plan.


8.11.3.4.1. Paved carparks are to be marked out accordingly by an approved road-marking Contractor and must comply with TNZ/LMOTSAM Manual of Traffic Signs and Markings.

8.11.3.5. The defects liability period and maintenance requirements shall be as detailed in Section 3: Rooding.

8.11.4. Pedestrian and Cycle Paths

8.11.4.1. Pedestrian and cycle paths are an integral part of the reserve design, as they connect access points and activity areas within and across the reserve. They must be accessible, convenient and safe, in accordance with CPTED principles.

8.11.4.2. Formed pedestrian-only paths should be about 2.0m wide, and paths shared by pedestrians and cyclists should be at least 2.5m wide. Increase the width to 3.0m wherever a lot of people are expected to use the path. Walking, mountain bike and multi-use tracks and bridle paths are also integral to the development of some reserves and the enhancement of existing networks, if


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new tracks can be linked to them. Design mountain bike tracks in accordance with Trail Solutions. Design and construct walkways or other tracks to comply with NZS/AS 1657 and SNZ HB 8630:2004.

- 8.11.4.3. In some reserves, boardwalks may be required as part of the path or walkway/track network to allow the area to be accessible to disabled people and to protect sensitive areas such as wetlands and the root zones of protected trees. These must be durable, made of suitable materials and slip resistant and necessary building consents approved.
- 8.11.4.4. All pedestrian way designs shall meet the classifications and related standards in Table 8.5: Pedestrian Way Standards, based on SNZ HB 8630: 2004. Cycle ways, where permitted shall be provided by extending the width of the various pedestrian ways and provision of markings and signs.


Table 8.5: Pedestrian Way Standards

	Cycleway	Short Walk	Walking Track	Walkway
Location	Suitable for highly populated to rural areas, linking towns, locations and reserves	Suitable for larger urban park areas with maximum grade of 1:6, no vegetation or obstacles limit width	Suitable for recreation / scenic reserve areas with maximum grade of 1:4.	
Accessibility	Cycles. Urban areas may have wheelchair, pram and disabled walker access, while rural areas may have no allowance for wheelchairs or prams.	Wheelchairs, prams and disabled walkers. Low fitness & most ages.	Disabled walkers. No allowance for wheelchairs or prams. Low to medium fitness & most ages.	No allowance for disabled persons or pram access. Medium fitness and most ages. There may be an element of physical challenge for persons of low fitness.
Length / Time	Minimum of 1 kilometre return length (20 mins cycle at 3 km/hr).	Minimum of 1 kilometre return length (40 mins walk at 1.5km/hr).	Maximum of 3 kilometres return length (1.5hrs walk at 2km/hr).	Minimum of 3 kilometres return length (1.5hrs walk at 2km/hr).

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	Cycleway	Short Walk	Walking Track	Walkway
Surface	Urban. Either Compacted aggregate or broomed concrete. Rural. Compacted aggregate Timber boardwalk / bridges.	Asphaltic concrete, concrete with broom of exposed aggregate finish, profile decking timber, natural stone with rough finish, paving bricks with abrasive finish, compacted aggregate or other suitable finish.	Compacted aggregate or other suitable finish. Timber boardwalk / bridges.	Compacted aggregate, Timber boardwalk / bridges.
Maximum Grade	1:14 ideal, to absolute maximum 1:6.	1:12 ideal, to 1:6 maximum.	Max of 1:4, 1:8 ideal. Steps are required in areas exceeding 1:6.	
Width	Minimum width of 2000mm may be reduced for short sections for aesthetic reasons. Width of combined pedestrian/cycle way shall be increased to 2500mm, with provision of paint marking along path and signage indicating dual use.	Between 750mm and 2000mm wide. Min width barrier free 1200mm.	750mm to 2000mm	
Vegetation Clearance	Clearance 2500mm high and provide 500mm either side of track width All vegetation is to be removed off track.	Clearance 2500mm high and provide 500mm either side of track width. All vegetation is to be removed off track.	Clearance 2500mm high and provide 300mm width clearance with sensitivity to vegetation contributing to the bush experience within the envelope.	
Steps	No steps	No steps, unless suitable adjacent ramps are provided. Steps shall have maximum riser height of 180mm and minimum tread length of 310mm.	Steps shall be constructed with a maximum riser height of 200mm and a minimum tread length of 300mm.	

8.11.4.5. Building Consent is the responsibility of the developer and may be required for all new structures such as platforms, boardwalks, footbridges, handrails/barriers and stairways. On completion of the structure a copy of the

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signed building certificate is to be provided to the Council. Resource Consent may be required for some structures in certain areas.

- 8.11.4.6. All pedestrian ways are to be aligned to maintain grade limits as outlined in Table 8.5: Grades are to be measured in planning stages to ensure suitable limits are maintained.
- 8.11.4.7. Cycle ways shall be extensions of the pedestrian ways and their respective standards, with pavement markings and signage indicating dual use.
- 8.11.4.8. All pedestrian ways are to be crowned or angled across the natural slope wherever possible to minimise flow of surface runoff over surface treatments.
- 8.11.4.9. Corners and junctions are to follow desire lines to minimize unformed shortcuts causing damage to areas outside the pedestrian way. This will include radii at urban path intersections and aesthetic considerations at areas of transition such as rest areas, switch backs and viewing platforms.
- 8.11.4.10. Gradient changes are to be indicated to the pedestrian through the use of transition zones as set out in NZS 4121. Localised variation in height must be minimised to provide a uniform gradient and to eliminate ponding.
- 8.11.5. General Site Preparation and Reinstatement**
- 8.11.5.1. Adjacent areas shall be protected from damage and silt runoff throughout construction.
- 8.11.5.2. Pedestrian ways shall be benched into the side of slopes and retained where required.
- 8.11.5.3. Surfaces are to be compact, firm, stable, non-slip and obstacle free with no loose metal or stone. Edges shall be well defined. The surface shall be of sufficient standard to prevent high density impact on the reserve while maintaining easy access.
- 8.11.5.4. Following installation of any pedestrian way or structure, the ground will be back filled and compacted to level. All excess materials and construction debris shall be removed from site. Where the paths abut grass areas, the disturbed area outside of the path shall be reinstated as outlined in Section 8.6 Grass Areas.


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8.11.6. Drainage

- 8.11.6.1. All pedestrian ways are to be free draining. All non-sealed surfaces shall be crowned to shed water from the pedestrian way and to eliminate ponding.
- 8.11.6.2. All sealed surfaces shall have an ideal 1.5% and maximum 2% crossfall. Reverses in crossfall to be minimised. 10m transition to be used in cases where crossfall transition is necessary.
- 8.11.6.3. Where topography does not allow evenly distributed runoff, drainage culverts shall be installed in paths and tracks. The run-off from these tracks shall not result in concentrated runoff that may erode the ground surface. All pedestrian way types to be water tabled, culverted, benched and bridged as required.
- 8.11.6.4. Dish channels or drainage may be provided on the high side of a footpath with subsoil drainage to prevent run-off from higher land discharging onto the paths and tracks.

8.11.7. Steps, Handrails, Barriers

- 8.11.7.1. Steps shall be constructed to enable comfortable use by children and older people.
- 8.11.7.2. The SNZ HB 8630:2004 standards for steps for each pedestrian way type shall apply for all situations where steps may be required. Steps shall be built to the specifications of Council, and are to comply with the New Zealand Building Code.
- 8.11.7.3. All step treads must have an even surface; they must not be muddy or rough. In boxed steps, the treads must have an even surface of well-graded and compacted aggregate on compacted soil. All wooden steps shall have ss tensor geogrid affixed. Aggregate shall have a good range of particle size distribution to facilitate compaction.
- 8.11.7.4. All timber to be H4 treated.
- 8.11.7.5. Handrails and barriers shall be constructed where visitors (including children) may experience a perceived or significant hazard or where the fall height exceeds 1.0m.

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8.11.7.6. The SNZ HB 8630: 2004 standard shall apply to all situations where handrails and barriers are or may be required.

8.11.7.7. Grab rails are to be provided in areas where a safety rail is not required but visitors experience significant danger, as outlined in SNZ HB 8630: 2004 Standard or in conjunction to safety rails where required for disabled access. Significant danger is defined as falls that may result in serious harm, as determined by fall height, secondary consequences of fall i.e. landing surface, propensity to roll.

8.11.8. Footbridges

8.11.8.1. The developer will be required to obtain any building and resource consents.

8.11.8.2. Footbridges shall be used in conjunction with pathways across any perennial waterways. Footbridges may be used across any seasonal riparian area where required. The width shall match that of the pedestrian way.

8.11.8.3. The design and positioning of footbridges is to be approved by the Council.


8.11.8.4. The design and construction of footbridges shall be in accordance with SNZ HB 8630:2004. Footbridges shall be designed to meet the specific requirements of a particular site.

8.11.9. Boardwalks

8.11.9.1. Boardwalks may be used over wet, swampy, muddy or sensitive track areas to achieve a mainly dry surface (i.e. for visitor comfort) as well as to protect the environment.

8.11.9.2. The design and positioning of boardwalks is to be approved by the Council.

8.11.9.3. The construction and design of boardwalks shall be in accordance with SNZ HB 8630:2004 and the Standard Design for Boardwalks. Variations on design will be required to have a Producer Statement meeting construction and design codes of compliance.

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8.11.10. Platforms

- 8.11.10.1. The use of viewing platforms can enhance people's appreciation of a feature or scenic point. Any platform built will be based upon achieving minimum long-term maintenance of structure and placement.
- 8.11.10.2. The design and positioning of platforms is to be approved by the Council.
- 8.11.10.3. The construction and design of platforms shall be in accordance with SNZ HB 8630:2004 and the Standard Design for Platforms. Variations on design will be required to have a Producer Statement meeting construction and design codes of compliance.


8.12. COMPLETION OF RESERVES AND STREETSAPES

At the time of Practical Completion, all reserves and street gardens must be presented in a tidy condition in accordance with the agreement negotiated with the Council.

Any variation to the design plans requires Council's acceptance in accordance with any agreement made between the party (developer) and Council.

Landscaped areas that have been developed must, as a minimum, meet the following general requirements:

- a. Be free of weeds species, tree stumps (above and below ground) and other specified vegetation;
- b. Be free of surplus, unwanted construction materials, debris, waste (liquid or solid) and rubbish;
- c. Present an established cover of grass complying with clause Part 8.6;
- d. Meet the minimum standards and specifications for all trees and planted areas;
- e. Be completed by the developer to agreed plans and standards, within the agreed timeframes and to the satisfaction of the Council.

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The Council will inspect all new assets prior to the release of the 224(c) certificate to ensure that the minimum standards and specifications in Section 8 are met before the Council will accept ownership. This will include the operation of assets such as irrigation systems, drinking fountains, and lighting to ensure their operational fitness.

8.12.1. Completion – Data Requirements

- 8.12.1.1. As-Built data of completed works shall be supplied. It shall conform to the Council's requirements, as specified in Part One of this Standard.
- 8.12.1.2. Drawings may also be required in a format for Council addition to GIS system (Refer to Appendix G2).
- 8.12.1.3. Completed Building Consent certification – where required.
- 8.12.1.4. Completed Resource Consent certification – where required.
- 8.12.1.5. Playground certification of compliance by an independent playground specialist. Documentation shall include test results and checklists to certify that the materials and construction conforms to AS/NZS4422, AS/NZS4486 and all their parts and amendments.
- 8.12.1.6. Written manufacturers guarantee for playgrounds and any other products where warranties available/applicable.
- 8.12.1.7. Certificates of Compliance and Producer Statements for works covered by legislative requirements.

8.12.2. Completion - Maintenance Requirements


- 8.12.2.1. The developer is responsible (and may be bonded) for the establishment, routine maintenance and any replacement of the planting, lawns and associated works during the maintenance period which is for a minimum of two summer periods, ending 30th April in the final or any subsequent additional year.
- 8.12.2.2. The length of the maintenance period for streetscape and reserve plantings is two summer seasons from 'sign-off' of 224. The maintenance period is to demonstrate that the plants are well established, healthy and fit for purpose.

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	<p style="text-align: center;">Section 8 Landscape - Reserves and Streetscape</p>

- 8.12.2.3. The developer shall rectify any damage to turf or surrounding areas including scalping, wheel rutting and damage caused by faulty machinery and third party contractors.
- 8.12.2.4. All dead, dying, diseased or damaged trees and plants (damage includes inappropriate pruning, vandalism, theft and acts of God) or those trees and plants that do not conform to the standards set out in Part 8 shall be replaced at the developer's cost as required to maintain the original numbers, grade and species as per the approved plans. Replacement shall take place as soon as favourable planting conditions exist (i.e. winter months). Replacement trees/plants shall be subject to a further two summer maintenance period.
- 8.12.2.5. Paths, roads and all other accessways shall be kept clear of excess growth. This includes sightlines and clearance heights.
- 8.12.2.6. A qualified arborist must undertake pruning of trees, once planted. All pruning must comply with recognised international arboricultural practice. A qualified horticulturalist must undertake any required pruning of plants (e.g. shrubs and groundcovers) once planted. All pruning must comply with recognised horticultural best practice.
- 8.12.2.7. Part 8 outlines the minimum establishment and maintenance standards required, and the recommended procedures to be followed, to ensure that all landscape works are at an acceptable standard prior to final inspection and release of the bond (if a bond was required).
- 8.12.3. Appendix 1 - Documents Relevant to this Section**
- 8.12.3.1. The current relevant standards that control the design, construction and installation of the Council's reserves and streetscape assets, which are referred to throughout this section, include:

Planning and Policy


- a. Thames Coromandel District Plan (District Plan) <http://www.tcdc.govt.nz/>
- b. Resource Management Act (RMA) (1991)

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- c. Building Act (2004)
- d. Fencing Act (1978)
- e. Historic Places Act (1993)
- f. Reserves Act (1977)
- g. Thames Coromandel District Tree Strategy (*TCDC, 28 May 2003*)
- h. Thames Coromandel Reserves Strategy (TCDC 2002)?
- i. Thames Coromandel District Council Reserves Activity Management Plan (*TCDC 2009*)
- j. Reserve Management Plan

Design

- a. NZS 5828: 2004 Playground equipment and surfacing
- b. NZS 4404: 2010 Land development and subdivision engineering
- c. NZS/AS 1657: 1992 Fixed platforms, walkways, stairways and ladders. Design, construction and installation
- d. SNZ HB 8630: 2004 Tracks and outdoor visitor structures
- e. Transit New Zealand Guidelines for Planting for Road Safety


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8.13. Appendix 2 - Drawings

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1.0 PURPOSE

This procedure describes the method of review and process employed for changes to the Code of Practice for Subdivision and Development (Engineering Standards) Manual.

1.1 Defined Goals fro the Procedures

- a. The purpose of this document is to define the process for requests for changes to the manual.
- b. To define the mechanisms for the review of the manual.

2.0 SCOPE


This procedure applies to all processes and standards written for the Code of Practice for Subdivisions and Development (Engineering Standards) for the Thames-Coromandel District Council (TCDC).

3.0 RESPONSIBILITY FOR THESE PROCEDURES

3.1 Planning Manager

The Planning Manager shall be responsible for:

- a. Reviewing the effectiveness of this procedure at 12-monthly intervals. The results of each review shall be documented and reported to the Chief Executive Officer (CEO).
- b. Advising holders of the Code of Practice Manual of all changes to these procedures.
- c. Reviewing the Code of Practices at 12-monthly intervals. The results of each review shall be documented and reported to the CEO.
- d. Receive and consider any requests for changes to the Code of Practice in liaison with the appropriate Council Manager.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
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- e. Ensuring any proposed amendments and / or alterations to the Code of Practice are considered as per section 6.
- f. Implement any approved amendments and / or alterations.
- g. Advising and circulating holders of the Code of Practice manual of all approved amendments.

3.2 Chief Executive Officer (CEO)

The CEO shall be responsible:

- a. To consider and make a decision on any disputed decision made by the Planning Manager by an applicant on their requested amendment or alteration.

3.3 Thames-Coromandel District Council (The Council)

The Council is responsible for:

- a. Approving Following consultations with Community Boards ward specific levels of service.

3.4 Applicants


All applicants shall be responsible for complying with the requirements of this procedure.

4.0 REFERENCES

- a. Amendments Request Form
- b. Code of Practice manual.

5.0 DEFINITIONS

Definitions for this procedure are as follows:

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
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- a. **Flowchart** - A flowchart is a pictorial representation showing all the steps of a process.
- b. **Applicant** - A person wishing to have either an amendment or addition made to the Code of Practice for Subdivision (Engineering Standards). This includes staff and or members of the public.
- c. **Amendment Request Form** - The form that all Applicants are required to complete and submit their requested amendment or alteration.

6.0 ACTIONS

6.1 Review

The Planning Manager shall under take annual review of the Code of Practice Manual and these Procedures, as follows:

- a. The reviews will be undertaken in November of each year (unless there is a significant reason to bring the review forward).
- b. The scope of the review will involve:
 - i. Ascertaining compliance for the Code of Practice with any new relevant legislation and or Council Policies.
 - ii. Review in liaison with appropriate Council Managers, any new materials and or practices that may be more appropriate than those specified in the Code of Practice.
 - iii. Review of applications received in the previous 12 months for amendments / alterations that have been declined, to ascertain if the reasons for declining remain valid.
 - iv. Review these procedures and implement any approved changes.
- c. A report on the outcome of the review shall be compiled and presented to the Chief Executive Officer within one month after the review date.

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- d. Any proposed amendments and or alterations arising from the review shall be processed in accordance with these stated procedures. The Planning Manager shall be responsible for initiating such requests.

6.2 Request for Changes


Applications for changes to the Code of Practice are required to be undertaken in accordance with the following:

- a. All applications are required to be submitted on the "*Amendment Request Form*", as no other method will be considered.
- b. The *Amendment Request Form* is required to be completed in full, with any supporting information attached.
 - i. *Section*: The section and subsection number of the requested change to the Code of Practice Manual is required to be stated.
 - ii. *Amendment Requested*: The requested change / addition is required to be written in clear and concise English to convey the exact intent. A separate paragraph, if deemed necessary by the Applicant, shall be included providing the basis for the requested change.
 - iii. *Applicant's Detail*: Details of the Applicant is required to be completed to enable the application to be processed and the Applicant kept informed.

6.3 Consideration of Request for Change of Standards

Upon receipt of an *Amendment Request Form*, the Planning Manager shall:

- a. Forward a letter acknowledgement of receipt to the Applicants, within 10 working days of its receipt.
- b. Shall circulate the requested change to the appropriate Council Managers for their consideration and comments. Responses from Council Managers are

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required to be forwarded to the Planning Manager within 20 working days. The Council Manager may get comment from Focus Group members.

- c. Upon receipt of the responses received from the Council Managers, the Planning Manager shall make a decision on the request. This decision is required to be made within 10 working days of receipt of the responses. In the case of amendments to levels of service the decision is limited to declining or recommending to Council - refer section 6.5.
- d. A letter is to be forwarded to the Applicant of the decision, within 5 working days of reaching the decision. If the Request is declined then the reasons for this decision is to be included in the letter of advice to the Applicant.
- e. If the requested change relating to Engineering standards is approved, then:
 - i. The Planning Manager will file the amendment to be incorporated with changes arising from the annual review.
 - ii. The amendment will be incorporated within any other amendments at the next review in revising the specific clauses to the Code of Practice manual.
- f. All *Amendment Request Form's* and associated correspondence shall be filed under the Corporate Filing system under the Subject File.

6.4 Decision Review

If the Applicant or a Council Manager is not satisfied with the decision made by the Planning Manager in respect to a Request, then the following process is to be implemented:

- a. The Appellant is to make a written request to the Planning Manager to have the decision reviewed.
- b. The Planning Manager shall forward a letter of acknowledgment to the Appellant, within 10 working days of receipt of the request.\


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- c. The Planning Manager shall forward the Request for a Review of the decision to the CEO, inclusive of all the material relating to the original Amendment Request. This information shall be forwarded to the CEO within 20 working days of receipt of the letter of appeal.
- d. The CEO shall consider the appeal and make a decision within 10 working days of receipt of the information. The CEO may get comment from the Technical Review Committee.
- e. The Appellant shall be advised in writing of the Chief Executive Officer's decision on their appeal, within 5 working days of reaching a decision.
- f. All associated correspondence shall be filed under the Corporate Filing system under the Subject File.

6.5 Request Approval for change of Level of Service

If, an *Amendment Request* has been approved by the Planning Manager, then the following process is to be implemented.

- a. If the requested change relates to levels of service then:
 - i. The Planning Manager will take the proposed amendments and recommendation to the approved Community Board / Boards for comment and then Council for final approval or decline (changes of Level of Service will be considered in October / November when considering next years Annual Plan Levels of Service).
- b. Then:
 - i. The Planning Manager will advise the originator of the amendment in writing of Council's decision.
 - ii. A copy of the order paper item and Council minutes shall be filed under the Corporate Filing system under the subject file.

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	Appendix A Procedures

6.6 Implementation of Approved Amendments

The Planning Manager shall:


- a. Undertake the approved revisions to the Code of Practice Manual in conjunction with the annual review, at which time, the approved amendments will become operative.
- b. Existing holders of the Manual will be advised in writing of the amendments. Registered Public holders of the Manual will also be advised of the costs for the revised sections.
- c. The revised sections of the Manual will be circulated to all Council registered holders of the Manual. Copies will be forwarded to Registered Public holders of the Manual, on receipt of their order. An invoice will be forwarded by Council.
- d. All approved amendments, shall be recorded on the Revision Status Form by the Planning Manager.

6.7 Manual Management

The Code of Practice for Subdivision and Development (Engineering Standards) Manual is a controlled document and as such all holders of the manual will be registered to enable notification of any subsequent updates and revisions.

The responsibility for controlling the release of the Manual, maintenance of the register and management of subsequent updates and amendments is the Planning Manager. The Planning Manager shall at all times maintain the following:

- a. Register of Manual Holders
- b. Revision Status Form

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Appendix A Procedures

6.8 Manual Purchase

All inquiries relating to the purchase of the Manual shall be directed to the Planning Manager, who will respond to all such requests.

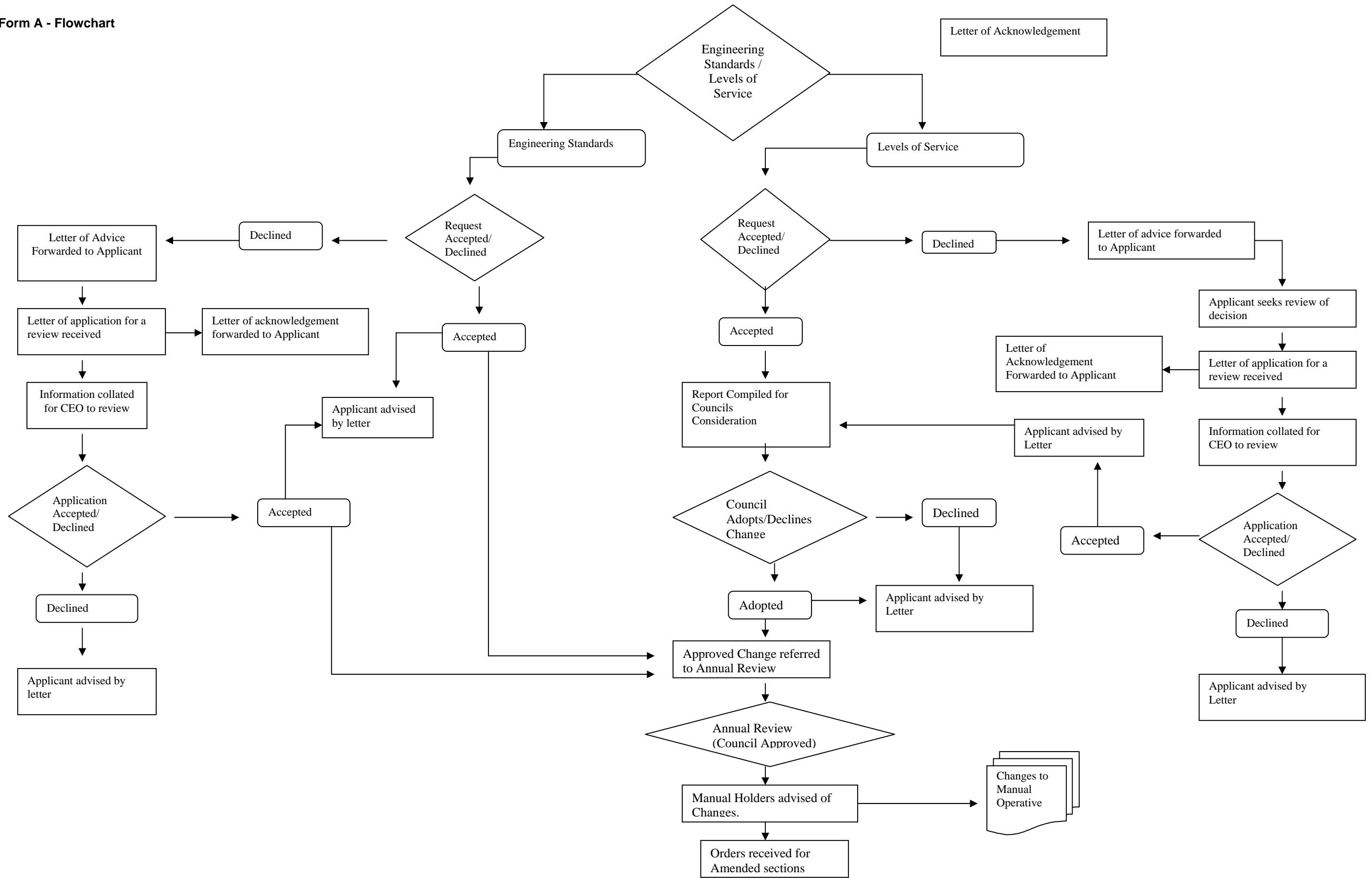
For Public copies of the Manual, there will be a charge. This charge shall cover the cost of document publication only. Payment for the Manual is required in advance, and upon receipt of payment, the Manual shall be forwarded within 5 working days.

7.0 DOCUMENTATION

All forms required for these procedures are as follows:

- a. Form A - Flowchart
- b. Form B - Amendment Request Form
- c. Form C - Record of Amendments.

Form A - Flowchart



Review Procedures

REVISION STATUS

Issue	Date	Revision Description	Author

Unless this document has a Red **AUTHORISED** stamp on the title page, it is not a controlled copy

CONFIDENTIAL INFORMATION.
This document is the property of the Thames-Coromandel District Council, it may not be used or produced wholly or in part without the expressed consent of the Chief Executive

Amendment Request Form

It is the intent of the Thames-Coromandel District Council that the Code of Practice for Subdivision and Development (Engineering Standards) be reviewed annually. We would appreciate receiving from you suggestions for changes or additions. Please complete the form below, with any relevant information and forward to:

Manager Planning
Thames-Coromandel District Council
Private Bag
THAMES
Fax (07) 868 9027

FORM B

Section	Subsection	Amendment Requested

Name	
Organisation	
Address	

Office Use Only:	Date	Decision	Notification	Authorised
Request Received				
Request Decision: Supported/Declined				
Decision Appealed				
Decision Appeal: Supported/Declined				
Council: Supported/Declined				
Change Included: Review Date				

PLANNING INFORMATION SHEET 7

General terms of resource consent

Please read the following information which relates to the terms of your resource consent under the Resource Management Act 1991 (the Act). If you are unsure of anything, please contact your solicitor or planning professional who can further advise you on your rights and obligations under the Act.

Your rights of objection

If you do not agree with the Council's decision on your resource consent, and/or any of its conditions or fees that have been charged, you may pursuant to Section 357 of the Act, lodge an objection with the Council. The notice of objection must be in writing and must set out the reasons of the objection and the suggested remedy. The notice of objection must be received by the Council within 15 working days of receipt of this decision.

Commencement of consent

The commencement date for your resource consent is the date of the letter advising of the Council's decision, unless you lodge an objection against the decision. The commencement date will then be the date on which a decision on the objection is determined.

Where the application was publicly notified or limited notified, and submissions were lodged, the consent will come into effect when the time for lodging appeals against the consent expires (15 working days) and no appeals have been lodged. If an appeal is lodged, the consent will not come into effect until the Environment Court has determined the appeal, or all appellants withdraw.

What is an appeal?

An appeal is a request to the Environment Court to review a decision/and or conditions on a resource consent application. The Court hears the application afresh and makes an independent decision on the matter. The Court is not bound to make the same decision as the Council, but may take into account the reasons for the Council's decision.

Your obligations under other regulations

Your resource consent has only been granted in terms of the Resource Management Act 1991. You must meet the requirements of any other legislation relating to your proposal. You must present a copy of your resource consent decision and a copy of the approved plans when applying for a building consent under the Building Act. It is the responsibility of the consent holder to ensure that all necessary building consents have been obtained and any geotechnical issues have been addressed to Council's satisfaction prior to the commencement of any earthworks (if applicable).

Resource consent from the Regional Council (Environment Waikato) may also be required. Environment Waikato can be contacted on Freephone 0800 800 401.

In some instances your proposal may need to comply with Council's Bylaws. Please contact Council's Environmental Health Department if you require further information with regard to Bylaws.

Payment of bonds

If a bank guaranteed bond is to be entered into by the consent holder instead of a cash bond, it is the responsibility of the consent holder to advise Council of this so that Council's Solicitors can draw up the guarantee. The bond document shall be drawn up at the expense of the consent holder.

Monitoring

The Council monitors resource consents to ensure that conditions are complied with and that development proceeds in accordance with the plans and information submitted with your application. Please note the conditions of your consent relating to 'notification of the commencement of work' and the payment of monitoring fees.

Lapsing of consent

Unless the Council has specified a different timeframe within the resource consent decision, your resource consent will lapse after a period of five years if you have not given effect to it. Any proposal that is not fully implemented and completed within 5 years will require a new resource consent or an extension of time. Once you have given effect to your resource consent you have the right of exercising the consent in perpetuity unless otherwise stated within the consent decision.

Consent to run with land

The resource consent is bound to your land. The right to exercise the resource consent belongs to the owner of the land and any successors in title.

Time extension

Subject to the criteria of Section 125 of the Act, you may apply for an extension of time for your resource consent. Such an application will be treated as a new resource consent application by Council.

Change or cancellation of consent conditions

Subject to the criteria set out in Section 127 of the Act, you may apply to have a condition of consent (other than any condition relating to the expiry date of a resource consent) varied or changed.

Development contributions payable

Development contributions may be charged by the Council in accordance with the Thames-Coromandel District Council Development Contributions Policy and the Local Government Act 1974. Please be advised that the amount of contributions payable will be disclosed in a separate letter sent to you within 10 working days of the granting of the resource consent decision.

Employment of suitably qualified contractors

The onus shall rest with the consent holder to demonstrate that the completed works meet Council requirements and accepted engineering standards. To this end, developers are advised to employ suitably qualified and experienced contractors, and to maintain records of the quality control process.

Contact details

District Office: 07 868 0200

Coromandel: 07 866 1001

Fax: 07 868 0234

Mercury Bay: 07 867 2010

Whangamata: 07 865 0060

E-mail: customer.services@tcdc.govt.nz

STANDARDS

AS 2566.1:1998	Plastics Pipelaying Design <i>AS 2566.1 Supplement 1 1998</i> Polyethylene sleeving for ductile iron pipelines.
AS 3680:1989	
AS/NZS 1100.401:1984	Engineering survey and engineering survey design drawing. <i>Amend: 1</i>
AS/NZS 1158 V3	AS/NZS 1158:- Road-lighting 1158.1 Vehicular traffic Category V) lighting. 1158.1.1:1997 Performance and installation design requirements. 1158.1.3:1997 Guide to design, installation, operation and maintenance.
AS/NZS 1260:1996	PVC pipes and fittings for drain, waste and vent applications. PCV pipes fittings for pressure applications.
AS/NZS 1477:1996	
AS/NZS 1547:2012	On-site Domestic Wastewater Management
AS/NZS 2280:1995	Ductile iron pressure pipes & fittings.
AS/NZS 2290:2009	Off-street parking for people with disabilities.
AS/NZS 3725:1989	Loads on buried concrete pipes. AS/NZS 3725.S1:1989 Commentary supplement.
AS/NZS 4331:-	Metallic flanges. 4331.1:1995, Steel flanges. 4331.2 1995, Cast iron flanges. 4331.3:1995, Copper alloy and composite flanges.
BS 65:1991	Specification for vitrified clay pipes, fittings and ducts, also flexible mechanical joints for use solely with surface water pipes and fittings. <i>Amend: May 1995</i>
BS EN 295: -	Vitrified clay pipes and fittings and pipe joints for drains and sewers. BS EN 295-1 1991 - Requirements (replaces BS 65 1988) <i>Amend: 9290 May 1996</i> <i>Amend: 9429 May 1995</i> BS EN 295-2 1991 - Quality Control - Sampling (replaces BS 65 1988)

STANDARDS

	<i>Amend: 9429 May 1995</i>
	BS EN 295-3 1991 - Test methods (replaces BS 65 1988)
	BS EN 295-4 1995 - Requirements for special fittings, adaptors and compatible accessories.
	BS EN 295-5 1994 - Requirements for perforated vitrified clay pipes and fittings.
	BS EN 295-6 1996 - Requirements for vitrified clay manholes.
	BS EN 295-7 1996 - Requirements for vitrified clay pipes and joints for pipe jacking.
BS 1377:-	Methods for testing soil for civil engineering purposes.
	BS 1377 Part 1 1990 - General requirements and sample preparation.
	BS 1377 Part 2 1990 - Classification tests.
	BS 1377 Part 3 1990 - Chemical and electro-chemical tests.
	BS 1377 Part 4 1990 - Compaction-related tests.
	BS 1377 Part 5 1990 - Compressibility, permability and durability tests.
	BS 1377 Part 6 1990 - Consolidation and permeability tests in hydraulic cells with pore pressure measurement.
	BS 1377 Part 7 1990 - Shear strength tests (total stress).
	BS 1377 Part 8 1990 - Shear strength tests (effective stress).
	BS 1377 Part 9 1990 - In-situ tests.
NZS 3106:1986	Code of practice for concrete structures for the storage of liquids.
NZS 3107:1987	Specification for precast concrete drainage and pressure pipes.
NZS 3124:1987	Specification for concrete construction for minor works.
NZS 3302:1983	Specification for ceramic pipes, fittings and joints.
NZS 3604:1999	Code of practice for light timber frame buildings not requiring specific design. <i>Amend: 1</i>
NZS 4121:2001	Design for access and use of buildings and facilities by

STANDARDS

	disabled persons.
NZS 4203: 1992	General structural design and design loadings for buildings.
NZS 4229:1986	Code of practice for concrete masonry buildings not requiring specific design. <i>Amend: 1,2</i>

NZS 4402:-	Part 1:1986 Methods of testing soils for civil engineering purposes. Part 2: - Soil classification tests. Part 2, Section 2:1986 Test 2.2 Determination of the liquid limit. Part 2, Section 6 1986 Test 2.6 Determination of the linear shrinkage.
NZS 4404:2010	Land Development and Subdivision Engineering.
NZS 4431 1989	Code of Practice for earth fill for residential development. <i>Amend. 1</i>
NZS 4442:1988	Welded steel pipes and fittings for water, sewage and medium pressure gas.
NZS 4452:1996	Code of practice for the construction of underground pipe sewers and drains. <i>Amend: 1</i>
NZS 6701:1983	Code of Practice for road lighting.
NZS 7604:1981	Specification for high density polyethylene drain and sewer pipe and fittings.
NZS 7609: -	Acrylonitrile butadiene styrene (ABS) pipes and fittings for pressure applications. Part 1:1990, Pipes. <i>Amend: A</i> Part 2:1990, Solvent cement fittings. <i>Amend: A</i>
NZS 7610:1991	Blue polyethylene pipes up to nominal size 63 for below ground use for potable water. <i>Amend 1, 2, A</i>
NZS 7642:1971	Specification for unplasticised PVC soil and ventilating pipe, fittings and accessories. <i>Amend: A, 1, 1A, 2, 2A,</i>
NZS 7643:1979	Code of practice for the installation of unplasticised PVC pipe systems. <i>Amend. 1</i>
NZS 7649:1988	Unplasticised PVC sewer, drain pipe and fittings.
NZS/AS 2033:1980	Installation of polyethylene pipe systems.
NZS/AS 1906:2010	Retro-reflective materials and devices for road traffic control purposes
NZS/AS 3725:1989	Loads on buried concrete pipes. <i>Supplement 1</i>

NZS/BS 2494:1990	Specification for elastomeric joint rings for pipework and pipelines.
NZS/BS 5152:1974	Specification for cast iron globe and globe stop and check valves for general purposes. <i>Amend: 1, 2, 3, 4</i>
NZS/BS 5153:1974	Specification for cast iron check valves for general purposes. <i>Amend. 3</i>
NZS/BS 5163:1986	Specification for predominantly key-operated cast iron gate valves for waterworks purposes. <i>Amend. 1, 2</i>
NZS/BS 750:1984	Specification for underground fire hydrants and surface box frames and covers. <i>Amend: 1</i>
NZS/BS 970:	Specification for wrought steels for mechanical and allied geographical engineering purposes.
Part 1:1991	General inspection and testing procedures and specific requirements for carbon, carbon manganese, alloy and stainless steels.

ROADING DESIGN DOCUMENTS

American Pub. - Highway Research:1977	The National Cooperative Highway Research Programme Report No 118 - Location, selection and maintenance of highway traffic barriers. - Michie, JD and Bronstadm ME <i>Figure 3.1 Median Barrier requirements</i>
Austroads:	Guide to Traffic Engineering Practice - Part 5: Intersections at grade, 1988 (with Roading Design Guideline RD-1 Transit 1991)
Austroads	Guide to Traffic Engineering Practice - Part 6: Roundabouts, 1993 (with Roading Design Guideline RD-2 Transit 1991)
Austroads	A Guide to Structural Design of Road Pavements in NZ, 1992 plus NZ (TNZ) Supplement (Nov. 95)
Austroads	Guide to the Geometric Design of Rural Roads, 1989 (with Appendix 3A of the State Highway Control Manual)
Austroads	Waterway Design - A Guide to the Hydraulic Design of Bridges, Culverts and Floodways, June 1994.
LTSA	NZ On-Road Tracking Curves, October 1995.
LTSA:1990	RTS 1 (MoT) - Guidelines for the implementation of Traffic

	Control at Crossroads.
LTSA:1991	RTS 4 (MoT) - Guidelines for Flush Medians.
LTSA:1992	RTS 5 (MoT) - Guidelines for Rural Road Marking & Delineation.
LTSA:1994	RTS 8 (MoT) - Guidelines for Safe Kerblines Protection.
LTSA:1994	RTS 9 (MoT) - Guidelines for the Signing and Laying out of Slip Lanes.
LTSA:1955	RTS 11 - Urban Roadside Barriers and alternative treatments.
NAASRA:1987	Safety Barriers : Consideration for the Provision for Safety Barriers on rural roads.
NZIE (Auckland Branch) now IPENZ	A Guide & Procedure for Hydrological design of urban stormwater systems 1980.
TNZ:1993	Bituminous Sealing Manual (Pavement Design).
TNZ:1994	Research Report No. 32 – Site Design for Heavy Vehicle Facilities.
TNZ:5/1994	Bridge Manual (Design).
TNZ:11/1994	Guideline for the Management of Road Traffic Noise - State Highway improvements.
TNZ:1991	Guidelines for Planting for Road Safety.

Notes:

1. Transit New Zealand has had a name change to New Zealand Transport Agency. At the time of completion of this Code (2012) the names of the roading specifications have not been adjusted accordingly.
2. The current edition of all standards must be used. Refer to www.nzta.govt.nz/resources/specifications.
3. REFER: Chip-sealing in New Zealand (NZTA Manual).
Traffic Control Devices (NZTA Manual).

TNZ SPECIFICATIONS -

TNZ/LTSA:2007	Manual of Traffic Signs & Markings Part 1 Traffic Signs.
TNZ/LTSA:2008	Manual of Traffic Signs & Markings Part 2 Traffic Markings.
NZN Pedestrian Planning and Design Guide	

THAMES COROMANDEL DISTRICT COUNCIL

District Plan.

APPENDIX C1A

STATEMENT OF PROFESSIONAL OPINION AS TO SUITABILITY OF LAND FOR SUBDIVISION

Development.....

Developer.....

Location.....

I.....of.....
(Full name)

.....
(Name and address of firm)

Hereby confirm that:

- 1. I am a geo-professional as defined in section 1.2.2 of NZS 4404:2010, experienced in the field of soils engineering and more particularly land slope and foundation stability as applicable, and was retained by the developer as the geo-professional on the above development.
- 2. Site investigations have been carried out under my direction and are described in my Report(s) reference number.....dated.....
- 3. I am aware of the details of the proposed scheme of subdivision and of the general nature of the proposed engineering works as shown on the following drawings:

.....
.....

In my professional opinion, not to be construed as a guarantee, I consider 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)

- 4. This professional opinion is furnished to the TCDC and the 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 investigation during the course of the works.

SignedDate.....

.....
(Professional qualifications)

APPENDIX C1B

STATEMENT OF PROFESSIONAL OPINION AS TO SUITABILITY OF LAND FOR BUILDING CONSTRUCTION

Development.....

Developer.....

Location.....

I.....of.....
 (Full name)

.....
 (Name and address of firm)

Hereby confirm that:

1. I am a geo-professional as defined in section 1.2.2 of NZS 4404: 2010, and was retained by the developer as the geo-professional on the above development.

