Subdivision and Development

Principles and Requirements 2012

Part One: Development Concepts

1. GENERAL

1.1 Planning Documents

Developers need to give due consideration to the requirements in the District Plan and any proposed Plan changes.

Applicants need to consider the requirements of Horizons Regional Council. They should consult to seek advice and to ascertain if resource consents are required from the Horizons Regional Council. This is particularly the case where large scale earthworks and/or waterways are involved in the development.

Developers should be familiar with any Council strategy documents including the Development Plan and Structure Plans. Applicants development proposals should cover relevant aspects of these documents in their resource consent applications.

1.2 Pre-development Consultation

Before any development can commence a resource consent may be required. Developers should consult with Council at an early stage to ascertain any particular requirements or site limitations for the development proposed.

Experience has shown that there is a great deal of value in developers meeting with Council representatives to work through design issues at a very early stage, particularly prior to the lodgement of any resource consent application.

1.3 Consultation

Consultation with other persons or organisations is more than likely required, including, but not limited to:

- local Iwi
- adjoining owners
- Department of Conservation
- Environmental groups
- LINZ
- New Zealand Historic Places Trust
- network utility operators
- New Zealand Transport Agency
- other Designating Authorities
- New Zealand Fire Service
- other interested parties.

2. DEVELOPMENT PLANS

2.1 Concept Plans

A concept plan is required where a large area is proposed to be developed, particularly if it is to be staged over a number of years. Concept plans are to be provided where alternative designs are proposed. Concept plans should look beyond the site to consider any strategic issues within the area.

Sufficient copies of the plan and supporting information shall be provided to Council for evaluation of the proposal. The plan shall include sufficient details to give a general outline of the nature of the development, either as part of the plan or in the explanatory material accompanying the plan. Information supporting alternative design proposals should be sufficient to enable Council staff to assess the effectiveness of operation and analyse the proposal on a whole of life basis.

The plan should indicate approximate locations of:

- roads
- reserves
- waterways and flood drains
- important natural features
- cultural sites
- hazards
- cycleways, walkways and bridleways
- proposed public amenities
- Other significant features.

It should also extend beyond the site to take account of any adjoining developable land, whether or not owned by the developer. It should take account of any effects on existing developed land, in particular stormwater catchments and effects.

2.2 Scheme Plans

Scheme plans of subdivisions shall comply with those requirements of the District Plan that apply to the land being subdivided and be submitted with the resource consent application.

In addition, scheme plans must satisfy the following requirements:

i. The position of all existing public utility services and water courses, water catchments, other significant water features in the vicinity and the effects thereof, taking into account both upstream and downstream effects.

ii. Adequate contour information to illustrate the existence on each allotment of a suitable building platform and to enable the gradients proposed for roads, rights of way and access ways to be assessed. For two to five lot subdivisions where the land is of gentle enough contour to enable road and right of way grades and drainage to be assessed without surveyed information, this requirement may not be required subject to Council approval.

iii. Sufficient topographical information, including a locality plan if necessary, to accurately identify the site. The position of all buildings and significant stands of trees or bush and

any other significant feature of historic, cultural, environmental or other interest shall be shown.

iv. Where a scheme plan forms only part of the future potential development of a larger block of land held in the same ownership and zoned residential, and a concept plan has not previously been provided, the scheme plan shall show the total development including roading, drainage, water supply and the number of allotments, so as to ensure that the initial scheme plan application does not prejudice full and future development. The extended development may be shown to a smaller scale as an insert on the initial application.

v. All allotments on the plan shall be numbered, including any land to vest, and shall show metric dimensions for all boundaries as well as the area of each allotment.

vi. Indicative roading networks and service layouts shall be shown with typical road cross-sections that provide sufficient information to check that adequate gradients and suitable manhole invert levels can be achieved.

vii. Any recreational cycleway and walkways.

viii. A landscape plan showing all landscape works proposed, including road reserves and the location and species of trees.

ix. Details shall be given of any proposed reserve and its proposed development. The applicant shall be responsible for nominating the purpose for which each reserve is to vest and such information shall be shown on the plan. The Council may or may not approve part or any of the proposals.

x. Public roads, private ways, service lanes, access ways, and cycleway, walkway and bridleway networks, shall be laid out to fit in with the general roading requirements of the locality in which they are situated. They shall provide for connectivity within the proposed development and, where applicable, to adjoining land, and meet any requirements arising from road safety audits that have been undertaken.

xi. The width of carriageways, road geometry and gradients to be in accordance with Table 3.2, Road Design Standards, in NZS 4404:2010, unless alternative designs are approved by the Council. It should be noted that road reserve widths used in Table 3.2 shall be a minimum of 20m wide or up to 33m for cul-de-sacs. If a road, lane or right of way serving up to 12 dwelling units has no through traffic, road reserves can be 10m to12m wide.

xii. Plans shall be drawn to commonly accepted metric scales. The Council's preference is for scales of either 1:250 or 1:500. Datum shall have reference to Wellington Mean Sea Level (WMSL) 1953. A north point must be shown on plans and should be orientated to the top of the sheet.

Due regard shall be given for any road widening or upgrading proposals which the Council may have and any requirements shall be ascertained by consultation at an early stage with appropriate Council staff.

In designing any scheme plan, consideration shall be given to the future development of adjoining land and the Council may require the creation of legal roads, road reserve and/or the formation of roads to or near the boundary of adjoining land at the developer's cost.

In submitting any scheme plan, the applicant shall provide documentary evidence that the general layout is sufficient for reticulation by other utility service authorities and meets New Zealand Fire Service requirements.

The scheme plan must make adequate provision for all transformer sites, junction boxes and other special needs of power, gas and communication authorities.

2.3 Survey Control Points

These shall be established by a Licensed Cadastral Surveyor from the National Survey Network with levels from the Wellington Mean Sea Level (WMSL) 1953 datum, and locations from Wanganui Circuit Geodetic Datum 2000, with all control points being confirmed on a project by project basis by Horowhenua District Council. Once established, the project control points shall be regarded as 'absolute' in location and level accuracy for the control and location of features within the project. Horizontal alignment shall be referenced to NZGD co-ordinates or where not possible to local property boundaries (any assumed level datum are not to be used and supplied to Council).

3. DEVELOPMENT CONTRIBUTIONS

Development contributions are required from new developments in the form of money for capital expenditure for growth for roading, water supply, wastewater, community infrastructure and reserves activities in accordance with the Council's Development Contributions Policy. These fees are adjusted from time to time, usually annually. The quanta of fees payable are those that apply at the date of granting consent.

The current schedule of fees is available from the Council.

4. CHECK LISTS

Check lists covering the requirements in this document have been developed and are available on Horowhenua District Council's website.

Part Two: Development Requirements

5. DEVELOPMENT STANDARDS AND GUIDES

Council recognises the following documents:

- Horowhenua Greenbelt Residential Subdivision Design Guideline
- Horowhenua Rural Subdivision Design Guideline
- The Standards New Zealand Handbook, SNZHB 44:2001 Subdivision for People and the Environment
- Crime Prevention through Environmental Design (CPTED) Guides
- New Zealand Standard 4404:2010, Land Development and Subdivision Infrastructure

Council recognises New Zealand Standard NZS 4404 Land Development and Subdivision Infrastructure as the pre-eminent document for development and subdivision infrastructure. Part Three of this document provides altered and additional requirements to NZS 4404.

If there is any conflict between the requirements in this document and NZS 4404 then the more stringent requirements take precedence.

6. OBJECTIVES

The Council seeks to have “Best Practice” implemented in developments undertaken within the District. Towards this end the Council has developed this document including technical appendices, which provide a range of principles which shall be applied in developments within the District.

Developments need to encapsulate, demonstrate and provide documentation that meet principles and requirements of this document. Alternative designs based on appropriate design guides and sound engineering principles will be considered. Clear supporting information must be provided for alternative designs to be considered.

7. DESIGN PRINCIPLES

7.1 General Requirements

Developments shall be in accordance with this Section (7) and NZS 4404:2010 Section 1, General Requirements and Procedures except as modified by the schedule titled **Schedule 1, Altered Requirements to Section 1 NZS 4404:2010, General Requirements and Procedures,** or as otherwise specifically approved by Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

7.2 Design Criteria

The purpose of an engineering design is to provide a common terms of reference for defining the works (as may be required to meet Council requirements and/or resource consent conditions) and to provide a mechanism to evaluate the proposed works against its performance requirements.

A design shall:

- define the scope of the works and incorporate all of the components required for the intended project.
- be legible and understandable and be supported by sufficient drawings, calculations, reports and associated documentation to facilitate appraisal.
- provide sufficient information for construction purposes.
- provide for:
  - safety.
  - the whole of the catchment.
  - sudden or catastrophic failure.
  - future development.
  - efficiency in operation and maintenance.
  - optimisation of life cycle costs.
- be certified by a Registered Professional Surveyor or Licensed Cadastral Surveyor and where appropriate a Chartered Professional Engineer.
- demonstrate compliance with resource consent conditions, this document and other regulatory and statutory requirements.
- be a platform for approvals and acceptance.

7.3 Developer's Professional Advisors

7.3.1 General Requirements

The owners of any development projects shall appoint a developer's or owner's representative or representatives who shall be the developer's professional advisor or advisors. They shall be responsible for the investigation, design and obtaining of approvals of the works, contract administration and supervision of the works, and certification upon completion of the works.

The developer's professional advisor shall be a person with qualifications and/or experience appropriate to the project with suitable public liability and professional indemnity cover commensurate with the scale of the development, but not less than one million dollars ($1,000,000) each and may vary depending on the amount of earthworks and amount of vesting.

The Council requires evidence at the time of consent application that appropriate liability and indemnity cover is held including a minimum of four years run-off cover from completion of construction.

All designs and construction works must be certified by a suitably qualified person recognised in their area of competence.

7.3.2 General Design

The engineering design shall be undertaken by a professional and suitably qualified person who is recognised in their area of competence relative to the complexity of the development. Refer Section 7.3.3 Specific Design for further clarification.

Engineering design covers, but is not limited to:

- roading.

- traffic management.
- lighting.
- water.
- sewer.
- stormwater control and disposal (including calculations).

Designs must be accompanied by the completed Schedule 1A of NZS 4404:2010.

Irrespective of any Council approved or endorsed designs for construction, the design shall be capable of withstanding scrutiny for whole of life typical and expected designs.

7.3.3 Specific Design

Where specific investigations, design and reports are required by an independent qualified person in addition to those provided in 7.3.2 above, a person or company will be agreed between the Council and applicant prior to the engagement. The person or company will be expected to be recognised in the area of competence claimed.