2. The extent of my preliminary investigations is described in my Report(s) reference numberdated and the conclusions and recommendations of that/those document(s) have been re-evaluated in the preparation of this report. The extent of my inspections during construction, and the results of all tests and/or re-evaluations carried out are as described in my geotechnical completion report dated

3. In my professional opinion, not to be construed as a guarantee, I consider that *(delete as appropriate)*:

(a) The earth fills shown on the attached Plan No have been placed in compliance with the requirements of the Thames-Coromandel District Council (TCDC) and my specification. (However, lots..... and did not pass final fill specification testing and as a result, specific site investigations and foundation designs will be required here at the time of building consent application).

(b) The completed works take into account land slope and foundation stability considerations, subject to the appended foundation recommendations and earthworks restrictions, (which should be read in conjunction with the appended final site contour plan).

(c) Subject to 3(a) and 3(b) above, the original ground not affected by filling is suitable for the erection of buildings designed according to NZS 3604:2011 provided that:

(i)

(ii)

(d) Subject to 3(a) and 3(b) above, the filled ground is suitable for the erection of buildings designed according to NZS 3604 provided that:

(i)

(ii)

(e) The original ground not affected by filling and the filled ground are not subject to erosion, subsidence, or slippage in accordance with the provisions of section 106 of the Resource Management Act 1991 provided that:

(i)

(ii)

NOTE - These sub-clauses may be deleted or added to as appropriate, to include such considerations as expansive soils where excluded from NZS 3604, and site seismic characteristics as covered in 3.1.3 of NZS 1170.5.

- 4. This professional opinion is furnished to the TCDC and the 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.
- 5. This certificate shall be read in conjunction with my geotechnical report referred to in clause 2 above and shall not be copied or reproduced except in conjunction with the full geotechnical completion report.

SignedDate.....

.....
(Professional qualifications)

APPENDIX D

Definitions

DEFINITIONS

AADT	Annual average daily traffic.
Abutment	An end support of a bridge or similar structure.
Access Chamber	A chamber with working space at drain level through which the drain passes either as an open channel or as a pipe incorporating an inspection point.
Alignment	The horizontal or vertical geometric form of the centreline of the carriageway.
Allotment	The meaning ascribed to it by section 4 of the Building Act 1991.
Applicant	The person or body corporate applying to carry out development, which may require a Resource Consent.
Applicant's Representative	A person appointed by the Applicant to act on its behalf. The Applicant's Representative may be the Applicants Consultant engaged by the Applicant. All notices and correspondence to the Applicant from the Council will be to the attention of the Applicant's Representative.
Area of Benefit	The Council service area as defined within the Area of Benefit maps.
Austrroads	Abbreviation for, Association of Road Transport and Traffic Authorities in Australia and New Zealand (previously NAASRA).
Back Pressure	A condition where the downstream pressure is greater than the supply pressure.
Backfill	The material used to fill an excavation.
Backflow	A flowing back or reversal of the normal direction of the flow that is caused by back pressure and includes back-siphonage.
Backflow Prevention Device	A device that prevents backflow.
Back-Siphonage	Back-flow caused by the supply pressure being less than atmospheric pressure.
Basecourse	The layer of material constituting the uppermost structural element of a pavement, immediately beneath the wearing course; or the graded aggregate that can be used in such a layer.
Berm	The edge of a road reserve between the kerb or surface water channel and property boundary.
Betterment	The increased value of land arising from improved access.

Bridge	A structure designed to carry a road or path over an obstacle by spanning it. This includes culverts and stock under passes with a cross-sectional area greater than or equal to 3.4 square metres.
Building Consent	Consent to carry out building work granted by a territorial authority under Part V of the Building Act; and includes all conditions to which the consent is subject.
Building	The meaning ascribed to it by section 3 of the Building Act (1991).
Building Work	The work for or in connection with the construction, alteration, demolition, or removal of a building; and includes site work.
Carriageway	That portion of the road devoted particularly to the use of travelling vehicles, including sealed shoulders, but excluding parking areas.
Catch pit	A chamber which is installed in the kerb channel or drain and incorporates structures to intercept and retain silt, gravel and other debris.
Cattle stop	A grid across the road to prevent stock movement along it.
Causeway	A raised road across water or a swamp.
Centre Line	A line (or series of lines) painted on a road to delineate the centre.
Centreline	The basic line, at or near the centre or axis of a road or other work, from which measurements for setting out or constructing the work can conveniently, be made.
Channelisation	A system of islands or markings on a carriageway to direct traffic into predetermined paths, usually at an intersection or junction.
Check Valve	(Or non-return valve). A valve that permits flow in one direction but prevents a return flow.
Chevron Board	A patterned reflective sight board with chevrons, which indicates an abrupt change in road direction.
Chip Seal	A wearing course consisting of a layer or layers of chips originally spread onto the pavement over a film of freshly sprayed binder and subsequently rolled into place.
Cladding	The exterior weather-resistant surface of a building.
Clay	A general term for very fine grained soils either with or without cohesive properties: <ul style="list-style-type: none"> - Soil particles smaller than 0.002 mm; or - Colloidal sized complex silicates derived by the natural decomposition of rocks and having a specific chemical composition e.g. kaolinite. The term, 'clay mineral' is frequently used, by scientists to specifically define this latter material.

Compact	To reduce the volume of a material by closer packing of its particles by rolling, tamping or other mechanical means.
Consultant	Is a technical advisor to the Applicant. A Consultant shall have appropriate Professional Indemnity Insurance.
Corrugations	Closely spaced ripples running across the line of traffic, generally where braking and acceleration of vehicles occurs.
Council	Thames-Coromandel District Council
Cover	The depth of material between the surface of the ground or pavement and the top of a culvert, cable or pipe.
Crib Wall	A retaining wall made of interlocking concrete or timber sections with earth or gravel fill between.
Cross Connection	Any actual or potential connection between a potable water supply and a source of contamination or pollution.
Crossfall	The slope or camber measured at right angles to the alignment upwards to the centre or edge of a road. Usually measured in percent.
Crown	The highest point and finished level on the cross-section of a carriageway with two-way cross-fall.
Culvert	One or more adjacent pipes or enclosed channels running across and below road formation level having a cross-sectional area, less than 3.4 square metres.
Cut-Off-Drain	An interceptor drain constructed along the top of a cutting or batter to prevent water running down the face.
Cycle Lane	That portion of the road devoted to the use of pedal cycles only.
Cycle Route	A route (on or off roads) recommended for use by pedal cycles.
Cycle way	A separately formed access-way designed specifically for the use of pedal cycles.
Detention Basin	An area of land or structure purpose built for the temporary holding of stormwater runoff.
Development Impact Fees (DIF)	Development Impact Fee is a development impact contribution or financial contribution as defined in Section 108 Resource Management Act 1991 and includes Reserve Development Impact Fee, a contribution made by the vesting of land or providing cash in lieu (or a combination) for the purposes set out in Section 4 (480).
Diameter	(Or bore) The nominal internal diameter.

Direction Sign	A sign placed usually at an intersection to direct traffic along a route or toward a destination.
Discharge Pipe	Any pipe which is intended to convey discharge from sanitary fixtures or sanitary appliances and includes a waste pipe, combined waste pipe, branch discharge pipe and discharge stack.
Divided Highway	A road with physically separated carriageways for traffic travelling in opposite directions.
Drain	A pipe normally laid below ground level including fittings and equipment and intended to convey foul water or surface water to an outfall.
Drop Structure	A structure built to lower the level of an open channel from one level to a lower level without increasing the velocity of the water in the channel.
Durable	Resistant to wear and decay.
Earthworks	Earthworks means any alteration to the contours, including the excavation and back filling or re-compaction of existing natural ground and the stripping of vegetation and topsoil.
Edge Line	A line painted on a road to indicate the outer edge of the traffic lane.
Electrical Installation	Any electrical fixed appliances, and components used in the reticulation of electricity, which are intended to remain permanently attached to and form part of the building.
Electrical Supply System	The source of electricity external to the electrical installation.
Embankment	A construction work (usually of earth or stone) which raises the ground (or formation) level above the natural surface.
EW	Environment Waikato (Waikato Regional Council)
First Coat Seal	The initial seal placed on a prepared base course.
Floodgate	A gate on the outlet of an open channel or piped system that prevents downstream water from entering back into the pipe or channel.
Footpath	That portion of the road reserve set aside, for the use of pedestrians.
Ford	A shallow place in a watercourse, stream or river where the bed may be crossed by traffic.
Foul Water	The discharge from any sanitary fixture or sanitary appliance.
Foul Water Drainage System	Drains, joints and fittings normally laid underground and used specifically for the conveyance of water from the plumbing system to an outfall.
Functional	In relation to a building, means those functions that a building is to perform

Requirements	for the purposes of the Building Act.
Gabion	A rectangular wire mesh cage filled with boulders, used to retain embankments and riverbanks.
Gantry	A structure covering a public way providing protection from both the side and overhead.
Geotextiles	A general name for synthetic fabrics used for drainage or to improve the stability or load carrying ability of batters and weak formations such as swamps.
Good Ground	<p>Any soil or rock capable of permanently withstanding an ultimate bearing pressure of 300kPa (i.e. an allowable bearing pressure of 100kPa using a factor of safety of 3.0), but excludes:</p> <ul style="list-style-type: none"> (a) 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, (b) 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 in accordance with NZS 4402 Test 2.6, and (c) Any ground which could foresee ably experience movement of 25mm or greater for any reason including one or a combination of: <ul style="list-style-type: none"> Land instability, ground creep, subsidence, seasonal swelling and shrinking, frost heave, changing ground water level, erosion, dissolution of soil in water, and effects of tree roots. <p>Comment: Soils (excepting those described in (a), (b) and (c) above) tested with a dynamic cone penetrometer in accordance with NZS 4402 Test 6.5.2, shall be acceptable as good ground for building foundations if penetration resistance is no less than:</p> <ul style="list-style-type: none"> (a) Blows per 75mm at depths no greater than footing width. (b) Blows per 75mm at depths greater than the footing width. <p>Depths shall be measured from the underside of the proposed footing.</p>
Gradient	The longitudinal slope of a road, pipeline or drain.
Granular Material	Material with a particle size no smaller than sand.
Grease Trap	A device designed to intercept grease in a foul water discharge.
Grit	Fine angular mineral aggregate, usually passing a 4.75mm sieve.
Ground Water	Water flowing or lying under the natural surface of the ground.

Guard Rail	A rail erected to restrain vehicles from physically leaving the road.
Gully Trap	A fitting designed to prevent foul air escaping from the drainage system and used to receive the discharge from waste pipes.
Handrail	A rail that provides support to, and assists with the movement of a person.
Hazardous	Creating an unreasonable risk to people of bodily injury or deterioration of health.
Hazardous Substance	Has the meaning ascribed to it by the Fire Service Act 1975.
Impervious	That which does not allow the passage of moisture.
Information Sign	A sign for the purpose of giving information, not being a warning or regulatory sign.
Inspection Chamber	A chamber with working space at ground level through which the drain passes either as an open channel or as a pipe incorporating an inspection point.
Inspection Point	A removable cap at drain level through which access may be made for cleaning and inspecting the drainage system.
Interceptor Drain	A type of drain that prevents water from flowing in a particular direction, usually towards the road. Best sited well away from the road formation.
Interceptor Trap	A device that will separate and retain desired liquids and solids from a liquid stream and which will provide a water barrier to prevent foul air or gas from entering any downstream system.
Invert	The bottom of the inside of a drainage channel or pipe.
IPENZ	Abbreviation for, Institution of Professional Engineers New Zealand
Judder Bars	Rounded ridges on the road surface, positioned to encourage drivers to restrain vehicle position or speed.
Kerb	A border of rigid material that is usually raised and which is formed at the edge of a traffic lane or shoulder.
Kerb and Channel	Combined kerb and sealed drainage channel.
Kerb Ramp	A short ramp that either cuts through a kerb or is built up to the kerb.
Land Held Under The Same Title	Includes a piece of land, or a building or part of a building, or both, that is: <ul style="list-style-type: none"> (a) A unit under the Unit Titles Act 1972, or (b) Leased under a cross lease registered under the Land Transfer Act 1952, or

	(c) Leased under a company lease registered under the Land Transfer Act 1952.
Lane Line	A line other than the centre line or edge line painted on the road which divides adjacent traffic lanes.
Level of Service	An agreed service level that is in accordance with customer expectations, safety and affordability.
LTSA	Abbreviation for, Land Transport Safety Authority.
Marker Post	A post placed at the edge of the road, equipped with a reflector to assist night driving.
Median	A raised or flush divider separating traffic.
Median Barrier	A device used on multi-lane roads to keep opposing traffic in prescribed carriageways.
Minister	The Minister of the Environment.
MOT	Abbreviation for, Ministry of Transport (now LTSA).
NAASRA	Abbreviation for, National Association of Australian Road Authorities (now Austroads)
Network Utility Operator	A person who: <ul style="list-style-type: none"> (a) Undertakes the distribution or transmission by pipeline of natural or manufactured gas, petroleum, or geothermal energy; or (b) Is an electricity operator or electrical distributor as defined by section 2(1) of the Electricity Act 1992 for the purposes of a work defined by that Act; or (c) Undertakes the piped distribution of potable water for supply; or (d) Is the operator of a sewerage system or a stormwater drainage system.
NZS	Abbreviation for New Zealand Standard, as published by Standards Association of New Zealand (SANZ).
Optimum Moisture Content	The moisture content at which a specified amount of compaction will produce a maximum density under specified conditions.
Other Property	Any land or buildings or part thereof which are: <ul style="list-style-type: none"> (a) Not held under the same allotment, or (b) Not held under the same ownership - and includes any road.
Outfall	That part of the disposal system that discharges stormwater or foul water

	from a drainage system.
Overpass	A grade separation where the traffic passes over an intersecting highway or railway.
Owner	In relation to any land, including any buildings on that land, means the person who is for the time being entitled to the rack rent thereof or who would be so entitled if the land were let to a tenant at a rack rent; and, for the purposes of sections 30, 33 and 43 of the Building Act, includes the: <ul style="list-style-type: none"> (a) Owner of the fee simple of the land; and (b) Any person who has agreed in writing, whether conditionally or unconditionally, to purchase the land or any leasehold estate or interest in the land, or to take a lease of the land, while the agreement remains in force, and ownership has a corresponding meaning.
Passing Bay	A widened length on a narrow bridge or road at which vehicles travelling in opposing directions can pass each other.
Passing Lane	An additional lane on a road to allow one to overtake vehicles travelling in the same direction.
Pavement	The road structure that is constructed on a subgrade and supports the traffic loading.
Pavement Markings	Any lines painted on the road to control traffic movement or parking.
Pedestrian Crossing	A specially marked area giving right of way to pedestrians crossing the road.
Performance Criteria	In relation to a building, means those qualitative or quantitative criteria, which the building is to satisfy in performing its functional requirement.
Person	Includes the Crown, a corporation sole, and also a body of persons, whether corporate or unincorporated.
Piping System	An assembly of pipes, pipe fittings, gaskets, boltings and pipe supports.
Plans and Specifications	Means the drawings, specifications, and other documents according to which works are proposed to be constructed, altered, demolished, or removed, including proposed procedures for inspection during construction, alteration, demolition, or removal, and also including (in respect of construction or alteration): <ul style="list-style-type: none"> (a) The intended use of the works, and (b) The design features or systems which the applicant considers will be required to be included in any compliance schedule issued in terms of section 44 of the Building Act; and (c) The proposed procedures for inspection and routine maintenance for the purposes of that compliance schedule in respect of those design features or systems.

Pressure Control Valve	A pressure limiting valve, or pressure reducing valve.
Primer	In roading, a bituminous material applied to a prepared base in preparation for sealing.
Producer Statement	Any statement that is supplied by or on behalf of an applicant for a building consent or by or on behalf of a person who has been granted a building consent that certain work will be or has been carried out in accordance with certain technical specifications.
Property	Land, buildings, and goods; but does not include incorporeal forms of property.
Public Mains	Mains that are within road reserves and designated easements.
Public Place	Re dangerous goods – any place which is freely open to and frequented by the public, excluded is, private property where the licensee can control the access of the public to dangerous goods.
Pump Station	A building housing one or more pumps for the distribution of potable or wastewater from one part of the network to another.
RAMMS	A computer-based maintenance management system including an inventory, which assists in the management of the maintenance and rehabilitation of pavements and related features. RAMMS stands for Road Assessment and Maintenance Management System.
Regional Council	Environment Waikato (Waikato Regional Council)
Relevant Boundary	A line from which space separation requirements are measured. It may be: <ul style="list-style-type: none"> (a) The boundary between two property titles; (b) The property boundary on the far side of an abutting street, railway or public place, or (c) A notional boundary. <p>Comment:</p> <p>Separation requirements are related to the potential threat from the effects of a fire emanating from the exterior wall of a building. A boundary is not a relevant boundary, if lines drawn parallel to the face of the building and to the boundary, intersect at an angle of more than 80°.</p>
Retaining Wall	A wall constructed to resist lateral pressure from the adjoining ground or to maintain in position a mass of earth.
Retention Basin	An area of land or structure purpose built for the temporary holding of stormwater runoff with a controlled outflow and an engineered overflow.
Road	An area formed for vehicular traffic to travel on. The term “road” usually describes the area between kerbs or surface water channels and includes medians, shoulders and parking areas.

Road Furniture	A general term to describe features placed on or near the road to improve safety and assist drivers. Furniture includes barriers, guard rails, lighting, parting meters, poles, posts, signs, lights,
Road Reserve	A legally described area within which facilities such as roads, footpaths and associated features may be constructed and maintained for public travel.
Road Type	The classification of a road relating to the type of financial assistance applying. Local roads, state highways, special purpose roads and revoked state highways are the four road types currently established.
Rodding Point	A removable cap at ground level through which access may be made for cleaning and inspecting the drainage system.
Roughness	Irregularities in the longitudinal profile of a road, with.
Roundabout	An intersection of two or more carriageways at a common level where all traffic travels around a central island, which induces weaving movements in lieu of direct crossings.
Route Marker	A sign indicating by means of a number, a device, or a colour, the course of a particular route.
RTS	Abbreviation for, Road and Traffic Standards (Section of MOT/LTSA)
Running Course	A thin layer of loose stone that protects the base course of an unsealed road.
Safety Sign	A particular type of sign which comprises a geometric form and a safety colour, together with a safety symbol or text (that is words, letters numbers or a combination of these) and gives a particular safety message.
Safety Symbol	A graphic symbol used in a safety sign.
Sanitary Appliance	An appliance that is intended to be used for sanitation, such as machines for washing dishes and clothes.
Sanitary Fixture	Any fixture which is intended to be used for sanitation.
Scaffolding	Used in the course of the construction process: <ul style="list-style-type: none"> (a) Any structure, framework, swinging stage, suspended scaffolding, or boatswain's chair, of a temporary nature, used or intended to be used for the support or protection of workers engaged in or in connection with construction work for the purpose of carrying out that work, or (b) For the support materials used in connection with any such work; and include any plank, coupling, fastening, fitting or device used in connection with the construction, erection or use of scaffolding.
Second Seal Coat	A chip seal placed on top of a first coat sealed surface.
Secondary Flow Path	The path over which surface water will follow if the drainage system becomes overloaded or inoperative.

Sewer	A drain that is under the control of, or maintained by, a network utility operator.
Shoulder	That portion of the road outside the traffic lanes.
Side Drain	A surface drain normally constructed on the road reserve near the outer boundary to prevent water flowing onto the road, or into the pavement layers, or to take water from a surface water channel and direct it to a water course.
Sight Rail	A timber or metal rail (usually reflective or painted white) placed to highlight a change in road direction or some other hazard.
Siphons	A pipeline between two open channels or two water holding structures, that has all, or part of, its feet at a lower level than that of the channel or structure.
Site Work	Work on a building site, including earthworks, preparatory to or associated with the construction, alteration, demolition or removal of a building.
Slurry Seal	A road surface treatment consisting of a mixture of bitumen emulsion and fine aggregate.
Soak Pit	A large hole created by a soak ring or a large hole filled with rock or stone, to create a large area in the surrounding ground, so that surface run-off can soak away.
Soil Fixture	A sanitary fixture constructed to receive solid and/or liquid excreted human waste. It includes a bedpan disposal unit, slop sink, urinal, water closet pan, bidet and water-flushed sanitary town disposal unit.
Specified Intended Life	The meaning ascribed to it by section 39 of the Building Act is as follows: " <i>Specified intended life</i> " in relation to, a proposed building, or any existing building proposed to be altered, which is intended to have a use of not more than 50 years, means the period of time, as stated in an application for a building consent or in the consent itself, for which the building is proposed to be used for its intended use.
Stabilise	To modify any natural material to improve, or maintain its load carrying capacity. (Usually by adding lime, cement or clay.)
Standard Year	For the purposes of determining natural lighting, the hours between 8 am and 5pm each day with an allowance being made for daylight saving.
Street	A road within an urban locality.
Sub-Base	An optional layer of pavement material placed under the base course and above the sub-grade.
Sub-Soil Drain	A drain below the ground surface with the lower portion, or all, of the back filling of porous material designed to collect water throughout its length.

Substructure	The piers and abutments (including wing walls) of a bridge which support the superstructure.
Subway	A structure constructed to permit the passage of pedestrians, cycles or stock beneath the road.
Sump	A chamber which is installed in the drain and incorporates features to intercept and retain silt, gravel and other debris.
Super elevation	The continuous transverse slope normally given to the carriageway at horizontal curves.
Superstructure	The part of a bridge structure that is supported by the piers and abutments.
Surface Water	All naturally occurring water, other than subsurface water, which results from rainfall on the site or water flowing onto the site, including that flowing from a drain, stream, river, lake or sea.
Surface Water Channel	An open drain or ditch along the side of the road which collects water running off the road's surface, thereby, preventing ground water from entering the pavement layers.
TCDC	Abbreviation for, Thames-Coromandel District Council
Territorial Authority	Has the meaning ascribed to it by section 2 of the Local Government Act 1975; and includes any organisation which is authorised to permit structures pursuant to section 12(1)(b) of the Resource Management Act 1991.
Title Boundary	A boundary with other property. Comment: The terms "Habitable Work" and "Title Boundary" in this document replace the definition "Protected Work" used in the Dangerous Goods Regulations 1980/46, 1985/188, 1985/170.
TNZ	Abbreviation for, Transit New Zealand.
Traffic Island	A defined area within a road, usually at an intersection, from which traffic is intended to be excluded, and which is used for control of vehicular movements and for pedestrian refuge.
Traffic Lane	A portion of the carriageway allotted for the use of a single line of vehicles.
Traffic Volume	The number of vehicles flowing in both directions past a particular point in a given time (E.g. vehicles per hour, vehicles per day).
Trap	A chamber which is installed in the drain and incorporates features to intercept and retain floatable debris.
Underpass	A grade separation where the traffic passes under an intersecting highway or

	railway.
Utility Services	Services such as gas, water, electricity, telephone, sewer and stormwater.
Vehicle Crossing	A formed area where vehicles can cross over channel and footpath.
Viaduct	A long bridge composed of a series of spans, usually over land.
Void-Fill Seal	An emulsion sea, usually consisting of grit or small chips, for filling the voids in an existing coarse textured chip seal surface.
Water Main	A water supply pipe vested in, or is under the control, or maintained by, a network utility operator.
Water Storage Tank	A covered water tank generally used for reserve water storage in case of failure of the water main.
Water Supply System	Pipes, fittings and tanks used or intended to be used in the piping of water from a water main or other water source to sanitary fixtures, sanitary appliances and fittings within a building.
Water Supply Tank (or Cistern)	A covered water tank generally used for the supply to sanitary fixtures or to storage water heaters. A float control valve normally regulates the water supply to the tank.
Water Table	The level at which ground water will finally stand in an un-pumped bore hole, well or other depression.
Water Tank	A fixed container for storing water.
Water Trap	A fitting designed to prevent foul air escaping from the plumbing system or foul water drainage system and entering a building.
Wearing Course	The top bonded layer of an unsealed pavement. Intended to provide a waterproof skid and abrasion resistant surface, it is the layer reshaped during grader maintenance.
Windrow	The long ridge of material usually formed by a grader or earth-moving machine. May also apply to loose gravel built up by traffic between/beside the wheel tracks on unsealed roads.
Wing Wall	A wall extending an abutment, as in a bridge, for retaining the side slopes of earth fill.
Working Day	Any day except a Saturday, a Sunday, Good Friday, Easter Monday, Christmas Day, Boxing Day, ANZAC Day, Labour Day, the Sovereign's birthday, Waitangi Day, and any other day observed in any locality concerned as a public holiday.

PRE-CONSTRUCTION MEETING

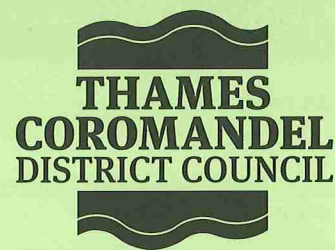
Name Of Subdivision:	
Council File Number:	
Address:	_____ _____

Agenda Items:

Contractor Name:	_____
Contractors Representative Contact Name:	_____
Phone Number:	_____
Sub-Contractor Name:	_____
Sub-Contractors Representative Contact Name:	_____
Phone Number:	_____
Engineering Representative Company:	_____
Engineering Representative Contact Name:	_____
Phone Number:	_____
Qualifications:	_____
Landscape Consultant Company:	_____
Landscape Consultant Contact Name:	_____
Phone Number:	_____
Qualifications:	_____
Landscape Contractor Company:	_____
Landscape Contractor Contact Name:	_____
Phone Number:	_____
1 - Programme Of Works:	_____ _____ _____ _____ _____
2 - Inspection Witnessing Required:	_____ _____ _____ _____

Resource Consent Application Form

Section 88 and 145 of the Resource Management Act 1991



Type of consent being applied for. Please tick	<input type="checkbox"/> LAND USE	<input type="checkbox"/> SUBDIVISION	<input type="checkbox"/> TIME EXTENSION	<input type="checkbox"/> CHANGE / CANCELLATION OF CONDITIONS OR CONSENT NOTICE CONDITIONS
	<input type="checkbox"/> COMBINED LAND USE /SUBDIVISION	<input type="checkbox"/> OUTLINE PLAN / OUTLINE PLAN WAIVER		

Description of the proposed activity / project

please print clearly

List the reasons for the application and any District Plan rules /standards infringed.

Please note: THIS IS NOT YOUR ASSESSMENT OF ENVIRONMENTAL EFFECTS (as required by the Schedule Four of the RMA) but it is important that you fill this section out clearly as consent cannot be granted for any activity that you do not apply for.

Location of proposed activity / project

Describe the location as it is commonly known and in a way that will enable it to be easily identified e.g *the street address, the legal description, the name of any relevant stream, river or other water body to which the application relates, proximity to any well-known landmark, the grid reference.*

Property Address		
Owned By		
Legal Description	LOT:	DPS:
Cross Lease / Unit Title	FLAT / UNIT:	DPS:
Legal Area		
Other information relevant to location		
<hr/> <hr/>		

Applicant Details

please print clearly

Applicant

Applicant		
Postal Address		
Phone no. <i>include area code</i>	Fax no. <i>include area code</i>	Mobile no.
Email Address		

Agent or Nominated Contact if different from applicant

Agent or Nominated Contact name(s)		
Postal Address		
Phone no. <i>include area code</i>	Fax no. <i>include area code</i>	Mobile no.
Email Address		

Owner / Occupier of the land to which the resource consent will apply if different from applicant

Owner/ Occupier name(s)		
Postal Address		
Phone no. <i>include area code</i>	Fax no. <i>include area code</i>	Mobile no.
Email Address		

Addresses for Correspondence & Payment / Invoices

All Correspondence (excluding invoices) sent to:

APPLICANT
 AGENT/NOMINATED CONTACT
 OWNER/OCCUPIER

Person paying for this consent invoices will be sent to:

APPLICANT
 AGENT/NOMINATED CONTACT
 OWNER/OCCUPIER

Additional Consents Required?

Building Consent	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Details or Consent No. if known
Liquor License	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Details or Consent No. if known
Environment Waikato	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Details or Consent No. if known
Other	<input type="checkbox"/> YES	<input type="checkbox"/> NO	Details or Consent No. if known

Pre Application Information

Have you received pre-application information or had a pre-application meeting regarding this proposal from the Council? If YES, provide the name of the staff member(s)

 YES

 NO

Date of Meeting	DD	/	MM	/	YYYY	Staff Member(s) name
-----------------	----	---	----	---	------	----------------------

Site Visit Requirements

As landowner and with the consent of any occupiers or lessees, I agree to Council staff or authorised consultants visiting the site, which is the subject of this application, for the purpose of assessing this application.

If the applicant is not the land owner please provide the landowners or person authorised to sign on behalf of the landowner

Full Name

Signature _____ Date (DD/MM/YYYY) _____

Provide details of any entry restrictions or health and safety concerns that Council staff should be aware of; eg *dogs, locked gates etc*

Notification Information

Are you requesting the application to be publicly notified?

 YES

 NO

Are you requesting the application to be limited notified to any persons who you consider are likely to be adversely affected by your proposal (if the adverse effects on the person are minor or more than minor) and who have not provided their written approval?

 YES

 NO

Please note: it is at the discretion of council to determine who is adversely affected)

Attachments

Please ensure you have attached the following when submitting this application

- | | |
|--|---|
| <p><input type="checkbox"/> A completed and signed application form</p> <p><input type="checkbox"/> A current Certificate of Title (less than 3 months old)</p> <p><input type="checkbox"/> Scaled Site Plan, Floor Plan, Elevations and any other relevant plans (2 copies)</p> <p><input type="checkbox"/> An Assessment of Environmental Effects (AEE), in accordance with the Fourth Schedule of the RMA 1991. Refer to the Planning Information Sheet No. 4 on how to prepare an AEE.</p> | <p><input type="checkbox"/> The written approval of any Affected Person(s). Refer the Affected Person(s) Written Approval Form (Form 8A).</p> <p><input type="checkbox"/> Any other information required to allow this application to be adequately assessed against the relevant assessment criteria set out within the District Plan. You may wish to discuss these requirements with Council's Duty Planner before lodging the application.</p> <p><input type="checkbox"/> If an application for Subdivision, I attach information that is sufficient to adequately define:</p> <ul style="list-style-type: none"> • The position of all new boundaries; and • The areas of all new allotments; and • The locations and areas of new reserves to be created, including any esplanade reserves and esplanade strips; and • The locations and areas of land below mean high water springs of the sea, or of any part of the bed of a river or lake, to be vested in the Crown or local authority under section 237A of the Resource Management Act 1991; and • The locations and areas of land to be set aside as new roads. |
|--|---|

Please note: Pursuant to section 88 of the RMA, the Council may reject the entire resource consent application if the basic supporting information has not been supplied or is found to be inadequate. Please refer to Planning Information Sheet No. 3 for details on resource consent information requirements.

Deposit Fee

The required deposit fee must be paid before any processing of the application will start
(refer to the schedule for Environmental Services Resource Consent Processing Fees)

I enclose a deposit fee of \$ for the processing of this application. 

I/we understand that Council may invoice me for the actual and reasonable costs incurred in the processing of this application. Subject to my/our rights under sections 357B and 358 of the RMA to object to any costs, I/we undertake to pay all and future processing costs incurred by the Council. Without limiting the Council's legal rights, if any steps, including the use of debt collectors, are necessary to recover unpaid processing costs, I/we agree to pay all costs of recovering those processing costs. If this application is made on behalf of a trust (private or family), a society (incorporated or unincorporated) or a company, in signing this application I/we are binding the trust, society or company to pay all the above costs and guaranteeing to pay all the above costs in my/our personal capacity.

Draft Conditions

Do you wish to see the draft conditions prior to the release of the resource consent decision?

 YES

 NO

If yes, Council may extend the processing timeframe pursuant to Section 37A of the Resource Management Act 1991.

Signature

Applicant Full Name *please print*

Signature of Applicant (or person authorised to sign on behalf of Applicant)

Date (DD/MM/YYYY)

Notes to Applicant

You may apply for 2 or more resource consents that are needed for the same activity on the same form.

If the application is lodged with the Environmental Protection Authority, you must lodge a form in Form 16a at the same time.

To: **The Development Planning Manager**
Thames-Coromandel District Council
Private Bag, 515 Mackay Street
Thames 3500

OR

To: **The Environmental Protection Authority ("EPA")**

You must pay the charge payable to the resource consent authority for the resource consent application under the Resource Management Act 1991 (if any). If the application is to the Environmental Protection Authority, you may be required to pay actual and reasonable costs incurred in dealing with this matter (see Section 149ZD of the Resource Management Act 1991).

The information you have provided on this form is required so that your application can be processed under the RMA, so that statistics can be collected by the Council. The information will be stored on a public register, and held by the Council. The details may also be made available to the public on the Council's website. These details are collected to inform the general public and community groups about all consents which have been issued through the Council. If you would like to request access to, or correction of your details, please contact the Council.

Office
use only

DATE & TIME RECEIVED

RECEIPT NO.

DATAWORKS NO.

APPLICATION NO.

PROCESSING OFFICER



Private Pump Station Permit Application

Applicant information (please print)

Applicant Name -----

Address -----

Contact Ph / mobile -----

Normal Activities Carried out on the Property COMMERCIAL / RESIDENTIAL

I agree to enter into a maintenance contract with an appropriate service provider to maintain the pump station and alarm in good working order at all times, and to carry out any maintenance that may be required. Evidence of the contact is to be provided with this application.

If appropriate, I agree that if a gravity sewer connection becomes available in the future, I will connect to it at my costs.

I agree to permit the Thames-Coromandel District Council to inspect the pump station at any time, and agree to pay any reasonable inspection fee that Council may set for the inspection of pump station.

Owner of Property: -----

Signed: -----



Private Pump Station Permit Application

Information required with an application for a private wastewater pump station:

1. Type of activity predominantly carried out on the property(Residential/Commercial)

- Residential - Size of dwelling (No. bedrooms)

- Commercial - (volume of wastewater produced per AS/NZS 1547:2012)

2. Type and Model of Pump/s proposed

3. Manufacturer's Pamphlet giving specifications and Design curve for Pump.

4. Reduced Level of pump chamber invert

5. Reduced Level of connection to sewer main

6. Diameter, material and pressure rating of rising main

7. Position and Type of Alarm



Private Pump Station Permit Application

8. Diagram of Pumping Station showing the following:

- Location Plan (scale 1:200)
- Cross section of pump station (scale 1:20)
- Cover details
- Venting details
- Dimensions of Chamber and Material specification
- Float Levels
- Overflow position and level
- Level and position of main Sewer line where rising main is to connect

9. A copy of the maintenance contract:

THAMES-COROMANDEL DISTRICT COUNCIL
APPLICATION FOR CONNECTION TO WATER/WASTEWATER/STORMWATER/WATER METER

TO: _____ DATE: _____ RECEIPT NO: _____
 RFS NO'S: _____ DEBTOR NO: _____

APPLICANT/AGENT

AGENT: _____ TELEPHONE: _____
 PROPERTY OWNER: _____ TELEPHONE: _____
 PROPERTY ADDRESS: _____
 CONSENT NO SUB/RMA: _____ PROPOSED LOT NO: (subdivision only) _____

PROPERTY TYPE:	Residential <input type="checkbox"/> Subdivision/ Crosslease <input type="checkbox"/> Farming <input type="checkbox"/> Commercial <input type="checkbox"/>	NUMBER OF CONNECTIONS REQUIRED:	Water <input type="checkbox"/> Wastewater <input type="checkbox"/> Stormwater <input type="checkbox"/> Water Meter Only <input type="checkbox"/>
----------------	--	------------------------------------	---

EXISTING CONNECTIONS: WATER _____ WASTEWATER _____ STORMWATER _____

CONNECTION NOTES:

RATES

RATES ADJUSTED FOR CONNECTION _____ CODING UPDATED FOR FUTURE YEARS _____
 DATE OF PROCESSING _____ SIGNATURE (RATES) _____

NOTE:

Veolia Water New Zealand is the only contractor permitted to undertake connections to TCDC water infrastructure, however a TCDC Approved Utilities Contractor may undertake wastewater or stormwater connections. The TCDC Approved Utilities Contractor List is available at all TCDC Service Centres or on our web page www.tcdc.govt.nz.

An inspection fee of \$133.00 (inc GST) will apply for each connection, irrespective of which contractor undertakes the work. A single Council administration fee of \$127.00 (inc GST) is applicable to each application.

A non-standard water connection is a connection outside of Option A - E (see page 2). TCDC Operations will request a quotation from Veolia Water New Zealand for this work. It is expected that all water connections, whether standard or non-standard will be completed within 7 working days following receipt of payment.

For a wastewater or stormwater connection, the applicant must submit to TCDC a quote for the connection from a TCDC Approved Utilities Contractor.

The applicant needs to make payment for all connections and inspection/application fees to Council, prior to any work proceeding.

TCDC Operations will send through an instruction to the approved contractor to proceed with the work. Please note, at least 48 hours before undertaking the work, Veolia Water are to be contacted by the Contractor to arrange for an inspection of the work. Following completion of the work, TCDC Operations must receive the as-built drawings before payment is made to the approved contractor. The as-built information is then entered into Council's GIS system.

Sketch of Preferred Location of Connection(s)

Please show boundary of property and location of any building(s) within the boundary.

APPLICANT/AGENT

If using Approved Contractor, a copy of 'as built' plan for connection must be provided to TCDC when completed.

WATER CONNECTIONS (inc GST)

A	20mm connection up to 5m <u>without meter</u> , in grass berm. No concrete footpath, driveway or road crossing.	\$655.00	
B	20mm connection up to 5m <u>with meter</u> , in grass berm. No concrete footpath, driveway or road crossing.	\$788.00	
C	20mm connection up to 5m <u>without meter</u> , in concrete footpath.	\$877.00	
D	20mm connection up to 5m <u>with meter</u> , in concrete footpath.	\$1,021.00	
E	Install a meter to a serviced connection (no inspection/application fee applies)	\$213.75	

NOTE: Please add \$133.00 (inc GST) per connection for the inspection fee and \$127.00 (inc GST) per application for the Council admin fee. Council is not responsible for locating Power or Telecom cables prior to excavations. In some cases Headwork Contribution Fees may be applicable.

Headwork Fees Applicable: \$ Application Approved: Application Declined:
 Development Contributions Paid: \$

Field Rep Comment: _____

Field Rep Signature: _____ Date: _____

Note Record dial digits as 9999.999 if meter is capable of recording up to 9,999 cubic meters before rolling back to zero

OPERATIONS



Application for Construction of Vehicle Crossing By a Council Authorised Contractor

This application is valid for 12 months following receipt date.

(An authorised Contractor is permitted to work on the road reserve without direct supervision).

Please complete this section and return with payment to your local Service Centre.

Attach a sketch plan indicating dimensions and distance to nearest intersection or bend in road.

Details of Owner/Applicant	Details of Vehicle Crossing Site	
Name:	Street Address:	
Address:	Town:	
Phone No:	Lot No:	
Fax No:	DPS No:	
Construction Type Drawing No: (Circle Applicable Drawing No)		
3000-2A	3000-5B	3000-7A
3000-3A	3000-6A	3000-4A

Name of Approved Contractor constructing the vehicle crossing:
(Refer list of Council Approved Contractors)

(For Office Use Only) - Please forward to Roading Asset Manager

- Sketch Plan Attached
- Applicant/Audit Fee Paid - (\$120.00 incl. GST - covers pre-pour inspection)
Should an additional inspection be required a further fee of \$95.00 will be incurred

Receipt Code:

Date: (Valid for 12 months)

Receipt No:



BOND RELEASE FORM

To	Resource Management Administrator	Date	
From	Snr Development Engineer	File No:	
Full Address	250 Waterways Parade, Pauanui	Consent No:	
Name (Applicant)			
Subject			
Property Address			
An inspection has been undertaken at the above property. All Engineering Conditions have been satisfied.			
Condition Number	Brief Description	Officer	Time (units)
	<p>A site inspection has been undertaken to inspect the works as described in the Schedule being:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>		
	<p>I have inspected the works on, and am satisfied that all is complete and that the Completion Bond of \$..... is able to be released.</p>		
Signed (Development Engineer)		Units	Date
Signed (Group Manager Service Delivery)		Units	Date

PLANNING INFORMATION SHEET 13

Subdivision Bonds

Sections 108 and 108A of the Resource Management Act 1991 provide for a Bond to be entered into in respect of Conditions of Resource Consent.

It is at the sole discretion of the Council whether a bond will be accepted as part of the subdivision process. Council may require a bond as a Condition of Consent, including for the maintenance of Vested Assets and Landscaping, under the Code of Practice for Subdivision and Development

Where a bond is required under a Condition of Consent or a request for Bond is accepted by the Council, the Applicant will be responsible for all costs associated with the Bond process.

What is a Bond?

A Bond is a form of surety which is drafted in document form by Council's solicitor. A Bond secures performance, by an applicant, of specific works or specific obligations. The terms of the Bond will vary on a case by case basis, depending on the circumstances for which it is being required.

The main elements of a Bond are:

- (a) A timeframe - how long is the Bond to run for.
- (b) Monetary value - the cost of the work/obligations being bonded.
- (c) Type of security - bank guarantee or cash.

Term of the Bond

The term or timeframe assigned to the Bond will either be set by the conditions of the consent, the Code of Practice for Subdivision and Development, or by agreement with Council staff on a case by case basis. Under the Code of Practice, a Bond for Maintenance of Vested Assets has a set term of twelve months from issue of 224c (of the Resource Management Act 1991) certification, and for Maintenance of Landscaping a set term of eighteen months from issue of 224c certification. In other circumstances the term of the Bond may either be of shorter or longer duration depending on the reason the Bond is being required or accepted. Where a Bond is being taken for works which have not been able to be completed, Council may only allow a three month term for example, or in situations where landscaping or planting has been completed, the term of the Maintenance Bond may extend to three or even five years.

Value of Bonds

When a Bond is required or being applied for, the onus rests on the applicant to provide a set of costings for review and approval by the Council. This set of costings will need to set out the value of the works to be bonded and will provide the basis for determining the value of the Bond. A 50% contingency will also need to be added to these costings to cover any additional costs which may arise in the event of default by the applicant and to minimise risk for the Council in the event that they are required to complete the bonded works and account for inflation. A completed application form and set of costings will need to be provided by the applicant as part of the 224c application process (or prior).

Types of security

A Bond can either be secured by cash or bank guarantee.

If a **Cash Bond**, an applicant is required to lodge cash funds either direct with Council or through Council's solicitor, who will place in their trust account for the duration of the term of the Bond.

If a **Bank Guaranteed Bond**, the applicant's banking representative will be required to be party to the Bond and provide a guarantee that payment of the Bond's agreed value will be made by the bank in the event of default by the applicant.

Types of Bonds

There are two main types of Bond associated with the subdivision process:

Completion Bond

A Completion Bond is required in circumstances where an Applicant has been unable to complete works required under their consent. A Completion Bond is often requested where an Applicant wants to complete their subdivision and obtain 224c Certification so that new titles can issue. It is at the discretion of Council whether a Completion Bond will be accepted. As example of a situation where a Bond maybe accepted is where an Applicant has not been able to complete Landscaping due to seasonal issues or a new road has not been able to be sealed due to adverse weather conditions. Each application for Completion Bond will be considered by Council as they arise and a decision made based on individual cases. The terms of the Completion Bond will specify what works need to be completed and by when, and will have a monetary value assigned which covers the cost of completing the specified works.

Maintenance Bond

A Maintenance Bond is required in all subdivisions where there are assets to vest in the Council. This is a requirement of the Code of Practice for Subdivision and Development. It remains the applicant's responsibility to maintain any assets that are to vest in Council for a period of twelve months following issue of 224c certification. They also carry a responsibility to maintain landscaping associated with such assets for a period of eighteen months following issue of 224c certification. A Maintenance Bond may also be required for Covenant and General Landscaping Conditions which form part of the subdivision. The requirement for a Maintenance Bond will be set out in the conditions of the consent decision together with the time frame and a summary of the works to be bonded. The monetary value however, will need to be set by agreement with Council and a set of costings will need to be submitted by the applicant for this purpose.

Bond document

Once the term and monetary value of the Bond have been agreed, Council staff will arrange the drafting of a Bond which will set out all of these details, together with a set of standard provisions/rules which govern how the Bond operates and the process which occurs should there be any default by the Applicant. This document is then signed by the applicant and Council. Under Section 109 of the Resource Management Act, every Bond given under Section 108A (of the Act) is deemed to be an instrument creating an interest in the land and maybe registered against a Certificate of Title. It will be at the discretion of the Council whether a particular Bond is registered, or whether it is just retained in Council records for monitoring and enforcement (if required).

Bond release

On expiry of the term of a Bond, an applicant may apply (in writing) to Council requesting release of the Bond. An inspection of the relevant works will be made by Council staff and a decision made as to whether the applicant's obligations have been met and the Bond can therefore be discharged.

Where Council accepts that an applicant has satisfactorily completed the bonded works, instruction will be given to release the Bond in question, and an Acknowledgment of Release of Bond Instrument will be signed by the Council.

In the event that Council does not accept that the applicant's obligations have been met, the applicant will be advised of any remedial works that are required to be undertaken. Should there be further default, the enforcement provisions of the Bond will be invoked.

Note: This sheet is intended for a guide only. For further information on Subdivision Bonds, please contact Council's Development Planning Officer or Senior Development Engineer.

Contact details

District Office: 07 868 0200

Coromandel: 07 866 1001

Fax: 07 868 0234

Mercury Bay: 07 867 2010

Whangamata: 07 865 0060

E-mail: customer.services@tcddc.govt.nz

To: The Development Planning Manager
Thames-Coromandel District Council
Private Bag, 515 Mackay Street,
Thames 3500

Subdivision Bond application form

Office use only

Date received:

Dataworks No:

Application No:

Processing Officer:

Applicant information (please print)

Applicant name

Agent / surveyor name

Applicant address for service

.....

Contact Ph / mobile

Applicant solicitor details

Application details

Application number

Stage (if applicable)

Site address

Legal description

.....

.....

Bond being applied for (please tick relevant box(es))

Completion Bond

Maintenance Bond

Reason for Bond

Please specify, e.g. vested asset maintenance, Incomplete works etc

.....

.....

.....

.....

Bond type (tick relevant box)

Bank guarantee. If yes, please specify bank details

Cash

Calculation of Bond total

Bond amount proposed \$

Calculation details. Please specify or attach supporting calculation/costings

.....
.....
.....

50% contingency \$

TOTAL BOND AMOUNT PROPOSED \$

Signature by or on behalf of the applicant

Applicant's signature (to be signed by applicant or agent)

Applicant's / agent's name (please print)

Date

Office use only

To be completed by Senior Development Engineer / Monitoring Officer:

Type of Bond

Term(s)

Total amount \$

Additional details / instructions

.....

.....

.....

Signed..... **Senior Development Engineer / Monitoring Officer**

Date:.....

Contact details

District Office: 07 868 0200

Coromandel: 07 866 1001

Fax: 07 868 0234

Mercury Bay: 07 867 2010

Whangamata: 07 865 0060

E-mail: customer.services@tcddc.govt.nz **Page 230**



Finger Directional Sign Application

Applicant to Complete

Name: _____ Date: _____
 Address: _____ Application Fee: \$100
 _____ Receipt No.: _____
 Phone Number: _____
 Contractor: _____

Sign Detail

Proposed Wording: _____
 Proposed Location: _____
 Existing Signage: _____
 Location to Existing Signage: _____

Site Plan The proposed application will be undertaken in accordance with the attached standards and conditions. Signed: _____																					

Application complies with definition Yes/No

Council to Complete

Date Received: _____
 Conditions/Requirement: _____

 Applicant Notified: _____
 Installation Inspection Date: _____
 Installation in Compliance: Yes/No (detail) _____
 Applicant advised of Non-Compliance: _____ Yes/No
 Re-Inspected Date: _____ Compliance Yes/No
 If Non-Compliance Proposed Action: _____
 Application Forward to Council for Filing: Yes/No ECM number: _____



Street Opening Application

Applicant: _____
 Telephone: _____
 Contact Name: _____
 Alternative: _____

Nature and Rating of Utility: _____
 Location (Attach Plan): _____
 Estimated Start Date: _____
 Estimated Duration: _____

Programme Attached?	Yes/No
Specification Attached?	Yes/No
New Zealand Transport Agency Informed of Work on State Highway?	Yes/No

Approval to be returned to: Opus International Consultants Ltd., Private Bag 395, Thames, or delivered to 330 Pollen Street, Thames.

I confirm that all works described in this application are in accordance with the conditions for the excavation and reinstatement of trenches

Signed: _____ Date: _____

(For Office Use Only)

This application is strictly in terms of the conditions for the excavation and reinstatement of trenches.

Application Received: _____ Date: _____

Application Approved: _____ Date: _____

Additional Conditions of Approval: _____

Reference: _____

**POWERCO**
Status – Issued
Form – 390F017
Version 2 – 16 May 2006
STREETLIGHT ALTERATION/INSTALLATION FORM

CONTRACTORS, PLEASE NOTE – ONE FORM PER REMOVAL, UPGRADE OR NEW STREETLIGHT

NAME OF OWNER:		
STREET No. & NAME:		
TOWN:		
LIGHT/POLE NUMBER:		
REMOVAL		
Date Removed :		
Lamp Size & Type:		
UPGRADE	INSTALLED	REMOVED
Date:		
Lamp Size & Type:		
NEW		
Date Installed		
Lamp Size & Type		
CONDUCTOR DETAILS		
No. of Phases:	Size:	
Type:	Depth:	
SKETCH SHOWING NEW UNDERGROUND CABLE & LAMP LOCATION:		
<p>The Plan of underground cables shall show sufficient dimensions to enable any person, equipped with only a sketch and measuring tape, to locate (or avoid) any section of the cable. Cable is to be dimensioned to permanent and readily identifiable features on site, preferably to Legal boundaries, otherwise fences, kerbs, power poles or streetlight standards. Dimensions shall be to nearest 0.05m e.g., 17.35m. Plans not meeting the above requirements will be returned and processing to live the installation will not begin until such time as an acceptable plan is received.</p> <p>The Contractor shall keep original of the document, and submit a copy only. This is to ensure that the information is not lost if this form does not reach this office.</p>		
Please return to Network Information		
INSTALLED BY:	DATE:	

CONTRACTOR'S FORM FOR ADDING STREET LIGHTING TO SLIM

Location Details

Installing Company Name					Date Of Installation				
Road Name					Township				
Light Route Position (Metres)			House No Same Side	Left	Right	House No. Opposite Side		Left	Right
Feature Same Side					Feature Opposite Side				

Pole Details

Pole Primary Use <i>(Lighting unit, Electrical dist)</i>		Owner	
Pole Construction <i>(Steel, Concrete etc)</i>		Shape <i>(Round, Square etc)</i>	
Manufacturer/Make		Model	
Mounting		Control <i>(relay, PEC, other state)</i>	
Network Company ID No.		Council ID No.	
Base Dimensions		Level <i>(Height of base of pole from road surface)</i>	
Pole Height		Height of Bracket <i>(Where the bracket is fixed to pole)</i>	
Pole Off Set <i>(From Kerb edge to center of pole)</i>		Light Height <i>(From center of light to road surface)</i>	
Pole Coating <i>(Painted, Powder Coated, Galvanised)</i>		Colour	

Bracket Details

Manufacturer		Type	
Bracket Angle In Degrees (From Pole)		Light Tilt In Degrees	

Luminaire Details

Manufacturer		Model	
Luminaire Coating <i>(Painted, Powder Coated, Galvanised)</i>		Color	
Lamp Manufacturer		Lamp Wattage & Type	



**BUILDING OVER OR CLOSE TO PUBLIC PIPELINES
WASTEWATER, STORMWATER or WATER**

Building Consent Number:	
Name:	
Address:	
Lot No.:	
DP No.:	

1.	A fee is payable to enable an assessment of potential pipeline building over or close to be made. A deposit will be charged and final costs will depend on the complexity of the proposal.	
2.	The applicant must provide: A site plan showing the as built of the pipeline(s) The plan is to show the proposed building footprint. Existing and finished ground levels to LINZ datum. A CCTV inspection of the pipeline(s) complete with inspection report and DVD or Video tape.	
3.	Once approved the applicant must prove the actual location of the pipeline(s) for confirmation by Thames-Coromandel district Council prior to building works commencing.	
4.	A second CCTV inspection must be carried out prior to start of works.	
5.	Any damage to the pipeline(s) or ancillary structure shall be repaired to at the satisfaction for TCDC Water Services Manager under the supervision of TCDC and at the applicants cost.	
6.	All design and construction works shall comply with the TCDC Standards for engineering Design and Construction. All relevant consents must be obtained by the applicant.	
7.	Specific circumstances outside the coverage of this Policy and the TCDC Standards for Engineering Design and Construction will be considered upon receipt of written application to the Water Services Manager.	
8.	Enter into a memorandum of encumbrance.	
9.	All costs associated with meeting the above conditions shall be borne by the applicant.	

Conditions Accepted

Property Owner(s) signature(s)

Date

Property Owners (s) Names (s)

Note the term owner and applicant are synonymous. Any agent acting on behalf of the owner will be deemed to have the owner's authority to enter into a binding contact under this policy.

PLANNING INFORMATION SHEET 12

Engineering plans and specifications checklist

Information Requirements

All engineering plans/drawings submitted to Council shall include and/or be accompanied by the following information as appropriate:

Extent of works covered		
These plans/drawings detail:	• All engineering works	<input type="checkbox"/>
	• Earthworks only	<input type="checkbox"/>
These plans/drawings cover:	• The entire development	<input type="checkbox"/>
	• Stage _____ of _____ stages	<input type="checkbox"/>

Supporting information attached	
3 print sets of the drawings/plans	<input type="checkbox"/>
3 sets of the specifications	<input type="checkbox"/>
3 copies of the Design Report (if not previously included in the consent application). The Design Report shall include information relevant to the application - e.g. pavement design, stormwater calculation sheets, stormwater treatment and mitigation device design calculations, network analysis of water supply pressures, pump station design calculations etc.	<input type="checkbox"/>
3 copies of retaining wall design calculations and PS-1 (unless subject to Building Consent)	<input type="checkbox"/>
Design Certificate (NZS 4404:2004 Schedule 1A) including the schedule of alternative items	<input type="checkbox"/>
Supporting information to enable evaluation of alternative items	<input type="checkbox"/>

Standard information to be shown on drawings/plans	
North point	<input type="checkbox"/>
Existing legal boundaries and legal descriptions of parcels and road names	<input type="checkbox"/>
Scheme plan Lot boundaries and Lot numbers	<input type="checkbox"/>
Plan scale 1:500 where possible	<input type="checkbox"/>
Locality	<input type="checkbox"/>
Plan sheet index	<input type="checkbox"/>
Datum (Auckland 1946 Datum)	<input type="checkbox"/>
N.B. all reduced levels shall be shown on the plans/drawings in terms of the Auckland 1946 Datum	

Earthworks information	
Existing contours	<input type="checkbox"/>
Proposed contours	<input type="checkbox"/>
Extent of batter and fill areas	<input type="checkbox"/>
Subsoil and counterfort drains, including discharge points	<input type="checkbox"/>
Retaining structures	<input type="checkbox"/>
Erosion and sediment control plan	<input type="checkbox"/>

Roading information

Plan and long-section detailing gradient (to a scale of 1:500 where possible)	<input type="checkbox"/>
Footpath(s)	<input type="checkbox"/>
Drainage details (cesspit location and type, outlets)	<input type="checkbox"/>
Landscaping	<input type="checkbox"/>
Services locations within the legal or proposed road	<input type="checkbox"/>
Retaining walls	<input type="checkbox"/>
Median islands and traffic calming devices	<input type="checkbox"/>
Intersection design and control	<input type="checkbox"/>
Street lighting	<input type="checkbox"/>
Typical cross-section detailing pavement structure	<input type="checkbox"/>
Private ways (gradients, drainage and typical cross-sections)	<input type="checkbox"/>

Water reticulation information

Plan detailing pipe location, nominal diameters and pipe materials	<input type="checkbox"/>
Valves, hydrants, tees, bends and other fittings	<input type="checkbox"/>
Pump stations including wiring diagrams and pipework details	<input type="checkbox"/>
Bores (as for pump stations)	<input type="checkbox"/>
Pipes to be removed or abandoned	<input type="checkbox"/>

Sanitary drainage reticulation information

Plan detailing pipe and manhole location, nominal diameters and materials	<input type="checkbox"/>
Long-sections of each line detailing gradients, depths and bedding types	<input type="checkbox"/>
Pump stations including wiring diagrams and pipework details	<input type="checkbox"/>
Rising mains	<input type="checkbox"/>
House connections	<input type="checkbox"/>
Pipes, manholes and pump stations to be removed or abandoned	<input type="checkbox"/>

Stormwater drainage reticulation information

Plan detailing pipe and manhole location, nominal diameters and materials	<input type="checkbox"/>
Long-sections of each line detailing gradients, depths and bedding types	<input type="checkbox"/>
Open channels and direction of flow	<input type="checkbox"/>
All stormwater discharges (piped or open channel) entering the site	<input type="checkbox"/>
Scour protection	<input type="checkbox"/>
House connections	<input type="checkbox"/>
Pipes and manholes to be removed or abandoned	<input type="checkbox"/>
Subsoil drains	<input type="checkbox"/>
Stormwater treatment devices	<input type="checkbox"/>
Secondary overland flow paths - 2% AEP	<input type="checkbox"/>

Reserves and pedestrian accessways information

Proposed contours and shape factor for neighbourhood reserves	<input type="checkbox"/>
Footpaths and walkways, including surfacing, grade and drainage	<input type="checkbox"/>
Fencing	<input type="checkbox"/>
Landscaping (e.g. trees, gardens, fixtures)	<input type="checkbox"/>

Contact details

District Office: 07 868 0200

Coromandel: 07 866 1001

Fax: 07 868 0234

Mercury Bay: 07 867 2010

Whangamata: 07 865 0060

E-mail: customer.services@tcdc.govt.nz

As-Built Spec
Thames Coromandel District Council

Hamilton Environmental Office
Opus House, Princes Street
Private Bag 3057, Waikato Mail Centre, Hamilton 3240
New Zealand

Tel +64 7 838 9344
Fax +64 7 838 9324

TO Craig Goodwin
COPY John Crawford
FROM Steve Andrews
DATE 17 August 2012
FILE 3-350415.39
SUBJECT Retrospective As-Built program



Craig,

Please find attached the short report/spec with regard to the retrospective As-Built & recommendation for a specification for future deliverables to council. The specification will need to be a live document (technology changes) and council should encourage feedback on any difficulties complying with the specification and make changes as required.

Investigation into the "BlackBox" was undertaken. It is software developed by "KARLCAD" which can be used in CAD as a plugin to extract information (council defines) from AS-BUILT drawings. Currently purchased by Tauranga & WBOPDC.

Regards,

Steve Andrews

Project Manager

*As-Built Spec
Thames Coromandel District Council*

MECHANICAL EQUIPMENT_P	Cabinets, Switchboards	Plan
PUMPS_P	Pump Outlines	Plan
WATER_P	Buried Water Pipes	Plan
POWER_P	Buried Power Cables,Ducts	Plan
GAS_P	Buried Gas Pipes	Plan
SEWER_P	Buried Sewer Pipes	Plan
STEELWORK_P	Structural steelwork	Plan
POND_P	Outline of Pond	Plan
TEXT_P	Annotation	Plan
DIMENSIONS_P	Dimensions	Plan
CONCRETE	Structures	Sections & Details
PIPEWORK	Pipework	Sections & Details
CENTRELINE	Centreline of pipework	Sections & Details
MECHANICAL EQUIPMENT	Cabinets, Switchboards	Sections & Details
PUMPS	Pump Outlines	Sections & Details
WATER	Buried Water Pipes	Sections & Details
POWER	Buried Power Cables,Ducts	Sections & Details
GAS	Buried Gas Pipes	Sections & Details
SEWER	Buried Sewer Pipes	Sections & Details
STEELWORK	Structural steelwork	Sections & Details
TEXT	Annotation	Sections & Details
DIMENSIONS	Dimension Lines	Sections & Details

Additional meaningful layer names may be added by users if not shown above.

2.3 Pipeline & Node Networks

Standard Layer Naming for **Pipeline Drawings** is required with all layers in the Plan views required to have _P used at the end of the layer name. This will allow easy identification of layers required for loading into GIS. Views like sections & details will not have the _P at the end of the layer name.

The centreline of the pipeline to be indicated on the drawing as a continuous 3D polyline with Invert levels at pipeline change points. Change points are defined as Manholes, Valves, change of pipeline class, change of pipeline material & bends. Manholes to indicate lid levels . Pipes connecting with manholes to capture entry & exit Invert levels.

LAYER	DESCRIPTION	OBJECT/DATA TYPE	LINE/POINT COLOUR	VIEW
WW_LINE_P	Wastewater Centreline of Pipework	Line/Polyline	Red (10)	Plan

*As-Built Spec
Thames Coromandel District Council*

SW_TEXT	Pipe & Node Network Annotation	Text	Dark Green (89)	Plan, Sections & Details
SW_DIMENSIONS	Pipe & Node Dimension Lines	Line/Polyline	Black (7)	Plan, Sections & Details
SW_CONN_P	Stormwater Connecting Pipe to Main		Green (70)	Plan
SW_CONN_TEXT	Annotation	Text	Dark Green (89)	Plan, Sections & Details
SW_CONN_DIMENSIONS	Dimension Lines	Line/Polyline	Black (7)	Plan, Sections & Details

Additional meaningful layer names may be added by users if not shown above.

2.4 Spatial Data

1. Electronic deliverables to be supplied in NZTM 2000 projection OR Mt Eden Circuit 2000.
2. The vertical Datum to use is Auckland 1946 Level datum.
3. Accuracy of the data supplied is to be +/- 0.01m (10mm) for X,Y and +/- 0.02m (20mm) for Z co-ordinates. This is especially important in areas where there is little variance in topography.

2.5 Contour Models & Survey Data

Contours of finished surface are to be extracted to polylines with elevation & supplied to the council in ESRI shape file format.

Survey data captured during design & As-Built phases to be provided as a .csv file format PENZD as well as being shown on the drawings.

3 Drawing Detail

- a) All drawings that have required the use of x-references shall be supplied with no path names saved with the x-ref files.
- b) All drawing files shall be purged of unused data.
- c) All "Plan Views" of structures, ponds, reservoirs etc to be drawn in the NZTM co-ordinate system. Plans to show the North direction.
- d) An Asset ID on the drawing for each asset matching the asset as identified on the relevant supplied attribute spread sheet.

4.3 Means of Compliance

The information supplied on the As-Built plans is to be Certified Accurate by a Chartered Professional Engineer or Licenced cadastral Surveyer unless alternative arrangements have been signed off by the overseeing Activity Manager.

Provision of the certification acknowledges and accepts the terms below which form part of standard consent or construction contract with TCDC.

As-Builts submitted to TCDC will be checked by the Project Manager and then by the Councils Asset Data Team, against this specification. Should the submitted data not measure up to the required specification and additional input is needed from Council and their Asset Data Team, TCDC reserve the right to retain any bond monies or invoice the relevant contractor/developer with additional charges to recover any costs incurred.

Hard copies & electronic data to be delivered to the:

Project Engineer or Development Engineers Representative

A request for a dated signed receipt on delivery of As-Builts will be granted.

RAMM DATA CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Name of Certified RAMM Technician:	
Qualifications:	

		Y	N/A	N	Applicant Engineer - Date inspected & comments	TCDC Field Rep - Date witnessed and comments
RAMM data captured for the following roading assets:						
DRAINAGE						
	Kerb & channel					
	Lined Channel					
	Culverts (Incl catchpit leads)					
	Manholes					
	Soakpits					
	Catchpits					
	Outlet structures (i.e headwalls, outlet protection, flumes)					
	Inlet structures (other than catchpits)					
PAVEMENT						
	Subgrade					
	Sub Basecourse					
	Basecourse					
SURFACING						
	Surfacing					
FOOTPATHS						
	Footpaths					
STREETLIGHTS						
	Poles					
	Brackets					
	Lanterns					
STRUCTURES						
	Retaining walls					
	Grassed median islands					
	Raised islands					
ROADMARKING						
	Roadmarking					
	Raised Pavement markers					
SIGNS						
	Signs					
	Edge marker posts					
Railings						
	Sight rails					
	Guard rails					

Comments:

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Notwithstanding this level of input, some elements of construction & materials may vary from the ideal details & requirements of the project documents & some departures should be expected. In providing this certification, the consent holder's representative does not warrant absolute compliance but claims that good, normally acceptable engineering design & construction implementation practices have been undertaken.

Print Name & Sign :.....(Engineer)

Date:.....

224c FIELD OFFICER ENGINEERING CHECKLIST

NAME OF SUBDIVISION:	
COUNCIL FILE NUMBER:	
MAIN CONTRACTOR:	
APPLICANT ENGINEER and COMPANY RESPONSIBLE FOR SUPERVISION:	
TCDC FIELD OFFICER:	

	ROADING / ROW	Y	N/A	N	Comments	Check
KERB & CHANNELLING						
1.	• Type as per approved Eng Plans?					
2.	• Free of defects?					
3.	• Smooth?					
4.	• Drainage Ok?					
CARRIAGEWAY						
5.	• Width as shown on approved plans?					
6.	• Within legal boundaries?					
SUBGRADE						
7.	• Tested by applicant's engineer and passed?					
BASECOURSE						
8.	• Compaction tested by applicant's engineer?					
9.	• Adequate depth measured by applicant's engineer?					
SEALING						
Chipseal						
10.	• Pre-seal inspection by applicant's engineer.					
11.	• Is surface true to line & free from bumps?					
12.	• Has the surface got a good clean stone mosaic before sealing?					
13.	• Will water pond on the sealed surface?					
14.	• Has a 2 coat seal been applied?					
Asphaltic Concrete						
15.	• Pre-seal inspection by applicant's engineer.					
16.	• Is surface true to line & free from bumps?					
17.	• Has the surface got a good clean stone mosaic before sealing?					
18.	• Will water pond on the sealed surface?					
Concrete						
19.	• Pre-seal inspection by applicant's engineer.					
20.	• Is surface true to line & free from bumps?					
21.	• Has the surface got a good clean stone mosaic before sealing?					
22.	• Will water pond on the sealed surface?					

Comments:

Print Name & Sign: _____ (Field Officer) Date: _____

224c FIELD OFFICER LANDSCAPING CHECKLIST

NAME OF SUBDIVISION:	
COUNCIL FILE NUMBER:	
MAIN CONTRACTOR:	
APPLICANT ENGINEER and COMPANY RESPONSIBLE FOR SUPERVISION:	
TCDC FIELD OFFICER:	

		Y	N/A	N	Comments	Check
LANDSCAPING						
1.	Has the landscaping completed in accordance with the approved landscape plan?					
2.	<ul style="list-style-type: none"> Is there the right quantity of plants? 					
3.	<ul style="list-style-type: none"> Is there the right type of plants? 					
4.	<ul style="list-style-type: none"> Are the plants the right size? 					
5.	<ul style="list-style-type: none"> Is there enough mulch on the landscaped areas? 					
MAINTENANCE OF LANDSCAPING						
6.	<ul style="list-style-type: none"> Has the applicant supplied a figure for the maintenance of the landscaping for an 18 month period? 					
7.	<ul style="list-style-type: none"> Is the \$ amount sufficient for the purposes? 					
8.	<ul style="list-style-type: none"> Forward to Development Engineer for drawing up of the bond documents. 					
BERMS						
9.	Has the right type of grass been utilized? e.g., Amenity Rye etc.					
10.	Has there been sufficient grass strike? (90% every m2)					
11.	Is there sufficient topsoil on the berms?					
RESERVES						
12.	Has the right type of grass been utilized?					
13.	Has there been sufficient grass strike? (90% every m2)					
14.	Is there sufficient topsoil utilized on the reserve?					
15.	Is the grassed area to undulating?					
16.	Is there any playground equipment installed?					
17.	Is the playground equipment been installed to standard?					
18.	Is there any streetware installed? (seats, rubbish bins, etc)					

Comments: _____

Print Name & Sign: _____ (Field Officer) Date: _____

STREET LIGHT INSTALLATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer - Date inspected & comments	TCDC Field Rep - Date witnessed and comments
STREET LIGHT CONNECTION PROCEDURE						
	Street lights connected to the network to Thames-Coromandel District Councils requirements and supply regulations?					
	MEN Point established at the base of the pole with all removable parts (gear tray, door etc) earted to this MEN point?					
	Signed certificate of compliance by an electrician and completed by an inspector provided?					
	Lights tested but remain isolated?					
	A Thames-Coromandel District Council SLIMM database capture form provided for each light installed?					
	A power authority form for each light has been sent to the appropriate power authority noting that the lights are isolated with a copy sent to Thames-Coromandel District Council?					
AS BUILT DOCUMENTATION FOR ALL STREET LIGHT INSTALLATIONS SHALL CONTAIN THE FOLLOWING INFORMATION AS A MINIMUM. ALL ITEMS BELOW ARE MANDATORY ITEMS REQUIRED FOR DESIGN APPROVAL						
	Isolux Plot					
	Calculation sheet defining lux levels achieved					
	Details of used to perform calculations					
	The fitting type and manufacturers details					
	The fittings IP rating					
	The height the fitting will be installed at and manufacturers details of the pole/column and outreach					
	The setback position for pole installation					
	The lamp type and lumen output					
	Assumptions made in the design production i.e. maintenance factors, NZ road type, arrangement, etc.					
	Producer statement stating the design compliance to As/NZS1158					
	Roading category					

Comments:

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Print Name & Sign:.....(Engineer)

Date:.....

EARTHWORKS CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer Date inspected & comments	TCDC Field Rep Date witnessed and comments
SILT, DUST AND STORMWATER CONTROL						
B1	Silt and stormwater control structures and procedures put in place as per the approved engineering drawing and plan.					
B2	Dust control procedures implemented as indicated in the approved specifications.					
	Note: These procedures may need to remain in place for the duration of the site earthworks.					
CLEARING						
B3	Debris and plant material cleared and disposed from areas shown in the approved engineering drawings.					
TOPSOIL REMOVAL & STOCKPILING						
B4	Topsoil and other organic material removed from areas shown in the approved engineering drawings.					
B5	Topsoil stockpiled or disposed of from site as shown in the approved engineering drawings or as indicated in the approved specifications.					
TEMPORARY ROADS & ACCESSWAYS						
B6	Temporary roads and accessways constructed as shown in the approved engineering drawing.					
CUT TO WASTE & UNSUITABLE MATERIAL						
B7	Waste material removed from site to areas indicated in the approved specifications.					
B8	The removal of material deemed to be unsuitable approved by supervising engineer.					
B9	Dump areas prepared and landscaped as indicated in the approved specifications.					
CUT						
B10	All batters, benches and other cut faces trimmed to grade and level as shown in the approved engineering drawing and specifications.					
FILL						
B11	All fill sourced as shown in the approved engineering specifications.					
B12	All fill placed to line and level, and compacted to the standard shown in the approved engineering specifications and on the approved engineering plans.					
B13	Appropriate compaction tests carried out by the contractor as per the approved engineering specifications and to the approval of the supervising engineer.					

TOPSOIL & LANDSCAPING					
B14	Topsoil spread on areas of cut and fill as shown on the approved engineering plan and as indicated in the approved engineering specifications.				
B15	Areas grassed (hydroseeded) as shown in the approved engineering specifications and on the approved engineering plans.				
B16	Temporary stockpiles and roads cleared and landscaped as required in the approved specifications and to the approval of the supervising engineer.				
B17	Temporary silt control and stormwater control structures cleared as required in the approved specifications and to the approval of the supervising engineer.				
B18	All construction material and plant cleared from site to the approval of the supervising engineer.				

Comments:

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Print Name & Sign :(Engineer)

Date:.....

ROADING CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer Date inspected & comments	TCDC Field Rep Date witnessed and comments
KERBING & CHANNELLING						
B1	Kerb & channel complete and free of defects.					
B2	Kerb type as per approved engineering drawings.					
B3	Carriageway position as shown on approved engineering drawings within the legal boundaries.					
B4	Carriageway width as shown on approved engineering drawings.					
B5	Kerb levels checked & found to be as per approved engineering drawings.					
SUBGRADE						
B6	Subgrade inspected, tested & approved by supervising engineer prior to pavement construction & complies with approved engineering drawings.					
BASECOURSE						
B7	Basecourse supplied complies with approved specifications.					
B8	Basecourse compacted to the approved specifications and TCDC CoP.					
B9	Basecourse depth checked @ 20 centres maximum & found to be not less than that shown on the approved engineering drawings.					
SEALING SURFACE						
B10	Basecourse surface inspected & approved by supervising engineer prior to sealing.					
B11	Sealing surface true to line & free of bumps. Variation from a 5m straight edge is less than 10mm.					
B12	Water will not pond on the sealing surface.					
B13	Sealing surface swept clean of loose aggregate, dust & dirt prior to sealing.					
B14	Sealing surface smooth & tightly bonded & presenting a clean stone mosaic free of a skin of fines.					
B15	Sealing surface reasonably dry prior to sealing.					
SEALING / ASPHALTIC CONCRETING						
B16	Sealing chips supplied comply with the approved engineering drawings and specification.					
B17	Sealing chips adherence to binder achieved.					
B18	Bitumen cutback approved by supervising engineer.					
B19	Application rate approved by supervising engineer.					
B20	Chipseal rolled with pneumatic tyred rollers.					
B21	Second coat chip seal applied.					
B22	Surplus chip removed.					

B23	Asphaltic concrete applied in accordance with the approved engineering drawings and specification.				
B24	Depth of Asphaltic concrete checked & found correct				
ROW ACCESS - URBAN					
B25	Kerb & channel complete and free of defects.				
B26	Kerb type as per approved engineering drawings.				
B27	Carriageway position as shown on approved engineering drawings within the legal boundaries.				
B28	Carriageway width as shown on approved engineering drawings.				
B29	Kerb levels checked & found to be as per approved engineering drawings.				
B30	Subgrade inspected, tested & approved by supervising engineer prior to pavement construction & complies with approved engineering drawings.				
B31	Basecourse compacted depth to be not less than that shown on the approved engineering drawings.				
B32	Basecourse surface inspected & approved by supervising engineer prior to sealing.				
B33	Two coat 3/5 chipseal applied in accordance with the approved engineering drawings and specification.				
B34	Asphaltic concrete applied in accordance with the approved engineering drawings and specification.				
B35	Concrete applied in accordance with the approved engineering drawings and specification.				
ROW ACCESS - RURAL					
B36	Carriageway position as shown on approved engineering drawings within the legal boundaries.				
B37	Carriageway width as shown on approved engineering drawings.				
B38	Subgrade inspected, tested & approved by supervising engineer prior to pavement construction & complies with approved engineering drawings.				
B39	Basecourse compacted depth to be not less than that shown on the approved engineering drawings.				
B40	Basecourse surface inspected & approved by supervising engineer prior to sealing.				
B41	Two coat 3/5 chipseal applied in accordance with the approved engineering drawings and specification.				
STREETLIGHTING					
B42	Street lighting completed as per approved streetlight plan.				
B43	Street lights activated.				
FOOTPATH & BERM					
B44	All footpaths constructed in accordance with the approved engineering drawings.				
B45	All pedestrian accessways constructed in accordance with the approved engineering drawings.				
B46	All pedestrian accessways fenced.				
B47	All berms topsoiled and grassed in accordance with the TCDC CoP.				
MISCELLANEOUS					
B48	Road marking completed as per approved engineering drawings and specifications, TCDC CoP and MOTSAM.				

B49	Benchmarks placed in kerb @ 200m centres maximum from nearest beanchmark.				
B50	Traffic signage erected as per approved engineering drawings and specifications, TCDC CoP and MOTSAM.				
B51	Road name signage erected as per approved engineering drawings and specifications, TCDC CoP and MOTSAM.				
B52	RAMM - Data provided.				

Comments:

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Print Name & Sign:(Engineer)

Date:.....

WATER SUPPLY CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer Date inspected & comments	TCDC Field Rep- Date witnessed and comments
E1	Mains laid in the position shown in the approved engineering drawings.					
E2	All pipework, valves & fittings inspected by Engineer prior to backfill & found to be satisfactory.					
E3	All pipe diameters & classes as per approved engineering drawings.					
E4	All pipe jointing & connecting systems are in accordance with the TCDC Code of Practice, approved engineering plans, & relevant NZ Standards.					
E5	All pipes and fittings are laid on uniform fine bedding.					
E6	All anchor blocks required are installed.					
E7	Minimum 500mm separation distance between mains & other services has been achieved.					
E8	Minimum cover to mains is 900mm in carriageway, 600mm in berms & footpaths, & 350mm at tobies.					
E9	All trench backfill compacted to required standard.					
E10	Fire hydrants provided as per approved engineering drawings.					
E11	Air Valves, sluice valves and peet valves provided as per approved engineering drawings.					
E12	All hydrant and valve boxes installed.					
E13	All Top of hydrant spindles between 115mm and 300mm below finished ground level.					
E14	All hydrants flow tested and certification provided by an independent authority.					
E15	After backfilling, all mains & connections have passed a pressure test in the presence of the supervising engineer.					
E16	A (metered) water connection has been provided to each lot in accordance with the TCDC CoP.					
E17	All mains have been disinfected prior to connection to Council mains.					
E18	New subdivision reticulation system connected to Councils mains.					
E19	All chambers constructed as per CoP.					
E20	Location of mains features including manholes and connections are recorded for as building.					

Comments:

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Print Name & Sign:(Engineer)

Date:.....

WASTEWATER CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer Date inspected & comments	TCDC Field Rep Date witnessed and comments
LINES & LATERALS						
D1	All pipe dia & classes as per approved engineering drawings.					
D2	Lines laid in the position shown on approved engineering drawings.					
D3	Lines laid to grade & levels given on approved engineering drawings.					
D4	All lines laid in accordance with manufacturers instructions, the TCDC Code of Practice & relevant NZ Standards.					
D5	All pipe bedding as per drawings / specifications approved by Council.					
D6	All trench backfill compacted to specified standard.					
D7	All lines free of faults, debris & obstructions.					
D8	All lines over 50m in length have been inspected by CCTV.					
D9	A wastewater connection has been provided for each lot.					
D10	The levels of all connections are such that pumping of wastewater by homeowners will not be necessary.					
D11	Ends of all connections are pegged as per the TCDC CoP.					
D12	All lines have passed on air test.					
D13	New subdivision reticulation system connected into Councils mains.					
MANHOLES						
D14	All joints sealed as per manufacturers instructions.					
D15	All manholes benched and haunched.					
D16	All safety steps installed as per standard drawings.					
D17	All manholes tested.					
RODDING EYES						
D18	All rodding eyes constructed as per CoP.					
CHAMBERS						
D19	All chambers constructed as per CoP.					
AS BUILTS						
D20	Location of mains features including manholes and connections are recorded for as building.					

Comments:

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Print Name & Sign:(Engineer)

Date:.....

STORMWATER CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer Date inspected & comments	TCDC Field Rep Date witnessed and comments
LINES & LATERALS						
C1	All pipe dia & classes as per approved engineering drawings.					
C2	Lines laid in the position shown on approved engineering drawings.					
C3	Lines laid to grade & levels given on approved engineering drawings.					
C4	All lines laid in accordance with manufacturers instructions, the TCDC Code of Practice & relevant NZ Standards.					
C5	All pipe bedding as per drawings / specifications approved by Council.					
C6	All trench backfill compacted to specified standard.					
C7	All lines free of faults, debris & obstructions.					
C8	A stormwater connection has been provided for each lot.					
C9	The levels of all connections are such that pumping of stormwater by homeowners will not be necessary.					
C10	Ends of all connections are pegged as per the TCDC CoP.					
C11	Air test / Water test completed.					
C12	New subdivision reticulation system connected into Councils mains.					
MANHOLES						
C13	All joints sealed as per manufacturers instructions.					
C14	All manholes benched and haunched.					
C15	All safety steps installed as per standard drawings.					
SUMPS & STRUCTURES						
C16	All sumps cleaned out at completion of roading.					
C17	All inlet & outlet structures as per approved engineering drawings.					
AS BUILTS						
C18	Location of mains features including manholes and connections are recorded for as building.					

Comments:

This certification includes any modification made to design criteria during construction & is based on regular observations of work undertaken, witness, assessment & acceptance of quality compliance data together with the contractors stated compliance with the project drawings, details, TCDC Code of Practice details, requirements & specifications.

Notwithstanding this level of input, some elements of construction & materials may vary from the ideal details & requirements of the project documents & some departures should be expected. In providing this certification, the consent holders representative does not warrant absolute compliance but claims that good, normally acceptable engineering design & construction implementation practices have been undertaken.

Print Name & Sign:.....(Engineer)

Date:.....

ELECTRICITY CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer Date inspected & comments	TCDC Field Rep Date witnessed and comments
LINES & LATERALS						
C1	Cables are laid in the position, to the depth and with the separation from other utilities services as shown in the approved Engineering Plans.					
C2	Fixed plant on street sites, are located to the approval of the Thames-Coromandel District Council.					
C3	Electricity is connected.					
C4	Letter of certification from the Power Provider has been received by the Council.					

Comments:

This certification includes any modification made to design criteria during construction & is based on regular observations of work undertaken, witness, assessment & acceptance of quality compliance data together with the contractors stated compliance with the project drawings, details, TCDC Code of Practice details, requirements & specifications.

Notwithstanding this level of input, some elements of construction & materials may vary from the ideal details & requirements of the project documents & some departures should be expected. In providing this certification, the consent holder's representative does not warrant absolute compliance but claims that good, normally acceptable engineering design & construction implementation practices have been undertaken.

Print Name & Sign:(Engineer)

Date:.....

TELEPHONE CONNECTION CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Main Contractor:	
Applicant Engineer and Company responsible for supervision:	
Qualifications:	

		Y	N/A	N	Applicant Engineer Date inspected & comments	TCDC Field Rep Date witnessed and comments
LINES & LATERALS						
C1	Cables are laid in the position, to the depth and with the separation from other utilities services as shown in the approved Engineering Drawings.					
C2	Substations and other fixed plant on street sites, are located to the approval of the Thames-Coromandel District Council.					
C3	Telephone is connected.					
C4	Letter of certification from the Telephone Provider has been received by the Council.					

Comments:

This certification includes any modification made to design criteria during construction & is based on regular observations of work undertaken, witness, assessment & acceptance of quality compliance data together with the contractors stated compliance with the project drawings, details, TCDC Code of Practice details, requirements & specifications.

Notwithstanding this level of input, some elements of construction & materials may vary from the ideal details & requirements of the project documents & some departures should be expected. In providing this certification, the consent holders representative does not warrant absolute compliance but claims that good, normally acceptable engineering design & construction implementation practices have been undertaken.

Print Name & Sign:(Engineer)

Date:.....