Professional indemnity insurance to a level suitable for the purpose must be held, but in any case not less than one million dollars ($1,000,000), including a minimum of four years run-off cover from completion of construction.

The Council requires evidence that appropriate liability and indemnity cover is held.

Without limiting the Council's rights to require the use of independent qualified persons, the following are examples of areas of expertise where such people may be required:

- Traffic engineering.
- Flood mitigation and assessment of effects of development on flood/run-off issues.
- Stormwater disposal.
- Suitability of land for onsite wastewater disposal.
- Suitability of rural water supply proposed by the applicant.
- Geotechnical engineering prior to development and to manage fill and excavation compliance during construction, slope stability and seismic resilience.
- Site investigations and recommendations for foundation design.
- Ecology reports and recommendations.
- Civil engineering works.

Where a specific design has been prepared, Council requires certification by the independent qualified person of the design. Upon completion, further certification is required such that the works have been completed in accordance with the design principles recommended.

7.4 Engineering Services

Engineering services required for a development shall be provided and be in accordance with Council requirements, or as otherwise approved by the Council.

Council shall not be liable to provide sewer, water and stormwater services.

Engineering works will generally include the provision of the following items.

Urban developments

i. Earthworks.
ii. Stormwater management, including all stormwater systems.
iii. Wastewater.
iv. Water supply, including for fire fighting purposes.
v. Underground power, gas and telecommunication services.
vi. Street lighting.
vii. Kerbs and/or channels where appropriate.
viii. Road formation, metalling and sealing.
ix. Footpaths as required.
x. Cycleways, walkways and bridleways.
xi. Formation, metalling, sealing, drainage, kerbs and/or channels (where appropriate) and provision of services for private rights of way and service lanes.
xii. Paths and fencing (where appropriate) in public access ways, cycleways, walkways and bridleways.
xiii. Grass areas, planting and other landscaping within road reserve or recreational and drainage reserves to vest.

Rural developments

xiv. Earthworks.
xv. Road surface water drainage and culvert installations.
xvi. Stormwater management, including all stormwater systems.
xvii. Provision for wastewater treatment and disposal.
xviii. Provision for onsite water supply or restricted water supply reticulation if a public system is available, including for fire fighting services.
xix. Electric power and telecommunication services for new roads and rights of way.
xx. Street lighting, if appropriate.
xxi. Formed, metalled and sealed road pavement, safety shoulders and drainage channels.
xxii. Formed, topsoiled and sown road berms.
xxiii. Cycleways, walkways and bridleways where appropriate.

Natural Ecosystems

Developers shall ensure that natural ecosystems are able to continue to function and are not degraded or lost as a result of the subdivision or development. Enhancement of existing natural ecosystems should be considered a priority as a form of mitigation.

As a minimum, developers are required to:

- Provide information about any natural values (including indigenous fauna) that occur within the development site or that will be affected by the development site (i.e. can be off site as well).
- Submit to the Council a plan detailing how any natural values will be protected and enhanced, and appropriate conditions or methods to achieve this.

The natural values/ecosystem assessment and plan will:

- Identify all natural values that will be affected and detail appropriate mitigation.
- Demonstrate that the impact of buildings, structures, people, domestic animals and increased use of the area and adjacent areas in relation to the impacts on indigenous vegetation communities, landforms (e.g. dunes) and indigenous fauna are effectively avoided, remedied or mitigated.

- Demonstrate that indigenous vegetation communities are not degraded by the introduction of weeds from gardens by either using indigenous species, or prohibiting the use of species that would become weeds in the particular environment in question.
- Demonstrate that the likely impacts of increased disturbance or predation are properly assessed and measures are put in place which protect indigenous fauna and flora.

Design requirements may include:

- Protection of areas of indigenous vegetation through legal protection, fencing and pest and weed control (see also Reserves section).
- No build areas or planted buffer areas to ensure that 'edge effects' and conflicts in use are not caused by building too close to natural areas (including watercourses).
- Conditions placed on the consent which list plants that should not be planted in the subdivision as a measure to control the spread of weeds.
- Interpretation, a very powerful and important tool that can help residents and the public to understand the values of a site and direct how they should be protected.
- The exclusion of domestic predators, such as cats and dogs, from the development in order to protect the values in adjoining areas. This consideration is important for subdivisions adjacent to coastal areas, wetlands and forest tracts, especially where there is no significant existing development in, or adjacent to, the area.
- The exclusion of goats, as they may not be appropriate to keep adjacent to forested areas or where adjoining a forest park, as they are hard to contain. Escaped goats can lead to establishment of wild populations in a forest park.

7.5 Design Report

The Council requires the submission of a Design Report. The Report:

- identifies and addresses; the design, management and administrative requirements for the purpose of engineering approval and legislative requirements specific to the design.
- identifies how the design meets the consent conditions.
- identifies demand/supply requirements for development, including electricity, water and wastewater.
- demonstrates how communication with stakeholders and other parties to the design has been managed.
- reviews and/or tests the design to ensure compliance with the quality requirements.
- provides detail of recorded design activities and evidence of compliance including calculations and drawings.
- provides a list of assets to be vested.
- provides completed Schedule 1A of NZS 4404:2010.

7.6 Peer Reviews

The Council reserves the right to have any work peer reviewed at the applicant's cost, regardless of any prior approval as to the acceptability of the independent qualified person. Generally peer reviews will assess underlying assumptions, methodology, interpretation of data and that the conclusions reached are supported by the data and analysis.

7.7 Quality Assurance

7.7.1 Plan

A Quality Assurance Plan is specific to the project and describes how the works will be managed and administered in compliance with Council's requirements.

The developer's or owner's representative shall submit the quality assurance plan for Council's assessment with the engineering drawings.

The comprehensiveness of the plan should be proportional to the scale of the proposal and be seen as part of the process of ensuring compliance with the conditions of the resource consent. The plan allows identification of key milestones early on in the process so that nothing is missed.

The document shall include, or otherwise reference, the procedures and checklists necessary to effectively manage the works. The following should be included in the Plan.

- A statement describing the activity, including proposed timeframe.
- A schedule of the contractual and materials quality records to be kept.
- A list of subcontractors.
- Health and Safety documentation for all contractors/subcontractors, including contractor's Health and Safety Plan and any approved contractor's letter.
- Procedures for auditing contractor and subcontractor compliance to the Quality Plan.
- A schedule of inspection and/or testing of materials and/or completed works, clearly indicating 'hold' or 'witness' points (level of supervision required shall be appropriate for the complexity/scale of the project and reference the 'Construction Monitoring Services' section on the IPENZ website).
- Documented procedures included, or referenced, for all activities.
- Non-conformance and quality improvement procedures included, or referenced.
- Provisions for traffic management and environmental management plans included or referenced.

7.7.2 Development Monitoring

Developers have the responsibility, both directly and through their appointed representatives, to ensure that all works carried out directly or by contractors or sub-contractors are at all times in accordance with the approved drawings and specifications (including approved variations), and in accordance with sound engineering practice. While Council officers will be available to offer advice and guidance, it remains the developer's professional advisors responsibility to supervise the construction and ensure standards are maintained.

The level of construction monitoring required to verify that the works have been completed in accordance with the approved plans and specifications depends on what is deemed appropriate for a particular project. To determine the appropriate level of supervision required for a project, reference shall be made to the 'Construction Monitoring Services' section on the IPENZ website.

7.7.3 Records

At a time of formal section 224c application, the developer or appointed advisers are responsible for providing Council with Certifications of:

- Schedule 1B, 1C, 1D and 2A of NZS 4404:2010.
- All "Quality Assurance Records".

- Asset and Water Meter Schedules.
- All As-built documentation as provided for in Engineering Appendix Five As-Builts.
- Request for section 224 certificates.

7.8 Safety

Developers, developer's Professional Advisors and contractors must meet the requirements of all relevant legislation. Developers and/or contractors working on a development site are responsible for the safety of Council employees and anyone else undertaking work on, or inspections of, the development.

Developers and their representatives shall ensure that contractors have in place effective safety management systems. They shall ensure that contractors have in place suitable plans to carry out the required work in a safe manner and that the contractors comply with the requirements of relevant legislation covering the works.

The developer's Professional Advisor shall ensure that they carry out regular reviews to ensure that all processes are being carried out as stated in the Health and Safety Plan.

7.9 Disruption to Existing Services and Access

Prior to construction, all parties that may be affected by the works shall be advised of the potential disruption and the likely effects from the activities to be undertaken.

7.10 Working in Existing Roads

The Council endorses the National Code of Practice for Utility Operators' Access to Transport Corridors. The requirements set out in this Code shall be followed except that Council's Engineering Appendix Four, Working in Roads and Trench Construction shall have precedence if there are variances. Work Access Permits must be issued prior to any work being undertaken in existing roads and reserves. Work Access Permits and Traffic Management Plans require separate approvals and are not part of consent approvals.

The Council may require the arrangement of bonds to cover work being undertaken within existing roads. The amount of the bond shall be Council's estimate (plus a factor of up to 50%) of the value of the works undertaken in road reserve and held to cover the costs that could be incurred by the Council in the event of default or prolonged opening. The bond shall be released upon Council being satisfied with the practical completion of the road opening. Maintenance bonds may also be required as part of the Work Access Permit.

7.11 Cultural Matters

Iwi Representation

Where the scope of earthworks is outside the District Plan Permitted Activity Standards and/or is to be undertaken in areas of cultural significance, a representative of the relevant local Iwi may be required to be on-site while earthworks are being undertaken.

The process of Iwi involvement is two staged. Firstly, all applications for resource consent are discussed with relevant Iwi where they get an opportunity to raise any cultural concerns they may have. Secondly, if deemed necessary, an Iwi representative will be required to be on-site during earthworks as a condition of consent.

Cultural Sites

Should a waahi tapu or other cultural site be unearthed during earthworks the contractor and/or owner shall:

a) cease operations.

b) inform local Iwi (Muaupoko,Ngati Raukawa, Rangitane, Ngati Apa).

c) inform the NZ Historic Places Trust (NZHPT) and apply for an appropriate authority if required.

d) take appropriate action, after discussion with the NZHPT, the Council and Iwi to remedy damage and/or restore the site.

Archaeological Sites

Where an archaeological site is present (or uncovered during earthworks) an authority from the NZ Historic Places Trust is required, in accordance with the Historic Places Act 1993.

Where earthworks are proposed it is recommended that this authority be obtained prior to the commencement of any work on the site.