LANDSCAPING CERTIFICATION CHECKLIST

Name of Subdivision:	
Council File Number:	
Landscape Contractor: (responsible for supervision)	
Landscape Consultant:	
Qualifications:	

		Y	N / A	N	Applicant Engineer- Date inspected & comments	TCDC Field Rep Date witnessed and comments
A1	Completed landscape works in accordance with approved plan & approved amendments.					
A2	All tree planting pits & garden beds inspected by landscape consultants prior to planting & found to be satisfactory in terms of depth; area; soil fertility (incorporation of organic material) & de-compaction.					
A3	All plant material inspected by landscape consultant & found to be in accordance with the requirements of the approved specification and NZS 4404:2010.					
A4	Type & application rate of fertilizer inspected & approved by landscape consultant.					
A5	Soil surface leveled weeds & grass removed prior to mulching.					
A6	All mulch inspected and confirmed. Mulch applied as per the requirements of the approved specification and NZS 4404:2010.					
A7	Site has been restored & tidied as per requirements of the approved specification and NZS 4404:2010.					
A8	All tree ties uniform, consistent and elasticized.					
A9	All tree stakes uniform and consistent.					
A10	All trees passed with inspection sheet.					
A11	All tree and garden species planted according to sound & accepted horticultural & arboricultural practice.					
A12	Maintenance contract & associated contacts attached.					

Comments:

I am experienced in landscape construction & horticultural / arboricultural practice & have been engaged by the consent holder to supervise maintenance of landscape works for the above development.

I hereby certify that except as noted above, all landscaping works are in specification & the works have been carried out in accordance with the documents approved by Council, the provisions of the Code of Practice, & sound horticulture / arboriculture practices. I now request to be released from the maintenance bond.

Print Name & Sign:.....(Supervising Landscape Consultant) Date:.....

Print Name & Sign:.....(Engineer) Date:.....

**STORMWATER DISPERSAL SYSTEM
(DESIGNED TO EW/VM1 STANDARDS)
CERTIFICATION CHECKLIST**

NAME OF SUBDIVISION:	
COUNCIL FILE NUMBER:	
MAIN CONTRACTOR:	
APPLICANT ENGINEER and COMPANY RESPONSIBLE FOR SUPERVISION:	
QUALIFICATIONS:	

		Y	N/A	N	Applicant consultant date inspected and comments	TCDC Field Rep Date witnessed and comments
ON-SITE LINES & LATERALS						
C1	All pipe dia & classes and other construction material supplied as per approved engineering drawings.					
C2	Soakpits constructed in the position shown on approved engineering drawings.					
C3	Lines and soakpit constructed to grade & levels given on approved engineering drawings.					
C4	All pipelines laid in accordance with manufacturers instructions, the TCDC Code of Practice & relevant NZ Standards.					
C5	All pipe bedding as per drawings / specifications approved by Council.					
C6	All trench and soakpit backfill compacted to specified standard.					
C7	All lines and soakpits free of faults, debris & obstructions.					
C8	Stormwater connections have been provided to each soakpit as shown on the approved engineering drawings.					
C9	The levels of all connections are such that pumping of stormwater by homeowners will not be necessary.					

Comments:

This certification includes any modification made to design criteria during construction & is based on regular observations of work undertaken, witness, assessment & acceptance of quality compliance data together with the contractors stated compliance with the project drawings, details, TCDC Code of Practice details, requirements & specifications.

Notwithstanding this level of input, some elements of construction & materials may vary from the ideal details & requirements of the project documents & some departures should be expected. In providing this certification, the consent holder's representative does not warrant absolute compliance but claims that good, normally acceptable engineering design & construction implementation practices have been undertaken.

Print Name & Sign: (Engineer)

Date:.....

**STORMWATER DISPERSAL/RETENTION SYSTEM
(ALTERNATIVE METHOD)
CERTIFICATION CHECKLIST**

NAME OF SUBDIVISION:	
COUNCIL FILE NUMBER:	
MAIN CONTRACTOR:	
APPLICANT ENGINEER and COMPANY RESPONSIBLE FOR SUPERVISION:	
QUALIFICATIONS:	

		Y	N/A	N	Applicants consultant date inspected and comments.	TCDC Field Rep date witness and comments.
ON-SITE LINES & LATERALS						
C1	All pipe dia & classes, and other construction material supplied as per approved engineering drawings.					
C2	Soak-wells or retention tanks constructed in the position shown on approved engineering drawings.					
C3	Lines and soak-wells constructed to grade & levels given on approved engineering drawings.					
C4	All pipelines laid in accordance with manufacturers instructions, the TCDC Code of Practice & relevant NZ Standards.					
C5	All pipe bedding as per drawings / specifications approved by Council.					
C6	All trench and soak-well backfill compacted to specified standard.					
C7	All lines, soak-wells or retention tanks free of faults, debris & obstructions.					
C8	Stormwater connections have been provided to each soak-well or retention tank as shown on the approved engineering drawings.					
C9	The levels of all connections are such that pumping of stormwater by homeowners will not be necessary.					

Comments:

This certification includes any modification made to design criteria during construction & is based on regular observations of work undertaken, witness, assessment & acceptance of quality compliance data together with the contractors stated compliance with the project drawings, details, TCDC Code of Practice details, requirements & specifications.

Notwithstanding this level of input, some elements of construction & materials may vary from the ideal details & requirements of the project documents & some departures should be expected. In providing this certification, the consent holder's representative does not warrant absolute compliance but claims that good, normally acceptable engineering design & construction implementation practices have been undertaken.

Print Name & Sign:(Engineer)

Date:.....

APPENDIX H1

DESIGN CERTIFICATE - LAND DEVELOPMENT/SUBDIVISION WORK

Issued by
 (Approved certifier firm)

To
 (Developer/owner)

TO BE SUPPLIED TO the Thames Coromandel District Council

For
 (Description of land development/subdivision work)

At
 (Address)

.....has been engaged by.....
 (Consultant/designer) (Developer/owner)

to provide services in respect to the land development and/or subdivision work described above.

I have the qualifications and experience relevant to this project as set out herein and have designed the subject works and confirm that the design is to current engineering practice, and that I believe on reasonable grounds that it satisfies all of the resource consent conditions RMA/SUB, including all relevant requirement and applicable codes and standards.

I / My practice holds professional indemnity insurance and run-off over as required by Council

..... Date
 (Signature of approved certifier on behalf of the approved certifier firm)

..... RPSurv/MNZIS CPEng

..... Other
 (Memberships) (Professional qualifications)

NOTE - This statement shall only be relied upon by the territorial authority named above. Liability under this statement accrues to the approved certifier firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the territorial authority in relation to this land development/subdivision work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$..... (insert)

Outstanding works

APPENDIX H2

CONTRACTOR'S CERTIFICATE UPON COMPLETION OF LAND DEVELOPMENT/SUBDIVISION WORK

Issued by
(Contractor)

To.....
(Principal)

TO BE SUPPLIED TO the Thames-Coromandel District Council

For.....
(Description of land development/subdivision work)

At.....
(Address)

..... has contracted to
(Contractor) (Principal)

to carry out and complete certain land development and/or subdivision work in accordance with a contract, titled

Contract No for
..... (the contract).

I a duly authorised representative of
(Duly authorised agent)

.....hereby certify that
(Contractor) (Contractor)

has carried out and completed the works, other than those outstanding works listed below, in accordance with the contract.

.....Date
(Signature of authorised agent on behalf of)

.....
(Contractor) (Address)

Outstanding works
.....
.....
.....
.....

APPENDIX H3

CERTIFICATION UPON COMPLETION OF LAND DEVELOPMENT/SUBDIVISION WORK

Issued by
(Approved certifier firm)

To.....
(Developer/Owner)

TO BE SUPPLIED TO the Thames-Coromandel District Council

For.....
(Description of land development/subdivision work)

At.....
(Address)

..... has been engaged by
(Consultant/designer) (Developer/Owner)

to provide construction observation review and certification services for the above subdivision work which is described in the specification and shown on the drawings numbered
..... approved by the TCDC.

I have sighted the TCDC consent and conditions of subdivision works being RMA/SUB and the approved specification and drawings.

On the basis of periodic reviews of the works and information supplied by the contractor in the course of the works, I believe on reasonable grounds that the works other than those outstanding works listed below, are complete and have been constructed in accordance with:

- (a) The approved engineering drawings and specifications and any approved amendments;
- (b) The TCDC Code of Practice; and
- (c) Manufacturer's instructions

..... Date
(Signature of approved certifier on behalf of the approved certifier firm)

Professional qualifications

NOTE - This statement shall only be relied upon by the territorial authority named above. Liability under this statement accrues to the approved certifier firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the territorial authority in relation to this land development/subdivision work, whether in contract, toil, or otherwise (including negligence), is limited to the sum of \$ (insert).

Outstanding works

.....
.....
.....
.....

MAINTENANCE COMPLETION CERTIFICATION

**CERTIFICATION UPON THE COMPLETION OF THE MAINTENANCE PERIOD
FOLLOWING THE LAND DEVELOPMENT/SUBDIVISION WORK**

Issued by
(Approved certifier firm)

To.....
(Developer/Owner)

TO BE SUPPLIED TO the Thames-Coromandel District Council

For.....
(Description of land development/subdivision work)

At.....
(Address)

..... has been engaged by.....
(Consultant/designer) (Developer/Owner)

to provide construction observation review and certification services for the above subdivision work which is described in the specification and shown on the drawings numbered

..... approved by the TCDC.

I have sighted the TCDC consent and conditions of subdivision works being RMA/SUB, the approved specification and drawings, and the outstanding maintenance items listed in Appendix H4.

On the basis of periodic reviews of the works and information supplied by the contractor in the course of the maintenance works, I believe on reasonable grounds that the works other than those outstanding works listed below, are complete and have been constructed in accordance with:

- (a) The approved engineering drawings and specifications and any approved amendments;
- (b) The TCDC Code of Practice; and
- (c) Manufacturer's instructions

..... Date
(Signature of approved certifier on behalf of the approved certifier firm)

Professional qualifications

NOTE - This statement shall only be relied upon by the territorial authority named above. Liability under this statement accrues to the approved certifier firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the territorial authority in relation to this land development/subdivision work, whether in contract, toil, or otherwise (including negligence), is limited to the sum of \$ (insert).

Remaining outstanding works

.....
.....
.....

AS BUILT DRAWINGS CERTIFICATION

Development.....

Developer.....

Location.....

I.....of.....

(Full name)

(Name and address of firm)

Hereby confirm that the manhole positions, schedule of co-ordinates, invert and lid levels, connection locations and distances between manholes and pipe sizes are correct.

I note that in the event of incorrect As-Built information, the following procedure will be adopted.

1. The Consultant shall act, within two working days of being informed, to locate the service on site and provide correct As-Built information.
2. If the Consultant fails to locate or respond accordingly, Council will arrange for the works to be carried out and charge the Consultant and take such action as is considered reasonable and necessary.
3. If proven to be correct, Council will meet Consultants cost to establish same.

SignedDate.....

(Professional qualifications)

PLANNING INFORMATION SHEET 9

223 and 224(c) subdivision certification

I have had a subdivision consent issued – now what do I do?

The subdivision consent alone does not give you new land titles. There are still a number of steps to be completed before you can apply to the District Land Registrar (through Land Information New Zealand – LINZ) to have new certificates of title issued.

These steps include the issue of the Section 223 and Section 224(c) certificates. These sections are referred to in the Resource Management Act 1991 (RMA).

When reading through your subdivision consent decision you will notice that it has been issued subject to a number of conditions. These conditions are usually broken up into two parts – those that must be completed before the Section 223 certificate may be issued, and some that must be completed before the Section 224(c) certificate may be issued.

In essence, the Section 223 conditions relate to the preparation of an accurate subdivision scheme plan and associated legal documents such as easements or land covenants that are endorsed on the survey plan (i.e. the 'paperwork'). The Section 224(c) conditions on the other hand, predominantly relate to the completion of physical works on the site, such as the installation of services, or the construction of access routes.

223 Certification

Once subdivision consent is issued an applicant has five years to lodge a Survey Plan with Council. This plan is a detailed plan prepared by a registered surveyor showing the boundaries, areas, and if relevant any easements and covenants that need to be prepared.

If the plan is in accordance with what was approved by Council as part of the subdivision consent then a Section 223 certificate approval will be signed. Once this has been signed by Council the plan may then be lodged with Land Information New Zealand (LINZ) for approval. This lodgment is the responsibility of the applicant.

Applicants should allow a minimum of 5 working days for processing of a 223 certification application. This time frame will be extended where an application is incomplete or the plan is not in accordance with what was originally approved by Council.

224(c) Certification

Once a 223 certificate has been signed by Council, an applicant then has a further three years from the date of signing to obtain a Section 224(c) certificate. A Section 224(c) certificate is a final approval from Council that all conditions of the subdivision consent have been complied with.

A formal application for 224(c) certification needs to be made to Council by an applicant once all works required as part of the subdivision have been completed. This application needs to set out each condition of resource consent and comment on how compliance has been achieved. This application should be accompanied by the relevant 224(c) certificate for signing. Certificate templates are available from Council upon request. *(continued overleaf)*

The processing of a 224(c) certificate requires Council Officers and Engineers to undertake a site inspection, review supporting documentation supplied with the application (including as built plans showing new services), confirm that the relevant development contributions have been paid and undertake a check of each condition of resource consent to confirm that they have been complied to the satisfaction of Council.

Once Council is satisfied that all conditions of subdivision consent have been complied with then the 224(c) certificates will be signed. An applicant must then lodge this certificate with Land Information New Zealand (LINZ) to allow separate titles for the newly created lots to be issued. Please note that Council is not responsible for the application for new titles – the subdivision consent holder or their agent must make this application.

The 224(c) certificate must be lodged with LINZ prior to the lapsing of Section 223 approval (three years from the date of signing); otherwise an applicant's subdivision consent will lapse.

Applicants should allow a minimum of 15 working days for processing of a 224(c) certification application. This time frame will be extended where an application is incomplete, or further works are required to achieve compliance with resource consent conditions.

Consent Notices

A consent notice is a notice which is registered against the titles of the newly created lots which brings future purchaser's attention to certain conditions relating to those lots. A consent notice may be used to address such issues as minimum floor levels, or stormwater disposal for new buildings on the land. An applicant's subdivision consent decision will set out if a Consent Notice is required and the conditions which are to be included in that notice.

A consent notice is issued pursuant to Section 221 of the Resource Management Act and will need to be supplied by the applicant at the time of application for 224(c) certification. A Consent Notice template is available from Council upon request.

Fees for 223 & 224(c) Certification

There is a set fee payable for 223 and 224(c) certification. Please refer to Council's Environmental Services Resource Consent Fees schedule.

Building consent applications

Please note that the Council will not issue a building consent for a newly subdivided property unless the 224(c) completion certificate has been issued for the subdivision consent. In this case your building consent (if you have already applied for one) will be placed on hold until the 224(c) certificate has been issued.

Further questions?

If you have any further questions in relation to the above or in relation to the resource consent process please contact Council's Duty Planner.

Contact details

District Office: 07 868 0200

Mercury Bay: 07 867 2010

Coromandel: 07 866 1001

Whangamata: 07 865 0060

Fax: 07 868 0234

E-mail: customer.services@tcdc.govt.nz



Finger Directional Sign Procedure

1. Purpose

- 1.1 To control the installation of information signs erected to Road Reserve to ensure continuity of signage or traffic safety.

2. Background

- 2.1 A number of requests are received from businesses and other organisations for the installation of directional signs off main road to their place of business.

3. Council Policy

- 3.1 The Council's policy permits the erection of accommodation services signage subject to it being in accordance with the following standards. Advertising of other commercial businesses is not permitted.
- 3.2 All other signage applications are subject to resource consent under Bylaw No. 21.

4. Authority

- 4.1 These procedures only relate to roads that are under the authority of the Thames-Coromandel District Council. This includes the portions of the State Highway Network within the urban area or 70kph speed restriction.
- 4.2 Signage within all other parts of the State Highway Network fall under the authority of the New Zealand Transport Agency. Applications are required to be made to the New Zealand Transport Agency, who have their own specific standards.

5. Definition

- 5.1 To qualify for signage as a motorist accommodation, facilities must be:
- 5.1.1 Available to casual travellers at all times of the year.
- 5.1.2 Be registered with the Thames-Coromandel District Council as an accommodation facility.

6. Standards

- 6.1 Permitted signage dimensions are as follows (refer to sketch fig. 1):
- | | |
|----------------------|---|
| FINGERBOARD: | 1000mm length x 175mm depth x 25mm thickness dressed timber. |
| WRITING: | Capitals Arial Regular - 1000mm height (non-reflective) |
| COLOUR: | Background: Black
Lettering: White |
| LOGOS/SYMBOLS: | Not permitted unless specifically approved by Community Services Manager. |
| CONTENT: | Name of accommodation/type of accommodation
Km - distance from the fingerboard sign |
| HEIGHT ABOVE GROUND: | 1.80m minimum except in Commercial and Town Centre where a minimum height of 2.10m is required. |

7. Posts

- 7.1 Directional Boards are permitted to be fixed to existing street name posts otherwise they are required to have their own post. Fixing to any other sign post is strictly prohibited.
- 7.2 Signs, where able to be fixed to an existing street name post, shall be fixed below the street name plate, having a minimum clearance of 200mm.
- 7.3 Signs, where able to be fixed to an existing sign, shall have a separation distance from existing directional sign of 50mm.
- 7.4 New posts are required to be 100 x 100mm (H3) dressed, painted white. All posts are required to be securely placed into the ground at least 1.0m but shall not be set in concrete. Directional signs shall be fixed to the posts by appropriately sized galvanised bolts.

Identification of any underground services in the proposed location of the post is to be identified prior to excavation.

8. Location

- 8.1 The location of the sign must be 200mm off the edge of the kerb or 200mm off the property boundary on the road reserve berm.
- 8.2 Signage shall not be placed to obscure any other traffic signage by either motorists and/or pedestrians. Signage shall not be placed adjacent to adjoining existing signage.

9. Installation

- 9.1 The applicant will arrange the production and installation of the directional sign and/or post from the Council's approved register of contractors after approval has been granted.
- 9.2 The applicant must inform Council on which approved contractor will be used before Finger Directional Sign is installed.

10. Maintenance

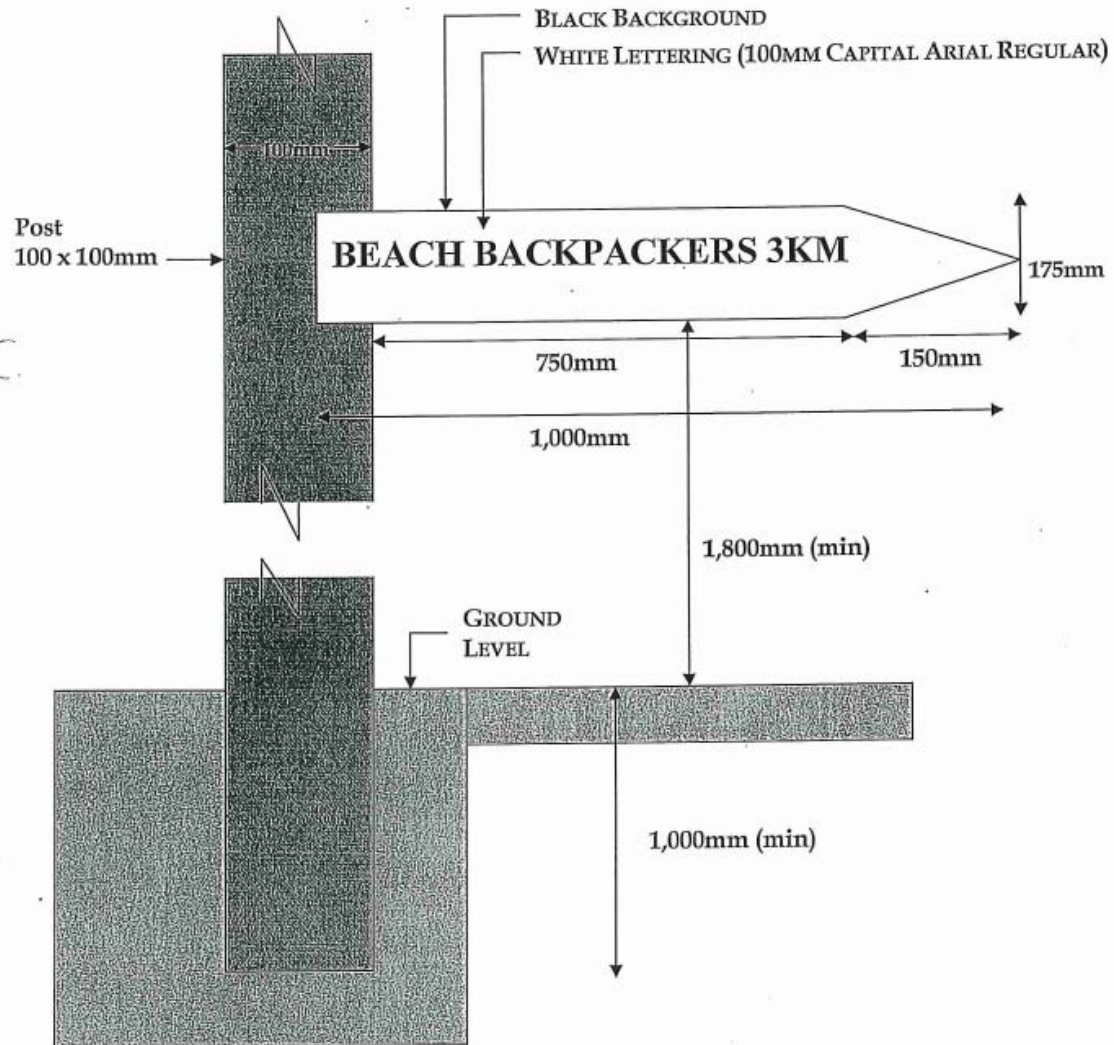
- 10.1 The Council assumes no responsibility for the directional sign once erected. Any future maintenance and/or repair remain the responsibility of the Applicant.
- 10.2 The Council reserves the right to remove any damaged or defective signs without notice.


11. Application

- 11.1 No directional signs are permitted to be erected without having been approved by the Council's Roading Professional Service Providers, Opus International Consultants Ltd.
- 11.2 All applications are required to be made on the attached Finger Directional Sign Application form as no other application will be considered. Customer Services upon checking the details are correctly completed will forward the application to Council's Contract Manager.
- 11.3 The fees shall be receipted to account number _____.
- 11.4 The Council's Contract Manager, Opus International Consultants Ltd, shall check the application and advise the Applicant directly if any amendments are required within 5 working days of its receipt.
- 11.5 The Applicant will advise the Contract Manager when the sign is erected. This installation will be checked and the Applicant advised of any problems that the Applicant will rectify within 48 hours.



Finger Directional Diagram



	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	<p style="text-align: center;">Appendix I2 Road Naming Procedure</p>

1.0 SUGGESTED ROAD NAMES

Suggested road names are to be submitted to the Resource Consent Planner at the time of a subdivision application as per AS/NZS 4819:2011 Sec 4.2

There will be two suggested road names requested for each road. The applicant may show a preference for certain names if so desired.

2.0 AS/NZS 4819:2011 CRITERIA AND THE DISTRICT ROADS INDEX

The resource consent planner sends to Land Information Officer to check the name(s) against AS/NZS 4819:2011 Sections 4.3 & 4.4 and the District Roads Index who advises the planner on suitability or otherwise

The planner will advise the applicant of any changes required or if neither name is appropriate according to the criteria, require another name(s) to be suggested.

3.0 COMMUNITY BOARD APPROVAL


The road names are then referred to the local Community Board Secretary for appropriate Community Board approval by the planner including a plan showing the location of the new road and a copy of the Item for the Order Paper with the suggested names listed. Where a preference has been indicated by the applicant, this will be noted; otherwise the Community Board will be totally at liberty to choose whichever of the names it wishes.

Because research into the name will have been done prior to approval being sought by the Community Boards, there is no need for this item to be noted for special attention by the Council.

4.0 RESERVED ROAD NAME

Name(s) approved by the Community Board are advised to Land Information Officer by the board secretary and are reserved in the District Roads Index.

The checklist and a copy of the minute relating to the road name approval will then be recorded against the consent application and forwarded to the assigned Resource Consent Planner for their information. This name will then be "Reserved"

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	<p style="text-align: center;">Appendix I2 Road Naming Procedure</p>

for that application for a period of 5 years. (If the subdivision plan is not deposited within that time the Resource Consent Planner shall decide whether or not to let the reservation lapse). The reservation will be noted on the District Roads Index along with its application number.

5.0 COMPLETION

The Approved name(s) procedure will be checked as completed as part of the 223 checklist by the appointed person and filed with the application.

THAMES COROMANDEL DISTRICT COUNCIL

STREET LIGHTING

POLICY & GUIDELINES

for

NEW STREET LIGHTING

Prepared by : Power Solutions Ltd
P.O. Box 691
ROTORUA

Phone: (07) 347-8349
Fax: (07) 347-8321
email: psl@powereng.co.nz

Sept 2008

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THAMES COROMANDEL DISTRICT COUNCIL

POLICY & GUIDELINES For NEW STREET LIGHTING

1.0 PREAMBLE

The intent of this document is to improve the quality of the street lighting within the Thames Coromandel District Council area by specifying the criteria to achieve an acceptable standard for equipment and installation.

It also lays out the necessary documentation requirements that Council requires so it can approve new streetlighting installations.

The Thames Coromandel District Council is the owner of the street lights on all Council Roads. Transit New Zealand is the owner of the street lights on all State Highways.

Powerco Ltd is the electricity Network Company in the district.

2.0 OBJECTIVES

2.1 The objectives of street lighting are:

- 2.1.1 Identify road, kerb features and boundaries, carriageways, and to show any obstructions (medians) or abrupt changes of footpaths, via the use of appropriate illumination and positions of luminaires.
- 2.1.2 To show the general run of the road, location and curves, intersections and junctions by an orderly layout of luminaires.
- 2.1.3 To provide an acceptable illumination over areas of road between property boundaries for safe and comfortable pedestrian movement, crime prevention, and property identification.

3.0 STANDARDS

The AS/NZS Standards detailed below shall apply for all street lighting installations in the Thames Coromandel District Council area. A Developer proposing a lighting scheme to these guidelines will be required to prove a thorough understanding of and compliance with these standards:

- (a) AS/NZS 1158.0:2005 - Part 0: Introduction
- AS/NZS 1158.1.1:2005 - Part 1.1: Vehicular traffic (Category V) lighting, Performance and design requirements.
- AS/NZS 1158.1.3:1997 - Part 1.3: Vehicular traffic (Category V) lighting, Guide to design, installation, operation and maintenance.
- AS/NZS 1158.2:2005 - Road Lighting – Computer procedures for the calculation of light technical parameters for Category P and Category V lighting
- AS/NZS 1158.3.1:2005 - Part 3.1: Pedestrian area (Category P) lighting,

- Performance and design requirements.
- AS/NZS 1158.6:2004 - Part 6: Luminaires
Lighting for roads and public spaces
- (b) NZS 6701:1983 - Code of practice for road lighting.
 - (c) Electricity Regulations: 2003.
 - (d) AS/NZS 3000:2000 - Where these supersede the Electricity Regulations and Codes of Practice.
 - (f) NZS 4203:1992 – General structural design and design loadings for buildings
 - (g) AS/NZS 1170.0:2002 - General Principles and relevant supplements (Structural Design)
 - (h) AS/NZS 1170.1:2002 - Permanent, imposed and other actions and relevant supplements (Structural Design)
 - (i) AS/NZS 1170.2:2002 - Wind actions and relevant supplements (Structural Design)

4.0 SERVICES

The Applicant shall provide the following full range of services to support their development of the project:

- (a) Design requirements and scheme proposal (allow to engage a competent designer of street lighting services) for Council's evaluation.
- (b) Supply of luminaires, poles/column supports, including foundations, cabling and connection to the Powerco Network.
- (c) Installation, inspection, testing and commissioning of (b) above.
- (d) Full design, material supply, documentation and drawings of the equipment used.
- (e) All regulatory, statute, application, inspection and connection costs.
- (f) Maintenance of the project for the specified period.
- (g) Compliance, confirmation and full supporting documentation for the development.

5.0 LUMINAIRE AND SUPPORT (POLES) TYPES/STYLES

5.1 General

Council wishes to maintain a level of flexibility to allow applicants to offer luminaires and poles of various designs and configuration to suit a particular theme for a subdivision. However, any such type and style offered shall meet Council's criteria as outlined below;

5.2 Specific Luminaire Design Criteria to be Met

The Applicant shall meet the following minimum requirements:

- 5.2.1 AS/NZS 1158.6:2004 – Part 6 Luminaires: Lighting for roads and public spaces.
- 5.2.2 Luminaires shall be of the HID (High Intensity Discharge) type.
Incandescent, fluorescent, mercury vapour or tungsten Halogen type luminaires are not permitted.
- 5.2.6 All luminaires shall be of a type and brand currently readily available and accepted on the New Zealand market and be supported for ongoing availability, for a minimum of 25 years, for servicing and spares by a New Zealand manufacturer or reputable and recognised agent in New Zealand.
Luminaires shall have an IP66 rating, a sealed optic, cut-off or semi cut-off diffuser options and have the lamp positioned entirely within the optic reflector to minimise glare.
- 5.2.7 All luminaires shall be die cast or spun aluminium with corrosion resistance to minimum LM6 standard and can be surface treated and/or painted to enhance corrosion protection and aesthetic purposes.
- 5.2.8 Access to the control gear shall be via tool less action for quick and easy servicing.

5.3 Poles/Supports

5.3.1 General

All poles/supports shall be free standing. There shall be one luminaire to each pole unless prior approval has been given by Thames Coromandel District Council.

The poles shall be of such configuration as to allow easy and ready fixing or replacement of luminaires without the need to lower the poles.

All luminaires and poles within any one area/subdivision shall be of the same type.

5.3.2 Fabrication

All poles shall be of octagonal, galvanised steel construction. The use of any other type of pole, for example decorative, must have pre-approval from Thames Coromandel District Council.

5.3.3 Uniformity

All poles within any one area/subdivision shall be of the same type. Council reserves the right to direct the Developer to match the luminaires and/or poles to any others used in an adjacent or similar subdivision for the sake of uniformity.

5.3.4 Outreaches

Council's policy for standard streetlighting installation is curved and elliptical outreach arms. Mitred outreach arms may only be used with specific approval from Council.

5.3.5 Poles/Outreach Arm Coatings

All poles shall be of a non-corrosive material; either, primary material such as aluminium, or corrosive treatment of metal such as hot dip galvanising over ferrous metal. All poles shall be coated in accordance with AS/NZS

2312:2002 'Guide to protection of structural steel against atmosphere corrosion by the use of protective coatings'. Where poles are to be painted the Applicant shall also comply with the 'Protective Coating Specification' contained in Appendix 3 of this guide. The Applicant shall provide Council with a certificate to prove that the pole(s) coating(s) have been certified as compliant with either or both of the aforementioned Standards and specification.

5.3.6 Erection of Poles

The Applicant shall prove full compliance with seismic, civil and wind loading requirements as set out in the NZ loading standard; (NZS 4203:1992).

Council's preferred standard pole for streetlighting installations is Octyl, galvanised poles. No wooden, concrete or other metal type poles will be accepted without specific approval from Council. All streetlighting poles shall be erected within a tolerance of +/- 2° of the vertical plain.

5.3.7 Service/Cable Access

Each pole shall be equipped with an access hatch of not less than 130mm wide x 250mm high opening for electrical cable entry and termination.

Each service access/connection point shall:

- (a) Be equipped with a street lighting cut out of the Cutler Hammer type. (As detailed in appendix 1) The cut out shall be complete with a loop in loop out extension box for connecting the neutral conductor and have a suitably rated HRC fuse or an appropriately sized MCB mounted within it.
- (b) Be equipped with a designated earth stud with a crimp lugged link between the stud and the Cutler Hammer street light cut out.
- (c) An earthing bond between the above earth stud and the metal casing/frame of the pole/support.
- (d) Internal cabling, phase neutral and earth from the above cable connection point up inside the pole to the luminaire.
- (e) The access cover shall be screwed in place with recessed or counter sunk stainless steel Allen screws, fixed in at least two places - top and bottom.
- (f) The cover shall be labelled with either cast in, engraved wording or separately externally stainless steel (316) screw fixed label "Danger live wires".
- (g) The access point shall be at the base of the pole but not more than 600mm above ground level.

5.3.8 In-ground Fixing

Poles/supports may be fixed in place by either direct burial at their footing (for that particular type of design) or via a holding down bolt reinforced cage set in concrete.

6.0 CABLING INSTALLATION/UNDERGROUND SERVICE

6.1 General

The Applicant shall allow designing the underground cabling from the notified point of supply to all street lights. The Applicant must ensure that any underground installation work is completed by approved Powerco contractors who are holders of current up to date Powerco Warrants for the type of work prescribed.

The cabling type, system and installation shall be in full compliance with the Electricity Regulations, relevant Codes of Practice, AS/NZS 3000:2000 and associated Standards and be of a type that meets with the minimum standard requirements of Powerco. Coordination with Powerco and evidence of any agreements shall be provided to Council.

Full allowance shall be made for load capacity, volt drop and environmental requirements for the particular site. All underground cabling shall be supplied and installed prior to completion of the subdivision.

6.2 Earthing

The Applicant shall ensure each pole/support has an effective earth as required under the Electricity Regulations. This may be either via its own metal work if an Oclyte type galvanised pole with the footing buried direct in the ground; or via a hold down bolt cage and concrete footing the metalwork of which shall be earthed

The preferred method for establishing an MEN point at the base of each lighting column is by use of a street lighting cut out of the Cutler Hammer type. The cut out shall be complete with a loop in loop out extension box for connecting the neutral conductor.

Proof of testing of effective earthing to AS/NZS 3000:2000 shall be provided via written records of all results at each pole/support location.

6.3 Direct Buried Cables

All cable shall be direct buried at not less than 600mm below ground level and be mechanically protected with at least 100mm wide "Magslab". Alternatively, a screen/armour protected cable may be used.

6.4 Cable Type/Terminations

The cable type and terminations must comply with the Powerco approved standard for each installation. Where possible tee joints in the cables must be avoided. If in-ground joints are used then the Applicant must record the exact location of the joint on the 'As Built' dimensioned plans submitted at the end of the project.

6.5 Point of Supply

The cable for the installation shall be provided from the point of supply as defined/agreed with Powerco.

This point of supply shall be either at the transformer or at the boundary point, preferably at a ground-mounted pillar.

The Applicant shall be responsible for all Powerco related costs.

6.6 Other Underground Services

The Applicant shall ensure all other underground services are identified and the lighting cable is routed and run to ensure at least 500mm lateral separation from any other service.

Mark all new lighting cables clearly on all 'As Built' drawings with the exact route, depth of burial and dimension from readily identified surface features and/or equipment.

7.0 ELECTRICAL

7.1 General

The Contractor/Developer shall allow engaging a specialist lighting installation designer and Applicant, who has proven competence in this field and has appropriate Powerco Warrants to undertake the construction/installation work.

7.2 Installation

All work shall be installed, inspected and certified according to the Electricity Regulations, its Codes of Practice, AS/NZS 3000:2000 and its associated Standards.

A streetlight has been defined by the Energy Safety Service (ESS) as an 'Electrical Installation' and as such requires the installation to be certified with a Certificate of Compliance issued before connection to the Powerco point of supply. The Applicant shall submit a copy of the Certificate of Compliance to the Thames Coromandel D.C. as part of the 'As Built' documentation for the project as well as retaining a copy for their records.

The Applicant can submit one Certificates of Compliance (COC) for each Point of Connection (Circuit) rather than one per streetlight.

7.3 Records

The Applicant shall record all test results which shall be carried out to AS/NZS 3000:2000 and append those results to the Certificate of Compliance.

8.0 DOCUMENTATION

8.1 Design Information:

The Applicant shall provide the following documentation to Council for approval, as part of the "Engineering Design Plans"; this information shall be submitted prior to the supply and installation of any lighting.

- (a) Isolux Plot (Mandatory)
- (b) Calculation Sheet defining the Lux levels achieved.
- (c) The software used to perform the calculations
- (d) The fitting type and manufacturer's details
- (e) The fittings IP Rating
- (f) The height the fitting will be installed at and manufacturer's details of the pole/column and outreach

- (g) The setback position for pole installation
- (h) The lamp type and lumen output
- (i) Assumptions made in the design production i.e. maintenance factors, NZ road surface type, arrangement, etc.
- (j) Producer statement stating the design's compliance with AS/NZS1158
- (k) Roading Category i.e. P3, P4, etc

8.2 “As Built” Documentation:

Once the streetlights have been installed, the Applicant shall provide Council with the following documentation:

- (a) A copy of the Certificate of Compliance.
- (b) Completed SLIM data sheet for each pole (Refer Appendix 2 of this guide).
- (c) “As Built” drawings of the project.
- (d) Details and specification of the street lighting cut out utilised.
- (e) Digital photos (Jpeg. format) of the pole and luminaire.
- (f) Written confirmation that Powerco’s requirements have been fulfilled.
- (g) Ownership/demarcation boundaries as agreed with or defined by Powerco.
- (h) Agreement for change of ownership of the streetlighting installation. This shall be typically in the form of a letter written by the Applicant stating that they gift the street lights to the Thames Coromandel D.C. and signed by both parties.

Failure to supply all or part of the above listed ‘As Built’ items will impact on the Council’s ability to issue the subdivision/development with a final completion certificate.

9.0 PEER REVIEW

Thames Coromandel D.C. reserve the right to undertake a peer review of any street lighting design proposed with an application by submitting the design to their streetlighting professional services consultant at the design stage of the project and before any construction work is undertaken. This is to ensure that the lighting scheme proposed is thorough, complete and compliant with this document.

Failure to supply all or part of the information listed in 8.1 (Above) for the peer review will result in Thames Coromandel District Council reviewing the Applicants right to continue with the subdivision/development. If required, the Council reserves the right to engage his specialist streetlighting consultant to provide any necessary missing information. All associated costs for this engagement will be passed on to the Applicant.

10.0 OWNERSHIP BOUNDARIES/DEMARCATON POINTS

The Applicant shall clearly establish the ownership boundaries and demarcation points between Powerco and the new streetlighting installation.

Once the work is completed an Agreement of Change of Ownership for the in ground cabling shall be reached with Powerco for handover of the cabling network to them and to whatever commercial/financial arrangement is made between the two parties at that time. There shall be no ongoing cost to the Thames Coromandel D.C.

The demarcation point then between the Powerco and actual street lights shall be at the lighting pole/support fuse.

It is important for all supporting documentation, as mentioned above, also to be handed over to Council and such handover/change of ownership shall not be considered complete until such documentation transfer is finalised.

11.0 COMMERCIAL

11.1 Suppliers/Contractors

The Applicant shall engage only equipment suppliers acceptable to Council and Contractors acceptable to Powerco. Only Approved PowerCo network contractors are to install underground cables and to make the final connections.

The details of the proposed Approved PowerCo network contractor are to be submitted to Thames Coromandel District Council before any cable installation is carried out.

11.2 Defects Liability

The Applicant shall maintain the streetlights after completion and handover to Council for a twelve (12) month period from the handover date. During this period the Applicant's Contractor shall carry out routine maintenance work necessitated by the statutory requirements and as required by normal maintenance practise. Any defects which occur shall be promptly repaired, within one week of the fault being identified. The Applicant's Contractor shall keep records of each inspection, the defects found and remedial actions taken and submit this to Council at the end of the twelve (12) month period as a historical record for the installation. This submission will be the formal notification to Council of their responsibility for the ongoing maintenance of the assets. Thereafter Council will maintain them under the Council's street lighting maintenance contract.

APPENDIX 1

DRAWINGS

Street Lighting Cut-Out Details

Street Lighting Single Luminaire Wiring Diagram

SL3
Street Lighting Cut-Outs 25A, 240V AC



THE RANGE

LIVE, NEUTRAL & SEPARATE EARTH VERSIONS:

Single pole with 1 fuseway (Classification, type 1).
 Double pole with 1 fuseway (Classification, type 4).
 Double pole with 2 fuseways (Classification, type 6).
 The above are fitted with PVC grommets and are available with SWA gland/ferrule plates

LIVE & COMBINED NEUTRAL / EARTH VERSIONS:

Single pole with 1 fuseway (Classification, type 2).
 Single pole with 2 fuseways (Classification, type 3).



FEATURES

- Designed to meet BS 7654 and includes requirements for use by Lighting and Highway Authorities.
- Robust construction manufactured from quality thermo-plastic injection moulded material.
- Single & double pole versions accept tag type fuselinks from 2A to 25A.
- Compact dimensions – a narrow width of 74mm makes units suitable for smaller columns.
- Screw down carrier offering enhanced security.
- Integral terminal shield shrouding both the live and neutral incoming terminals of double pole cutouts when carrier is removed.
- Padlocking facility to obstruct the insertion of the carrier during maintenance work.
- Integral wiring channel allows a fused spur up to 6mm² to be taken from the bottom of the units.

CABLE ENTRY OPTIONS



PVC Grommets



SWA Gland/Ferrule Plate



Tapped Gland Plate – see accessories (Compression Glands not supplied)



CUT-OUTS AND CABLE EXTENSION BOXES

LIVE, NEUTRAL & SEPARATE EARTH CUT-OUT DESCRIPTION	BS 7654 CLASSIFICATION	CUT-OUT CONFIGURATION	CUT-OUT CAT. NO.
Single pole one fuseway with PVC grommets	TYPE 1		SL3S1
Single pole one fuseway steel wire armour version	-		SL3S1A
Double pole one fuseway with PVC grommets	TYPE 4		SL3D1
Double pole one fuseway steel wire armour version	-		SL3D1A
Double pole two fuseways with PVC grommets	TYPE 6		SL3D2
Double pole two fuseways steel wire armour version	-		SL3D2A

Steel wire armour versions incorporate a gland/ferrule plate Cat.No. SL3A

SL3

Street Lighting Cut-Outs 25A, 240V AC



LIVE & COMBINED NEUTRAL/EARTH CUT-OUT DESCRIPTION	BS 7654 CLASSIFICATION	CUT-OUT CONFIGURATION	CUT-OUT CAT. NO.
Single pole one fuseway with PVC grommets	TYPE 2		SL3S1NE
Single pole two fuseways with PVC grommets	TYPE 3		SL3S2NE

CABLE EXTENSION BOXES
 Cable extension boxes are available in four basic configurations. Other configurations can be supplied to special order.



All extension boxes have a brass gland plate with:
 1 x 20mm dia. hole
 2 x 25mm dia. holes
 2 x M6 earth screws & 3 blank plugs.
 Note: An alternative gland plate with 3 x 25mm dia. holes is available, Cat. No. **SL3BG**.

EXTENSION BOX DESCRIPTION	EXTENSION BOX CONFIGURATION	EXTENSION BOX CAT. NO.
Extension box without terminals for increased cabling space		SL3B
Extension box with two main incoming (looping) terminals at opposite sides of the box, leaving the throat clear		SL3B2*
Extension box with four terminals: two twin incoming (looping) terminals, two twin incoming, single ongoing terminals		SL3B4*
Extension box with four lug type M6 terminals the two central terminals incorporate a single ongoing tunnel terminal		SL3B4L*

*With the addition of auxiliary terminal **SL3BAT** an ongoing terminal can be added to either or both the terminals positioned at the side of the extension box.

CUT-OUT AND EXTENSION BOX TERMINAL CAPACITIES

TERMINALS	MIN. TO MAX. CIRCULAR STRANDED COPPER CONDUCTORS
SL3 cut-out single outgoing terminals	1.5mm ² up to 16mm ²
SL3 cut-out twin incoming terminals	1.5mm ² up to 25mm ²
Extension box standard terminals	1.5mm ² up to 25mm ² (25mm ² shaped stranded)
Extension box lug type terminals	M6
Auxiliary terminals	1.5mm ² up to 10mm ²

SL3 Accessories



GLAND PLATE ACCESSORIES FOR CUT-OUTS

DESCRIPTION	CAT. NO
Steel wire armour gland/ferrule plate to convert standard cut-outs to an SWA incomer arrangement cables must be less than 18mm dia. under the armour	SL3A
Tapped plate suitable for two 20mm dia. compression glands (not supplied)	SL3G
PVC cap for an unused way in an SL3A gland plate	SL3AC
M20 plug for an unused way in SL3G gland plate	SL3GP



ACCESSORIES FOR EXTENSION BOXES

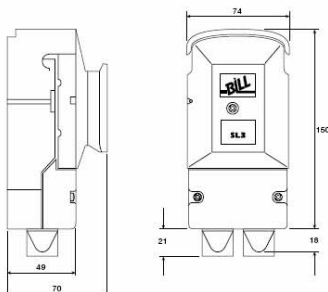
DESCRIPTION	CAT. NO
Auxiliary terminal 10mm ²	SL3BAT
Alternative gland plate 3 x 25mm holes	SL3BG
20mm dia. blanking plug for gland plate	SL3P20
25mm dia blanking plug for gland plate	SL3P25

HRC FUSELINKS

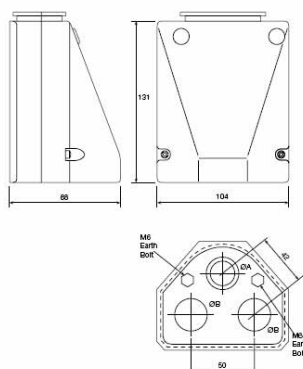
RATING	BILL HRC FUSELINK CAT. NO.
2A	BLST2
4A	BLST4
6A	BLST6
10A	BLST10
15A	BLST16
20A	BLST20
25A	BLST25
32A	BLST32

SPARE FUSE CARRIERS

CARRIER DESCRIPTION	SUITABLE FOR CUT-OUTS	CAT. NO
Single pole one fuse	SL3S1, SL3S1A, SL3S1NE	SL3S1C
Single pole two fuses	SL3S2NE	SL3S2C
Double pole one fuse	SL3D1, SL3D1A	SL3D1C
Double pole two fuses	SL3D2, SL3D2A	SL3D2C

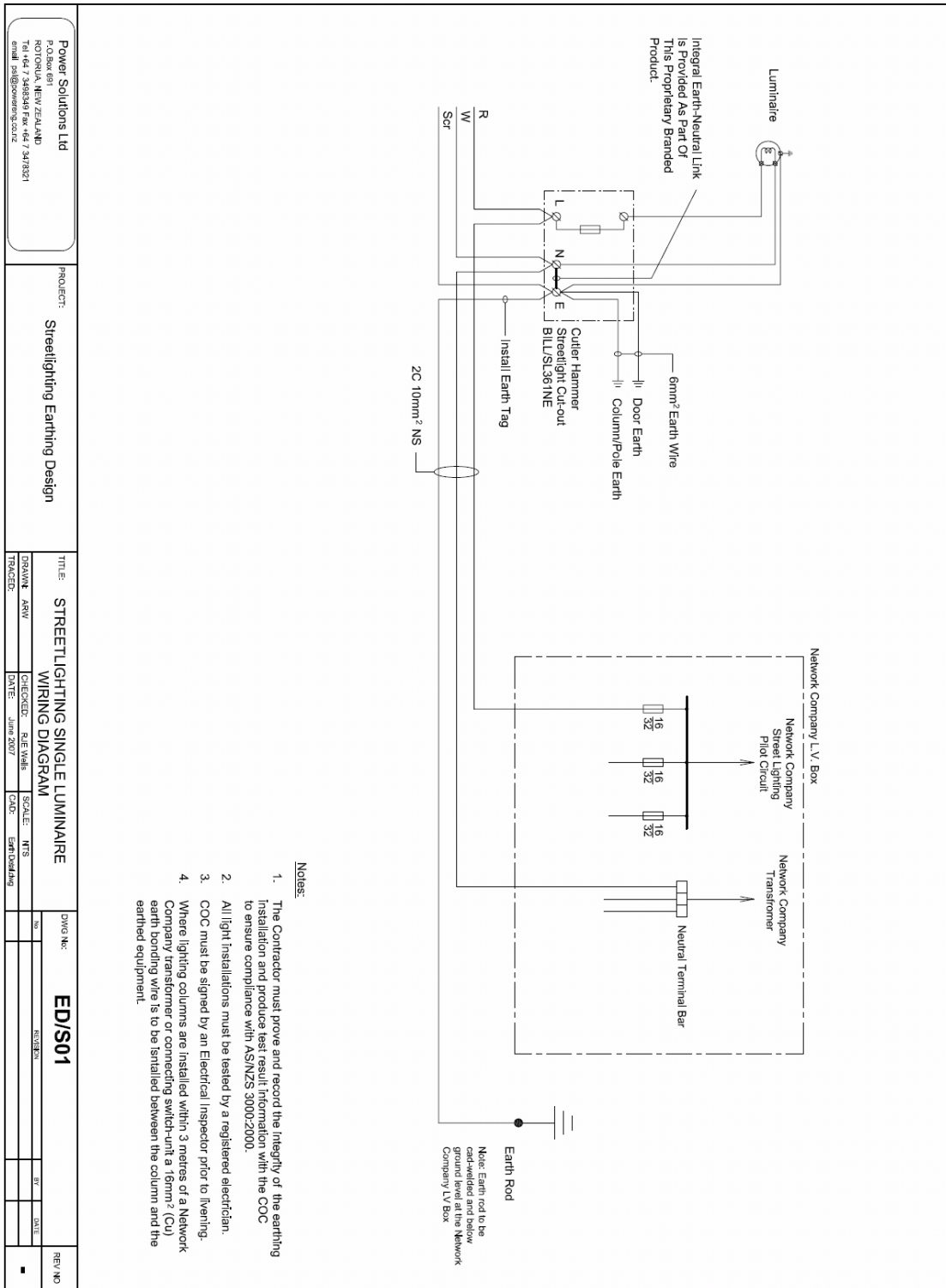


SL3 Streetlighting Cut-Outs
Dimensions in millimetres, all versions.



SL3 Cable Extension Boxes
Dimensions in millimetres, all versions.
Standard Gland Plate
Diameter ØA = 20mm
Diameter ØB = 25mm
Alternative SL3BG Gland Plate
Diameter ØA = 25mm
Diameter ØB = 25mm

DIRECT SALES 0121 685 2004



Power Solutions Ltd P.O. Box 691 1000 New Zealand Tel: +64 7 3463346 Fax: +64 7 3473321 email: psll@powerins.co.nz		PROJECT: Streetlighting Earthing Design		TITLE: STREETLIGHTING SINGLE LUMINAIRE WIRING DIAGRAM		DWG NO.: ED/S01	
DRAWN: ARW TRACED:	CHECKED: B.E. WALKER DATE: 29/01/2007	SCALE: NTS CAD: EM/10/04/07	NO.	REVISED	BY	DATE	REV NO.

APPENDIX 2

SLIM DATA CAPTURE FORM

CONTRACTOR'S FORM FOR ADDING STREET LIGHTING TO SLIM

Please fill in the details below – 1 form per light installed and return by fax to TCDC on 07 868 0234

Location Details

Installing Company Name						Date Of Installation		
Road Name						Township		
Light Route Position (Metres)		House No Same Side	Left	Right	House No. Opposite Side	Left	Right	
Feature Same Side					Feature Opposite Side			

Pole Details

Pole Primary Use <i>(Lighting unit, Electrical dist)</i>			Owner	
Pole Construction <i>(Steel, Concrete etc)</i>			Shape <i>(Round, Square etc)</i>	
Manufacturer/Make			Model	
Mounting			Control <i>(relay, PEC, other state)</i>	
Network Company ID No.			Council ID No.	
Base Dimensions	mm	x	Level <i>(Height of base of pole from road surface)</i>	(metres)
Pole Height	(metres)		Height of Bracket <i>(Where the bracket is fixed to pole)</i>	
Pole Off Set <i>(From Kerb edge to centre of pole)</i>	(metres)		Light Height <i>(From centre of light to road surface)</i>	(metres)
Pole Coating <i>(Painted, Powder Coated, Galvanised)</i>			Colour	

Bracket Details

Manufacturer		Type	
Bracket Angle In Degrees (From Pole)		Light Tilt In Degrees	

Luminaire Details

Manufacturer		Model	
Pole Coating <i>(Painted, Powder Coated, Galvanised)</i>		Colour	
Lamp Manufacturer		Lamp Wattage & Type	

APPENDIX 3

PROTECTIVE COATINGS SPECIFICATION

Protective Coatings Specification**TG-2008-100760**

Spec Type : New

Job Name : 10480 - Thames-Coromandel Street Light Poles

Description : Exterior Galvanised Surfaces

Location : Rotorua, New Zealand

Environment : Exterior moderate AS2312 Cat B: Low - Cat D: High

Substrate : Galvanised Steel

Company : Power Solutions Limited

Address : PO Box 601

City : Rotorua

Region :

Country :

Contact : Mr Jon Stevens

Title :

Postcode :

Phone : 07 349 8351



INDUSTRIAL & MARINE

 Altex Coatings Limited
 PO Box 142
 TAURANGA
 NEW ZEALAND

 Phone: (64-7) 541-1221
 Fax: (64-7) 541-1310
Surface Preparation

Degrease galvanising with Devprep 88 diluted 1:3 with water as per data sheet instruction. High volume low pressure wash to remove all Devprep, oil residue & soluble contamination. DO NOT allow Devprep to dry onto surface. Sand or sweep abrasive blast galvanising with non-metallic media to a uniform matt finish. Ensure all galvanised surfaces are free from dichromate passivation treatment, oil and grease. Spot abrasive blast or power tool clean all weld damaged areas. Repair all galvanised damaged areas with Catha-Coat 315 applied at 50 µm DFT. Allow to cure for 12 hours minimum. Apply coat 1 within 8 hours of preparing the galvanised substrate. Apply full coats of coats 2 and 3. All surfaces must be clean and dry before painting

Coating System

Product	Coating	Colour	TC	WFT	DFT	MR	MinRC	MaxRC	Thin	Note
1 - Altra~Prime 504	- full prime		11.0	91	50	4:1	2 hrs	1 mth	1/2	
2 - Altra~Shield 2000	- full coat		6.0	167	125	4:1	4 hrs	5 days	1/2	
3 - E-Line 379	- full coat		12.0	83	50	4:1			No 5	

TC = Theoretical coverage m²/litre
 WFT = Wet Film Thickness µm
 DFT = Dry Film Thickness µm
 MR = Mix ratio by volume

MinRC = Recoat Min @ 20°C / 50% RH
 MaxRC = Recoat Max @ 20°C / 50% RH
 Thin = Thinner(Spray)

Notes

Complies with AS/NZS 2312:2002 system HDG600P7, 25 + years for an exterior environment category C: medium (35 µm rust/ year, ISO 9223 category 3). Adequate inspection records including surface preparation, batch numbers, DFT's must be recorded by the contractor. The coating system is deemed adequate to warrant a manufacturer's certification for a period of 10 years based on an adhesion assessment criterion of >98 % of area of coating to the galvanised substrate for an exterior coastal environment category C: medium (NB: DO NOT exceed maximum recoat times

Issue Date Monday, 22 September 2008

Authorised by Neil Adamson

Issued by Neil Adamson

- * For specific details referred to in the above specification, please refer to the relevant product or material safety data sheets.
- * Spray application is normally recommended. Suitable equipment may include airless / air assisted airless / HVLP or conventional pressure pot equipment.
- * If the specified thickness is not achieved in one coat, additional coats must be applied to meet the specified D.F.T. Stripe coats should be brush applied.
- * Any contamination or moisture which occurs between coats must be removed by suitable means before applying successive coats in the system.
- * Care must be taken handling and applying all paint coatings. All stated minimum and maximum recoat times are based on 20°C/50% RH.
- ** This specification has been issued in good faith based on information given by the Client at the time of issue. Altex Coatings Ltd. has taken all reasonable steps to ensure the specification meets the needs of the client but reserves the right to amend or withdraw the specification if (a change in) conditions so dictate.



General Requirements for Private Wastewater Pumping Stations

1. TRADITIONAL PUMP STATIONS

1.1. Typically private pump stations are only permitted in exceptional conditions where it is not possible to obtain a gravity connection to the Council sewer within the prescribed distance under the Local Government Act. If part of the household unit can achieve a gravity connection, then that part is to be so connected.

1.2. The general requirement for private pump station is one per individual property.

2. Alternatives

2.1. Council is considering the use of grinder or septic pumping systems as part of its seeking sustainable servicing options and some areas may be required to have individual private grinder pump stations or septic tanks on each property. Conditions and design guidelines for these systems are under development.

2.2. Conditions

2.2.1. The volume of emergency storage above the alarm level shall be a minimum of 1,000 litres for a household unit containing no more than four bedrooms. (This allows for approximately 24 hours storage in emergency.)

2.2.2. An approved high water level alarm shall be fitted. (A red light located in the kitchen is an approved alarm). The alarm is to activate when the water level in the pump chamber exceeds the pump start level by 25mm.

2.2.3. A high level overflow shall be placed as near as possible to the pump chamber top. This shall discharge in a place on the property that is highly prominent to the Owner/Occupier, but will not cause any inconvenience to neighbours.

2.2.4. Generally one submersible pump is required for pump stations serving one household unit, and two pumps (duty and standby) in one pump chamber for stations serving commercial premises. Stations that have two pumps are to have the controls so arranged that there is automatic duty change, and that the standby pump starts automatically after the high water level alarm has been activated.

2.2.5. Levels of the pump station, the sewer to which it is to pump, the pump specifications and the pump characteristics (capacity vs lift) are required with the permit application.

2.2.6. The pump station is to be built to ensure that no stormwater enters, either through the wall or the roof and lid. The lid is to be a minimum of 100mm above the ground level, and the surrounding ground graded away from the station.



General Requirements for Private Wastewater Pumping Stations

- 2.2.7. The Manufacturer/Supplier specifications and calculations are to be provided with the Permit Application to prove the pump choice. Pumps of a macerator or grinder type are recommended.
- 2.2.8. Toilets and hand basins that discharge into a small tank with an installed pump (i.e. saniflo, sanitop, sanipaks or similar) will only be permitted where there are alternative WC and basin facilities within the same house, that are on gravity connections.
- 2.2.9. If a gravity connection is at any time in the future made available the owner will be required to connect to that connection at their expense.
- 2.2.10. The property owner shall enter into a contract with an appropriate service provider who shall be responsible for maintenance of the pump station on a minimum six monthly basis or in accordance with manufacturer's recommendations. All maintenance records shall be kept on the site and made available for Council inspection as required.



Minor Public Wastewater Pumping Stations

1. GENERAL

- 1.1. The Council has determined that a set standard is to be applied to all minor wastewater pumping stations in all subdivisions developed under the council's jurisdiction.
- 1.2. From the date this document is issued, all minor wastewater pumping stations shall comply with its code.
- 1.3. Up until the time this document was issued developers were able to determine, within certain limits, the brand or make of chamber, pump, motor or whatever they use in the construction of minor pumping stations.
- 1.4. This code will help standardize the various items that the Council will accept in the construction of minor wastewater pumping stations and this will reflect on the ease of maintaining these stations and reduce the number of spare parts needed to be provided by developers as well as the number of parts that the Council will have to retain for maintenance purposes.

2. SCOPE

- 2.1. This Code is intended for minor wastewater pumping stations where the electric motor's maximum output power is less than 30kW and the rising main does not exceed 150mm diameter.
- 2.2. The type of pumping station is a wet well containing submersible pumps and this is the arrangement for which the requirements of this code are given.
- 2.3. The type of pumping station is a wet well containing submersible pumps and this is the arrangement for which the requirements of this code are given.
- 2.4. The size of the subdivision served by the pumping station would be less than 500 lots.
- 2.5. The pumping rate in the rising main covered by this code is to be between 31/s and 501/s with maximum power rate of 30 kW.

3. GENERAL REQUIREMENTS

- 3.1. The pumping station is to be fully automatic and shall have provision for remote monitoring by telemetry. Plant and equipment shall be capable of operating between the manufacturer's recommended service intervals without attention or inspection.
- 3.2. The station is to be located on land that is vested in Council and with reasonable vehicle access to a public road formed and provided by the developer.



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- 3.3.** The station is to be located such that sewage flooding does not occur at or upstream of the pumping station during plant or power failure and that emergency overflow pipes can be laid to the nearest watercourse or stormwater drain.

4. LOCATION

- 4.1.** The pumping station is to be located at a site where a reliable power supply, sufficient for the station's needs is readily available at a reasonable cost. The subdivider/developer, at his cost, shall arrange with the power network utility operation to provide a power connection to the station.
- 4.2.** The pumping station shall be located a sufficient distance away from houses and buildings which will minimise the risk of odours, noise and nuisance. Facilities for odour control shall be installed if the Council so directs. The pumping station shall be located in an area that is known, by the Council, to be flood free and above the 20 year flood level. Electronics to be above 100 year flood level.
- 4.3.** The pumping station shall not be located in areas where it could be subject to normal everyday traffic loadings or where maintenance works will interfere with traffic movements.
- 4.4.** The location shall be such that it will allow reasonable vehicular access for maintenance purposes.
- 4.5.** Fencing of the site and accessway shall be carried out, to the satisfaction of the Council, generally in accordance with the approved site layout standard drawing.

5. SITE LAYOUT

The site and access shall be such that:

- 5.1.** There is sufficient space to allow a tanker, a large van and a mobile pump to park off the road.
- 5.2.** There is sufficient space between the various structures on the site to enable maintenance operations to be carried out.
- 5.3.** The doors of the kiosk can open such that easy access is offered to the control panel.
- 5.4.** A safe standing place shall be available in front of the control panel without risk of stepping into the pump chamber if the station lids are open.
- 5.5.** The pump delivery pipework (within the wet well) is opposite the inlet sewer.



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5.6. The site handstand area shall be asphalted and any access road shall be concrete surfaced to HNHO 72 standards.

6. EMERGENCY OVERFLOW

6.1. The provision of an emergency overflow shall not be undertaken.

7. WET WELL

7.1. The wet well shall be constructed using a minimum of 2050mm diameter precast circular reinforced concrete manhole risers complete with concrete base. The riser shall be of a diameter that will provide the required storage capacity without excessive depth. Joints in the riser shall be kept to a minimum and where the depth exceeds 2.44m the number of joints shall not exceed the depth of the riser divided by 2.44 unless otherwise agreed to with Council.

7.2. Precast reinforced concrete risers shall comply with the requirements in NZS3107:1978, "Specification for precast concrete drainage and pressure pipes" for Class X pipes.

7.3. Lids shall be precast reinforced concrete lids rated for a HN-HO-72 wheel loading shall be used where there is a danger of vehicles running over the covers. A producer statement certifying the load rating of the lid shall be produced.

7.4. The wet well and lid shall be constructed as an approved sulphate resistant cement.

7.5. Bases shall be precast reinforced concrete with a minimum thickness of 200mm and the riser shall be factory cast into the base.

7.6. Joints shall be made in the manner shown on the drawings and shall be firmly clamped. Clamping holes and joints to be made watertight.

7.7. Concrete shall be Ordinary Grade complying with NZS 3108:1983 and shall have a minimum crushing strength of 20MPa at 28 days.

7.8. The design of the wet well and sewer inlet arrangement shall ensure that there is a satisfactory flow to the pumps and that the formation of vortices is avoided. To achieve this, the pump delivery pipe work within the wet well is to be opposite the incoming sewer.

7.9. The design static head for the design flow is to be based on the average stop and start levels in the wet well.

7.10. A typical general arrangement of a wet well two pump station is shown on the TCDC approved standard drawings.



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- 7.11. The operating storage capacity of the wet well is to be a minimum of 4 hours times the average dry weather flow (ADWF) volume measured between the pump start level and the overflow level.
- 7.12. The design storage capacity of the wet well will vary depending on the vulnerability of the receiving environment and is to be based on the twelve hour times ADWF volume excluding any volume within the upstream pipework and manholes when adjacent to the sea, estuary, or high value recreational areas (Note: The provision of a generator may mitigate the high storage requirement.). Other areas are to be based on the nine hour times ADWF volume excluding any volume within the upstream pipework and manholes, and is based on 200 l/h/d.
- 7.13. The inlet into the wet well shall be via one pipe and a satellite manhole shall collect sewage where there are more than one pipe in the watershed system.
- 7.14. Mechanical wall wash down facilities shall be provided in the wet well. These facilities shall be such that they can thoroughly wash down all sections of the walls of the well and can be operated from outside the well.
- 7.15. The wet well shall have advisory signs posted warning of the type of hazard zone protection specified by the installer in the manner detailed in NZS 6101.1:1988.

8. VALVE CHAMBER

- 8.1. The valve chamber shall be a cast-in-situ reinforced concrete unit constructed generally to the dimensions shown on the TCDC approved standard drawings. Concrete shall be High Grade concrete complying with NZS 3104:1991 and shall have a compressive strength of 20MPa at 28 days. Reinforcing steel shall comply with AS/NZS 4671:2001. Concrete construction shall comply with the methods set out in NZS 3109:1997.
- 8.2. The valve chamber lid/cover shall be manufactured from the type of material shown on the TCDC approved standard drawings and shall be capable of taking a HO-HN-72 wheel loading shall be used where there is a danger of vehicles running over the covers. A producer statement certifying the load rating of the lid shall be produced by a suitably experienced Chartered Professional Engineer.
- 8.3. All exposed ferrous materials, if any shall be hot-dip galvanised to the requirements of ASINZS4680:1999.
- 8.4. The valve chamber shall drain into the wet well and a valve shall be installed on the connecting drain line to prevent flow from the wet well back into the valve chamber. The chamber shall be shallow unless agreed otherwise by the Council.
- 8.5. Lugged knifegate valves shall be provided with removable cast iron wheels unless otherwise directed by Council. Extension spindles shall be provided where necessary



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in deep wells such that these extend to just below the access cover so that the valves can be operated from above the ground using T keys.

- 8.6. Reflux valves shall be mounted horizontally and have a removable top cover. The valve shall be non-clogging, quick acting with good seating properties and have closing characteristics which provide slam protection when the pump stops.
- 8.7. Ball valves must be bolted vertical to the pump volute base and discharge flange.

9. ACCESS INTO WET WELL AND CHAMBERS

- 9.1. The top of the wet well, valve chamber and emergency overflow chamber (if any) shall be above the surrounding ground level to prevent surface water entry and to deter vehicles running over the covers. Heavy duty covers capable of carrying a HN-HO-72 wheel loading shall be used where there is a danger of vehicles running over the covers. The tops of the wet well and valve chamber shall be above any flood level known by Council as per 4.3 above.
- 9.2. Access covers on chambers shall be large enough to enable pumps and valves and other plant to be easily and safely lifted out of the wet well or valve chamber for above ground maintenance, inspection or replacement.
- 9.3. Access covers shall be lockable and fabricated from the materials nominated on the TCDC approved standard drawings.
- 9.4. Removable safety grills capable of holding 300kg shall be suspended no more than 300mm from the underside of the lids under the access covers. The possible distance of fall shall be no greater than 5m within the wet well, additional platforms should be constructed within the wet well to meet this requirement.
- 9.5. The wet well shall be vented. An air inlet/outlet shall be provided and positioned at least 3m from the kiosk and buildings and as far away possible from the nearest property.
- 9.6. Fixed means of access into the wet well and valve chamber shall be provided by means of aluminium manhole rungs or galvanised steel ladder fixed with stainless steel bolts with insulating washers.

10. PUMPS AND MOTORS

- 10.1. Two identical submersible sewage pumps shall be provided in the wet well — one 'duty' and one 'standby'- the capacity of each pump being sufficient to pump the design flow.
- 10.2. The sewage pumps shall be a recognised brand with a track record of reliability and performance recognised by local authorities throughout the country. The agents for the pumps shall have proven ability to be able to provide spare parts for the pump within 24



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hours notice. The pumps and parts shall be compatible with the “Flygt” brand of submersible sewage pump of similar capacity.

The pumps shall comply with the requirements set out below:

- 10.3. The pumps and motors offered shall be the design and fabrication of a single recognized manufacturer of such equipment with a proven track record and a minimum ten years service in New Zealand.
- 10.4. The pump(s) shall be back pull-out type, purpose built for the pumping of raw sewage, sludge, effluent and wastewater containing solids. The pump(s) shall be able to be raised and lowered on a twin galvanised pipe guide rail system and be easily removed for inspection or service without the need for personnel to enter the wet-well. The pump(s) shall be fitted with a single removable sliding bracket. The pumps will automatically couple and disconnect with the fixed discharge connection pedestal.
- 10.5. The pump, motor and accessories must be capable of continuous submergence to a depth of 20 metres. Pumps shall be capable of the following maximum working pressures:
 - a. 0 - 3.0kW = 0.4 MPa
 - b. 3 – 8.0kW = 0.6MPa
 - c. 8 - 60.0kW = 0.9 MPa
 - d. 60.0 kW and above = 1.0 Mpa
- 10.6. Standard versions shall be rated for operation in a liquid temperature up to 40 degrees C and for a pH range of 6 -11.
- 10.7. Pump(s) and motors shall be constructed of high quality (DIN 1691 GG20) cast iron with all screws, nuts, bolts etc. to be stainless steel (DIN X5CrNi 189). Mild steel components such as lifting handles etc. shall be hot dip galvanised steel. Pump(s) shall be available with stainless steel shafts which shall have minimum shaft over hang and be supported top and bottom by bearings. Volutes and/or impellers shall be fitted with wear rings, which shall be easily inspected and replaced.
- 10.8. Motors shall be manufactured by the pump manufacturer specifically for submersible pump operation. They shall be manufactured in accordance with IEC 34 -1 and insulated to class F - IEC 85. The winding and stator leads shall be dipped and triple baked in class F varnish to resist a temperature of + 155 degrees Celsius. The motor shall be rated for a minimum of 15 evenly spaced starts per hour. Motor windings shall be locally repairable and the supplier able to furnish such rewinding data upon request for all models offered. A motor performance chart shall be provided showing curves for



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torque, current, power factor, input/output kW, efficiency and moment of inertia. Motors shall be rated S1 for continuous running, S3 will not be acceptable.

- 10.9.** Class of protection shall be minimum 1P68.
- 10.10.** The motor stator shall have embedded in the windings thermal switches. These switches shall be wired in series and be normally closed snap action type. These switches should open at approx. 125 degrees C and automatically close at approx. 90 degrees C.
- 10.11.** Impellers shall be of the shrouded channel type, dynamically and/or hydraulically balanced, or 2 vane self cleaning type Preference will be given to standard impellers as opposed to those specially trimmed to meet the required performance. Impellers shall rotate in a replaceable wear ring(s).
- 10.12.** Pumps shall be fitted with a standard heavy-duty flexible power cable of the length specified. Cables requiring special moulded seals or glands shall not be used. The cable entry unit shall be a compressible rubber seal type, which does not require special compounds, silicon or epoxy joints. Cables must be of the European H07-RN type readily available in New Zealand.
- 10.13.** Pumps above 3.0kW shall be fitted with a separate terminal box and terminal board. The terminal box shall be completely sealed from the motor.
- 10.14.** Pump motors shall be capable of D.O.L, Star Delta or Electronic Soft Starting and be suitable for use with Variable Frequency Drive. The pump supplier should confirm their ability to provide accurate variable frequency curves if required.
- 10.15.** The pump motor shaft shall rotate on a minimum of two permanently lubricated bearings. Bearings shall be located at either end of the shaft and be high quality, (e.g. SKF) bearings of the roller and/or double row angular contact type.
- 10.16.** The pump shall be able to be provided with the following sensing devices as options should they be required:
- 10.16.1. Water in oil sensor
 - 10.16.2. Water in stator sensor
- 10.17.** The supplier should also confirm that an external relay is available to provide indication of a sensor operating (including the thermal devices) and/or the ability to shut down the pump under such conditions.
- 10.18.** The pump manufacturer shall have certified quality assurance to ISO 9001. The pump supplier shall be certified to ISO 9002.



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- 10.19.** The pumps (above 3.0kw) shall be available with an externally mounted flushing valve manufactured by the pump manufacturer. Such flush valves shall be available for new and retrofit installation and shall not require any additional pipes fittings or power supplies. The flush valve must be installed in such a way as to allow normal removal and installation of the pump c/w the flush valve for inspection. Disconnection of pipes, cables etc. shall not be required.
- 10.20.** The pump/motor manufacture shall provide details of the tests available for the units offered. Minimum tests shall include the following:
- 10.20.1. Tightness test: Nolek vacuum method or similar.
 - 10.20.2. Dielectric Test In accordance with IEC-34-1 standard "Rotating Electrical Machines, Part 1: Rating and Performance".
 - 10.20.3. Performance Tests: All pumps will be performance tested in accordance with ISO 2548/C annex B or a corresponding test standard.
 - 10.20.4. Should such performance test certificates be required the information provided shall correspond with the requirements in ISO, DIN and HI test standards.
- 10.21.** Pumps and motors shall be primed and coated with a low solvent epoxy topcoat Manufacturers paint specification shall be provided.

11. ELECTRICAL INSTALLATION

11.1. Scope

- 11.1.1. The works shall include the supply and installation of Electrical and Telemetry equipment for a standard two- pump sewage pump station. Ground preparation and installation of a concrete base for the Electrical and Telemetry plinth.
- 11.1.2. Mains cabling from the power authorities point of supply.
- 11.1.3. Services to wetwell.
- 11.1.4. Earth and earth bonding.
- 11.1.5. Enclosures.
- 11.1.6. Tariff Metering and Distribution.
- 11.1.7. Motor Control Centre.



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11.1.8. Telemetry equipment.

11.1.9. Commissioning and Documentation.

11.2. Electrical Specification and Technical Details

11.2.1. Ground preparation and concrete base

- a. Prepare ground works for a concrete base appropriate for the motor control centre (MCC) telemetry cabinet and the fold down antenna base.
- b. Preparation of ground works to include compacting to prevent ground movement below the pad.
- c. The concrete base shall have a minimum thickness of 100mm, reinforced steel mesh and a 20Mpa rating. It shall include all power and cable penetrations.

N.B. Where practical and with the engineers approval, the equipment may be mounted the wet well lid.

11.2.2. Mains Cabling

- a. Supply and install underground three phase mains cabling from the designated point of supply to the MCC mains isolator.
- b. All mains cable to be installed in electrical cable duct.
- c. The electrical contractor shall allow for the Network Provider's charge for connection at the designated point of supply.
- d. No service mains shall have a capacity of less than 60 Amps.

11.2.3. Services to Wet Well

- a. Supply and install two separate ducts from the MCC to the wet well. One for the controls and the other for the pump cables.
- b. Supply and install the MultiTrobe 2.5/1 0-1 OM probe in the wet well as per the manufacturers recommendations with the lowest sensor point situated 100mm above the top of the volute of the pumps.
- c. Supply and install the two floats for High Wet Well and Imminent Overflow monitoring. Heights for the floats shall be designated by the engineer.



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- d. All cable ducts should enter the wet well as high as practical and must be above the overflow outlet.
- e. All ducts shall be sealed at both ends with fume and gas resistant material.

11.2.4. Earthing and Bonding

- a. The contractor shall include for earthing and bonding of the installation in accordance with the Electrical Regulations, ECP's and to the satisfaction of the engineer.
- b. The main earth shall be terminated in a Toby box or similar.

11.2.5. Enclosures

- a. If the electrical services are to be free standing and outdoors, then the MCC and Telemetry services shall be mounted in a pedestal cabinet. The pump station pedestal, housing the electrical and telemetry services shall be constructed of 3mm, 5251 Marine Grade powder coated (Green) aluminium and complete with accessible cable duct box and on a galvanised steel base. The doors shall be constructed from similar material. The hinges are to be fitted with stainless steel screw fixings, inaccessible when the doors are closed. All doors are to be fitted on the inside with a 30mm x M6 earthing stud on the hinged side. Both doors should open more than 90 degrees. Locks are to be flush fitting; satin chrome Lockwood 100 Nightlatch complete with TCDC standard key. The enclosure shall have all welds cleaned and polished to match the external finish and all edges are to be debuted. The Pedestal shall be anchored with stainless steel fixings not visible from the outside of the enclosure. Cable entry to the top of the duct box shall be via non-ferrous cable gland plates. All cables shall achieve a standard of IP56 or better.
- b. The MCC enclosure shall be powder coated steel or polycarbonate and 1P56 rated or better.
- c. The Telemetry cabinet shall be powder coated steel or polycarbonate and IP56 rated or better.
- d. Shop drawings of the layout must be submitted to the engineer for approval before construction begins.

11.2.6. Tariff metering and distribution.



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- a. Take delivery of, mount and wire the electricity supply company tariff meters and associated equipment. Make provision for supply authority seals.
- b. Install a main switch with a suitable load break capability for the installation. Allow sufficient space for a power capacity circuit breaker to be fitted, should it be required.
- c. Supply and install generator appliance inlet and a four pole generator changeover switch with a suitable load break capability (63 Amp minimum rating)
- d. Install an RCD protected (double switch socket) service outlet and service light (60 watt strip) complete with a separate switch on the panel.
- e. Install suitable 'Anti-condensation' heater complete with thermostat.

11.2.7. Electrical Motor Control Centre.

- a. The MCC cabinet shall be metal, powder coated and installed in the pedestal cabinet. All components shall be adequate labeled for identification. Shop drawings of the layout must be submitted to the engineer for approval before construction begins.
- b. The motor control centre shall be wired in accordance with the standard 2-pump electrical schematic diagrams supplied. Wire colour, size and numbers shall be standard. All wiring to be stranded appliance wire. (No conduit wire to be used.)
- c. Control of the station shall be via a MultiTrode MT2PC Duplex Pump Controller interfaced with a MultiTrode 2.5/10/10M level probe.
- d. Soft starters shall be used on all pumps having a rating exceeding 3.7 KW or more, and shall be Telemecanique LH4 series or equivalent to the satisfaction of the engineer.
- e. Each pump shall have phase fail protection. The phase fail relay shall be Telemecanique or equivalent to the satisfaction of the engineer.
- f. Each pump shall have a resettable start counter and an hours run counter - type Omron H7 series or equivalent to the satisfaction of the engineer.
- g. Each pump shall have one phase monitored by an ammeter (72mm Sq.) on the door with running current mid scale.



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- h. Electronic over current relays shall be wired to each pump, type Samwha, EODS2 series or equivalent to the satisfaction of the engineer and complete with a door mounted illuminated reset unit.
- i. Operators and indicating units shall be mounted on the MCC door and be Telemechanique ZB5 series or equivalent to the satisfaction of the engineer.
- j. Each pump shall be supplied with a local isolator located on the Pedestal gear tray or the MCC cabinet door. All pump leads and control will terminate on an outgoing terminal strip at the bottom of the MCC gear tray. Should the MCC be remote from the wet well and the motor flexes are not long enough, the motor flexes shall be terminated in local isolators mounted in a galvanised steel (shrouded & locked) enclosure on the top of the wet well. Shop drawings of the layout must be submitted to the engineer for approval before construction begins.

11.2.8. Telemetry System

- a. The Telemetry cabinet shall be metal, powder coated and installed in the pedestal cabinet all components shall be adequate labelled for identification. Shop drawings of the layout must be submitted to the engineer for approval before construction begins.
- b. Radio signal strength tests are to be carried out prior to the installation of the telemetry equipment, should a repeater be required to gain an adequate signal path to the Council's telemetry network this shall be included in the Scope. Network design detail to be submitted to the engineer for approval before construction begins.
- c. The telemetry radio path must be commissioned and tested via network through to the base station P.C. The telemetry equipment must operate successfully with a minimum of 20db of attenuation connected to the antenna system. The radio aerial must test an SWR ratio no greater than 1.2 to 1.
- d. Supply and install all telemetry hardware, interface cabling, aerials etc necessary for operation to required standards.

11.2.9. Commissioning

- a. The contractor shall undertake the complete testing, pre-commissioning and commissioning of the electrical and telemetry equipment installed by the contractor. Commissioning of the works shall be co-ordinated by the contractor.



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- b. The works will be commissioned by operating the installation and simulating failures of all sensed conditions and demonstrating that the control system operates in accordance with the specified requirements.
- c. Advise the engineer two weeks prior to the expected pre-commissioning date and cooperate with the engineer or nominated representative to allow witnessing of the tests.

11.3. Regulations

11.3.1. Permits, Fees and Compliance

- a. The subcontractor shall obtain, keep up to date and pay for all permits and fees arising from the above requirements. Comply with statutes, regulations in accordance with the ECP's and NZIAS 3000.
- b. Supply a Certificate of compliance at the completion of the contract. Meet all associated costs for supply C.O.C and inspection costs.

11.4. Documentation

11.4.1. Records

- a. Make a record of all plant and equipment settings, normal motor running currents, MultiTrode EDS setting and the like.
- b. The record shall be in the format of a schedule, which lists plant duty and commissioning information against plant item numbers and descriptions to enable plant items to be identified on the maintenance drawings.
- c. Copies of the commissioning records shall be included in the maintenance manuals.

11.5. Software Backups

11.5.1. Three backup disks shall be provided. The Council's copy to be installed on site in a disk box attached to telemetry cabinet door, one copy to go to Council.


11.5.2. A laminated copy of the back up management procedures is to be fixed to the telemetry cabinet door.

12. OPERATION AND MAINTENANCE MANUALS



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- 12.1. An operation and maintenance manual must be produced for the new pump station, and must be to the Thames-Coromandel District Council 'Sewage Pump Station operation and maintenance manual format.'
- 12.2. Drawings shall be provided showing dimensional details including pump clearances. Such drawings should be CAD quality and shall be available on Disc or CD Rom format.
- 12.3. The Maintenance manual shall incorporate the Electrical Control Manual supplied by the Contractor.
- 12.4. Include the Telemetry connections on the as built drawings.
- 12.5. Provide two copies of the electrical circuit drawings, equipment specifications, manufacturers information, as installed settings and commissioning results. Note: All control drawings shall be completed with identified control cables and control conductors.
- 12.6. Provide and permanently install inside the cabinet door a laminated copy of the Operation and Maintenance manual.
- 12.7. Supply two copies of the PLC, and MIRI software on disc to the Engineer. Software copies to be included with the as built drawings, one copy to be housed in a disc protection box in the pump station.
- 13. **GUARANTEE**
- 13.1. The contractor shall guarantee the whole of the electrical equipment for a period of one year. The Contractor shall supply warranties to this effect.
- 13.2. The Contractor will operate the pump station through the maintenance period of twelve months.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure

1. SCOPE

The document sets out the conditions under which building over or close to public infrastructure is dealt with. Public infrastructure by its very nature is required to be long-lived, be easily maintained and repaired, and cost effective. Activities which diminish those criteria such as building over or close to need to be analysed with the principal focus being on maintaining the long term integrity of the infrastructure. Transferring costs from the private to public sector merely to enable one particular building footprint to be developed is not acceptable. This document sets out obligations and responsibilities on both the property owner and the network operator to ensure as far as possible that the reasonable needs of both can be met.