7.12 Traffic Management Plan

Prior to the start of any construction, where work is to be carried out in road reserve, then it is the full responsibility of the developer, applicant or contractor doing the work, to submit to Council, a Traffic Management Plan in compliance with CoPTTM (Code of Practice for Temporary Traffic Management) Level 1. This shall be supplied to Council for its approval. Once the Traffic Management Plan has been approved by Council in writing, then the developer, applicant or contractor takes the responsibility to abide, in full, by the approved plan.

7.13 Contaminated Sites and Hazardous Areas

Where there is the possibility of a site containing contaminated materials, including from agricultural use, then the applicant shall have appropriate site investigations undertaken by an independently qualified person. A report by the independently qualified person shall be included with the resource consent application outlining the findings of the investigation with recommendations on how to deal with the contaminants.

Where the site is subjected to hazards including, but not limited to, flooding, coastal erosion, earthquake fault lines and land slips, then the applicant shall have appropriate investigations undertaken by an independently qualified person. A report by the independently qualified person shall be provided with the resource consent application outlining the extent of the hazard and recommendations on how to deal with the hazards identified. Section 106 of the Resource Management Act may apply to the hazardous situation.

7.14 Commuted Sums

In some situations the Council will require a commuted sum to be paid by the developer based on the net present value of the ongoing operation, maintenance and replacement costs for a facility taken over by the Council. This particularly relates to sewer pumping stations, but may also apply to other non-normal situations. If applicable, applicants should discuss this aspect with the Council at an early stage. These sums will be assessed prior to consenting with advice by way of a consent condition. If insufficient information is provided prior to consenting, any design endorsements or approvals will be "subject to" such sums. Full payment may be required prior to issue of the section 224c certificate.

8. EARTHWORKS AND GEOTECHNICAL

8.1 General Requirements

Developments shall be in accordance with this Section (8) and NZS 4404:2010 Section 2, Earthworks and Geotechnical Requirements except as modified by the schedule titled **Schedule 2, Altered Requirements to Section 2 NZS 4404:2010, Earthworks and Geotechnical Requirements**, or as otherwise specifically approved by the Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

8.2 Performance Criteria

Earthworks proposed for the development shall:

- meet the relevant standards and criteria of the District Plan.
- be safe and stable and geotechnically sound.
- not unnecessarily alter the natural land form or interfere with natural features.
- avoid, remedy or mitigate the potential risk posed by seismic activity, i.e. liquefaction, lateral spreading or fault rupture.
- provide adequate foundations for roads and services.
- provide an accessible building area within each lot of a subdivision appropriate to the zoning of the land. (This does not necessarily mean that the area has to be “flat”.)
- control surface and ground water flows and levels both during and after construction.
- control sediment generated by the works.
- not cause undue nuisance from silt, dust, noise or disposal of vegetation.

8.3 Design Principles

The following paragraphs set out a number of principles and requirements to be applied in earthworks design.

8.3.1 District Plan Provisions

The Horowhenua District Plan contains various provisions for the preservation of vegetation and/or landform. Developers shall comply with those provisions and should note that this may have an impact on the extent of earthworks which may be permitted.

8.3.2 Geotechnical Appraisal and Design

Geotechnical appraisal and design will be required:

a) prior to detailed planning, which usually involves some form of subsurface investigation.

b) during the review of design concepts.

c) during construction to ensure the adequacy of bulk filling and the execution of the earthworks design.

d) after construction, to provide certification and/or define limitations of the works.

8.3.3 Erosion and Sediment Control

Control of erosion and sediment during the course of the works is extremely important. Developers are responsible for ensuring that all practical measures are undertaken to control erosion and

sediment. Developers shall ensure the protection of existing infrastructure, particularly in staged developments or infill developments, where work is occurring adjacent to that existing infrastructure.

"Control Plans" shall be provided for all engineering works associated with subdivision and land development, in accordance with the relevant sections in this document together with all relevant information required under the District Plan.

9. TRANSPORTATION

9.1 General Requirements

Developments shall be in accordance with this Section (9) and NZS 4404:2010 Section 3, Roads, except as modified by the schedule titled **Schedule 3, Altered Requirements to Section 3 NZS 4404:2010, Roads,** or as otherwise specifically approved by the Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

Alternative specifically designed proposals may be submitted with appropriate engineering information that will enable the Council to assess the viability of the proposal.

Work and reinstatement of trenches in road shall comply with the Council's Engineering Appendix Four Working in Roads and Trench Construction.

9.2 Transport Objectives

Strategy

The Council wishes to encourage pleasant, walkable neighbourhoods, with a low speed environment, which provides increased amenity, for example by enhancing connectivity, decreasing the area of sealed surfaces, differentiating parking bays and providing associated landscaping. This will be achieved by:

- planning and implementing a balanced roading network with adequate opportunity for future growth.
- planning and constructing cycleways and footpaths to provide safe access between home, work, shops and schools for cyclists, pedestrians and mobility scooter users.
- planning and implementing a linked network of access ways using streams, riverbanks and pathways to link reserve areas and open spaces for recreational uses such as cycling, walking and horse riding.
- planning and developing low speed, attractive and connected neighbourhood areas.

Network Hierarchy

The road corridor is a shared space that has a major impact on the character of surrounding areas. The network hierarchy has been developed to identify broad road functions in terms of traffic management. The road design shall reflect the desired amenity and high level design of the road corridor. The Place and Link contexts and Table 3.1 in NZS 4404 should be used as a guide for decision making on transport infrastructure and services.

The access network hierarchy provides for the following:

- Identification of the function of a route.

- Separate identification of the volumes of traffic along the route. A route may be classified as significant for walking, cycling and/or horse riding.
- Clear allocation of space across all modes, if at all possible;
- Allocation of broad design solutions which provides:
  - for the overall function of the route.
  - for a solution relevant to the traffic volumes.
  - for the particular character along the route.

This framework separates design and allocation of space across modes from being driven by just traffic function and volumes. Broad road design 'typologies' for the routes are to be applied taking all transport modes and streetscapes into account.

Table 3.2 in NZS 4404 should be used as the basis for road design. It should be noted that the road reserve widths used in Table 3.2 shall be a minimum of 20m wide or up to 33m for cul-de-sacs. If a road, lane or right of way serving up to 12 dwelling units has no through traffic, then the road reserve can be 10m to 12m wide subject to placement of services and footpaths.

The roading hierarchy is detailed in Chapter 21 of the District Plan.

9.3 Performance Criteria

The layout and structure of a road network and its associated amenities shall:

- Meet the relevant standards and criteria of the District Plan and Council's engineering requirements.
- Be appropriate for its position in the road hierarchy.
- Provide safe roads with operating speeds appropriate to the surrounding environment.
- Provide linkages and connectivity.
- Provide good connections for promotion of sustainable transport modes.
- Provide for the safe, efficient, and comfortable passage of motor vehicles (including emergency vehicles), cycle and pedestrian traffic, and, where appropriate, horse riding.
- Provide for appropriate car parking, including that associated with reserves.
- Be of sufficient strength to cope with design loads.
- Be of adequate width and gradient to allow ease of passage, as constrained by land form.
- Provide for low impact stormwater drainage, landscaping and utility services.
- Minimise noise to a level compatible with the character of the neighbourhood.
- Where access points are not clearly identifiable at the subdivision or development stage, demonstrate that all lots are able to be accessed in accordance with clause 3.3.17 of NZS 4404:2010, the District Plan and comply with the Council's Engineering Appendix One Vehicle Crossings.

9.4 Design Principles

The following paragraphs set out a number of principles and requirements to be applied in the layout and structure of a road network and its associated amenities.

9.4.1 District Plan Provisions

With regard to Subdivision and Development the Council has reserved control in the District Plan over the design and layout of subdivisions and some aspects of development including Structure Plans in development areas to give connectivity.

9.4.2 General Design

Designs of roads, rights of way and other access facilities should be site specific and take into account site constraints and opportunities. They should be designed as part of an integrated development looking to achieve residential amenity, enhance connectivity, safety, access and manoeuvring for fire fighting appliances, traffic calming, stormwater management, minimise earthworks and avoid destruction of natural features. Developments need to meet the roading hierarchy requirements of the District Plan and the Council's Subdivision Design Guides.

New roads within developments should connect with existing and new roads where possible. As such cul-de-sacs, particularly long cul-de-sacs, will not be permitted by the Council where connections are not possible. Where cul-de-sacs are used, then pedestrian and cycling links to enhance connectivity may be required.

In principle, preference is for rights of way to serve no more than five lots. Where there are six or more lots then legal roads should be provided.

9.4.3 Design and Access Statement

A design and access statement shall be submitted with any application for design approval as set out in clause 3.2.6 of NZS 4404:2010 that shows how the design conforms to the Council's Design Principles.

When evaluating the effects of the proposed development and its ultimate extent on the surrounding communities and transportation network, traffic modelling and/or survey may be required at the discretion of the Council.

9.4.4 Road Safety Audits

All applications for consents or planning approval that have a roading component shall follow the most up to date New Zealand Transport Agency Road Safety Audit Procedures for Projects Guideline and submit documentation demonstrating compliance. In particular the Guideline requires audits at three stages throughout a project, being:

a) Feasibility/Concept and Scheme/ Preliminary Design Stages.

b) Detailed Design Stage.

c) Post Construction Stage.

This audit requirement shall apply to all applications that involve subdivision with land to be vested in the Council as road, or any land use resource consent involving a vehicle crossing or entrance that accommodates more than 400 vehicles per day. The Council may require audits in other situations where it considers safety may be an issue, such as access onto a State Highway or other arterial and collector roads.

The applicant should take careful note of the experience and suitability of the persons engaged to carry out the audits. If the independent audit team engaged by the developer considers that any stage of the Road Safety Audit is not required, the lead auditor may complete an "Exemption Declaration" as described in the Guideline and submit it as part of the application process. The Council may then either accept or refuse the exemption.

The applicant shall submit the initial Road Safety Audit Report at the feasibility/concept stage (if this stage is required) or with their applications for consents, submit the second Audit Report with

their construction drawings and shall submit their final post construction audit prior to being granted the 224 certificate for the development. If a report is provided at feasibility/concept stage, then an updated report may be required at the application for consent stage.

9.4.5 Roading Materials Sampling and Testing

The sampling of gravel and aggregates shall be in accordance with NZS 4407. The gravels and aggregates shall be sampled from the stockpiled material by a qualified technician during construction and **not historic stockpiles**. This material shall not be added to or modified subsequent to the sampling.

The sampling of concrete will be in accordance with NZS 3112. The sampling and collection of materials shall only be undertaken by persons approved by a TELARC registered laboratory, or in accordance with TELARC Technical Note 15.