- 1.1 Building over or close to public infrastructure is permitted only if diversion of the pipeline or modification of the building footprint is not practicable, or where significant additional infrastructure will be created.
- 1.2 Building over or close to public infrastructure can and does restrict the ability of the network operator to maintain the network. The costs of maintaining the network can be very significantly increased particularly where the pipeline is at some depth and/or the soils on the site are difficult to work in. In consequence, design and installation of temporary or permanent sheet piling of trenches may be necessary where it is essential to excavate down to the pipeline. Similarly, the use of concrete slab construction on hardfill places different constraints on subsequent excavation to pipelines. For this reason, the minimum or in specific instances, greater separation distances will be applied. Refer to drawings TCDC Drawings H10 Sheets 1 to 7 inclusive (as attached).
- 1.3 Where building over or close to drains is approved a note will be placed on the Land Information Memorandum file to the effect that the dwelling has been constructed over a wastewater or stormwater pipeline. The purpose of this notation will be to advise prospective purchasers of the fact and to alert cultural sensitivities particularly to the issue of wastewater passing under the dwelling. The notation will also indicate that in the event of failure or major problem in the pipeline that repair works may involve more extensive property disruption than otherwise might be the case.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure

2. CRITERIA


- 2.1. Any diversion of public wastewater or storm water pipelines shall be carried out in accordance with the Thames Coromandel District Council Standard. Drawings of the work must be provided for approval prior to the work being carried out. A fee will be charged for processing the application.
- 2.2. Building over or Close to Public Storm water or Wastewater pipelines and related infrastructure will **NOT** generally be permitted for:
- Wastewater gravity pipelines greater than 150mm internal diameter.
 - Storm water pipelines greater than 375mm internal diameter.
 - Any wastewater rising main
 - Any storm water or wastewater manhole or other structure.
 - Any connection.

Storm water and Wastewater Pipelines of lesser diameter will not automatically be approved for Building Over or Close to. Each case will be determined on the basis of the site and local network conditions.

- 2.3. The minimum separation distance required when building close to drains is set out in table 1. Note that the minimum separation distance depends on the difference between finished ground level and the invert level of the pipeline at any point along the affected length of the pipeline. For this reason final levels must be included in the application.

Table 1 Minimum Separation Distances

Depth to invert from finished Ground level 'D'	Minimum Separation Distance 'x' from centreline of pipeline diameter 'd' to building line or outside of drilled pile whichever is closer to pipeline.
Up to 2 m	$d/2 + 200\text{mm} + 1.3 \text{ metres.}$

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Depth to invert from finished Ground level 'D'	Minimum Separation Distance 'x' from centreline of pipeline diameter 'd' to building line or outside of drilled pile whichever is closer to pipeline.
Between 2 and 2.5 m	$d/2 + 200\text{mm} + 1.60$ metres
Between 2.5m and 3m	$d/2 + 200\text{mm} + 1.90$ metres
> three metres	Subject to specific design and conditions

3 EXCLUSIONS


- 3.1 The policy will not apply to non-habitable temporary or portable (i.e. building consent not required) residential structures such as single storey light frame structures and garden sheds provided that the extent of build over does not exceed eight (8.0) metres and that manholes and other structures are not affected. These buildings will however be required to be isolated from the pipeline as per the relevant standard drawings.
- 3.2 Where permission is given to build over a storm water pipeline the applicant will be required to provide an analysis of the upstream Catchment and design and construct an overland flow path in terms of the TCDC Code of Practice. The applicant will be required to show the continuity of the flow path from a viable upstream point to the logical downstream discharge point.

4 APPROVAL TO BUILD OVER PIPELINES SUBJECT TO THE FOLLOWING


- 4.1 A mandatory assessment of the condition of the pipeline and the effects of the build over is required **prior** to any approval being given. The information to be supplied as part of the assessment may include:
- As built information supplied by the applicant including site contour levels, proposed floor levels and invert levels and location of affected pipelines in relation to the proposed building.
 - A statement on the nature and respective depth of soils on the site

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	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure


- c. A statement on the construction methodology to be used for the construction of the building i.e. whether the floor is supported above ground on piles or directly supported by the subgrade of the soils.
- d. Access to the site if replacement is contemplated.
- e. Need to increase length of replacement to link to adjacent manholes either up or downstream.
- f. Location of existing connections both to the site and to adjoining sites.
- g. A CCTV inspection using a pan and tilt camera, to permit a 360 degree inspection, is to be carried out by a suitably qualified person at the applicants expense, of the whole portion of affected pipeline from upstream manhole to downstream manhole. This inspection is to be repeated after the piles have been drilled and concreted and **prior** to the pouring of the concrete for the slab. A DVD and copy of the inspection sheet complying with the NZ Pipe Inspection Manual of the inspections is to be supplied to the TCDC Utilities Manager for assessment and sign off. Approval to pour concrete will then be given.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure


- 4.2 The DVD shall be assessed by the Water Services Manager who shall determine the necessity or otherwise to replace the pipe or other affected infrastructure. Any replacement of pipelines or other items of infrastructure affected by the work shall be replaced at the applicant's expense.
- 4.3 Where the network affected by the proposal has been constructed using earthenware, vitreous clay, asbestos cement, reinforced concrete, concrete lined mild steel pipes, and the gradient is greater than one per cent, the affected section of pipeline shall be replaced using PE 80B SDR 17 pipe. Where the gradient is less than one per cent UPVC SN 16 solid wall pipe shall be used. Where the length of the build over exceeds the nominal single length of pipe – twelve metres - and it is necessary to join the pipe, this shall be carried out in accordance with the TCDC Code of Practice. Particular care is to be paid to the bedding and haunching of the replacement pipeline, and to the width of trench.
- 4.4 The pipe shall be reconnected to the existing pipeline using approved shear band couplers. These couplers must have components manufactured from 316 Stainless Steel and Type B EPDM rubber.
- 4.5 The minimum length of pipeline to be replaced is the full length under the building footprint- including decks- plus a minimum of two metres extending either side beyond the footprint.
- 4.6 All buildings but especially raft foundation structures shall be protected and isolated from the effects of the trench and any damage caused by possible future pipe bursting construction techniques. Special consideration must be given to the migration of material from under the floor slab into any excavation in close proximity tot the structure. The use of shock absorbing layers between the floor slab ant the sub grade of the slab is required. Depending on soil conditions a protective skirt wall may be required to be installed to prevent migration of material into the trench area. This would be the case particularly when the separation distance is minimal and the dwelling runs substantially the full wall length along, and parallel to, the pipeline.
- 4.7 Foundation piles must be taken at least 500mm below estimated invert of the pipeline.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure

- 4.8 Foundation piles must be drilled or hand dug once the location of the drain is accurately identified.
- 4.9 Where connections are under the proposed footprint of the building the the pipes shall be relocated outside the footprint a minimum of 2.0 times the depth of the pipeline clear of the footprint at the owners expense. If the pipeline is not to be replaced the cost of the new connection including capping of the old connection shall be met by the applicant.
- 4.10 Where a connection from an adjoining site is located under the proposed footprint, the cost of relocating the connection and diverting the service back to the boundary line to reconnect the existing service is to be borne by the applicant. This section of pipeline is deemed to be public and shall be constructed in materials specified in the TCDC Code of Practice and not to the lesser standards permitted under the Building Code.
- 5 RETAINING WALLS**
- 5.1 Where it is intended to construct a retaining wall of any description within five metres of a storm water or wastewater pipeline, the details must be submitted to Council for approval prior to the construction of the wall. Whether the wall requires a building consent or not is irrelevant as the constraints imposed on the infrastructure will need to be assessed.
- 5.2 In the case of drilled piles the separation distance will be measured from the invert of the pile encasement extended vertically to the outside wall of the pipeline.
- 5.3 Matters to be considered will include but not be confined to:-
- a. Type of wall i.e. cantilevered timber, gravity, cantilevered masonry.
 - b. In the case of cantilevered walls consideration is to be taken on the impact of trenching to the pipeline on the stability of the walls vertical members.
 - c. Separation distance from pipeline.
 - d. Existing depth of the pipeline.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure


- e. Surcharge placed on pipeline.
- f. Whether the wall crosses the pipeline diagonally or at right-angles.
- g. Pipe material.
- h. Pipe class.
- i. Pipe size.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure


Check list – REFER Policy guide for details

ABA			
Name			
Address			
Lot		DP	

1.	A fee is payable to enable an assessment of potential pipeline building over or close to be made. A deposit will be charged and final costs will depend on complexity of proposal.	
2.	The applicant must provide: <ul style="list-style-type: none"> a. A site plan showing the as built of the pipeline(s) in relation to the proposed building footprint. b. Existing and proposed ground levels. c. A CCTV inspection of the pipeline(s) complete with inspection sheets and DVD or Video tape 	
3.	If approved, the applicant must prove the actual location of the pipeline(s) for confirmation by Thames Coromandel District Council prior to building works commencing.	
4.	A second CCTV inspection must be carried out prior to concreting of the floor slab as set out in 4.1. (g) of this Appendix.	
5.	Any damage to the pipeline(s) or ancillary structures shall be repaired to at the satisfaction of TCDC Water Services Manager under the supervision of TCDC and at the applicants cost.	

	<p>CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT</p>
	<p>Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure</p>

6.	All design and construction works shall comply with the TCDC Standards for Engineering Design and Construction. All relevant consents must be obtained by the applicant.	
7.	Specific circumstances outside the coverage of this Policy and the TCDC Standards for Engineering Design and Construction will be considered upon receipt of written application to the Water Services Manager.	
8.	All costs associated with meeting the above conditions shall be borne by the applicant.	
	Conditions Accepted	
	<p>.....</p> <p>.</p> <p>Property Owner(s) signature(s) Date</p>	
	<p>.....</p> <p>..</p> <p>Property Owners(s) Name(s)</p>	

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Building Over or Close to Public Stormwater, wastewater or water pipelines and infrastructure

	<p>Note the term owner and applicant are synonymous. Any agent acting on behalf of the owner will be deemed to have the owner's authority to enter into a binding contract under this policy.</p>	
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	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	On-Site Stormwater Dispersal Design Verification Method E1/VM1

1. SCOPE

It is the purpose of an on-site stormwater dispersal system to ensure hydraulic neutrality on every building lot. To this end the Council have accepted that design should be carried out utilising the verification method E1/VM1 of the New Zealand Building Code. In attenuating circumstances the following alternative design methods may be used. They are:

- Porous well liners for the construction of domestic on-site stormwater soakpits in the Whangamata sand-bar area (explained in Appendix I6B).
- Detention tanks. Particularly useful in impermeable areas or on properties with limited available area.


2. DESIGN AUTHORS

To ensure that the quality of design and construction remains consistent it is expected that each individual system must be designed by a chartered professional engineer (CPeng) or Council authorized producer statement author for on-site stormwater disposal systems. Details of the procedure to register as an authorized producer statement author may be obtained from the Council.

3. INVESTIGATION AND REPORT

The following information must be supplied to the Council by the designer in the form of a report for acceptance, prior to the construction of the system.

- A topographical description of the site.
- A geological description of the site.
- House roof plan.
- A photograph of the property and the bore/s site.
- A location plan of the property showing existing buildings, the proposed building location, the access and the proposed position of the soakpits.
- Test results, analysis, and system design based on E1/VM1.
- Producer statement covering the design of the specific system.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Alternative Soak-pit Design Whangamata & Pauanui Sand Bar Areas

1. SCOPE

The use of porous well liners for the construction of domestic on-site stormwater soakpits has been approved by the Council for use on the Whangamata and Pauanui sand-bar area as an alternative design to the generally utilised system in E1 of the Building Code.

The system has been used in the sandy areas of Whangamata and Pauanui with success since the early 1990s and for this reason the Council will continue to accept the design criteria.

2. DESIGN AUTHORS

To ensure that the quality of design and construction remains consistent it is expected that each individual system may be designed by a chartered professional engineer (CPeng) or council authorized producer statement author for on-site stormwater disposal systems. The latter may include registered drain layers who are familiar with the conditions in the Whangamata and Pauanui sand-bar area.

3. SYSTEM REQUIREMENTS


The alternative system requires that:

- One well (2 X liners) will dispose of stormwater off 50m² of roof area.
- The well may not be placed within 3m of building foundations or within 1.5m of the property boundary.
- The well must not be stacked below the winter water table depth.

4. INVESTIGATION AND REPORT

Basic information must be supplied to the Council by the designer in the form of a brief report for acceptance, prior to the construction of the system.

- A borelog of sub-soil at the proposed site of each well must show that the well is to be constructed in sand.
- A photograph of the property and the bore.
- Council Drawing WOSD1, showing the property location.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT
	Alternative Soak-pit Design Whangamata & Pauanui Sand Bar Areas

- A sketch plan showing the position of the proposed building and the stormwater disposal system on the building site.
- The detailed roof plan of the proposed building.
- Detail of the well liner.
- The watertable depth below ground level at the position of each proposed soakpit. Note that local knowledge may be used towards determining the winter level of the watertable.

The porous well liners (900mm diameter X 450mm depth) are available from suppliers in Whangamata. Technical details of these liners must be submitted to the Council along with the system design.

Attachments

1. Plans of the Whangamata and Pauanui townships showing the limits of the sand-bar area in which this system may be constructed.
2. A drawing showing the typical construction of an on-site stormwater well.

THAMES COROMANDEL DISTRICT COUNCIL

VEHICLE CROSSINGS

POLICIES & GUIDELINES

For

NEW VEHICLE CROSSINGS



VEHICLE CROSSING POLICIES

Do I need to install a vehicle crossing?

You are required to install an appropriate vehicle crossing:

- To ensure that safe and appropriate vehicle access is provided and maintained by the property owner.
- To ensure that property owners protect footpaths, road shoulders, berm and underground utilities from damage due to the passage of vehicles
- To ensure that property owners prevent the flooding of their properties due to stormwater from the road and ensure that natural water flows along the road are maintained.
- To ensure that property owners prevent the flooding of the road due to stormwater from their properties.
- To prevent loose metal from rolling on to sealed roads and into the stormwater systems.
- If you are building a house or garage and there is an existing footpath outside your driveway.
- If required as a condition of a subdivision.

When the Council installs a footpath outside your driveway, you will be required to install a vehicle crossing if you have not done so already.

Remember a vehicle crossing adds value to your property!

In all cases it is the owner's responsibility to provide and maintain and appropriate crossing.

What type of crossing must I install?

Crossings must be made of concrete or cobbles in urban areas and may also be chip sealed in rural areas. If the road is a metal road, the crossing can be metal also.

Gobi block crossings may be considered in place of cobbles where there is no footpath.

The details of the crossings are set out in the document titled VEHICLE CROSSING SPECIFICATION.

What applications do I need and what fees apply?

By obtaining and filling out vehicle crossing application form from the nearest Thames-Coromandel District Council Office. The following fees are payable with the application:

Using a Contractor authorised to work without direct supervision	\$120.00 Incl GST
Using Contractor where supervision or inspection is required	\$215.00 Incl GST

Traffic safety issues **must** be resolved before you make your application. Our staff will be able to assist you in this regard.

Who is permitted to construct a vehicle crossing?

Any experienced person or contractor may construct a vehicle crossing.

Supervision or inspection of the work will be required to ensure that Council's objectives are not compromised. Council's supervision is not intended to guarantee the quality of work and does not in any way relieve the person doing the work of any of his obligations. Certain contractors have authority to construct vehicle crossings without such intensive supervision and we only carry out occasional checks on their work.

It will be advantageous for you to make use of these AUTHORISED CONTRACTORS. Our customer service staff will be able to provide you with a list of these contractors.

Can any contractor be authorised to construct a vehicle crossing without supervision?

Any suitably experienced contractor who is committed to working according to Council's specifications and has a satisfactory track record with Council may be authorised to construct vehicle crossings without supervision.

Do I need to get permission from other authorities?

If you are working on a State Highway in a rural area you must contact Transit New Zealand. Your work may also affect electricity or telephone cables, water mains or other services. You will need to be very careful about doing any excavation in the berm as damage to services can become very expensive or even dangerous. We would advise you to contact the appropriate utility authority. Your contractor may do this for you. The responsibilities in this regard finally rest with the property owner.

If you have reservations we advise you to make use of an experienced contractor.

What laws cover vehicle crossings?

The Local Government Act and Council's Vehicle Crossing Bylaw enable Council to control activities in road reserve, set standards for vehicle crossings and if necessary address problems caused by accesses.

Any person undertaking construction work must be aware of the framework of legislation covering traffic control and occupational safety.

PLEASE DO NOT HESITATE TO ASK OUR CUSTOMER SERVICE STAFF IF YOU HAVE ANY OTHER QUESTIONS

Vehicle Crossing Specification

1. General

This specification provides for the installation of residential and rural vehicle crossings within the Thames Coromandel District Council district, spanning the footpath/berm from road edge to property boundary.

In the case of an owner-built crossing, reference to the contractor shall imply the owner of the section for the purposes of this specification.

No work shall be undertaken unless a consent from the Council has been issued.

Application forms are available at Council Offices.

In all cases finally, it is the owner's responsibility to provide and maintain an appropriate crossing.

2 Existing Services

2.1 The Contractor is responsible for the location of all other services and protection of such services.

2.2 The Contractor shall notify the owner or controlling authority of the proposed work and comply with any specific requirements for excavation that would affect their services.

2.3 In all cases finally the owner is accountable for any damage occurring to other services, building or structure, by this work. In event damage does occur, the Contractor shall immediately contact the owner or controlling authority and the Council.

2.4 The owner or controlling authority will make arrangements for necessary repairs for which the Contractor shall be liable for all costs incurred.

3 Inspections where supervision is required

The contractor shall provide one working day's notice to the local area office of the Council to ensure that the compacted subgrade layer is inspected and approved before the next phase is commenced.

Other inspections will be made when necessary.

Any work rejected or tests required by the Council shall be undertaken by the Contractor at the Contractor's expense.

Working Space

4 The Contractor shall confine his working space to the area of excavation unless specifically approved by the Council. The site shall not be a hazard to the public at any time, and the contractor shall comply with the Health and Safety in Employment Act 1992.

5 State Highways

Work on State Highway road reserve in a rural area will be subject to Transit New Zealand approvals. These must be obtained and forwarded to Council with the completed application form before any work commences.

6 Signs

The Contractor is prohibited from erecting any signs other than traffic warning signs.

7 Clean Up

On completion of the work the Contractor shall remove all plant, materials and any other items brought onto the site and leave it in a clean and tidy condition.

8 Gradients

Gradient shall at no point exceed 1 in 8 or 12% within road reserve.

9 Construction Standard

9.1 All vehicle crossings shall comply with the Code of Practice for Subdivision and Development, Section 3 (4.1 and 4.2). See copy attached

9.2 Gobi block crossings may be considered in place of cobbles where there is no footpath.

10 Geometric Standard

10.1 A crossing shall not be located on a corner or within 6 metres of a tangent point of a corner of an intersecting road in an urban (50kph) area.

10.2 Council will not approve the installation of a crossing located at a point where horizontal or vertical sightlines are not adequate in a rural (60kph speed limit or higher) area.

10.3 Each property shall not have more than one vehicle entrance except with the written permission of the Council.

11 Mandatory Construction

Council may require the owner of an existing crossing which is inadequately constructed or unsealed to construct the entrance to an approved standard:

- a. If loose metal from the entrance migrates on to the road or into any edge drain, culvert or stormwater system.
- b. If vehicle tracking is likely to damage underground services.
- c. If vehicles entering a section damage a public footpath.
- d. As a condition of a building consent.
- e. As a condition for a subdivision/land use consent.
- f. If deterioration of the formed road edge is occurring.

12 Stormwater Control

The property owner shall ensure that the property runoff water is disposed of on the property, otherwise approved drainage facilities must be installed. Provision must be made to prevent road stormwater draining into the entrance and causing flooding of the section and/or surface water from private properties discharging on to the pavement.


13 Intrusions into Road

The formal crossing shall not intrude into the trafficked carriageway and shall not obstruct water flow in the channel, culvert or side drains.

14 Rural Standards

Rural standards are specified in Drawing 600-217 and shall apply to vehicle crossings on rural roads.

See also Drawing 600.218 Rural Commercial Access.

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	SECTION 3 – STANDARD SPECIFICATIONS FOOTPATHS, CROSSINGS, BERMS	

4.0 Construction

4.1 General

4.1.1 Dimensions

Footpaths, crossings and berms shall be constructed where shown on the drawings. Meanders in the horizontal geometry of the footpath shall be constructed generally at the locations shown on the drawings. Some tolerance in the exact positioning of the meanders will be allowed at the direction of the Engineer, in order to avoid existing service covers and street furniture.


The footpath width shall be 1.5m in all locations, Vehicle crossings shall be to the dimensions shown on the attached drawings or as shown on the construction plans.

4.1.2 Pavement Depth

The depth of the footpath pavement shall be as shown on the attached drawings and as detailed in the tables “Footpath Pavements” and “Vehicle Crossing Pavements” below.

Footpath Pavements

Footpath Type	Minimum Excavation Depth	Minimum Basecourse Depth	Surfacing
Asphaltic Concrete	120mm	100mm AP40	20mm AC7
Concrete (Developed Areas)	105mm	30mm AP20	100mm 20MPa Concrete
Concrete and sections without barrier kerb (Undeveloped areas) and sections without barrier kerb	170mm	50mm AP25	150mm 20Mpa Concrete

 THAMES COROMANDEL DISTRICT COUNCIL	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT	Final Version Approved September 2003
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Vehicle Crossing Pavements

Crossing Type	Minimum Excavation Depth	Minimum Subbase (AP65)	Minimum Basecourse	Surfacing
Residential (Urban)	155mm	30mm crusher finds	-	120 mm 20MPa Concrete
Commercial (Urban)	200mm	50mm crusher finds		150 mm 20MPa Concrete
Industrial (Urban)	250mm	50mm crusher finds		200 mm 20MPa Concrete + reinforce 665 mesh
Rural (Residential) Sealed road	250mm	150mm	100mm AP40 Grade 4 Chip Seal	
Rural (Commercial) Sealed Road	250mm	200mm	100mm AP40	2 wet coat Chip Seal
Rural (Industrial) Sealed Road		250mm	150mm AP40	2 wet coat Chip Seal
Rural Unsealed road		150mm	100mm AP40	50mm MAP20


The excavation depths shown on these tables are minimum depths. Should there be topsoil, or other unsuitable foundation material, at this depth the excavation shall be extended down to a sub grade with a CBR strength of at least 3. Alternatively an approved geotextile shall be placed on the sub grade at the minimum excavation depth.

4.1.3 Setting Out

The Contractor shall be responsible for the setting out of all footpath details both in horizontal and vertical geometry in accordance with the drawings and specifications and to the satisfaction of the Engineer. The checking, or any setting out of any line or level by the Engineer shall not in any way relieve the Contractor of his responsibilities under the contract.

4.1.4 Stormwater Laterals

Every care shall be taken to ensure that property drains and other stormwater pipes laid across the path are not broken or displaced and any damage in this respect must be completely made good.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT	Final Version Approved September 2003
	SECTION 3 – STANDARD SPECIFICATIONS FOOTPATHS, CROSSINGS, BERMS	

4.1.5 Surface Openings

All surface openings shall be adjusted in level so as to be generally flush with the finished footpath surfaces as set out below and the disturbed metal course re-compacted as specified elsewhere in this specification.

4.1.6 Waterworks Surface Covers

The Contractor shall carry out adjustments in level of all Waterworks surface covers. Adjustments shall be made to surface covers, by firmly bedding and accurately positioning the covers on precast concrete frames or concrete bricks. Cast iron frames shall be set to protrude 2 mm above and lie parallel to the new surface of the path. Wood or earthenware bricks shall not be used to make small adjustments in surface level.

The Contractor shall rectify any subsidence during the maintenance period as soon as possible.

Existing valve boxes and fire hydrants shall be left clear of spoil and readily accessible at all times.

4.1.7 Existing Telecom Manhole Tops

The Telecom Corporation of New Zealand will adjust Telecom manhole tops. The Contractor shall give adequate notice to Telecom of when they require this work to be carried out.

4.1.8 Existing Sewer and Stormwater Manhole Tops


The Contractor shall adjust existing manhole tops when specified or directed to by the Engineer. This work shall meet all requirements of the TCDC Drainage Specifications

4.1.9 New Telecom, Sewer and Stormwater Tops

These shall be installed to the correct level to suit the footpath.

4.1.10 Other Existing Surface Openings

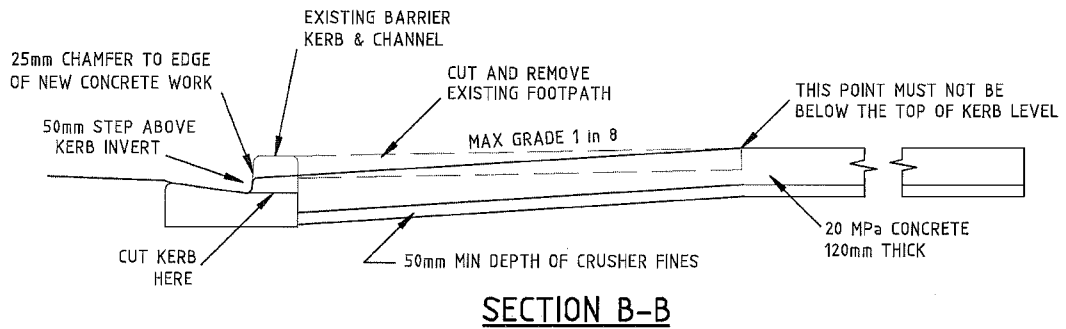
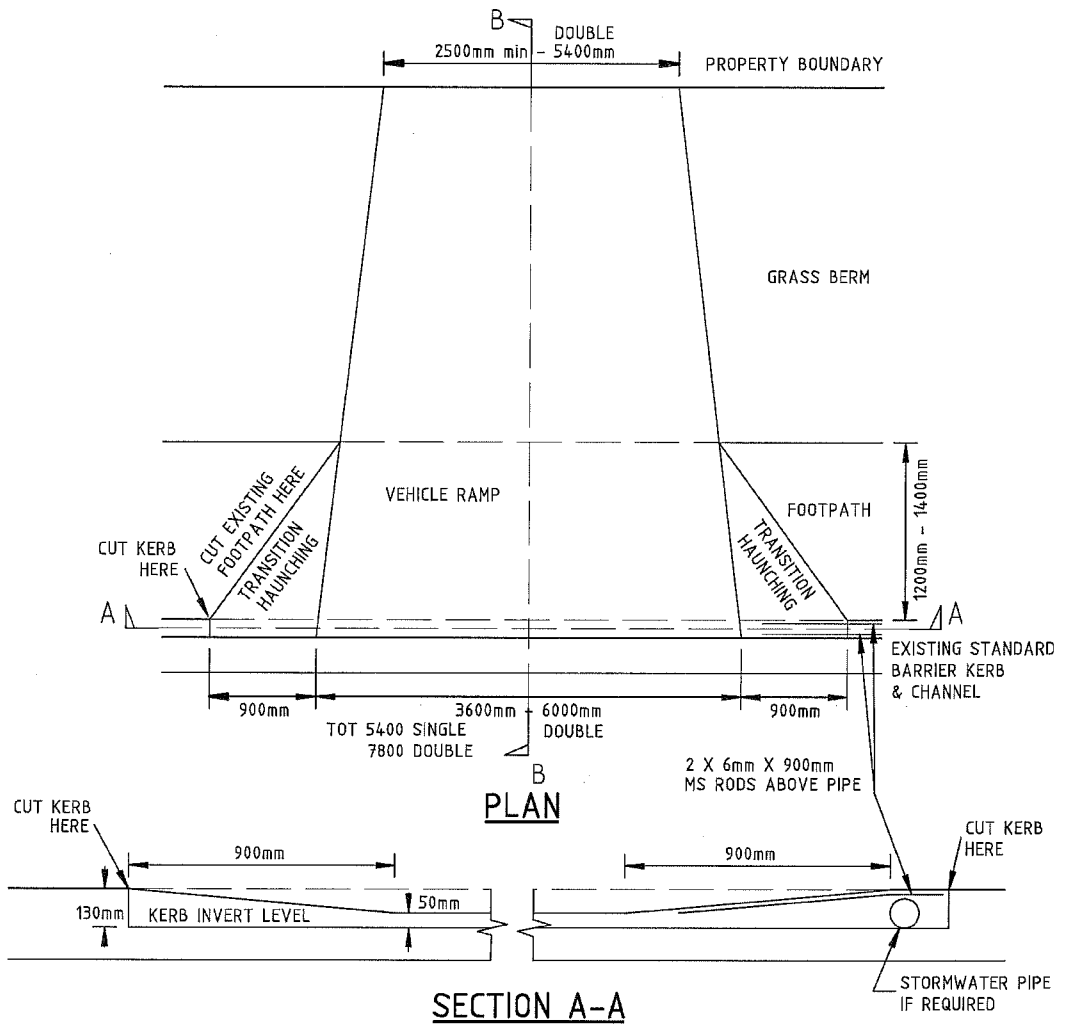
The Contractor shall adjust other surface openings such as vents, sewer gully traps, existing stormwater inspection openings, etc. within the footpath construction area.

	CODE OF PRACTICE FOR SUBDIVISION AND DEVELOPMENT	Final Version Approved September 2003
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4.2 Sub grade Preparation

The footpath including all vehicle crossings, shall be constructed on solid sub grade compacted to a CBR of at least seven. The Contractor shall fill or excavate as necessary to bring the finished sub grade to the true level and crossfall. Should soft or otherwise unsuitable material be encountered extra excavation down to firm bearing may be required. This shall only be carried out at the direction of the Engineer. Before construction commences, the sub grade shall be rolled to produce a solid even surface to the satisfaction of the Engineer. No tolerance will be allowed which reduces the depth of the footpath construction.

ORIGINAL SIZE A4 DO NOT SCALE - IF IN DOUBT, ASK

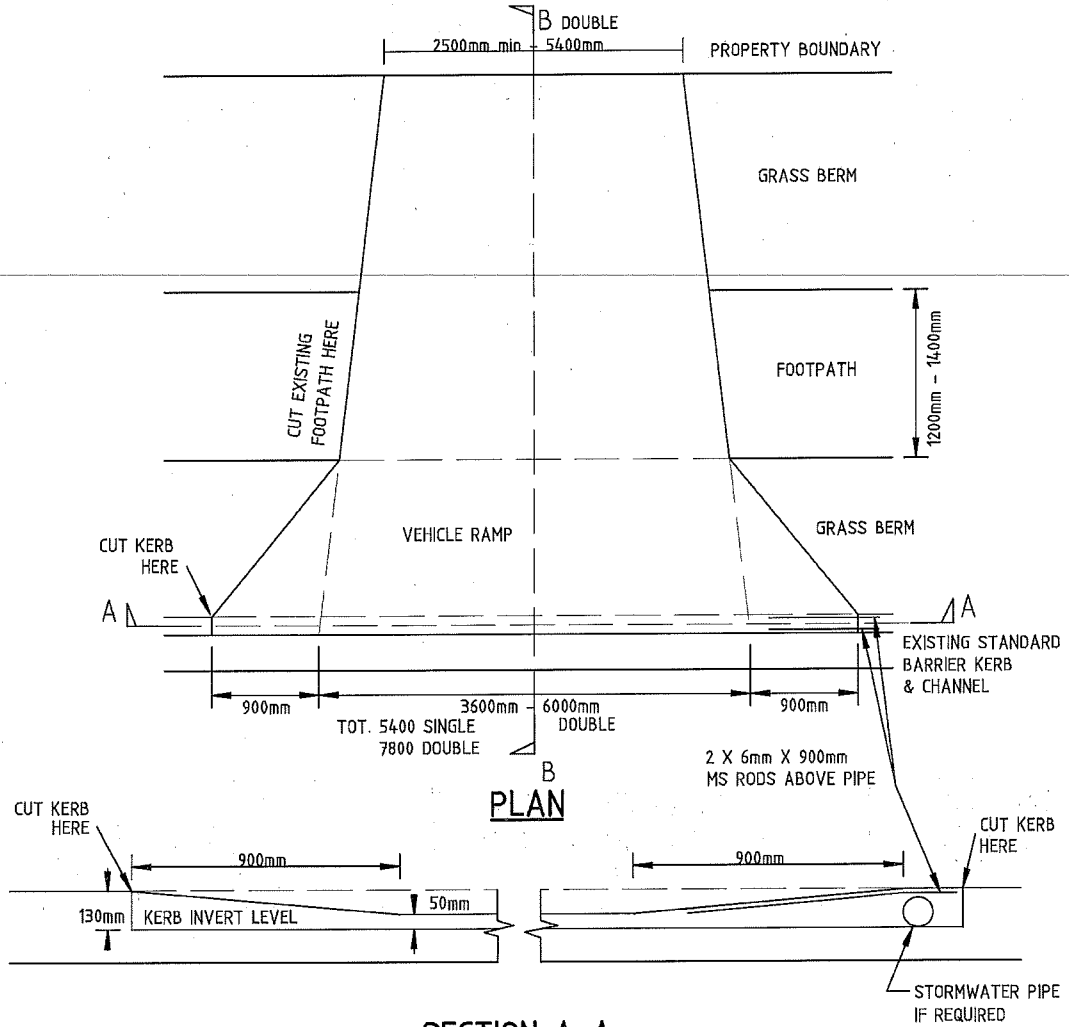


NOTE: FOR MOUNTABLE KERB BUTT NEW CONCRETE UP BEHIND KERB

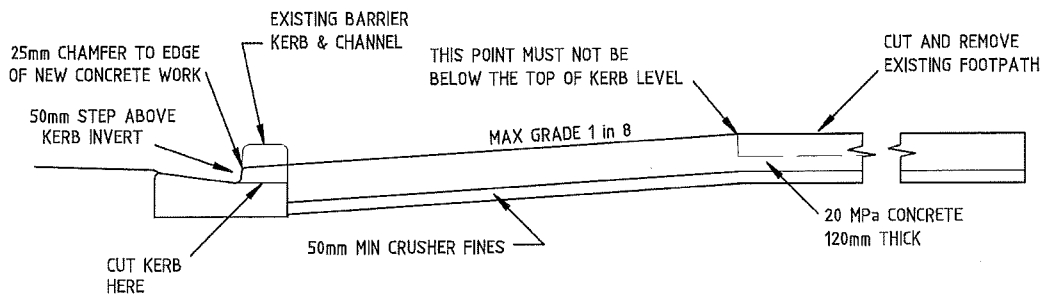
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			Date Stamp 01/08/2003	Sheet No.
			ISSUE A	

ORIGINAL SIZE A4 DO NOT SCALE - IF IN DOUBT, ASK



SECTION A-A



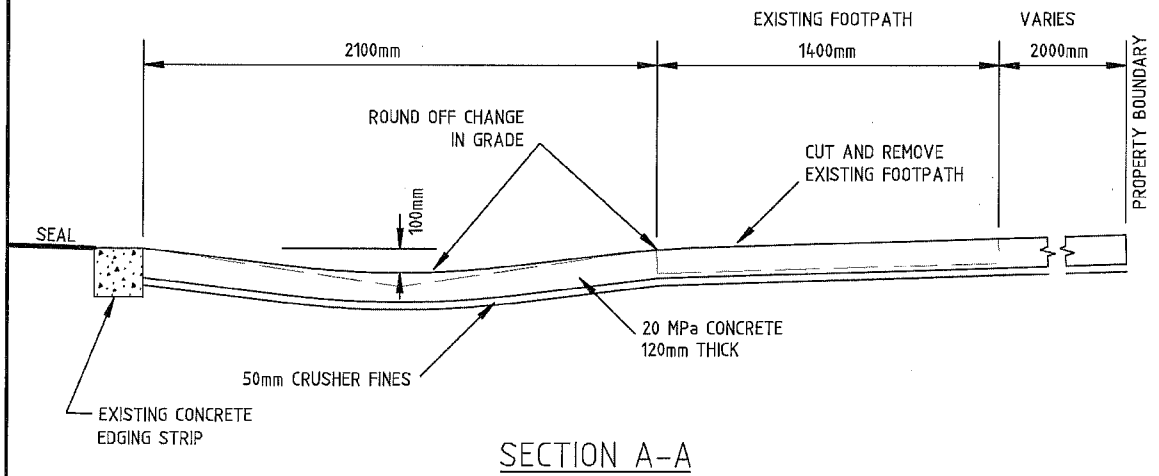
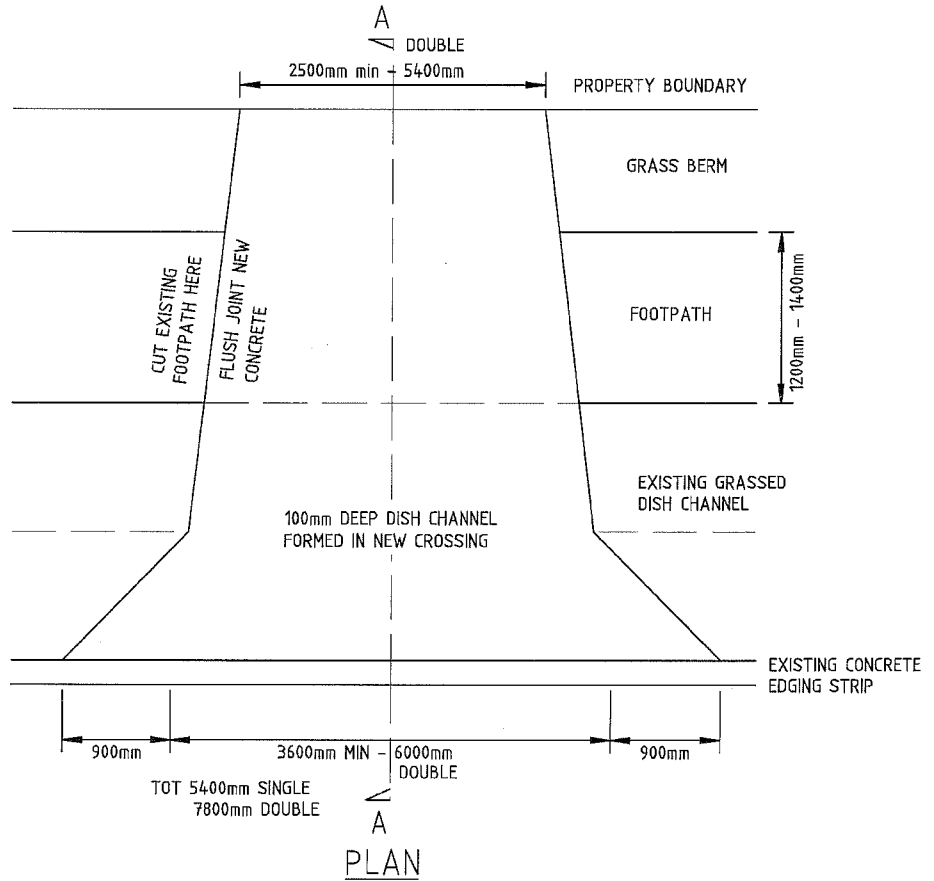
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NOTE: FOR MOUNTABLE KERB BUTT NEW CONCRETE UP BEHIND KERB

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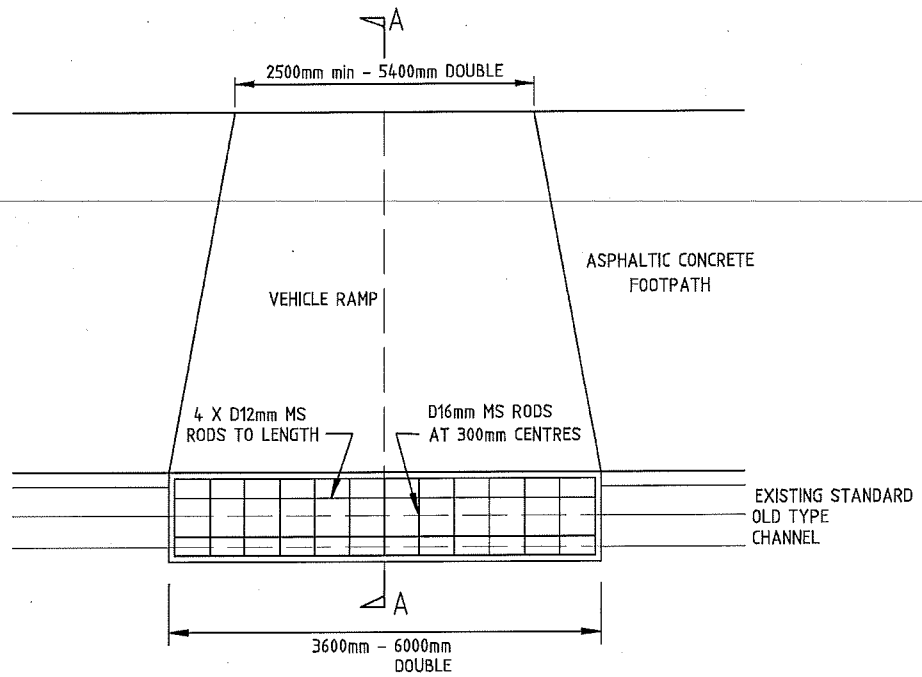
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			Date Stamp 01/08/2003
			ISSUE A
			Sheet No. 1 of 1

ORIGINAL SIZE A4 DO NOT SCALE - IF IN DOUBT, ASK

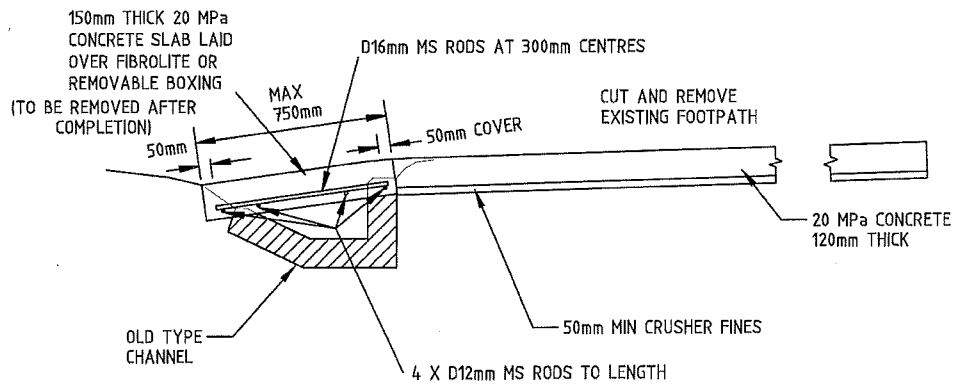


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			SCALE NTS	Date Stamp 01/08/2003
			ISSUE A	Sheet No. 1 of 1

ORIGINAL SIZE A4 DO NOT SCALE - IF IN DOUBT, ASK



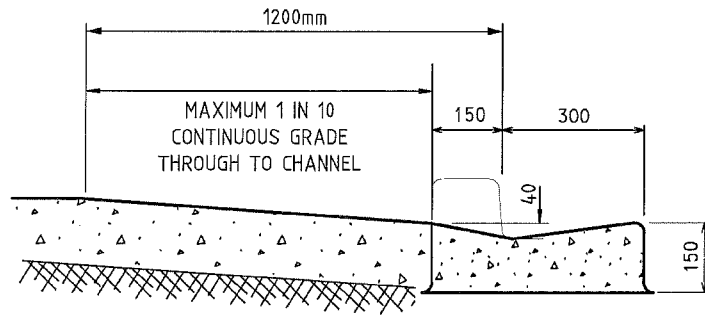
PLAN



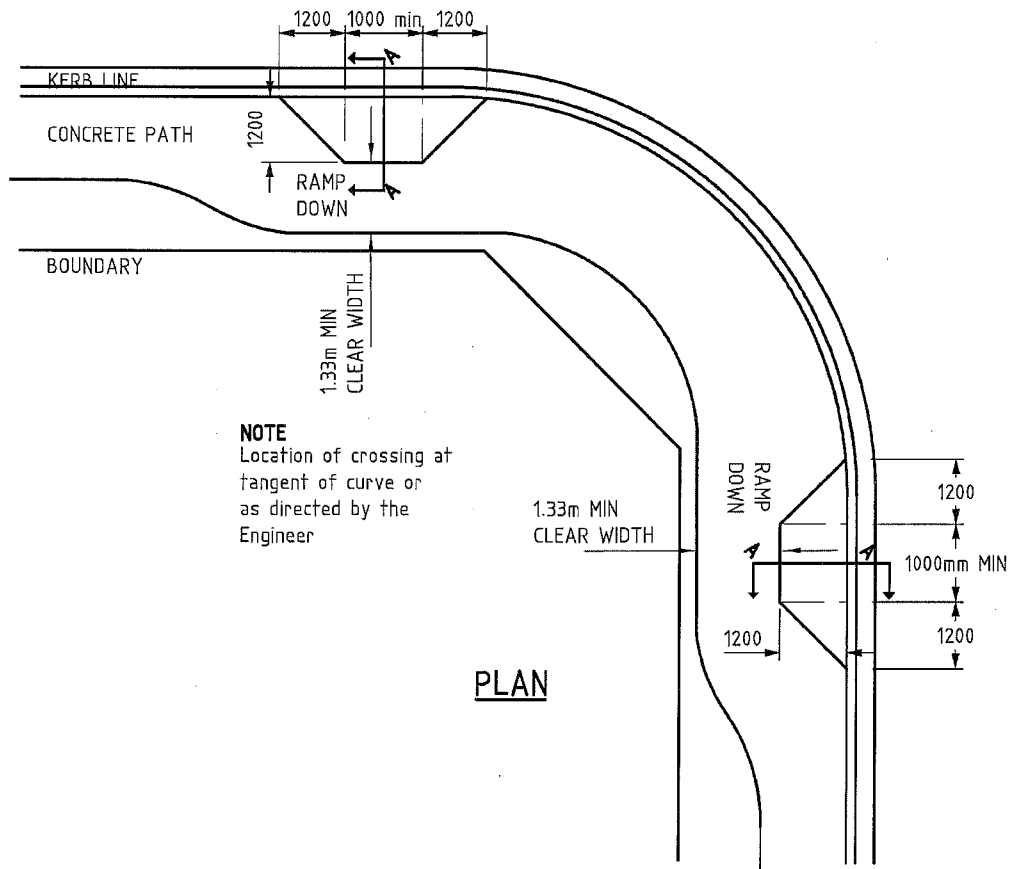
SECTION A-A

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SCALE NTS	<p>TILAMES COROMANDEL DISTRICT COUNCIL</p>	SHEET TITLE VEHICLE CROSSING STANDARD RESIDENTIAL FOR OLD TYPE CHANNEL	PLAN No. 600-211D
			Date Stamp 01/08/2003
			ISSUE A
			Sheet No. 1 of 1



SECTION A-A



PLAN

ORIGINAL SIZE A4 DO NOT SCALE - IF IN DOUBT, ASK

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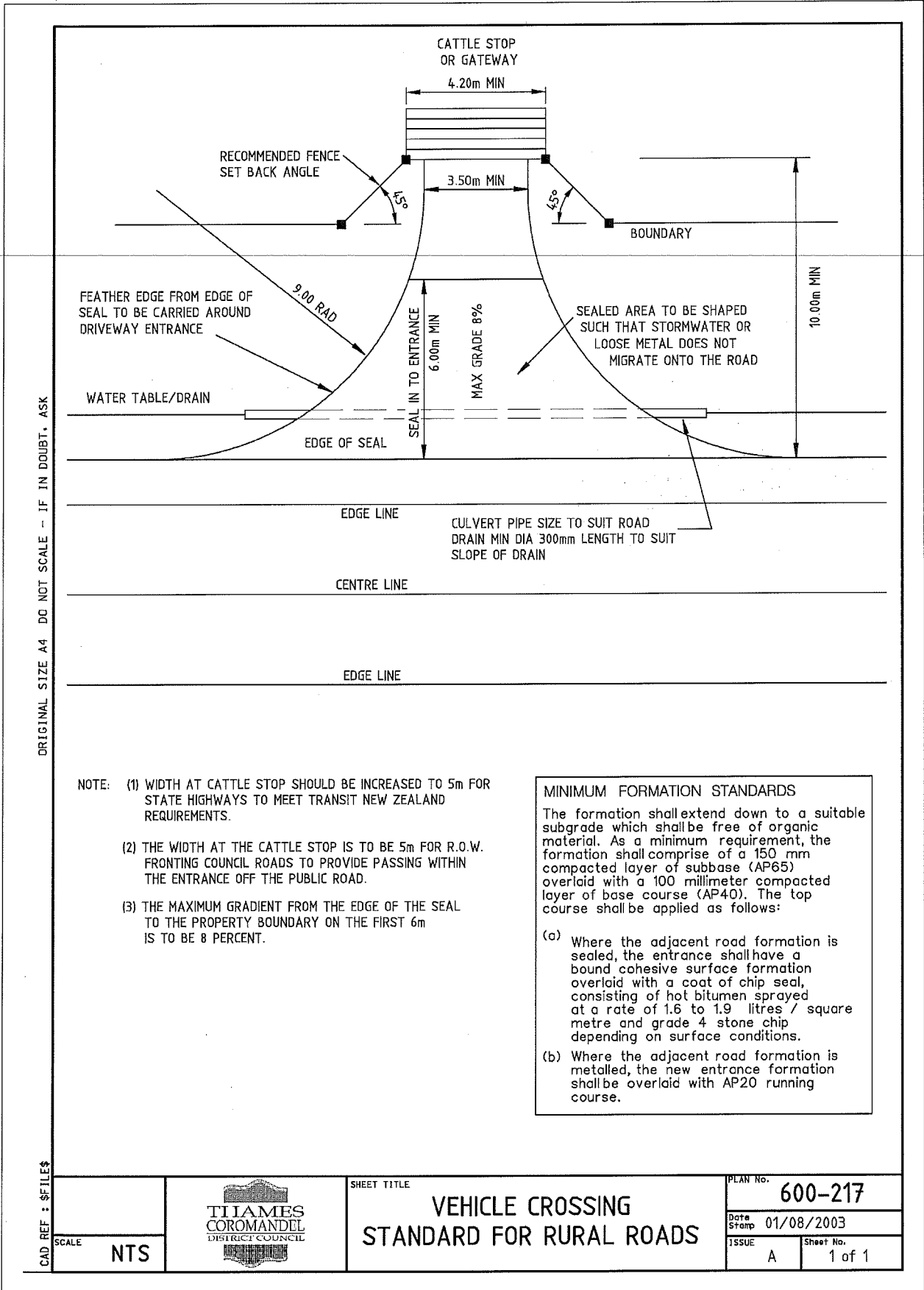
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PEDESTRIAN CUTDOWN

PLAN No. **600-213**

Date Stamp 01/08/2003

ISSUE A Sheet No. 1 of 1



- NOTE:
- (1) WIDTH AT CATTLE STOP SHOULD BE INCREASED TO 5m FOR STATE HIGHWAYS TO MEET TRANSIT NEW ZEALAND REQUIREMENTS.
 - (2) THE WIDTH AT THE CATTLE STOP IS TO BE 5m FOR R.O.W. FRONTING COUNCIL ROADS TO PROVIDE PASSING WITHIN THE ENTRANCE OFF THE PUBLIC ROAD.
 - (3) THE MAXIMUM GRADIENT FROM THE EDGE OF THE SEAL TO THE PROPERTY BOUNDARY ON THE FIRST 6m IS TO BE 8 PERCENT.

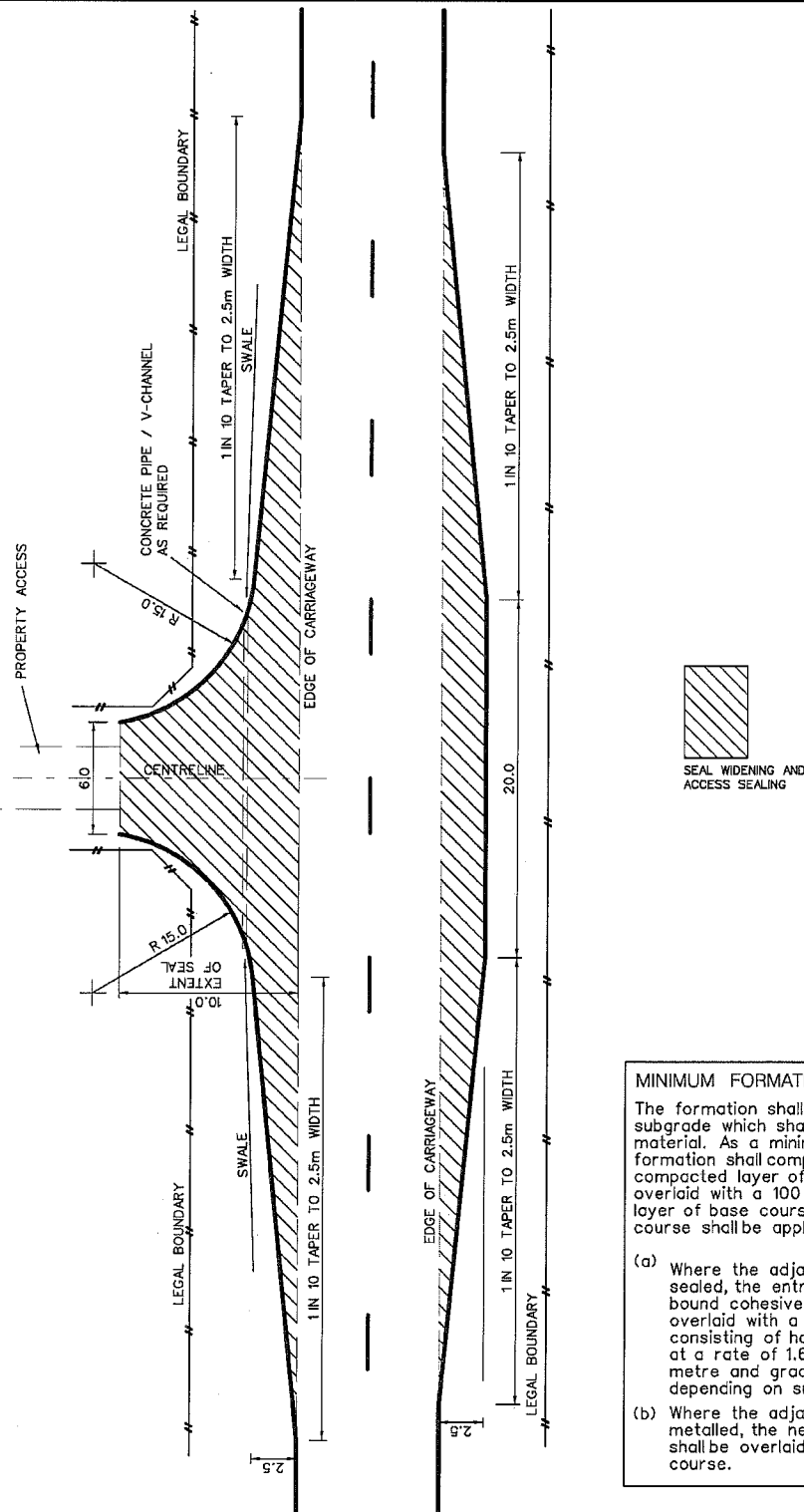
MINIMUM FORMATION STANDARDS

The formation shall extend down to a suitable subgrade which shall be free of organic material. As a minimum requirement, the formation shall comprise of a 150 mm compacted layer of subbase (AP65) overlaid with a 100 millimeter compacted layer of base course (AP40). The top course shall be applied as follows:

- (a) Where the adjacent road formation is sealed, the entrance shall have a bound cohesive surface formation overlaid with a coat of chip seal, consisting of hot bitumen sprayed at a rate of 1.6 to 1.9 litres / square metre and grade 4 stone chip depending on surface conditions.
- (b) Where the adjacent road formation is metalled, the new entrance formation shall be overlaid with AP20 running course.

SCALE NTS	 TAIRĀWHITI DISTRICT COUNCIL	SHEET TITLE	PLAN No.
		VEHICLE CROSSING STANDARD FOR RURAL ROADS	600-217
			Date Stamp
		ISSUE	Sheet No.
		A	1 of 1

ORIGINAL SIZE A4 DO NOT SCALE - IF IN DOUBT, ASK



MINIMUM FORMATION STANDARDS

The formation shall extend down to a suitable subgrade which shall be free of organic material. As a minimum requirement, the formation shall comprise of a 150 mm compacted layer of subbase (AP65) overlaid with a 100 millimeter compacted layer of base course (AP40). The top course shall be applied as follows:

- Where the adjacent road formation is sealed, the entrance shall have a bound cohesive surface formation overlaid with a coat of chip seal, consisting of hot bitumen sprayed at a rate of 1.6 to 1.9 litres / square metre and grade 4 stone chip depending on surface conditions.
- Where the adjacent road formation is metalled, the new entrance formation shall be overlaid with AP20 running course.

CAD REF : \$FILES\$

SCALE
NTS



SHEET TITLE
TYPICAL RURAL COMMERCIAL ACCESS

PLAN No. 600-218	
Date Stamp	01/08/2003
ISSUE	Sheet No. A 1 of 1

Table 1: CBD

Materials that are not on the following table MUST be approved by *Council* – refer to *AM-1 – General Provisions*.

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-CBD.1	Grassing					
AM-CBD1.1	Grass Seed Mixture			Specific <i>Design</i>		
AM-CB1.2	Fertiliser			Specific <i>Design</i>		
AM-CBD.2	Gardens					
AM-CBD.2.1	Soil			Specific <i>Design</i>		
AM-CBD.2.2	Mulch			Specific <i>Design</i>		
AM-CBD.3	Tree Pits					
AM-CBD.3.1	Backfill	Tree pits		50:50 mix of in-situ material and decomposed and treated organic matter.		
AM-CBD.3.2	Mulch	Tree pits 100mm uniform depth		Cambium-grade bark that is clean, free of sawdust and dirt and with individual pieces no larger than 100mm. Arb mulch.		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
		Hardstand area		75mm depth hoggin mulch.		
AM-CBD.3.3	Stakes			90mm Ø small end diameter H4 timber poles, stained black.		
AM-CBD.3.4	Ties			Specific <i>Design</i>		
AM-CBD.3.5	Root Guard			An impermeable root barrier minimum 4.0m long, 0.5m deep and 1mm thick.		
AM-CBD.4	Bollards					
AM-CBD.4.1	Concrete Surround	Bollard support and mowing strips	NZS 3104	17.5MPa concrete		
AM-CBD.4.2	Timber			Sceptre		<i>Streetscapes</i>
AM-CBD.4.3	Stainless Steel	CBD Only		Tier 1 Bollard		<i>Streetscapes</i>
AM-CBD.4.4	Hasp and Staple	Removable bollards				
AM-CBD.4.5	<i>Ground Sleeve</i>	Removable bollards		PVC		
AM-CBD.4.6	Reflector	Removable bollards		Specific <i>Design</i>		
AM-CBD.5	Fences					

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-CBD.5.1	Concrete Surround	Post support and mowing strips	NZS 3104	17.5MPa concrete		
AM-CBD.5.2	Timber	All posts		All timber to be suitably treated for given application i.e. H5 where <i>ground</i> contact is expected.		
AM-CBD.5.3	Stainless Steel	CBD Palisade		20mm Ø, 12 per panel, 200mm spacings. Refer to CBD220.		
AM-CBD.5.4	Fastenings	All fastenings		All fastenings to be minimum hot-dip galvanised.		
AM-CBD.6	Gateways					
AM-CBD.6.1	Chains			Specific <i>Design</i>		
AM-CBD.6.2	Gates			Specific <i>Design</i>		
AM-CBD.7	Pathways					
AM-CBD.7.1	Timber	Path edging		H5 100mm x 25mm		
AM-CBD.7.2		CBD Timber Deck Waterside Edging		100mm x 200mm Iron Bark on timber spacer. Refer CBD441.		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-CBD.7.3		CBD Timber Decking		100mm x 200mm Iron Bark on structure. Refer CBD440.		
AM-CBD.7.4	Concrete		NZS 3104	17.5MPa concrete		
AM-CBD.7.5	Aggregate			GAP 25		
AM-CBD.7.6	Cobbles/Pavers			Specific <i>Design</i>		
AM-CBD.7.7	Tactile Paving		AS/NZS 1428			
AM-CBD.7.8	Steel Edging			10mm x 50mm equal angle stainless steel. Refer CBD225.		
AM-CBD.8	Seats					
AM-CBD.8.1	Type S1 Bespoke			Refer CBD340		
AM-CBD.8.2	Type S1 Bespoke. Backless			Refer CBD341		
AM-CBD.8.3	Type S2 Bespoke			Refer CBD342		
AM-	Type S2 Bespoke.			Refer CBD343		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
CBD.8.4	Backless					
AM-CBD.8.5	Type S4 Proprietary			Refer CBD344		
AM-CBD.9	Signage					
AM-CBD.9.1	<i>Street</i> Signage	General use		Refer to MOTSAM		
AM-CBD.9.2	Interpretive	CBD only		Refer CBD351		
AM-CBD.9.3	Way Finding	CBD only		Refer CBD350		
AM-CBD.10	Lighting					
AM-CBD.10.1	All Lighting			Specific <i>Design</i> Refer CBD801 for Accent Lighting		
AM-CBD.11	Miscellaneous Furniture					
AM-CBD.11.1	Drinking Fountain			Refer CBD230		
AM-CBD.11.2	Concrete Cube	Seating or Bollard dual purpose applications.		Refer CBD801		
AM-	Grassing					

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
CBD.1						
AM-CBD1.1	Grass Seed Mixture			Specific <i>Design</i>		
AM-CB1.2	Fertiliser			Specific <i>Design</i>		
AM-CBD.2	Gardens					
AM-CBD.2.1	Soil			Specific <i>Design</i>		
AM-CBD.2.2	Mulch			Specific <i>Design</i>		
AM-CBD.3	Tree Pits					
AM-CBD.3.1	Backfill	Tree pits		50:50 mix of in-situ material and decomposed and treated organic matter.		
AM-CBD.3.2	Mulch	Tree pits 100mm uniform depth		Cambium-grade bark that is clean, free of sawdust and dirt and with individual pieces no larger than 100mm. Arb mulch.		
		Hardstand area		75mm depth hoggin mulch.		
AM-CBD.3.3	Stakes			90mm Ø small end diameter H4 timber poles, stained black.		
AM-	Ties			Specific <i>Design</i>		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
CBD.3.4						
AM-CBD.3.5	Root Guard			An impermeable root barrier minimum 4.0m long, 0.5m deep and 1mm thick.		
AM-CBD.4	Bollards					
AM-CBD.4.1	Concrete Surround	Bollard support and mowing strips	NZS 3104	17.5MPa concrete		
AM-CBD.4.2	Timber			Sceptre		Streetscapes
AM-CBD.4.3	Stainless Steel	CBD Only		Tier 1 Bollard		Streetscapes
AM-CBD.4.4	Hasp and Staple	Removable bollards				
AM-CBD.4.5	<i>Ground</i> Sleeve	Removable bollards		PVC		
AM-CBD.4.6	Reflector	Removable bollards		Specific <i>Design</i>		
AM-CBD.5	Fences					
AM-CBD.5.1	Concrete Surround	Post support and mowing strips	NZS 3104	17.5MPa concrete		
AM-CBD.5.2	Timber	All posts		All timber to be suitably treated for given application i.e. H5 where <i>ground</i>		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
				contact is expected.		
AM-CBD.5.3	Stainless Steel	CBD Palisade		20mm Ø, 12 per panel, 200mm spacings. Refer to CBD220.		
AM-CBD.5.4	Fastenings	All fastenings		All fastenings to be minimum hot-dip galvanised.		
AM-CBD.6	Gateways					
AM-CBD.6.1	Chains			Specific <i>Design</i>		
AM-CBD.6.2	Gates			Specific <i>Design</i>		
AM-CBD.7	Pathways					
AM-CBD.7.1	Timber	Path edging		H5 100mm x 25mm		
AM-CBD.7.2		CBD Timber Deck Waterside Edging		100mm x 200mm Iron Bark on timber spacer. Refer CBD441.		
AM-CBD.7.3		CBD Timber Decking		100mm x 200mm Iron Bark on structure. Refer CBD440.		
AM-	Concrete		NZS 3104	17.5MPa concrete		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
CBD.7.4						
AM-CBD.7.5	Aggregate			GAP 25		
AM-CBD.7.6	Cobbles/Pavers			Specific <i>Design</i>		
AM-CBD.7.7	Tactile Paving		AS/NZS 1428			
AM-CBD.7.8	Steel Edging			10mm x 50mm equal angle stainless steel. Refer CBD225.		
AM-CBD.8	Seats					
AM-CBD.8.1	Type S1 Bespoke			Refer CBD340		
AM-CBD.8.2	Type S1 Bespoke. Backless			Refer CBD341		
AM-CBD.8.3	Type S2 Bespoke			Refer CBD342		
AM-CBD.8.4	Type S2 Bespoke. Backless			Refer CBD343		
AM-CBD.8.5	Type S4 Proprietary			Refer CBD344		
AM-	Signage					

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
CBD.9						
AM-CBD.9.1	Street Signage	General use		Refer to MOTSAM		
AM-CBD.9.2	Interpretive	CBD only		Refer CBD351		
AM-CBD.9.3	Way Finding	CBD only		Refer CBD350		
AM-CBD.10	Lighting					
AM-CBD.10.1	All Lighting			Specific <i>Design</i> Refer CBD801 for Accent Lighting		
AM-CBD.11	Miscellaneous Furniture					
AM-CBD.11.1	Drinking Fountain			Refer CBD230		
AM-CBD.11.2	Concrete Cube	Seating or Bollard dual purpose applications.		Refer CBD801		

Table 2: Streetscape

Materials that are not on the following table MUST be approved by *Council* – refer to *AM-1 – General Provisions*.

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-2.1	Grassing					
AM-2.1.1	Grass Seed Mixture	All grassed areas		NZ Browntop 50kg/ha. High-endophyte Turf Rye 200kg/ha.		
AM-2.1.2	Fertiliser	All grassed areas 2-3 days before seeding		30% Potassic superphosphate 150kg/ha. Sulphate of ammonia 50kg/ha.		
		One month after seeding		Di-ammonium phosphate (DAP) 100kg/ha.		
AM-2.2	Gardens					
AM-2.2.1	Soil	All gardens minimum 500mm deep		50:50 mix of in situ material and decomposed and treated organic matter.		
AM-2.2.2	Mulch	All gardens 100mm uniform depth		Cambium-grade bark that is clean, free of sawdust and dirt and with individual pieces no larger than 100mm.		
AM-2.3	Tree Pits					
AM-2.3.1	Backfill	All tree pits		50:50 mix of in-situ material and decomposed and treated organic matter.		
AM-2.3.2	Mulch	All tree pits 100mm uniform depth		Cambium-grade bark that is clean, free of sawdust and dirt and with individual pieces no larger than 100mm.		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
				Arb mulch.		
AM-2.3.3	Stakes	All tree pits		Untreated hardwood, minimum 40mm x 40mm x 1500mm.		
AM-2.3.4	Ties			Rubber bicycle inner-tube.		
				Jute (hessian).		
AM-2.3.5	Root Guard	All trees		An impermeable root barrier minimum 4.0m long, 0.5m deep and 1mm thick.		
AM-2.4	Fences					
AM-2.4.1	Concrete	Post support and mowing strips	NZS 3104	17.5MPa concrete.		
AM-2.4.2	Timber	All posts		All timber to be suitably treated for given application i.e. H5 where <i>ground</i> contact is expected.		
AM-2.4.3	Wire	Rural fencing		No. 8 gauge wire or 2.4mm HT wire.		
AM-2.4.4	Wire Mesh	Rural fencing		50mm mesh No. 12 gauge wire.		
AM-2.4.5	Fastenings	All fastenings		All fastenings to be minimum hot-dip galvanised.		
AM-2.5	Bollards					

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-2.5.1	Concrete	Bollard support and mowing strips	NZS 3104	17.5MPa concrete.		
AM-2.5.2	Bollards	All bollards		180mm Ø. H5 treated radiata pine.		
AM-2.5.3	Hasp and Staple	Removable bollards				
AM-2.5.4	Ground Sleeve	Removable bollards		PVC.		
AM-2.5.5	Reflector	Removable bollards				
AM-2.6	Gateways					
AM-2.6.1	Chains			Specific approval.		
AM-2.6.2	Gates			Specific approval.		
AM-2.7	Pathways					
AM-2.7.1	Timber	Path edging		H5 100mm x 25mm.		
AM-2.7.2	Concrete		NZS 3104	17.5MPa concrete.		
AM-2.7.3	Gravel			GAP 25.		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM- 2.7.4	Cobbles					

Table 3: Reserves

Materials that are not on the following table MUST be approved by *Council* – refer to *AM-1 – General Provisions*.

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-3.1	Grassing					
AM-3.1.1	NZ Browntop 50kg/ha High-endophyte Turf Rye 200kg/ha	All grassed areas		Grass Seed Mixture.		
AM-3.1.2	kikuyu and couch turf			Grass Seed Mixture specific approval.		
AM-3.1.3	30% Potassic superphosphate 150kg/ha Sulphate of ammonia 50kg/ha	All grassed areas 2-3 days before seeding		Fertiliser.		
AM-3.1.3.1	Di-ammonium phosphate (DAP) 100kg/ha	One month after seeding		Fertiliser to be applied as separate applications after fertilising as noted in AM.3.1.3 .		
AM-3.2	Gardens					
AM-3.2.1	Soil	All gardens minimum 500mm deep		50:50 mix of in-situ material and decomposed and treated organic matter.		
AM-3.2.2	Mulch	All gardens 100mm uniform depth		Cambium-grade bark that is clean, free of sawdust and dirt and with individual pieces no larger than 100mm.		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-3.3	Tree Pits					
AM-3.3.1	Backfill	All tree pits		50:50 mix of in-situ material and decomposed and treated organic matter.		
AM-3.3.2	Mulch	All tree pits 100mm uniform depth		Cambium-grade bark that is clean, free of sawdust and dirt and with individual pieces no larger than 100mm. Arb mulch.		
AM-3.3.3	Stakes	All tree pits		Untreated hardwood, minimum 40mm x 40mm x 1500mm.		
AM-3.3.4	Ties			Rubber bicycle inner-tube.		
				Jute (hessian).		
AM-3.3.5	Root Guard	All trees		An impermeable root barrier minimum 4.0m long, 0.5m deep and 1mm thick.		
AM-3.4	Fences					
AM-3.4.1	Concrete	Post support and mowing strips	NZS 3104	17.5MPa concrete.		
AM-3.4.2	Timber	All posts		All timber to be suitably treated for given application i.e. H5 where <i>ground</i> contact is expected.		
AM-3.4.3	Wire	Rural fencing		No. 8 gauge wire or 2.4mm HT wire.		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-3.4.4	Wire Mesh	Rural fencing		50mm mesh No. 12 gauge wire.		
AM-3.4.5	Fastenings	All fastenings		All fastenings to be minimum hot-dip galvanised.		
AM-3.5	Bollards					
AM-3.5.1	Concrete	Bollard support and mowing strips	NZS 3104	17.5MPa concrete.		
AM-3.5.2	Bollards	All bollards		180mm Ø. H5 treated radiata pine.		
AM-3.5.3	Hasp and Staple	Removable bollards				
AM-3.5.4	Ground Sleeve	Removable bollards		PVC.		
AM-3.5.5	Reflector	Removable bollards				
AM-3.6	Gateways					
AM-3.6.1	Chains			Specific approval.		
AM-3.6.2	Gates			Specific approval.		
AM-3.7	Pathways					
AM-	Timber	Path edging		H5 100mm x 25mm.		

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
3.7.1						
AM-3.7.2	Concrete		NZS 3104	17.5MPa concrete.		
AM-3.7.3	Gravel			GAP 25.		
AM-3.7.4	Cobbles					

Table 4: Transportation Network

Materials that are not on the following table MUST be approved by *Council* – refer to *AM-1 – General Provisions*.

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier																		
AM-4.1	Imported Sand	For use in the formations of lower sub-base of <i>pavement</i> , imported sub-grade, <i>footpaths</i> and paved areas and as foundations to concrete works		<p>Shall be "run of pit" sand which is free of organic matter and well graded within the limits given below. It shall be made up of clean particles of silica or hard stone containing minimal silts, clays and pumice. The sand shall obtain a smooth grading curve within the grading limits given below:</p> <table border="1"> <thead> <tr> <th>Test Sieve</th> <th>% of weight passing</th> </tr> </thead> <tbody> <tr> <td>9.5mm</td> <td>95 - 100</td> </tr> <tr> <td>4.75mm</td> <td>80 - 100</td> </tr> <tr> <td>2.36mm</td> <td>45 - 80</td> </tr> <tr> <td>1.18mm</td> <td>25 - 65</td> </tr> <tr> <td>600 micron</td> <td>18 - 45</td> </tr> <tr> <td>300 micron</td> <td>12 - 30</td> </tr> <tr> <td>150 micron</td> <td>5 - 15</td> </tr> <tr> <td>75 micron</td> <td>10 max</td> </tr> </tbody> </table>	Test Sieve	% of weight passing	9.5mm	95 - 100	4.75mm	80 - 100	2.36mm	45 - 80	1.18mm	25 - 65	600 micron	18 - 45	300 micron	12 - 30	150 micron	5 - 15	75 micron	10 max		
Test Sieve	% of weight passing																							
9.5mm	95 - 100																							
4.75mm	80 - 100																							
2.36mm	45 - 80																							
1.18mm	25 - 65																							
600 micron	18 - 45																							
300 micron	12 - 30																							
150 micron	5 - 15																							
75 micron	10 max																							
AM-4.1.1	Bedding Sand	For use with concrete block paving	NZS 3116	Single-sized, gap-graded or other sands containing an excessive amount of fines shall not be used. The sand shall be free																				

				of any harmful materials, soluble salts and other contaminants. The particles shall preferably be sharp. The sand shall have a moisture content in the range 4% – 8%.		
AM-4.1.2	Joint filling Sand	For use with concrete block paving		Shall be such that 90% passes a 1.18mm BS410 sieve and no more than 10% passes a 75 micron sieve and shall be free of materials that are harmful in any way, soluble salts and other contaminants. It shall be dry enough to be free running and shall be non-plastic.		
AM-4.1.3	Trench Sand	Backfilling trenches		Trench sand shall comprise "run of pit" sand as above and 4% - 6% by weight of clean loam.		
AM-4.2	Brown Rock	WBOPDC Only		This material is a non-specific rock aggregate with a maximum particle size of 200mm. The suitability of the material will be assessed on its grading, crushing and weathering resistance and clay content relative to its use. Evidence of these properties will be required for approval by the <i>Engineer</i> before its use.		
AM-4.3	WHAP Aggregate	WBOPDC Only Sub-base or shaping material for stabilisation	NZS 4407 NZS 4402	This specification sets out requirements for crushed general aggregate (WHAP).		
AM-4.3.1	Proportion of Broken Rock			In each of the aggregate fractions between the 63.0mm and 4.75mm sieves not less than 50% by weight shall have 2 or more broken faces. It shall be free of organic matter.		

AM-4.3.2	Crushing Resistance		NZS 4407	The crushing resistance shall not be less than 130kN when the aggregate is tested in accordance Test 3.10, Crushing Resistance Test.																																	
AM-4.3.3	Weathering Resistance		NZS 4407	The aggregate shall have a quality index of AA, AB, AC, BA, BB or CA when tested according to Test 3.11, Weathering Quality Index Test.																																	
AM-4.3.4	Sand Equivalent		NZS 4407	The sand equivalent shall not be less than 25 when the aggregate is tested according to Test 3.6, Sand Equivalent Test. The sand equivalent test may be neglected if the grading test shows less than 4% passing the 75 micron sieve.																																	
AM-4.3.5	Grading Limits		NZS 4407	When tested according to Test 3.8.1, Standard Method by Wet Sieving, or Test 3.8.2, Subsidiary Method of Dry Sieving, the grading of the aggregate shall fall within their respective envelopes defined below:																																	
				<table border="1"> <thead> <tr> <th rowspan="2">Test Sieve (mm)</th> <th colspan="3">% of Weight Passing</th> </tr> <tr> <th>WHAP 65</th> <th>WHAP 40</th> <th>WHAP 20</th> </tr> </thead> <tbody> <tr> <td>63</td> <td>100</td> <td>-</td> <td>-</td> </tr> <tr> <td>37.5</td> <td>55-80</td> <td>100</td> <td>-</td> </tr> <tr> <td>19</td> <td>35-65</td> <td>60-80</td> <td>100</td> </tr> <tr> <td>9.5</td> <td>20-50</td> <td>35-65</td> <td>45-75</td> </tr> <tr> <td>4.75</td> <td>10-35</td> <td>20-45</td> <td>25-55</td> </tr> <tr> <td>1.18</td> <td>2-20</td> <td>2-25</td> <td>2-30</td> </tr> </tbody> </table>	Test Sieve (mm)	% of Weight Passing			WHAP 65	WHAP 40	WHAP 20	63	100	-	-	37.5	55-80	100	-	19	35-65	60-80	100	9.5	20-50	35-65	45-75	4.75	10-35	20-45	25-55	1.18	2-20	2-25	2-30		
Test Sieve (mm)	% of Weight Passing																																				
	WHAP 65	WHAP 40	WHAP 20																																		
63	100	-	-																																		
37.5	55-80	100	-																																		
19	35-65	60-80	100																																		
9.5	20-50	35-65	45-75																																		
4.75	10-35	20-45	25-55																																		
1.18	2-20	2-25	2-30																																		

				0.075	6 max	7 max	8 max		
AM-4.4	GAP Aggregate	GAP65 shall be used for sub-base and GAP40 shall be used for base course	NZS 4407 NZS 4402	The GAP aggregate shall comprise crushed aggregate and must be free of all non-mineral matter.					
AM-4.4.1	Crushing Resistance		NZS 4407	The crushing resistance shall be not less than 100kN when the aggregate is tested according to Test 3.10, The Crushing Resistance Test. An aggregate shall be considered to have met the requirement if the sample produces less than 10% fines when loaded so that the specified peak load is reached in 10 minutes. In this case the test shall follow the standard method in all other respects. If the aggregate passes the test it shall be reported as having a crushing resistance "greater than (the load specified)".					
AM-4.4.2	Weathering Resistance		NZS 4407	The aggregate shall have a quality index of AA, AB, AC, BA, BB, CA or CB when tested according to Test 3.11, Weathering Quality Index Test.					
AM-4.4.3	Sand Equivalent		NZS 4407	The sand equivalent shall not be less than 40 for carriageway <i>pavement</i> metal when the aggregate is tested according to Test 3.6, Sand Equivalent Test. Where GAP20 is to be used on the <i>footpath</i> the sand equivalent shall not be less than 25 when tested according to Test 3.6, Sand Equivalent Test.					
AM-	Grading Limits		NZS 4407	When tested according to NZS 4407 Test					

4.4.4				<p>3.8.2, Subsidiary Method by Dry Sieving, or Test 3.8.1, Standard Method for Wet Sieving, where aggregates contain clay or other fine material causing aggregating of the particles, the grading of the aggregate shall fall within the respective envelope defined in the following table:</p> <table border="1"> <thead> <tr> <th>Test Sieve</th> <th colspan="2">Percent Passing</th> </tr> </thead> <tbody> <tr> <td>37.5mm</td> <td>100</td> <td>-</td> </tr> <tr> <td>19.0mm</td> <td>63-81</td> <td>100</td> </tr> <tr> <td>9.5mm</td> <td>40 – 60</td> <td>52 – 76</td> </tr> <tr> <td>4.75mm</td> <td>25 – 45</td> <td>33 – 57</td> </tr> <tr> <td>2.36mm</td> <td>16 – 35</td> <td>20 – 44</td> </tr> <tr> <td>1.18mm</td> <td>9 – 27</td> <td>12 – 35</td> </tr> <tr> <td>600 micron</td> <td>5 – 20</td> <td>7 – 25</td> </tr> <tr> <td>300 micron</td> <td>1 – 15</td> <td>4 – 20</td> </tr> <tr> <td>150 micron</td> <td>10 max</td> <td>12 max</td> </tr> <tr> <td>75 micron</td> <td>7 max</td> <td>8 max</td> </tr> </tbody> </table>	Test Sieve	Percent Passing		37.5mm	100	-	19.0mm	63-81	100	9.5mm	40 – 60	52 – 76	4.75mm	25 – 45	33 – 57	2.36mm	16 – 35	20 – 44	1.18mm	9 – 27	12 – 35	600 micron	5 – 20	7 – 25	300 micron	1 – 15	4 – 20	150 micron	10 max	12 max	75 micron	7 max	8 max		
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AM-4.4.5	Grading Shape Control			<p>The weight in each fraction shall lie within the limits defined in the following table:</p> <table border="1"> <thead> <tr> <th>Fractions</th> <th colspan="2">Percentage of Material Within the Given Fraction</th> </tr> </thead> <tbody> <tr> <td></td> <td>GAP40</td> <td>GAP20</td> </tr> </tbody> </table>	Fractions	Percentage of Material Within the Given Fraction			GAP40	GAP20																													
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				19.0 – 4.75mm	25 – 49	-		
				9.5 – 2.36mm	14 – 36	19 – 45		
				4.75 – 1.18mm	7 – 27	11 – 35		
				2.36mm – 600micron	5 – 22	6 – 26		
				1.18mm – 300micron	3 – 18	3 – 21		
				600 – 150micron	1 - 13	2 – 18		
AM-4.4.6	GAP65 Requirements		NZS 4407	Refer to IT-4.2.2 Sub-base Testing				
AM-4.4.7	GAP40 Requirements			Refer to IT-4.2.3 Basecourse Testing				
AM-4.5	TNZ M/4	Pavement course		TNZ M/4 aggregate can be used for the base course layer. Refer to IT-4.2.3 Basecourse Testing				
AM-4.6	Bitumen Bound Basecourse			The emulsion shall conform to TNZ Specification M/1 and the base course shall conform to GAP40 or M/4 AP40 specifications.				
AM-4.7	Cement (for stabilisation)		NZS 3122	Cement shall comply with NZS 3122.				
AM-4.8	Sealing Chip			Sealing chip shall conform to TNZ Specification M/6 for all applications in the works.				
AM-4.9	Asphaltic Concrete			Asphaltic concrete shall conform to TNZ Specification M/10 Specification for				

				Asphaltic Concrete.		
AM-4.10	Concrete		NZS 3109 NZS 3104 NZS 3108	Cement, aggregates and water shall be of the qualities specified in NZS 3109 , Concrete Construction. If requested, samples shall be supplied to the <i>Engineer</i> for testing. Curing compounds shall conform to ASTM C309, Specifications for Liquid Membrane Forming Compounds for Curing Concrete.		
AM-4.11	Timber			H5 for retaining structures e.g. poles. H4 for edging, pegs, fence posts, retaining structure rails or other members in contact with the <i>ground</i> . H3 for all other components.		
AM-4.12	Concrete Block Paving		NZS 3116	Concrete blocks shall comply with NZS 3116 , Interlocking Concrete Block Paving.		
AM-4.13	Reinforcement		NZS 4671	Reinforcing bars shall conform to NZS 4671 , Steel Reinforcing Materials.		
AM-4.14	<i>Sumps</i>					
AM-4.14.1	Precast Concrete Components <i>Sump</i> flat top <i>Sump</i> top (back entry) Rectangular <i>sump</i> barrel			675x450x1650mm 675x580x1650mm 675x450x1200mm "Ike" type.		Hynds Pipe Systems Ltd Humes Pipeline Systems
AM-4.14.2	Circular <i>sump</i> barrel			600 Ø x 1800mm 750 Ø x 1800mm	Specific approval required for circular <i>sumps</i>	Hynds Pipe Systems Ltd Humes Pipeline

						Systems
AM-4.14.3	<i>Sump</i> for ROW			450x450x950		Hynds Pipe Systems Ltd Humes Pipeline Systems
AM-4.14.4	Frames and Grates			675 x 450 cast-iron grate and frame. 300 Ø cast-iron grate to suit socket of 225 Ø culvert pipe. 300 Ø cast-iron grate to suit socket of 225 Ø culvert pipe. 610 x 310 galvanised web grate and frame. 610 x 310 galvanised web grate and frame.	Surecast Metals Saint Gobain PAM	Hynds Pipe Systems Ltd Humes Pipeline Systems Hygrade Products Ltd Pipe & <i>Infrastructure</i> Ltd
AM-4.14.5	High-Capacity <i>Sumps</i>	Where carriageway longitudinal gradient exceeds 12%		Super pits, mega pits, max pits. 610 x 310 galvanised web grate and frame.		Humes Pipeline Systems Hynds Pipe Systems Ltd Hygrade Products Ltd

Table 5: Stormwater

Materials that are not on the following table MUST be approved by *Council* - refer to *AM-1 - General Provisions*.