All testing of materials will be carried out by a laboratory able to provide TELARC endorsed test reports or similar as approved by Council. Except for materials sampled at the site during the work, all reports will be provided to the Engineer prior to the materials being incorporated into the work.

The reports will include TELARC endorsement that sampling has been carried out as specified.

10. STORMWATER

10.1 General Requirements

Developments shall be in accordance with this section (10) and NZS 4404:2010 Section 4, Stormwater except as modified by the schedule titled **Schedule 4, Altered Requirements to Section 4 NZS 4404:2010, Stormwater,** or as otherwise specifically approved by the Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

Alternative specifically designed proposals may be submitted with appropriate engineering information that will enable the Council to assess the viability of the proposal.

Low impact designs shall have construction details referenced to an appropriate design guide and/or have full construction details provided, with appropriate supporting engineering information.

10.2 Stormwater Objectives

Strategy

Council will be developing a stormwater management strategy/framework. The purpose of this strategy is to enable Council to define its obligations, how these can be met and how to effectively manage stormwater in the District.

Council may manage the location and density of development based on the stormwater management strategy. This will include areas where development may not occur at all or where particular conditions will be placed on development to effectively manage stormwater.

Developers shall demonstrate conclusively that development will not increase existing stormwater issues on any properties (up or downstream) and that building platforms and roading will be above future inundation, ponding and flooding levels except where roading has been designed as secondary flow path.

It is the Council's objective to develop stormwater systems that minimise the risk of surface water flooding and protects public and private property from inundation. The Council seeks high standard sustainable stormwater systems that minimise the effects of flooding, erosion and water pollution and that takes into account climate change.

Stormwater Management

Stormwater systems shall mitigate physical and environmental impacts which includes protecting people and property from water damage, reducing risks associated to ponding, pollution of waterways, coastal and marine environments, erosion and habitats. The Council is committed to sustainable development, and as such encourages the development of stormwater systems that will have low impact on the receiving environment. This includes reduced pavement areas, permeable pavements, wetlands, ponds, swales, soak pits and attenuating devices in order to minimise environmental concerns and maintenance expenditure.

Stormwater from developed lots, developments or redevelopments, shall be attenuated or disposed of on-site, unless this is shown to be not feasible and subsequently approved by Council. Appropriate site investigations will be necessary to ascertain on-site disposal requirements.

Council does not have a comprehensive stormwater reticulation, and policy dictates stormwater shall be contained and managed within the development. Council does not provide reticulated stormwater for disposal of stormwater from private property into a piped or open drain.

Watercourses shall remain in a natural state wherever possible. Channel lining shall only be considered where planned maintenance is not considered appropriate or there is a threat to life and property. Any lining shall be carried out in a manner and by a method that is sensitive to the surrounding environment. Piping or closing in of natural waterways is not recommended and will only be approved in exceptional circumstances. Consent for such work will be required from Horizons Regional Council.

Design of stormwater for two lot subdivisions is provided for in Engineering Appendix Two Stormwater Disposal to Soakpits. Subdivisions larger than two lots are to comply with the requirements of the following sections.

10.3 Performance Criteria

A stormwater system proposed for a development shall:

- Meet the relevant standards and criteria of the District Plan, the Council's developing stormwater strategy and Horizons Regional Council's One Plan.
- Provide for the collection and/or control of stormwater, allowing for ultimate future development within the catchment or adjoining catchments and for climate change.
- Achieve hydraulic neutrality so that peak flows into the receiving bodies for the 1 in 2 year, 1 in 5 year, 1 in 10 year, 1 in 50 year and 1 in 100 year design rainfall events, shall not exceed the pre-development peak flows for the same design rainfall events. Critical duration storm events pre-development shall be matched for post development.
- Achieve hydraulic neutrality so that peak flood levels are not increased as a result of filling in floodable areas for the 1 in 2 year, 1 in 5 year, 1 in 10 year, 1 in 50 year and 1 in 100 year design rainfall events. Levels shall not exceed the pre-development peak levels for the same design rainfall events. This can be met by the provision of storage to offset or replace that volume lost to the footprint of the proposed works. Alternatively, this may also be achieved by over attenuation of runoff peaks flows.
- Take into account winter groundwater mounding and groundwater levels.
- Provide for climate change predictions.

- Meet the requirements of any stormwater management plans/catchment management plans.
- Create a multifunctional landscape where the design integrates with other aspects of site planning and provides multiple benefits.
- Make use of available natural features and processes on-site wherever possible.
- Result in minimal disturbance to the site and natural water systems.
- Preserve and/or recreate natural landscape features.
- Reduce impervious cover as far as practical.
- Facilitate detention and infiltration opportunities.
- Address flood events and preserve treatment systems through off-line storage and by-passes.
- Meet Regional and District stormwater discharge quality requirements.
- Have stormwater treatment systems based on created natural systems (e.g. wetlands, lakes and detention ponds) that are able to mimic natural processes and function as entire ecosystems.
- Comprise simple, non-structural, low-tech and low cost methods.

10.4 Design Principles

The following paragraphs set out a number of principles and requirements to be applied in developing stormwater systems.

10.4.1 Relevant Information

The Council does not hold significant information concerning catchments, flood plains, flood levels, waterways and existing systems. Developers should approach Horowhenua District Council and Horizons Regional Council to obtain any information held that may be relevant to their proposed development but ultimately the developers shall provide sufficient detail in determining stormwater needs and will be responsible for its "base data" accuracy.

10.4.2 Design Requirements

The design of a stormwater system shall include the following:

- Stormwater drainage systems shall consist of both a primary system to cater for the more frequent rainfall events and a system of secondary flow paths to cater for higher intensity rainfall events and occasions when there are blockages in the primary drainage system.
- The primary stormwater drainage system shall be designed to adequately cater for the following rainfall events and achieve hydraulic neutrality. The use of critical storm duration analysis must be detailed in design.
    - 10% Annual Exceedance Probability (AEP) (10 year) rainfall event for industrial/commercial areas and residential areas.
    - 20% Annual Exceedance Probability (AEP) (5 year) for rural areas.
    - 10% Annual Exceedance Probability (AEP) (10 year) rainfall event for culverts. However culverts may need to be designed up to 1% AEP depending on circumstances. This will be determined on a case by case basis.
    - 1% Annual Exceedance Probability (AEP) (100 year) rainfall event for all situations where secondary overflow paths are not available or where these are through private property.
- Design shall take into account climate change. Allowance of 16% on rainfall data shall be applied.

- Secondary flow paths shall be designed to adequately cater for the full 1% AEP (100 year) flow less an appropriate contribution from the primary drainage system. The contribution from the primary drainage system shall take account of the risk and likely degree of blockage as well as the capacity of the inlets to the system. Allowance for 100% blockage may be necessary in certain situations. Provision of additional capacity in the primary drainage system does not eliminate the need to provide a secondary flow path.
- Design shall account for all types of surfacing on a site noting impervious area is made up of building coverage, sheds, driveways, footpaths, paths, decks etc.
- For soak pits used as the primary drainage system then a secondary flow path is required to carry stormwater away from the site in case of failure. This is required even if the soak pit system is designed to the 1% AEP.
- Building sites within subdivisions shall be above the flood level of the 1% AEP storm event plus an approved freeboard.
- Areas of private property may be able to become inundated (usually not exceeding 300mm except in dedicated stormwater storage/attenuation/treatment areas) provided they are not used as building sites and roads may be inundated up to maximum height of 200mm at the centreline, in the 1% AEP storm event. A distinction is made between inundation by ponding and inundation where flood waters are likely to generate scour velocities and consequent erosion. These areas shall be marked on property title as flooding areas.
- Detention and/or storage devices/areas may be required as part of a development to mitigate stormwater effects on downstream catchments and surrounding land. Such devices shall make provision for grit and debris entrapment and be designed for ease of maintenance.
- The proposed stormwater system shall be compatible with the existing drainage network and comply with current requirements as identified by the Council.
- The system design shall identify and incorporate downstream improvements required as a result of the proposed works.

10.4.3 Design for Integration

The Council seeks to promote the utilisation and enhancement of natural systems for stormwater treatment and integration into the environment through future subdivision and development design. When assessing proposals for subdivision and development the Council will look to:

- Ensure development styles and stormwater management methods that mimic natural run-off patterns.
- Ensure protection and enhancement of riparian vegetation.
- Minimise vegetation loss in riparian areas associated with development.
- Ensure sufficient water flows are maintained to support healthy aquatic life.
- Promote the restoration of degraded or piped channelled streams.
- Promote the remediation of existing barriers to migration of weak-climbing native aquatic species.
- Ensure the use of low impact design for development.
- Promote the use of swales within road reserves.
- Promote the use of rain gardens in areas which are largely impermeable, such as car parks.
- Ensure on-site disposal.
- Promote the use of soft engineering or bioengineering solutions.
- Promote the fencing off of stock from water bodies and their margins.

- Avoid straightening of streams and for streams already in a forced alignment encourage the realignment into a natural pattern.
- Consider whole of life costs and maintenance schedules.

10.4.4 Efficient Use of Water Resources

Encourage the efficient use of water resources within subdivision and development through the use of stormwater as a water resource for non-potable uses. When assessing proposals for subdivision and development the Council will look to:

- Promote the use of stormwater methods that minimise, retain, treat and reuse stormwater run-off within the development for non-potable uses such as toilets, laundries, irrigation, fire fighting, etc.
- Ensure that treated stormwater water quality is of a standard suitable for the proposed use, where it will be used in contact with people.
- Ensure that specifications for stormwater treatment devices take into account habitat requirements.

10.4.5 Minimise Effects of Development

Ensure that new subdivisions and developments are compatible with existing natural (ecologically intact) water systems as far as practically possible, or replicate natural systems, and minimise the increase of stormwater run-off from those sites. When assessing proposals for subdivision and development the Council will look to:

- Achieve hydraulic neutrality such that post development peak flows do not exceed predevelopment peak flows and in areas subject to flooding, prior to subdivision ensure mitigation is achieved for these pre development levels of inundation.
- Minimise the adverse effects of activities on habitat quality and promote sustainable solutions.
- Avoid the creation of barriers to upstream movement of weak climbing native aquatic species.
- In addressing flooding issues, give priority to solutions that also address water quality and habitat values by ensuring a practical balance is achieved to address both flooding and ecological considerations.
- As far as practical, ensure secondary flow paths are located in public land. If not practical then ensure they are in areas where they will not be obstructed by fences or planting and easements are created.
- In areas subject to flooding, ensure the type of planting are not species known to exacerbate flooding.
- Consider effects on groundwater quality and levels.

10.4.6 Compatibility of Treatment and Disposal Systems

Ensure any stormwater treatment and disposal/use systems proposed in a subdivision or development are able to maintain and enhance the condition of natural systems, ecological values, landscape, recreation, cultural and safety values of that system. When assessing proposals for subdivision and development, the Council will look to:

- Promote the use of stormwater management devices that are designed to increase habitat opportunities.
- Avoid the piping and channelling of streams.
- If discharge to natural systems is approved, prior treatment of road run-off discharges within a development shall be mandatory.

- Ensure that groundwater quality and levels are not adversely affected.
- Ensure stormwater infrastructure (including man made natural systems) is designed to minimise long-term maintenance costs.
- Ensure stormwater systems do not conflict with the operation of other utilities
- Ensure safety of the public in terms of the management of stormwater and provide adequate signage for areas known to have changing water levels and contaminants.

10.4.7 Horizons Regional Council Requirements

Activities such as the discharge of stormwater, damming and diversion of water courses, establishment of structures and works in the beds of rivers or in the coastal marine area are governed by rules in the One Plan.

Applicants should consult with Horizons Regional Council to determine:

- whether or not resource consents are required from Horizons Regional Council for the activities they intend to undertake, and
- what conditions must be met to comply with permitted activity rules.

If available, any Horizons Regional Council requirements shall be noted in resource consent applications to Horowhenua District Council. If its requirements are not available at the time of lodging consent applications, then the applications may be put on hold until such time as any requirements are provided to Horowhenua District Council.

10.4.8 Stormwater Quality

Stormwater quality issues shall be addressed during planning, construction and for final intended uses.

Water quality ponds (wet ponds), wetlands, or other effective treatment facilities shall be constructed for new development where practical.

Pre-treatment devices are required to be constructed to prevent floating contaminants and debris entering into the wet ponds or other treatment systems.

Existing water bodies shall be protected from contaminants generated by the development. The design and construction of any treatment facilities shall be undertaken in such a way that future maintenance can be carried out easily.

10.4.9 Low Impact Design References

Low Impact designs based on NZWERF On-Site Stormwater Management Guidelines are acceptable design guides. There are a number of other references and publications that provide appropriate guidance on low impact design. The titles of these reference documents can be found in the Referenced Documents and Related Documents sections of NZS 4404:2010.

When designing and constructing ponds or lakes they shall be based on Wellington Regional Council's publication *"So you're thinking about a pond...."* (Revision August 2007 GW/RP-G-07/172).

When using this document replace references to Councils outside the Horowhenua and Horizons Regions with Horowhenua District Council and Horizons Regional Council.

10.4.10 Fencing of Swimming Pool Act, 1987

A stormwater attenuation pond with a water depth in excess of 400mm that is constructed on a site containing, or adjacent to, any residential dwelling, may require fencing in compliance with the requirements of the Fencing of Swimming Pool Act, 1987.

11. WASTEWATER

11.1 General Requirements

Developments shall be in accordance with this Section (11) and NZS 4404:2010 Section 5, Wastewater, except as modified by the schedule titled **Schedule 5, Altered Requirements to Section 5 NZS 4404:2010, Wastewater**, or as otherwise specifically approved by the Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

Alternative specific proposals may be submitted with appropriate engineering information that will enable the Council to assess the proposal.

11.1.1 Approved Contractors

Construction of wastewater reticulation systems shall only be undertaken by contractors approved by the Council. The Council will hold a list of approved contractors who have met the appropriate criteria. Criteria that are required to be met include:

- Current certificates of immunisation for Hepatitis A & B , Tetanus and Typhoid.
- Health and Safety Plan.
- Qualifications.

Type	Minimum Qualification Required
New Construction (Green Field)	National Certificate in Infrastructure Pipelaying
Renewal Work	National Certificate in Water and Wastewater or National Certificate in Water Reticulation (Service Person).
Connections into Existing Networks	To be completed by Council's maintenance contractor.

11.2 Wastewater Objectives

The Council is seeking to have reliable, affordable and environmentally acceptable wastewater collection and disposal systems that protect public health and safety, the environment, and that are adequate to meet present and future needs.

Wastewater systems shall minimise environmental impacts, including erosion, pollution of waterways, coastal and marine environments and habitats. Development of alternative wastewater systems that minimise environmental concerns and/or maintenance expenditure will be considered.

Where the Council's wastewater network is available to service developments, then each lot shall be provided with a connection and each development shall be provided with a piped wastewater system connecting to the Council's system, unless alternatives are approved by the Council.

11.3 Performance Criteria

The wastewater system shall include the following:

- Meet the relevant standards and criteria of the District Plan and Horizons Regional Council's One Plan.
- Provide for the collection of wastewater, allowing for ultimate future development within the catchment or adjoining catchments.
- Minimise health and safety related risks.
- Be compatible with the existing wastewater system.
- Meet the requirements of the Horowhenua District Council Trade Waste Bylaw.
- Prevent stormwater ingress (inflow and infiltration) into the system and prevent sewage egress out of the system.
- Where the Horowhenua District Council wastewater system is available, provide a connection for each lot.
- On-site systems (where required) are compatible with daily flow, wastewater characteristics and soil/site conditions so that effective assimilation of pollutants without exceeding the carrying capacity of the receiving environment is achieved.

11.4 Design Principles

The design of a wastewater system shall include the following:

i. Pipe sizes shall be based on the design flow without surcharging, but those mains to pass into Horowhenua District Council ownership shall be a minimum of 150mm diameter, except as detailed in paragraph 11.4.2 below.
ii. The design flows shall be calculated using the flow parameters detailed in Schedule 5.
iii. The proposed wastewater system shall be compatible with the existing network and comply with current requirements as identified by Horowhenua District Council. If demand on the system requires the use of a wastewater reticulation model to ascertain effects, then this will be at the cost of the applicant.
iv. The system design shall identify and incorporate downstream improvements required as a result of the proposed works.
v. Where a proposed development cannot be adequately serviced by a gravity system, a public wastewater pumping station may be proposed for consideration by Horowhenua District Council, provided it is located and designed to service the entire area of potential catchment beyond the reach of the gravity system and that the design provides the minimum whole of life cost. The land area to be served shall be demarcated on the basis of sound engineering practice. A monetary contribution towards future operation, maintenance and replacement may be required. See also paragraph 11.4.9 of this Section.
vi. The Horowhenua District Council may consider an alternative where individual lots pump into a common rising main vested in Horowhenua District Council. In this situation, pumps and tanks are located on the lots and are the responsibility of the private owners.
vii. On-site wastewater disposal systems shall be specifically designed taking into account the daily flow, the wastewater characteristics and the site/soil conditions and meet the requirements of Horizons Regional Council.

11.4.1 Horizons Regional Council Requirements

The discharges of wastewater are governed by rules in the Horizons Regional Council's One Plan.

Applicants should consult with Horizons Regional Council to determine:

- Whether or not resource consents are required from Horizons Regional Council for the activities they intend to undertake.
- What conditions must be met to comply with permitted activity rules.

If available any Horizons Regional Council's requirements shall be noted in resource consent applications to Horowhenua District Council. If their requirements are not available at the time of lodging consent applications, then the applications may be put on hold until such time as any requirements are provided to Horowhenua District Council.

11.4.2 Private and Public Drains

A private drain (generally 100mm diameter) is a drain which serves one lot, regardless of the number of dwellings on that lot and regardless of whether it traverses adjacent lots. In some cases drains with appropriate easements serving more than one lot will be considered common private drains. These drains require a Common Private Drain Agreement between all the owners served by the drain.

Public drains include:

- Any drain or pipeline which serves more than one lot, except where a common private drain situation applies.
- The section of 100mm diameter drain within the road reserve between the lot served by it and the pipeline to which it connects.
- Where within private property to the edge of the easement or 1.5m where no easement is in place.
- Any drain over which Horowhenua District Council has exercised control for a period of not less than 20 years.
- Drains for the general interest of the District as opposed to the particular or personal benefit of one or two individuals or households are generally public drains.
- Any drain so declared under Section 462 of the Local Government Act.

11.4.3 Alternative Wastewater Systems

The following principles are applicable in providing alternative wastewater systems and shall be at the approval of Horowhenua District Council at subdivision consent.

11.4.4 Compatibility of Treatment and Disposal Systems

Ensure any wastewater treatment and disposal/use systems proposed in a subdivision or development are able to maintain and enhance the condition of natural systems, ecological values, landscape, recreation and cultural values of that system. The system shall be publically safe and healthy. When assessing proposals for subdivision and development the Horowhenua District Council will look to:

- Require the provision of monitoring and maintenance of alternative systems as part of the supplier’s contract for a reasonable post installation period depending upon the specific system installed.
- Encourage the use of the latest technology in monitoring through the provision of a 24 hour monitored system.
- Ensure that sites where on-site wastewater systems are used in a community capacity that the design and maintenance of the system avoids the direct discharge of inadequately treated contaminants into natural water bodies.

11.4.5 Reuse of Wastewater

Encourage the safe and efficient use of water resources within subdivision and development through the use of treated wastewater (greywater only) from community/neighbourhood systems as a water resource for non-potable uses and/or the use of subsurface greywater irrigation systems. When assessing proposals for subdivision and development Horowhenua District Council will look to:

- Ensure that the public are aware of areas where non-potable supplies exist as well as the precautions necessary for its use.
- Require the plumbing of new dwellings in communities where non-potable water is used is such that it will prevent any cross contamination of potable water supplies and so that it will allow grey and black water to be separated for treatment on-site.

11.4.6 On-Site Wastewater Systems

Where appropriate Horowhenua District Council may approve the utilisation of ecosystem services for wastewater treatment and assimilation into the environment as neighbourhood systems in areas not connected to the reticulated wastewater system or where it is inefficient to connect to the reticulation system. When assessing proposals for subdivision and development Horowhenua District Council will look to:

- Ensure that suitably qualified and experienced on-site wastewater treatment suppliers are used by developers, and that these suppliers are involved with ongoing monitoring and maintenance of the systems throughout their lives.
- Ensure that approved systems provide an acceptable level of risk that is balanced between environmental, efficiency and public health concerns.
- Ensure appropriate involvement of Horizons Regional Council, Regional Public Health and Iwi in the assessment procedure.

An efficiently operating on-site wastewater treatment and disposal system is necessary in areas where there is no Horowhenua District Council operated reticulated sewerage system. Such systems (even very old ones) need to be maintained from time to time to ensure they are operating as designed.

Where connection to a District Council scheme is not practical, a sustainable wastewater treatment and disposal system will be required that complies with local and regional rules. Such a system will require site specific design and installation by a suitably qualified wastewater professional and then regular and ongoing maintenance.