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-5.1	<i>Stormwater Pipe</i>			Primary mains: Larger than 225mm. Reticulation mains: 225-150mm. Lateral/connection: 100mm and 150mm.		
AM-5.1.1	Reinforced Concrete Rubber Ring Jointed Pipes (RCRRJ)	All primary mains	AS/NZS 4058			Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-5.1.1.1	Rubber Ring Joint					Humes Pipeline Systems (Licence # 2618) Hynds Pipe Systems Ltd (Licence # 2586) Mico Pipelines
AM-5.1.1.2	Flush Jointed Pipes	Specific approval and <i>design</i>		Not generally accepted.	Manufacturers who can supply to the relevant standards.	
AM-5.1.1.3	Skid Ring Joint	Specific approval and <i>design</i>		Not generally accepted.	Manufacturers who can supply to the relevant standards.	

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-5.1.1.4	Roller Compacted Pipes					Humes Pipeline Systems (Licence #2618) Mico Pipelines
AM-5.1.2	Spiral-welded Steel Pipe Internal linings include concrete only	Specific <i>design</i> Structural mains	NZS 4442 or AS1579	Polyken YG111 external wrapping or Polyken Synergy wrapping. Manufacturer capable of meeting the required standard.	Steelpipe New Zealand	
AM-5.1.3	Ductile Iron Class K9 /K12	Specific <i>design</i> Structural mains	AS/NZS 2280 and amendments	Light cement lined with Tyton joints. External protection with green sleeve. Generally suspended pipes and high structural loadings. Manufacturer capable of meeting the required standard.	Tubemakers of Australia (Licence #2029)	
AM-5.1.3.1	Ductile Iron Pipe Light Cement lined Tyton Excel PN20 and PN35	Specific <i>design</i> Structural mains	AS/NZS 2280 and amendments	With Tyton joint elastomeric seals and socket / spigot joints (with blue polyethylene sleeve). Manufacturer capable of meeting the required standard.	Tyco Flow Control Pacific (Licence #SMK0883)	
AM-5.1.4	Polypropylene (PP) Twin-wall Pipe	Specific <i>design</i>	AS/NZS 5065	Rubber ring joint.	Waters & Farr- 'Stormboss'	Hynds Pipe Systems Ltd Humes Pipeline Systems Mico Pipelines
AM-5.1.5	uPVC Pipes (solid wall) and fittings for gravity applications	Reticulation mains and lateral/ connections	AS/NZS 1260, 1254, 4441, 1477, 4765	Rubber ring jointed	Iplex Pipelines New Zealand Ltd	Keyplas RX Plastics Ltd Hynds Pipe

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
	(SN 16)				Marley New Zealand Limited RX Plastics Ltd	Systems Ltd Humes Pipeline Systems Mico Pipelines
AM-5.1.6	uPVC Pipes (solid wall) and fittings for pressure applications	Specific <i>design</i>	AS/NZS 4441, 1477, 4765		Iplex Pipelines New Zealand Ltd Marley New Zealand Limited RX Plastics Ltd	Keyplas Hynds Pipe Systems Ltd Humes Pipeline Systems Mico Pipelines
AM-5.1.7	Polyethylene Pipe (PE) for pressure applications PE100 SDR17 or PE80, SDR 17 (minimum PN10)	Specific <i>design</i> situations	AS/NZS 4130, 4131	Pipes will be butt welded in accordance with manufacturer's recommendations, and the standard coloured black with inner core colour white/grey. Electrofusion couplings are not generally accepted.	Iplex Pipelines New Zealand Ltd Marley New Zealand Limited RX Plastics Ltd Waters & Farr	Hynds Pipe Systems Ltd Humes Pipeline Systems Mico Pipelines
AM-5.1.8	Corrugated Aluminum or Galvanised Steel Pipe	Specific <i>design</i> option		Not generally accepted for urban <i>design</i> use. Specific <i>design</i> option only.	Manufacturers who can supply to the relevant standards.	
AM-5.1.9	Perforated drainage pipes or similar pipe for subsoil situations	Specific <i>design</i> use for groundwater control		Includes <i>products</i> such as novafLOW, novacoil, or similar.	Manufacturers who can supply to the relevant standards.	
AM-5.2	Seal Rings		Comply with AS 1646.1	Elastomeric seals.	Iplex Pipelines New Zealand Ltd (Licence #SMK1174)	

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-5.3	Fittings					
AM-5.3.1	Cast-iron Socket and Spigot Fittings Cast-iron Flanges		AS/NZS 1830 and AS/NZS 2544 Table D and coated to AS/NZS 4158 and amendments	Rated at PN16 or higher. Epoxy coated.	Gillies Metaltech	HJ Asmus & Company Limited
AM-5.3.2	Ductile Iron Pipe Flanged, Socket and Spigot Fittings to Width Flanges		AS/NZS 2280 Table D or Raised Face and drilled to AS 4087, and coated to A/NZS 4158 and amendments		Crevet Pipelines Surecast Metals Tyco Flow Control Pacific Gillies Metaltech	Humes Pipeline Systems Hygrade Products Ltd
AM-5.3.3	Stand-alone Flanges		Table D coated to AS/NZS 4158 and amendments	Ductile or cast-iron.	Iplex Pipelines New Zealand Ltd Marley New Zealand Limited Steel and tube holdings Limited - Unflanged adaptor - Ductile Iron	
AM-	Bolts, nuts and		AS/NZS 1111	ISO metric hexagon commercial bolts	Manufacturers	

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
5.3.4	washers to be hot-dipped galvanised are an alternative to 316-grade stainless steel.		and 1112	and screws and ISO metric hexagon nuts, including thin nuts, slotted nuts and castle nuts.	who can supply to the relevant standards.	
AM-5.3.5	Stainless Steel Bolts, Nuts and Washers are the preferred acceptable fastenings provided that they are 316-grade stainless steel with factory applied molybond coating		Complying with AS 1252 – High-Strength Steel Fastenings	This particularly applies for corrosive soil conditions.	Manufacturers who can supply to the relevant standards.	
AM-5.3.6	PE Fittings			<p>Agru Butt welding and Electro fusion Fittings</p> <p>Viking Johnson Aqua fast, Aqua grip and Ultra grip Mechanical Fittings for Polyethylene Pipe.</p> <p>Hawle System 2000 Mechanical Fittings for Polyethylene Pipe</p> <p>DuraFuse (Licence #9603049)</p> <p>Philmac (Lic #1271)</p> <p>Pushlok (Lic #1494)</p> <p>Plasson (Licence #1494 and 1271)</p> <p>Alprene A16 Easygrip (Licence #1157)</p> <p>GF – Compression fittings (Licence #1157)</p>	<p>Iplex Pipelines New Zealand Ltd</p> <p>Marley New Zealand Limited</p> <p>Asmuss Plastic Systems Limited</p> <p>PPI Corporation (NZ) Limited</p>	<p>Hygrade Products Ltd</p> <p>Humes Pipeline Systems</p> <p>RX Plastics Ltd</p> <p>Mico Pipelines</p>

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
				"Plassim" MDPE Fitting to AS/NZS 4129 – Lic No: WMKA21062 "Magnum" MDPE Fitting to ASNZS 4129 – Lic No: SMK02432	Waters and Farr RX Plastics Ltd	
AM-5.3.7	uPVC Fittings		AS/NZS 1260	RRJ fitting only to be used.	Iplex Pipelines New Zealand Ltd (Licence #SMK1174) Marley New Zealand Limited (Licence # WMKA20224)	Keyplas Hynds Pipe Systems Ltd Humes Pipeline Systems Mico Pipelines
AM-5.3.8	Rubber Sleeves	Reticulation pipes (non-pressure)	AS/NZS 4326	All couplings shall have a central 316-grade stainless steel sheer band.	Furnco Pty Ltd	
AM-5.4	Manholes					
AM-5.4.1	1050mm to 2500mm id with Precast Base					Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-5.4.2	Concrete Lid (flat top) with 600m openings					Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-5.4.3	Manhole sealant, flexible jointing compound			BM100 or SM9020.		Humes Pipeline Systems Hynds Pipe

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
						Systems Ltd Mico Pipelines
AM-5.4.4	Access Steps Hot-dipped galvanised steel access step or 316-grade stainless steel.			Galvanised manhole steps - 20mmØ. Stainless manholes steps - 16mmØ.	Costavic	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-5.4.5	Plastic Encapsulated Stainless Steel Access Step		AS/NZS 1657, AS4198		Nextep Miyama NZ Ltd License #jp-JQA-QM6570	
AM-5.4.6	Cast-iron or ductile iron Manhole Covers and Frames: 600mm nominal diameter minimum		BS EN 124 vehicle loading or AS3996 210kN Heavy Duty load rating	Includes "non-rock".	Gatic Pty Ltd Saint Gobain PAM Webforge NZ	Humes Pipeline Systems Hynds Pipe Systems Ltd Hygrade Products Ltd Pipe & Infrastructure Ltd Mico Pipelines
AM-5.4.7	Epoxy	Covering exposed steel in cut pipes		Two-part epoxy (e.g. Humebond, Hybond).	Manufacturers who can supply to the relevant standards.	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-5.4.8	Concrete	Lid surround	NZS 3104	17.5MPa.	Manufacturers who can supply	

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
					to the relevant standards.	
AM-5.4.8.1	Reinforcing Steel	Lid surround	AS/NZS 4671	D10 Grade 300.	Pacific Steel Group	
AM-5.5	Rodding Eyes					
AM-5.5.1	Reinforced Concrete Pipe	To create chamber	NZS 3107 -soon to be replaced with AS/NZS 4058	600mm Ø cut to 600mm length.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-5.5.2	Cast-iron or ductile iron Cover and Frames 545mm nominal diameter minimum		BS EN 124 vehicle loading or AS3996 210Kn Heavy Duty load rating	Heavy duty.	Gatic Pty Ltd Saint Gobain PAM Webforge NZ	Humes Pipeline Systems Hynds Pipe Systems Ltd Hygrade Products Ltd Pipe & <i>Infrastructure</i> Ltd Mico Pipelines
AM-5.5.3	UPVC Fittings and Bends		AS/NZS 1260	45 deg swept bend. Solvent welded threaded mall fitting. Threaded cap.	Iplex Pipelines New Zealand Ltd (Licence #SMK1174) Marley New Zealand Limited (Licence #WMKA20224)	Keyplas Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-	Concrete	Lid surround	NZS 3104	17.5MPa	Manufacturers	

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
5.5.4					who can supply to the relevant standards.	
AM-5.5.5	Reinforcing Steel	Lid surround	AS/NZS 4671	D10 Grade 300.	Pacific Steel Group	
AM-5.6	Inlet/Outlet					
AM-5.6.1	Scruffy Dome	Specific <i>design</i>				Humes Pipeline Systems Hynds Pipe Systems Ltd
AM-5.6.2	Precast Concrete Wingwalls					Humes Pipeline Systems Hynds Pipe Systems Ltd
AM-5.7	Sumps			<i>Refer to AM-4.14 Sumps</i>		

Table 6: Wastewater

Materials that are not on the following table MUST be approved by *Council* – refer to *AM-1 – General Provisions*.

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-6.1	Wastewater Pipe			Trunk Mains: larger than 150mm. These to be specifically approved and specified by <i>Council</i> . Reticulation Mains: 150mm. Lateral/connection: 100 and 150mm. Rising mains minimum 76mm ID.		
AM-6.1.1	Spiral-welded Steel Pipe Internal linings include concrete or epoxy	Specific <i>design</i> . Structural mains	NZS 4442 or AS1579	Polyken YG111 external wrapping or Speed Steel with polyethylene coatings. Note internal coating must be resistant to hydrogen sulphide. Manufacturer capable of meeting the required standard.	Steelpipe New Zealand	
AM-6.1.2	Ductile Iron Class K9 /K12	Specific <i>design</i> . Structural mains	AS/NZS 2280 and amendments	Light cement lined with Tyton joints. External protection with greensleeve. Generally suspended pipes and high structural loadings. Note internal coating must be resistant to hydrogen sulphide. Manufacturer capable of meeting the required standard	Tubemakers of Australia (Licence #2029)	Humes Pipeline Systems Hynds Pipe Systems Ltd
AM-6.1.3	Ductile Iron Pipe Light Cement-lined Tyton Excel PN20 and PN35	Specific <i>design</i> . Structural mains	AS/NZS 2280 and amendments	With Tyton joint elastomeric seals and socket / spigot joints (with blue polyethylene sleeving). Note: internal coating must be resistant to hydrogen sulphide.	Tyco Flow Control Pacific (Licence #SMK0883)	

				Manufacturer capable of meeting the required standard.		
AM-6.1.4	uPVC Pipes (solid wall) and fittings for gravity applications (SN 16)	Reticulation mains and lateral/connections	AS/NZS 1260, 1254, 4441, 1477, 4765	Rubber ring jointed	Iplex Pipelines New Zealand Ltd (Licence #1697) Marley New Zealand Limited (Licence # 2365) RX Plastics Ltd	Keyplas RX Plastics Ltd Mico Pipelines
AM-6.1.5	uPVC Pipes (solid wall) and fittings for pressure applications	Specific <i>design</i>	AS/NZS 4441, 1477, 4765		Iplex Pipelines New Zealand Ltd Marley New Zealand Limited RX Plastics Ltd	Keyplas Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.1.6	Polyethylene Pipe (PE) for pressure applications PE100 SDR17 or PE80, SDR 17 (minimum PN10)	Specific <i>design</i> situations	AS/NZS 4130, 4131	Pipes shall be jointed in accordance with manufacturer's recommendations, and be standard black colour with inner core colour brown. Electrofusion couplings are not generally accepted.	Iplex Pipelines New Zealand Ltd Marley New Zealand Limited RX Plastics Ltd Waters & Farr	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.2	Seal Rings		Comply with AS 1646.1	Elastomeric seals for <i>wastewater</i> purposes.	Iplex Pipelines New Zealand Ltd (Licence #SMK1174)	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.3	Fittings					
AM-6.3.1	Cast-iron Socket and Spigot Fittings Cast-iron Flanges		AS/NZS 1830 and AS/NZS 2544 Table D and	Rated at PN16 or higher. Epoxy coated.	Gillies Metaltech	HJ Asmus & Company Limited Mico Pipelines

			coated to AS/NZS 4158 and amendments.			
AM-6.3.2	Ductile Iron Pipe Flanged, Socket and Spigot Fittings Flanges		AS/NZS 2280 to Table D or Raised Face and drilled to AS 4087, and coated to AS/NZS 4158 and amendments		Crevet Pipelines Surecast Metals Tyco Flow Control Pacific Gillies Metaltech	Humes Pipeline Systems Hygrade Products Ltd Mico Pipelines
AM-6.3.3	Stand-alone Flanges		Table D coated to AS/NZS 4158 and amendments	PVC, ductile or cast iron.	Iplex Pipelines New Zealand Ltd Marley New Zealand Limited Steel and tube holdings Limited - Unflanged adaptor - Ductile Iron	Mico Pipelines
AM-6.3.4	Bolts, Nuts and Washers to be hot-dipped galvanised		AS/NZS 1111 and 1112	ISO metric hexagon commercial bolts and screws and ISO metric hexagon nuts, including thin nuts, slotted nuts and castle nuts.	Manufacturers who can supply to the relevant standards.	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.3.5	Stainless Steel Bolts, Nuts and Washers are acceptable alternatives to hot-dipped galvanised fastenings provided they are 316-grade		Complying with AS 1252 – High Strength Steel Fastenings	This particularly applies for use in corrosive soil conditions.	Manufacturers who can supply to the relevant standards.	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines

	stainless steel with factory applied molybond coating					
AM-6.3.6	Gibaults - Cast iron (coating as per standard) - Gunmetal DR LG2 with ABS belly - M16 316 stainless steel, (with clips fusion coating as per standard)		4158 and amendments Coating to ASTM A276 AS/NZS 4158	Use 316-grade stainless steel bolts. Preference for long barrel. Use 316-grade stainless steel fasteners.	Gillies Metaltech Viking Johnson – Maxifit (with Sheraplex coated bolts) Crevet Pipelines Milnes Pty Ltd Tyco Flow Control Pacific	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.3.7	PE Fittings			Agru Butt welding and Electro fusion Fittings Viking Johnson Aqua fast, Aqua grip and Ultra grip Mechanical Fittings for Polyethylene Pipe. Hawle System 2000 Mechanical Fittings for Polyethylene Pipe DuraFuse (Licence #9603049) Philmac (Lic #1271) Pushlok (Lic #1494) Plasson (Licence #1494 and 1271) Alprene A16 Easygrip (Licence #1157) GF – Compression fittings (Licence #1157) "Plassim" MDPE Fitting to AS/NZS 4129	Iplex Pipelines New Zealand Ltd Marley New Zealand Limited Asmuss Plastic Systems Limited PPI Corporation (NZ) Limited Waters and Farr	Hygrade Products Ltd Humes Pipeline Systems RX Plastics Ltd Mico Pipelines

				– Lic No: WMKA21062 “Magnum” MDPE Fitting to AS/NZS 4129 – Lic No: SMK02432	RX Plastics Ltd	
AM-6.3.8	uPVC Fittings		AS/NZS 1260	RRJ fitting only to be used.	Iplex Pipelines New Zealand Ltd (Licence #SMK1174) Marley New Zealand Limited (Licence # WMKA20224)	Keyplas Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.3.9	Rubber Sleeves	Reticulation pipes (non-pressure)	AS/NZS 4326	All couplings used shall have a central 316-grade stainless steel sheer band.	Furnco Pty Ltd	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.4	Valves					
AM-6.4.1	Valves =50mm Resilient seated anti-clockwise closing Rated at PN16 External and Internal Protective Coating Flanges to be raised face and drilled as per standard	Pump station and rising mains	AS/NZS 2638.2 NZS/BS 5163 Class 1 AS/NZS 4158 and amendments AS 4087	Teflon gland packing or 2 or more O ring seals and dust cover. In-line valves shall be the same diameter as the reticulation main.	AVK Australia Pty Ltd (Licence #SAI2420 and 2573) Gillies Metaltech Tyco Flow Control Pacific (Licence #PRD/R61/0412/2) Crevet Pipelines (Licence #1327) Hawle 4060E2 and 4500E2AS serues (Licence #SMK20123)	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5	Manholes					

AM-6.5.1	1050mm to 2500mm id with Precast Base					Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5.2	Concrete Lid (flat top) with 600mm openings					Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5.3	Manhole Sealant, Flexible Jointing Compound			BM100 or SM9020.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5.4	Access Steps - 316-grade stainless steel access steps			Stainless manholes steps - 16mmØ.	Costavic	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5.5	Plastic Encapsulated Stainless Steel Access Step		AS/NZS 1657, AS4198		Nextep Miyama NZ Ltd Licence #jp-JQA-QM6570	
AM-6.5.6	Cast-iron or ductile iron Manhole Covers and Frames: 600mm nominal diameter minimum		BS EN 124 vehicle loading or AS3996:2006 210kN Heavy Duty load rating	Includes "non-rock".	Gatic Pty Ltd Saint Gobain PAM Webforge NZ	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines Pipe & Infrastructure

						Ltd
AM-6.5.7	Manhole Connectors					
AM-6.5.7.1	PVC			Proprietary units only.	Iplex Pipelines New Zealand Ltd Solo Plastics Ltd	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5.7.2	PE			PE 80. PE 100.	Manufacturers who can supply to the relevant standards.	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5.8	Epoxy	Sealing joints and step irons		2-part epoxy (e.g., Humebond, Hybond).		Humes Pipeline Systems Ltd Hynds Pipe Systems Ltd Mico Pipelines
AM-6.5.9	Concrete	Lid surround	NZS 3104	17.5MPa.		
AM-6.5.9.1	Reinforcing Steel	Lid surround	AS/NZS 4671	D10 Grade 300.	Pacific Steel Group	
AM-6.6	Rodding Eyes					
AM-6.6.1	Reinforced Concrete Pipe	To create chamber	NZS 3107 -soon to be replaced with AS/NZS 4058	600mm Ø cut to 600mm length.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-	Cast-iron or ductile		BS EN 124	Heavy duty.	Gatic Pty Ltd	Humes Pipeline

6.6.2	iron Cover and Frames 545mm nominal diameter minimum		vehicle loading or AS3996 210Kn Heavy Duty load rating		Saint Gobain PAM Webforge NZ	Systems Hynds Pipe Systems Ltd Mico Pipelines Hygrade Products Ltd Pipe & <i>Infrastructure</i> Ltd
AM-6.6.3	UPVC Fittings and Bends		AS/NZS 1260	45 deg swept bend. Solvent welded threaded mall fitting. Threaded cap.	Iplex Pipelines New Zealand Ltd (Licence #SMK1174) Marley New Zealand Limited (Licence # WMKA20224)	Keyplas Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.6.4	Concrete	Lid surround	NZS 3104	17.5MPa	Manufacturers who can supply to the relevant standards.	
AM-6.6.5	Reinforcing Steel	Lid surround	AS/NZS 4671	D10 Grade 300.	Pacific Steel Group	
AM-6.7	Pump Stations			Fibreglass Packaged Pump stations by specific <i>design</i> & approval only		
AM-6.7.1	Wet Well			FRP Pump Stations are subject to specific <i>design</i> and approval.		
AM-6.7.1.1	Centrifugally Spun Flushed Jointed Concrete Pipes – Class 2 (X)	Pump stations		Minimum Ø 1800mm. Altex- Carboline <i>product</i> range : Carboguard 504 as the primer to new or used concrete surfaces followed by 2x coats of Carboguard 690		Humes Pipeline Systems Hynds Pipe Systems Ltd

AM-6.7.1.2	Guide Rails	Pump stations		Schedule 10, 316-grade stainless steel pipe. Any joints to be an internal pressed fit stainless steel sleeve.		
AM-6.7.1.3	Guide Rail Brackets	Pump stations		Flygt 316-grade stainless steel.		
AM-6.7.1.4	Cable Brackets	Pump stations		316-grade stainless steel.		
AM-6.7.2	Pump Valve Chamber					
AM-6.7.2.1	Chamber Walls	Pump stations		200mm concrete block.		
AM-6.7.2.2	Chamber Floor	Pump stations		Cast in-situ concrete – 17.5 Mpa.		
AM-6.7.2.3	Chamber Top Slab	Pump stations		Concrete may be precast – 17.5 MPa.		
AM-6.7.2.4	Flanges	Pump stations		Gaskets shall be 3mm full face neoprene.		
AM-6.7.2.5	Access Lids	Pump stations		6mm aluminium chequer plate. Stainless steel 316-grade frame and fittings. Specific <i>design</i> that considers odour and water infiltration.		
AM-6.7.2.6	Valves =50mm Resilient seated anti-clockwise closing Rated at PN16 External and internal protective	Pump stations	AS/NZS 2638.2 NZS/BS 5163 Class 1 AS/NZS 4158 and	Teflon gland packing or 2 or more O ring seals and dust cover. In-line valves shall be the same diameter as the reticulation main. Resilient seated anti-clockwise closing. Rated at PN16.	AVK Australia Pty Ltd (Licence #SAI2420 and 2573) Gillies Metaltech Tyco Flow Control Pacific (Licence	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines

	coating Flanges to be raised face and drilled as per standard		amendments AS 4087	External and internal protective coating. Flanges to be raised face and drilled as per standard. Valves to have hand wheels.	#PRD/R61/0412/2) Crevet Pipelines (Licence #1327) Hawle 4060E2 and 4500E2AS series (Licence #SMK20123)	
AM-6.7.2.7	Ductile Iron Non-return Valves	Pump stations	AS 4794	Ball type. Other types require specific approval.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.7.2.8	Ductile Iron Fittings	Pump stations	AS 2280 AS/NZS 4158	All ductile valves, fittings and pipes shall be coated in accordance with AS/NZS 4158.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.7.3	Pumps	Pump stations		Flygt submersible <i>wastewater</i> pumps.	ITT Flygt Ltd	
AM-6.7.4	Pump Discharge Pipes	Pump stations	AS 2280	Ductile iron pipes and fittings AS 2280:1999 Schedule 10, 316-grade stainless steel.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-6.7.5	Rising Main	Pump stations	AS/NZS 4130	PE100 or PE80 polyethylene pipe manufactured to AS/NZS 4130, minimum PN10 with welded or flanged joints.		RX Plastics Ltd Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-	Bolts, Nuts and	Pump stations		All to be 316-grade stainless steel and		Humes Pipeline

6.7.6	Washers			coated before installation to prevent "binding".		Systems Hynds Pipe Systems Ltd Mico Pipelines
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Table 7: Water Supply

Materials that are not on the following table MUST be approved by *Council* – refer to *AM-1 – General Provisions*.

Note: All parts of the water supply system in contact with drinking water shall be designed using components and materials that comply with *AS/NZS 4020*

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-7. 1	Water Pipe			<p>Bulk water mains: larger than 200mm Ø. These to be specifically approved and specified by <i>Council</i>.</p> <p><i>Principal</i> mains: 100, 150 and 200mm Ø either uPVC or PE.</p> <p>Rider mains: 50mm Ø (ID PVC), 63mm Ø (OD MDPE/PE 80).</p> <p>Services : 20, 25, 40 and 50mm Ø.</p>		
AM-7.1.1	Spiral-welded Steel Pipe	Generally (but not limited to) bulk mains unless other wise approved	<i>NZS 4442</i> or <i>AS1579</i>	<p>Rubber ring joints and Polyken YG111 external wrapping or Speed Steel with polyethylene coatings.</p> <p>Internal Linings include concrete, epoxy and galvanised.</p>	Steelpipe New Zealand	Mico Pipelines
AM-7.1.2	Ductile Iron Class K9	Bulk mains unless other wise approved	<i>AS/NZS 2280</i> and amendments	<p>Light cement lined with Tyton joints. External protection with greensleeve. Generally suspended pipes and high structural loadings.</p>	Tubemakers of Australia	Mico Pipelines
AM-7.1.3	Ductile-iron pipe, light cement lined	Bulk mains unless other wise approved	<i>AS/NZS 2280</i> and	With Tyton Joint elastomeric seals and socket/spigot joints (with blue	Tyco Flow Control Pacific (Licence	Mico Pipelines

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
	Tyton Excel PN20 and PN35		amendments	polyethylene sleeving) not for use in high water table areas.	#SMK0883)	
AM-7.1.4	PVC Pipes and Fittings for pressure applications	Bulk, <i>principal</i> and rider mains	AS/NZS 1477	Coloured white. Joints shall be spigot and socket rubber ring type (Z joint). Solvent cement joint shall not be used.	Iplex Pipelines New Zealand Ltd (Licence #SMK 02570) Marley New Zealand Limited RX Plastics Ltd (License Tel.Lic0001)	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.1.5	uPVC	Bulk, <i>principal</i> and rider mains	AS/NZS 1477	Joints shall be spigot and socket rubber ring type (Z joint). Solvent cement joint shall not be used.	Iplex Pipelines New Zealand Ltd (Licence #SMK 02570) Marley New Zealand Limited RX Plastics Ltd (License Tel.Lic0001)	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.1.6	mPVC RRJ	Bulk, <i>principal</i> and rider mains	AS/NZS 4765: Series 2	Joints shall be spigot and socket rubber ring type (Z joint). Solvent cement joint shall not be used.	Iplex Pipelines New Zealand Ltd Marley New Zealand Limited RX Plastics Ltd	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-	Polyethylene Pipe	<i>Principal</i> , rider and	AS/NZS 4130 and	Pipes shall be butt or fusion welded in accordance with the manufacturer's	Iplex Pipelines New Zealand Ltd	Humes Pipeline

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
7.1.7	(MDPE) PE80, PE100 (HDPE), PN12.5, SDR 11	service mains	amendments	recommendations, and the standard coloured blue or blue jacket. Unrestrained mechanical couplers can be used where appropriate and meets relevant NZ standard.	(Licence #SMK P20400) Marley New Zealand Limited RX Plastics Ltd (Licence SMKP 21662) RX Plastics Ltd Waters and Farr	Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.1.8	Copper Tube 20 – 50mm half-hard	BPD on service mains	NZS 3501	For use with RPZ backflow prevention devices only.		Mico Metals
AM-7.2	Seal Rings		Comply with AS 1646.1	Elastomeric seals for waterworks purposes.	NZ Channel Forms Ltd	
AM-7.3	Fittings					
AM-7.3.1	Cast-iron Socket and Spigot Fittings Cast-iron Flanges		AS/NZS 1830 and AS/NZS 2544 Table D and coated to AS/NZS 4158 and amendments.	Rated at PN16 or higher. Epoxy coated.	Gillies Metaltech	HJ Asmus & Company Limited
AM-7.3.2	Ductile-iron pipe Flanged, Socket and Spigot Fittings		AS/NZS 2280		Crevet Pipelines Tyco Flow Control	Humes Pipeline Systems Hygrade

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
	Flanges		to Table D or raised, faced and drilled to AS 4087, and coated to AS/NZS 4158 and amendments		Pacific	Products Ltd Mico Pipelines
AM-7.3.3	Stand-alone Flanges		Table D coated to AS/NZS 4158 and amendments Cast-iron AS/NZS 4331.2 AS4087 B5 Class 16	PVC, ductile- or cast-iron.	Iplex Pipelines New Zealand Ltd Marley New Zealand Limited Unflanged adaptor - Ductile Iron (as supplied by Steel and tube holdings Limited) Tyco Flow Control Pacific	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.3.4	Bolts, Nuts and Washers to be hot-dipped galvanised		AS/NZS 1111 and 1112		Manufacturer who meets the required standard	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.3.5	Stainless Steel Bolts, Nuts and Washers are acceptable		Complying with AS 1252 – high-strength steel	This particularly applies for use in corrosive soil conditions.	Manufacturer who meets the required standard	Humes Pipeline Systems Hynds Pipe

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
	alternatives to hot-dipped galvanised fastenings, provided they are 316-grade stainless steel with factory applied molybond coating		fastenings			Systems Ltd Mico Pipelines
AM-7.3.6	Gibaults - Cast-iron (coating as per standard) - M16 316 stainless steel, (with clips fusion coating as per standard)		4158 and amendments Coating to ASTM A276 AS/NZS 4158	Use 316-grade stainless steel bolts as a preference. Use 316-grade stainless steel fasteners.	Gillies Metaltech Viking Johnson – Maxifit (with Sheraplex coated bolts) Crevet Pipelines Milnes Pty Ltd Tyco Flow Control Pacific	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.3.7	Unrestrained Mechanical Couplings - Ductile-iron (nylon coating as per standard) - M16 316-grade stainless steel barrel, (with clips fusion coating as per standard)	Up to 200mm DI barrels and backing rings or SS barrels with DI backing rings. Above 200mm note in item 1	AS/NZ 4998 AS/NZS 4158	Use hot-dipped galvanised bolts as per 3.1.4. or 316-grade stainless steel bolts. Use 316-grade stainless steel fasteners.	Gillies Metaltech Viking Johnson Crevet Pipelines Milnes Pty Ltd AVK Australia Pty Ltd Tyco Flow Control Pacific (recommended for Gibaults >200 mm)	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
					(ID))	
AM-7.3.8	MDPE Fittings - Electro Fusion - Butt Fusion - Mechanical <50mm		AS/NZ 4129	Agro Butt welding and Electro fusion Fittings. "Plassim" MDPE Fitting to AS/NZS 4129 – Lic No: WMKA21062 "Magnum" MDPE Fitting to AS/NZS 4129 – Lic No: SMK02432 Viking Johnson Aqua fast, Aqua grip and Ultra grip Mechanical Fittings for Polyethylene Pipe. Hawle System 2000 Mechanical Fittings for Polyethylene Pipe.	DuraFuse (Licence #9603049) Iplex Pipelines New Zealand Ltd Marley New Zealand Limited (Lic #1271) Plasson (Licence #1494 and 1271) Waters & Farr	Asmuss Plastic Systems Limited - Alprene A16 Easygrip (Licence #1157) Hygrade Products Ltd RX Plastics Ltd Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.3.9	Brass Fittings alloy 486		AS 1567 – 486 ASTM –B21 485000	Recommend New Zealand manufacture due to variability of imported materials.	Spartan Engineering Co. Ltd	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.3.10	Manifold (brass)				Acuflow Industries Ltd Reliance Worldwide Ltd	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
AM-7.3.11	Ferrules: Gunmetal with polyethylene fittings	WBOPDC only				
AM-7.4	Valves					
AM-7.4.1	Sluice Valves =80mm resilient seated anti-clockwise closing rated at PN16 External and internal protective coating Flanges to be raised face and drilled as per standard	Bulk, <i>principal</i> and rider mains	AS/NZS 2638.2 NZS/BS 5163 Class1 AS/NZS 4158 and amendments AS 4087 B5 Class 16	Teflon gland packing or 2 or more O ring seals and dust cover. In-line valves shall be the same diameter as the reticulation main.	Gillies Metaltech Tyco Flow Control Pacific (Licence #PRD/R61/0412/2) Crevet Pipelines Hawle (Licence #SMK20123) AVK Australia Pty Ltd	Pipe & <i>Infrastructure</i> Ltd Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.4.2	Gate Valves 25mm and 40mm		BS 5154 or AS 1628	Clock-wise closing dezincification-resistant materials or LG2 gunmetal, PN16 or higher.	KITZ Corporation (Lic #WMKA02054) Pegler Hattersley (Lic #1850)	Humes Pipeline Systems Pipe & <i>Infrastructure</i> Ltd Mico Pipelines
AM-	Gate Valve 50mm	Rider mains and	NZS/BS 5163	Clock-wise closing, resilient seating.	Hawle (Licence	Humes Pipeline

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
7.4.3		connections			WMKA 20123) AVK Australia Pty Ltd	Systems Pipe & Infrastructure Ltd Mico Pipelines
AM-7.4.4	Butterfly Valves	Specific <i>design</i> only where approved				
AM-7.5	Fire Hydrants					
AM-7.5.1	Tall pattern screw-down standard clockwise closing, rated to PN16 or higher Coated as per standard		NZS/BS 750 AS/NZS 4158 and amendments.	O ring sealing system. Drain holes for frost protection are not permitted. The use of ball hydrants is not permitted.	Crevet Pipelines Hydravalve Gillies Metaltech Tyco Flow Control Pacific Hawle	Tudor Pipeline Supplies Co Ltd Humes Pipeline Systems Pipe & Infrastructure Ltd Mico Pipelines
AM-7.6	Tapping Bands and Saddles		Standards Australia MP52			
AM-7.6.1	40mm-200mm LG2 gunmetal DR type, fully enclosed Polyethylene type, fully enclosed with stainless steel bolts		AS/NZS 4793 / MP52 – Spec025	Tapping bands should be 25mm or greater for live tapping. Fully enclosed for mPVC blue brute, superblue, cast iron and spiral steel (AC sizing). Swivel bolt type with a flexible band for	Milnes Pty Ltd (Licence #W134) Milnes Pty Ltd – Series GM60A Milnes Pty Ltd – Series 61 Maintenance	Mico Pipelines

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
				existing AC water main.	Milnes Pty Ltd insulated type for ductile, cast or steel mains (Licence #W134) Giltech Precision Castings Plasson (Licence #1494)	
AM-7.7	Water meters (concentric)		ISO 4064/1 or OMIL R49-1 NZS/AS 3688	Class C measuring accuracy Designation N2.5 for "Kent" meters and N1.5 for all other meters. Construction shall be dezincification-resistant (DR) brass to NZS/AS 3688.	Kent MSM 20mm PSM >25mm Actaris Pty Ltd	Sensus Metering Systems(DEECO Services Ltd) Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.7.1	≥50mm	Specific <i>design</i> only where approved				
AM-7.8	Tracer Wire			A continuous 2.5mm ² multi-strand (polythene sleeved) cable.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-7.9	Boxes (Valve, Fire		NZS/BS750	Hydrant cast box to NZS/BS750.		Humes Pipeline

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
	Hydrant, Meter), Packers and Valve Marker Plate (WBoP only) Cast-iron/ductile- iron			Valve cast box - to <i>Council</i> Standard Drawings.		Systems Hygrade Products Ltd Hynds Pipe Systems Ltd Mico Pipelines
AM- 7.10	Concrete Products					
AM- 7.10.1	Concrete Valve / Hydrant Marker Post			To <i>Council</i> Standard Drawings.	Williamson Creative Products Newstead Concrete Products	Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM- 7.10.2	Fire Hydrant Concrete Surrounds			To <i>Council</i> Standard Drawings.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM- 7.10.3	Valve Concrete Surrounds			To <i>Council</i> Standard Drawings.		Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines
AM-	Wooden Products					

	Category / Material	Application	Standard	Comment	Recommended Manufacturer	Recommended Supplier
7.11						
AM-7.11.1	Wooden Valve Post	WBOPDC Only		To <i>Council</i> Standard Drawings.	Not Applicable in the <i>Council</i> .	
AM-7.12	Toby Boxes Cast iron Polyethylene			To <i>Council</i> Standard Drawings.	Surecast Metals Chevron Industries 2001 Ltd Acuflow Industries Ltd Draper Enterprises Ltd	Humes Pipeline Systems Hygrade Products Ltd Mico Pipelines
AM-7.13	Backflow Prevention Devices		AS/NZ 2845.1	Types and classification of devices to meet <i>Council</i> requirements as assessed. For dedicated fire systems, use Verifire standard.	Reliance Worldwide Ltd Tyco Flow Control Pacific	Hydroflow Distributors Ltd Deeco Services Ltd Humes Pipeline Systems Hynds Pipe Systems Ltd Mico Pipelines



**APPLICATION FOR
THAMES-COROMANDEL DISTRICT COUNCIL
APPROVED CONTRACTOR**

Date: _____

Applicant's Name: _____

Company Name: _____

Company Address: _____

Telephone: _____

Fax: _____

Email: _____

Please ✓ applicable trade you are applying for.

Code	Description	Tick
A	Maintenance Tradesman: Carpenter, Plumber, Electrician, Drain Layer, Painter, Plasterer	<input type="checkbox"/>
B	Roading Road constructions, Seal surfaces, Gravel surfaces, Roadside furniture	<input type="checkbox"/>
C	Construction/Earthworks General earthworks, Civil construction, Bulk haulage, Excavations	<input type="checkbox"/>
D	Landscaping Soft Gardening, Arborist, Weed control, Mowing, Spraying, Logging	<input type="checkbox"/>
E	Landscaping Hard Concrete laying, Concrete construction, Retaining walls, Paving, Fencing, Piling	<input type="checkbox"/>
F	Other /Specialist Services - Please describe the type of work you will be undertaking:	



APPLICATION FOR THAMES-COROMANDEL DISTRICT COUNCIL APPROVED CONTRACTOR

Please supply the following relevant information with your application

Check List

1. QUALIFICATIONS AND/OR EXPERIENCE

Number of years experience

References to relevant experience

Copies of appropriate certificates for licenses held by all staff

Examples of work successfully undertaken

Photos of your latest project undertaken

References from previous projects undertaken

2. YOUR HEALTH AND SAFETY POLICY DOCUMENTATION

Evidence that Health and Safety responsibilities are addressed.

Evidence of Accident/Incident recording (i.e. A copy of your accident register or form)

Training records that verify appropriate training has been undertaken and completed.

3. INSURANCES

A copy of your current public liability insurance

A copy of your current vehicle insurance

HEALTH AND SAFETY HISTORY QUESTIONNAIRE

Please tick the correct answer to the following questions relating to your company's Health and Safety history:		
If the answer to any of the questions asked below is 'YES', please supply further information.	Tick	
	Yes	No
Have you been prosecuted in the last five years, or do you have any prosecutions pending, for any offence under the Health and Safety in Employment Act 1992 or any associated regulations?	<input type="checkbox"/>	<input type="checkbox"/>
Have you been issued with any prohibition or improvement notices by the Occupational Safety and Health Service of the Department of Labour during the last five years?	<input type="checkbox"/>	<input type="checkbox"/>
Have you had any serious harm accidents in the last five years?	<input type="checkbox"/>	<input type="checkbox"/>
Have you ever been refused workplace insurance cover as a result of a serious harm accident?	<input type="checkbox"/>	<input type="checkbox"/>

Please complete this application form and return along with your Health and Safety Policy to:

*Wendy Johnson
Thames-Coromandel District Council
Private Bag
Thames 3500*

Appendix K