Effective on-site wastewater system design encompasses:

- A comprehensive site investigation that documents property size, soil type and profile, the high groundwater level and other site constraints such as streams, lakes, bores etc.
- A conservative estimate of daily wastewater production based on the number of bedrooms.
- Designing a system to achieve an appropriate level of treatment of the wastewater (noting that secondary treatment is a requirement in the Horowhenua for properties under 10ha).
- A conservative land application system loading rate based on the soil assessment.
- An appropriate land application system for the site soils and other constraints (noting that sub-surface pressure compensating drip irrigation is expected in the Horowhenua).
- Appropriate mitigation measures for ensuring the disposal field operates effectively e.g. buffers to high groundwater level and stormwater cut-off/diversion.

- An ongoing Service Contract for the treatment and disposal system with the supplier or an agent.

Suitable design guidelines currently available are:

- AS/NZS 1546:2008 On-site domestic wastewater treatment units.
- AS/NZS 1547:2000 On-site domestic wastewater management.
- Manual for On-Site Wastewater Design and Management for the Manawatu-Wanganui Region (Horizons Regional Council Nov 2007).
- On-site Wastewater System Guidelines for the Manawatu-Wanganui Region (HRC November 2000).
- On-site Wastewater Systems Design and Management Manual - Technical Publication 58 (TP 58); Auckland Regional Council

11.4.7 Domestic On-site Wastewater Systems

Any on-site wastewater system being installed shall be in compliance with the Regional Rules of Horizons Regional Council. No works shall commence prior to written approval of the wastewater disposal design by Horizons Regional Council or delegated authority. No system, if approved or not, shall have any significant adverse effects on human health or the environment or be a nuisance to neighbouring properties.

The details in this section should be used as a guide for people wishing to have a wastewater system designed that complies with Horizons Regional Council's requirements as a permitted activity. All systems must be approved prior to installation and signed off by Horowhenua District Council's compliance staff. Note: any system complying with these requirements or not, may require additional resource consents.

Site Assessment, Design, Installation and Compliance

- A site and soil assessment shall be carried out by a suitably qualified person experienced in designing wastewater systems and land treatment.
- A suitable professional shall undertake the design and installation of the on-site treatment system.
- Wastewater systems shall provide treatment to secondary standard i.e. BOD5: suspended solids 20:30.
- The capacity shall be occupancy based and designed on the number of bedrooms in the dwelling.
- Systems shall comply with NZ Standards and be approved by Horizons Regional Council.
- The approved design of the effluent fields will be based on soil type and other considerations as detailed in Horizons Regional Council's manual for On-Site Wastewater Design and Management.
- The property owner shall ensure that a test on the wastewater system is carried out by the installer or manufacturer within a four month period of the system's activation to demonstrate its compliance. A copy of the compliance results is to be sent to Horowhenua District Council.
- The property owner shall ensure that "As-builts" showing the location and extent of the tanks and disposal fields in relation to boundaries and the like have been forwarded by the installer or manufacturer to Horowhenua District Council prior to issuance of the Code Compliance Certificate.

- Once the effluent disposal system is installed, it shall be the responsibility of the property owner to maintain it under an ongoing Service Contract with the supplier agent. The owners are responsible for regular maintenance, involving at least 6 monthly inspections or in accordance with suppliers specifications of the plant and disposal field (whichever is the most stringent), with an approved suitably qualified person for the life of the system. The owners shall furnish a copy of the 6 monthly inspection reports to Horowhenua District Council.

Sizing and Locating an Effluent Disposal Field

- Sited in suitable soils and groundwater conditions, with a loading rate not exceeding 3.0 litres/m²/day.
- A 50% 'reserve area' for future use i.e. malfunctions or additional bedrooms.
- Have at least 20m separation distance between neighbouring disposal fields.
- Located no closer than 1.5m from any property boundary.
- Located with buffers of not less than 20m to any river, lake, natural wetland or artificial water course or the coastal marine area.
- The underside of the disposal bed is to be not less than 900mm above the highest water table.
- In a designated area free from slopes over 18 degrees (3 horizontal - 1 vertical).
- Maximum discharge to land not to exceed 2,000 litres/day per disposal field.
- **Or** an approved design for the effluent fields based on soil type and other considerations as detailed in Horizons Regional Council's manual for On-Site Wastewater Design and Management.

General

- Suitable plants and shrubs shall be planted and maintained in the disposal field.
- Fencing of the disposal field from children and animals may be necessary as a protection for public health. (This will be identified and specified at the time of application).

Advisory Note: A 3-bedroom dwelling (5-person occupancy) with suitable soils requires a disposal field:

- with an area of not less than 300m² and a 'reserve area' of 150m² i.e. a total area of 450 m² required for wastewater disposal.

Where the requirements of Horizons Regional Council under this section are more stringent than Horowhenua District Council, then Horizons Regional Council's specifications will prevail.

11.4.8 Greywater Reuse

Greywater from laundries and bathrooms may be used for subsurface irrigation. Any greywater systems proposed require Horowhenua District Council approval.

11.4.9 Pumping Mains and Pump Stations

Pumping stations will only be considered and approved by Horowhenua District Council when all other options, including pumping from individual lots to a Horowhenua District Council rising main, are impracticable. Where required, pumping stations shall be provided at the entire expense of the developer and be located in publicly owned property. If properly designed and constructed to the Horowhenua District Council's approval, Horowhenua District Council will take over their future operation and maintenance after they have been commissioned.

A monetary contribution may be required. This contribution will be based on the net present value of the ongoing operation, maintenance and replacement costs. Design of pumping stations shall be

carried out by a Chartered Professional Engineer. Designers will need to consult Horowhenua District Council staff at an early stage.

Minimum details shall be as per Engineering Appendix Three, Pumping Stations.

12. WATER SUPPLY

12.1 General Requirements

Development shall be in accordance with this Section (12) and NZS 4404:2010 6, Water Supply as modified by the schedule titled **Schedule 6, Altered Requirements to Section 6 NZS 4404:2010, Water Supply**, or as otherwise specifically approved by the Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

Alternative specific proposals may be submitted with appropriate engineering information that will enable Horowhenua District Council to assess the proposal.

12.1.1 Approved Contractors

Construction of water supply systems shall only be undertaken by contractors approved by Horowhenua District Council. Horowhenua District Council will hold a list of approved contractors who have met the appropriate criteria. Criteria that are required to be met are:

- Current certificates of immunisation for Hepatitis A & B , Tetanus and Typhoid
- Health and Safety Plan (including) disinfection procedures, plant and equipment.

Type	Minimum Qualification Required
New Construction (Green Field)	National Certificate in Infrastructure Pipelaying
Renewal Work	National Certificate in Water and Wastewater or National Certificate in Water Reticulation (Service Person).
Connections into Existing Networks	To be completed by Council's maintenance contractor.

12.2 Water Supply Objectives

Horowhenua District Council seeks to have a reliable potable water supply to an acceptable quality and reasonable quantity standards that will meet the present and future water supply needs of the community in order to protect public health and meet fire fighting requirements, while promoting water conservation.

Horowhenua District Council is looking to reduce peak consumption to reasonable, sustainable levels using a range of demand management measures.

Developers are encouraged to look to make efficient use of available water sources within a site through providing for sustainable systems of collection and use of rainwater, and grey water.

In some circumstances, Council's potable water supply network may have insufficient pressures to provide water for fire fighting purposes in which case the developer will need to provide evidence of how fire fighting supplies will be provided.

12.3 Performance Criteria

The design of a water supply system shall include the following:

- Meet the relevant standards and criteria of the District Plan.
- Meet the requirements of Horowhenua District Council's Water Supply Bylaw
- Meet the requirements of Horowhenua District Council's Water Management Plan (when adopted).
- Be compatible with the existing water supply system.
- Provide for an adequate water supply that will meet fire fighting and domestic needs, commercial and industrial requirements, allowing for ultimate future development within the catchment or adjoining catchments.
- Minimise health and safety related risks.
- Prevent contamination of the water supply system.
- Where Horowhenua District Council's water supply system is available and approved, provide a connection for each lot.

12.4 Design Principles

The design of a water supply system shall include the following:

- Pipe sizes shall be based on the design flows required to meet fire fighting and supply requirements.
- The system design shall identify and incorporate improvements required to the existing network as a result of the proposed works. If demand on the system requires water reticulation models to ascertain effects, then this will be at the cost of the applicant.
- On-site water supply systems shall be specifically designed. The focus of the design shall be on the efficient and safe use of water resources within a site.
- Where on-site storage is required this shall be a minimum of 25,000 litres (sufficient storage to supply 4 people for up at 25 days at 250 litres per person per day), unless otherwise approved by the Horowhenua District Council. Horowhenua District Council may require minimum storage of a greater volume.
- Where reticulated water supplies are unavailable or insufficient, an alternative fire fighting water supply shall be provided in accordance with SNZ PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice. The fire fighting requirement is over and above any on-site storage requirements.

12.4.1 Relevant Information

Developers shall show, at their cost, that existing reticulated systems have sufficient capacity to supply the proposed development if required.

Where Horowhenua District Council’s potable water supply network is available and has capacity to service developments, then each lot shall be provided with a connection and each development shall be provided a piped water supply system connecting to Horowhenua District Council’s system, unless alternatives are approved by Horowhenua District Council.

12.4.2 Pumping Stations and Reservoirs

A development may require the construction of booster pumping stations and/or storage in order to comply with requirements. Where these are required, the Horowhenua District Council's Water Services Manager shall be consulted on the specific requirements and they shall be provided at the entire expense of the developer. If properly designed and constructed to the Horowhenua District Council's approval, the Horowhenua District Council may take over their future operation and maintenance after they have been commissioned. Horowhenua District Council shall decide this at the onset. Should the asset be taken over by Horowhenua District Council, the construction phase shall include hold points where Horowhenua District Council shall be involved in inspections. In some situations a financial contribution to cover future operation, maintenance and replacement costs may be required. Design shall be carried out by suitably qualified persons.

13. LANDSCAPE

13.1 General Requirements

Developments shall be in accordance with this Section (13) and NZS 4404:2010 Section 7, Landscape except as modified by the schedule titled **Schedule 7, Altered Requirements to Section 7 NZS 4404:2010, Landscape,** or as otherwise specifically approved by the Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

Alternative specific proposals may be submitted with appropriate information that will enable Horowhenua District Council to assess the proposal.

13.1.1 Council Undertakes the Work

Horowhenua District Council may accept an option of the Council undertaking some or all of the landscape planting at some stage after completion of a development. The Council will require a monetary contribution from the developer prior to issue of the Section 224 certificate equivalent to the estimated cost of completing the work in accordance with the approved landscape plan.

13.2 Landscape Objectives

Developers are encouraged to undertake landscaping within their developments that will provide an interesting and varied living environment which is attractive to residents and visitors particularly within private lots. Any commitment for future ongoing maintenance of landscape features by Council shall be approved prior to construction acceptance.

13.3 Performance Criteria

As a minimum, the landscaping for the development shall:

- Meet the relevant standards and criteria of the District Plan.
- Incorporate low impact design features.

13.4 Design Principles

As a minimum, the design and development works for landscaping shall provide for a comprehensive landscaping plan where new roads are created or existing roads extended, and, where required, for other reserves. The plan shall consider any existing amenity and ambiance of adjacent streetscape.

The landscaping work shall be completed in accordance with the approved landscape design and provide temporary screening as protection during construction.

Other landscaping and plantings may be required for specific locations e.g. riparian planting in drainage situations, coastal areas and adjacent to open space.
The following paragraphs set out a number of further principles and requirements to be applied development landscaping.

13.4.1 Protection of Vegetation

In accordance with clause 7.3.3 of NZS 4404, developers shall provide appropriate protection to existing vegetation during the development period and shall provide appropriate protection to all vegetation, including new plantings, during the landscaping maintenance period.

13.4.2 General Reserves

Designs shall take into consideration that reserves proposed to be vested with Council, either as part of a contribution or incorporated into the development, will be in accordance with the District Plan requirements and the Council's Open Space Strategy.

When acquiring new open space, Council will make a careful assessment as to determine the value of the land to the community. This assessment covers, but is not limited to, the following categories:

- the strategic fit of the potential land acquisition to Open Space Strategy, Parks and Reserves Activity and Asset Management Plan.
- associated costs.

Cost considerations are evaluated against benefits as follows:

- financial investment.
- development costs.
- maintenance costs.
- administration / implementation costs.
- monitoring and enforcement costs.

13.4.3 Stormwater Reserves

Land that is required to be used for stormwater or flood mitigation purposes does not count towards reserves contributions.

14. NETWORK UTILITY SERVICES

14.1 General Requirements

Developments shall be in accordance with this Section (14) and NZS 4404:2010 Section 8, Network Utility Services except as modified by the schedule titled **Schedule 8, Altered Requirements to Section 8 NZS 4404:2010, Network Utility Services**, or as otherwise specifically approved by the Council.

If there is any conflict between the requirements in this Section and NZS 4404 then the more stringent requirements take precedence.

Alternative specific proposals may be submitted with appropriate engineering information that will enable the Council to assess the proposal.

14.2 Design Principles

- Subdivisions and developments which include rights of way or vested road are required to be serviced with electric power, telecommunications and, where applicable, gas reticulation to lot boundaries. These services are generally to be provided by an appropriate network utility operator. At the conclusion of a development or subdivision, written confirmation is required from the network utility provider that its installation requirements are met and network capacity is available or planned.
- Work undertaken on Council owned roads shall be undertaken in accordance with the National Code of Practice for Utilities Operators' Access to Transport Corridors, including appropriate procedures outlined in the Council's Engineering Appendix Four Working in Roads and Trench Construction.
- Consideration shall be given to co-location of services and shared corridors where appropriate.
- All services shall be underground unless otherwise authorised by the Council. Existing overhead services located on land proposed to be subdivided or otherwise developed should also to be relocated underground. Where existing services cannot be relocated, mitigation is required and consideration shall be given to building orientation, visual screening and subdivision layout.
- Council may consider proposals for alternative means of providing electrical and telecommunication services, particularly in rural areas. The Council's approval for any alternative proposals should be sought prior to seeking resource consent approval. A section 221 notice maybe required.
- Council shall not be liable to provide electric power, telecommunications and, where applicable, gas.
- The Council may require extra ducts to be laid, or consideration of location(s) for wireless base station(s), within a development for possible future requirements.
- Easements are required in favour of the network utility service provider when not located on road reserve.
- All designs and construction shall include sufficient capacity so future trenching is kept to a minimum.

Part Three: Minimum Engineering Requirements

15. INTRODUCTION

The Minimum Engineering Requirements are made up of:

- NZS 4404:2010, Land Development and Subdivision Engineering.
- Schedules 1 to 8 of this document containing Council's amendments to NZS 4404:2010.
- National Code of Practice for Utility Operators' Access to Transport Corridors.

Other Standards are as listed in NZS 4404:2010 or in Schedules 1 to 8.

16. SCHEDULE 1: ALTERED REQUIREMENTS TO SECTION 1 NZS 4404:2010 GENERAL REQUIREMENTS AND PROCEDURES

Horowhenua District Council has adopted Section 1 of NZS 4404:2010 with the following additions and/or alterations.

16.1 Clause 1.8.1 - Documents to be submitted for design approval

- The Council requires the documents listed in paragraphs 1.8.1.1 (a) to (d) of NZS 4404 inclusive to be submitted. Specifications should include a discussion on the maintenance and operation of any non-standard feature. Where considered appropriate by the Council, cost benefit or life cycle costing may be required for larger or unique projects.

  Stormwater to include entire catchments and effects downstream including seasonal groundwater levels including the effects of " groundwater mounding ".

- Add to the existing paragraph.

  (e) A street lighting design that is specific to the project, as set out in clause 3.3.14 of Schedule 3.

  (f) A Sediment and Erosion Control Plan as set out in clause 2.3.7 of Schedule 2.

  (g) A completed Design Certificate, Schedule 1A, NZS 4404.

  (h) A Design Report.

  (i) A Quality Assurance Plan.

16.2 Clause 1.8.2 - Drawings

- Add further paragraphs to 1.8.2.1

  Engineering drawings must be legible, clear, readable, complete and comply with Council's Engineering Appendix Five, As-Builts. They must clearly illustrate the proposal to enable both assessment and construction compliance.

Two copies of preliminary drawings, specifications and calculations shall be supplied to the Council. One set will be returned to the applicant when these have been checked by Council staff with any required amendments endorsed on the plans and specifications. These check prints shall be preserved intact and returned to the Council when the required amendments have been completed, along with two copies of the amended set of plans and specifications.

The level datum used in the Horowhenua District is Wellington Mean Sea Level (WMSL) 1953, unless otherwise advised by Council. State the source of the levels (the benchmark) and the datum used on engineering drawings.

16.3 Clause 1.8.2.3 - Scale

- Non-standard scales such as 1:150, 1:300, 1:400, etc, are generally not acceptable. The scale of drawings is generally 1:250 or 1:500 but other accepted metric scales may be used to suit the level of details on the drawings.
- For long sections, draw standard horizontal scales generally to match the plan. Vertical scales may be 1:20 or 1:50, to improve clarity.

16.4 Clause 1.8.2.4 - Content of drawings

Add to the existing paragraph:

(j) For low impact design, any of the specific requirements listed in section 4.3.7 of NZS 4404.

16.5 Clause 1.8.3.2 - Alternative design basis

- Addition to the first sentence of the second paragraph.

An explanation of the design basis or construction method (together with the results of any materials testing) shall be submitted, for approval in principle.

16.6 Clause 1.8.4 - Approval of design

- Add to the existing paragraph 1.8.4.1.

Once approved, and if requested by the Council, the owner or their representative shall resubmit amended plans, specifications or other documents, bearing the revision number and date.

16.7 Clause 1.8.5 - Notification of contracts and phases of construction

- The Council requires notification as set out in paragraphs 1.8.5.1 and 1.8.5.2

16.8 Clause 1.8.6 - Supervision of construction

- The Council requires completion certificates in the form given in schedules 1B and 1C, NZS 4404.

16.9 Clause 1.8.7 - Connection to existing services

In meeting the requirements of clause 1.8.7.2 for water supply the developer shall provide a completed Application for New Connection/Disconnection Form to the Council along with the application fee. Council will arrange the connection at the applicant's cost with payment prior to work commencing.

16.10 Clause 1.8.8 - Testing

- Add to the existing paragraph

  The following Council test certificates are required to be completed in the presence of the Council's Engineer:

  - Pipeline Pressure Test
  - Hydrostatic testing of Chambers
  - Pipe Disinfection Test

- Add new clause **1.8.8.1 CCTV Post Construction Inspections**

  Once the road surface is to finished level and prior to any road sealing, the developer shall arrange for all public stormwater and sewer mains to be inspected by CCTV. The developer shall provide a DVD and defects report to Council. Reports shall be to NZ Pipe Inspection Manual standards. The filming shall be done travelling upstream with a trickle of water flowing downstream to allow hollows and steps to be easily seen. All defects are to be fixed to the satisfaction of Council at the developer's cost. Where faults are found and repaired, Council may instruct the developer to further CCTV those lengths to ensure there are no further problems.

16.11 Clause 1.8.9 - Maintenance

- Replace the existing clause with the following.

  The developer shall maintain the works until they are formally taken over by the Council. Formal takeover is the date when the Council issues the final staged Section 224(c) certificates or such other earlier date as may be agreed by the Council. For uncompleted works covered by a bond, the developer shall maintain the works until a date specified in the bond or the works are completed to the satisfaction of the Council.

  Unless stated otherwise in the consent conditions, a defects liability period of two years from formal takeover by the Council of the final stage shall apply for the entire development and may be bonded to ensure compliance. For landscaping and reserves, or where low impact devices or products are used, a maintenance liability period of a minimum of three years shall apply. The developer is responsible and shall be bonded for the establishment and routine maintenance and any replacement of the planting, lawns and associated works during the establishment period.

The developer shall monitor the situation to ensure that appropriate maintenance and/or replacement is undertaken, and shall be responsible for arranging a final inspection by Council staff at the end of the defects liability period, to get sign-off for practical completion.

The developer shall not be responsible for damage caused by other activities, such as building construction on completed sections, or for fair wear and tear or vandalism caused by public use except in the case of landscape maintenance.

16.12 Clause 1.8.10 - Completion documentation

- Add to existing list:

  Other documentation required under sub-paragraph (g) includes specification and supplier details of all non-standard features, test certificates for each lighting standard, compliance certificate for the complete street light installation, ICP numbers, serial numbers and the provision of as-built information in RAMM (SLIM) format (refer Appendix Five).

- Add to existing list.

  (h) A Stormwater Management Manual for all stormwater facilities. The manual is to include a maintenance schedule and details of the construction and operation system.

  Document to include:
  - Contact details of maintenance personnel engaged and maintenance period.
  - Description of stormwater system and its operation (volume calculations and soakage rates, design and as-built plans of stormwater system to be appended to manual).
  - Compliance method and standards (if required).
  - Description of maintenance procedures and details of specific maintenance tasks.
  - Measures to minimise risk of contaminants entering stormwater treatment and disposal system, and steps taken in the event of a spill (if appropriated.
  - Inspection forms and records.
  - Producer statement completed by design author confirming all stormwater facilities are constructed and operate as designed.

  (i) A record of spray application for weed control.

  Document to include:
  - Approved handler details, substances / classes and phases of lifecycle handler as approved, i.e. copy of approved handler's certificate.
  - Substance information, i.e. unequivocal identification, quantity, any site specific limitations / restrictions.
  - Manner of application, amount and date, location (site plan where appropriate).

  (j) A Maintenance Manual for all landscaping and reserves, including vegetated low impact urban devices or products. The manual is to include a maintenance schedule.

  Document to include:
  - Contact details of maintenance personnel engaged.
  - Description of maintenance procedures and details of specific maintenance tasks.
  - Compliance method and standards required (in consultation with Council).
  - Inspection forms and records.

  (k) Complete and comply with the Council's Engineering Appendix Five, As-Builts.

(l) The Operations and Maintenance Instruction Manual for all pump stations shall be supplied to Council prior to commencement of the 24 months defects maintenance period and handover of the completed pump station and associated works.

Over this period, the full responsibility for all works or workmanship carried out during the construction stage shall remain with the Applicant or Contractor. A bond may be required to ensure compliance with the Defects Liability Period.

16.13 Clause 1.9.1 - Uncompleted works

Where in the opinion of the Council it is appropriate, the Council may approve uncompleted work, subject to satisfactory bonds being arranged.

Bonds must be secured by an appropriate guarantee or be in cash and lodged with the Council. Where necessary, bonds must be executed and registered.

The amount of any bond under clause 1.9.1.3 shall be based on a minimum of 150% of the estimated value of the uncompleted/maintenance work, with preparation and inspection costs deducted from the repayment if not paid previously.

16.14 Additional requirements

Reducing waste

When designing the development, consider ways in which waste can be reduced.

- Plan to reduce waste during demolition e.g. minimise earthworks, reuse excavated material elsewhere.
- Design to reduce waste during construction, e.g. prescribe waste reduction as a condition of contract.
- Select materials and products that reduce waste by selecting materials with minimum installation wastage rates.
- Use materials with a high recycled content e.g. recycled concrete sub-base, foamed bitumen. Proposed recycled materials will need approval from the Council to ensure that environmental contamination does not occur.
- Consider carbon accounting and reduction plans to identify the source and quantify significant green house gas emissions. Plan to reduce carbon emissions over the whole life cycle of the development.

Emergency Works

If during the course of the development, any situation arises associated with the development whereby, in the opinion of the Council, public safety, the security of public or private property, or the operation of any public facility or ecological site is endangered, the developer shall immediately carry out such remedial measures as the Council requires to remove the danger. Any work so required shall be at the expense of the developer.

If such emergency works are not immediately carried out, the Council may arrange for the necessary remedial work to be carried out and charge the developer the cost for carrying out the works.

Damage to Existing Roads, Services and Property

All damage to existing roads, services or private property, or any disturbance of survey boundary marks due to, or caused by, any new works, shall be the liability of the developer. All damage must be repaired by the developer immediately following instructions from the Council. If such remedial works are not commenced within twenty four hours, the Council may arrange for the necessary work to be carried out and charged to the developer. This provision includes the removal of mud and debris from existing roads in the vicinity of the development. A daily removal of such debris may be necessary in the interests of traffic safety.

In any situation where the Council considers that damage to existing roads, services or private property constitutes a risk or potential risk to the safety, of road users, pedestrians or other persons, the developer shall immediately repair the damage or otherwise abate the hazard or potential hazard.

Road Contamination

Developers shall put in place measures to avoid transporting sediment or other contaminants on to public roads.

Safety

Temporary fencing and warning signs shall be erected in accordance with the Health and Safety Plan to protect site personnel and the general public, particularly children, from all hazards associated with the development. All fences and warning signs shall comply with Occupational Health and Safety requirements.

Easements

Easements are required over any rights of way, communal services where these pass through lots in subdivisions and any stormwater secondary flow paths over private property. Minimum widths will vary depending on depth. The Council may also require other easements.

Easements shall be shown on the land transfer title plan and documentation shall be prepared by solicitors at the developer's expense. Draft easement documentation will require Council approval.

'Stop work' Notices

Any person or persons carrying out 'on-site' works as part of any Council approved development project shall cease such work, or part thereof, immediately upon receipt of a written stop work notice specifying restrictions and issued by Council or an authorised agent.

The developer's representative shall have the right to appeal to the Operations Manager, Community Assets, to override or amend such stop work notice. A copy of the notice and associated correspondence shall be recorded on Council's resource consent or project file. Work may recommence when the Council advises in writing.

Works "encountered"

If during construction, conditions not anticipated by the designs exist, then additional designs taking into account the changes shall be submitted for Council's consideration.

17. SCHEDULE 2: ALTERED REQUIREMENTS TO SECTION 2 NZS 4404:2010 EARTHWORKS AND GEOTECHNICAL REQUIREMENTS

Horowhenua District Council has adopted Section 2 of NZS 4404:2010 with the following additions and/or alterations.

17.1 Clause 2.2.2 - Referenced documents

- NZS 6801:1999: Acoustics - Construction Noise.

17.2 Clause 2.2.4 - Geotechnical requirements

- Add to existing paragraph

(i) Earthwork requirements, where no standard for earthworks is applicable to the project, shall conform to Council requirements and to resource consent conditions (if any) that apply to the proposed development.

17.3 Clause 2.3.2 - Preliminary site evaluation

- Add to existing paragraph (b) Drainage

Council does not provide reticulated stormwater systems and therefore disposal is by on-site soakage with clearly identified overland flow paths for excessive rainfall events. High seasonal ground water levels shall be used during designs.

Stormwater disposal systems must not cause adverse effects within and outside of the property. The designer must consider the effects of groundwater mounding .

17.4 Clause 2.3.3 - Landform selection

- Add to existing paragraph

(vii) The provision of building platforms which take into account house orientation is recommended. House orientation is crucial when maximising opportunities for passive solar heating or solar heat gain avoidance, natural ventilation or day lighting throughout the year.

17.5 Clause 2.3.7 - Erosion, sediment and dust control

- Add further clause

2.3.7.3 Erosion and sediment control

Developers shall apply the appropriate recommended treatments outlined in the *Erosion and Sediment Control Guidelines for the Wellington Region and Small Earthworks – Erosion and Sediment Control for Small Sites* (available from the Greater Wellington Regional Council).

Although winter is usually not a desired timing for earthworks, consideration should be given for earthworks in dune fields for dust control, which may be more appropriate, rather than during summer months.

An Erosion and Sediment Control Plan shall be prepared and shall include:

- Contact details of personnel engaged in sediment and erosion control.
- Description of any detention or control measures employed (include any supporting documentation/calculations).
- Compliance standards (under consent conditions).
- Description of maintenance procedures and details of specific maintenance tasks together with frequency of occurrence.
- Description of remedial actions to be undertaken by contractors, including procedure for the disposal of materials if an inspection requires that material be removed.
- Measures to protect Council's infrastructure and/or natural features (if appropriate).
- Inspection forms and records.

Any damage sustained to existing Council infrastructure, or additional maintenance costs, directly attributed to or resulting from erosion or deposits of sediment from any development, shall be the full responsibility of the developer (at their cost) to make good to the satisfaction of the Council.

- Add further clause

2.3.7.4 Dust control

Should there be potential for wind-blown sand, soil or other material to be transported onto other properties, the developer shall erect suitable fabric fencing (sarlon cloth or similar) and/or take other mitigation measures acceptable to the Council, such as frequent watering or establishing suitable ground cover, to control any dust nuisance. Water for dust control shall not be sourced from the Council's potable water supply without the agreement of the Council. A fee shall be charged for water used for this purpose.

17.6 Clause 2.6.2 - As-Built drawings for earthworks and subsoil drains

- This clause applies for all earthworks situations.

Additional Requirements

- Contaminated Sites

Sites potentially, known to be, or subsequently found to be, contaminated as a result of previous activities may require the services of a specialist environmental scientist for a site evaluation. The site history is fundamental as this will identify all past and present activities at the site that involved the storage, production, use, treatment or disposal of materials that could contaminate the site. If contaminating activities have or may have occurred, or if the history is incomplete, it may be necessary to undertake a sampling and analysis programme. It is important to ascertain, at an early stage, the extent of any contamination and gain a reasonably accurate picture of the clean up needed to meet the required standards.

- Local Conditions

The general topography and nature of the soils present within, or adjacent to, the subject site give an indication of areas that have previously slipped or been earth-worked, where springs

and under-runners may be present, or where seismic events are likely to affect earth-fills, slopes and liquefiable ground. If these conditions are encountered or are likely to be encountered the services of a specialist geotechnical engineer may be required as those conditions must be taken into account in the design and construction of any development.

- Noise and Vibrations

  The developer shall consider the effects of noise and vibration on the surrounding properties and take these into account in the implementation of any earthworks in accordance with the scale of the development.

  Developers shall take all necessary precautions to minimise the effects of earth vibration during piling or compaction works and prevent any damage that may occur on adjoining properties.

  Construction noise associated with any earthworks to be in accordance with the New Zealand Standard for Construction Noise, NZS 6801:1999: Acoustics – Construction Noise.

- An Earthworks Management Plan (EMP) that addresses all potential adverse effects of the proposed earthworks shall be submitted prior to earthworks. As a minimum, the EMP will need to address at least the following matters:
  - windblown soil.
  - sediment control and stormwater run-off.
  - maintenance of local drainage paths from adjoining properties.
  - progressive top soiling and re-vegetation immediately following completion of each stage of the works.
  - the control of noise, vibration and other construction related effects.
  - a monitoring programme for effects of the earthworks on and off site.
  - the discovery of an unrecorded archaeological site.

The Erosion and Sediment Control Plan shall be included with the EMP.

18. SCHEDULE 3: ALTERED REQUIREMENTS TO SECTION 3 NZS 4404:2010 ROADS

Horowhenua District Council has adopted Section 3 of NZS 4404:2010 with the following additions and/or alterations.

18.1 Clause 3.2.2 - Related Standards and guidelines

Add the following Standards and guideline:

- NZS 6806:2010 Acoustics: Road Traffic Noise – New and Altered Roads
- AS/NZS 2890.1:2004 Parking Facilities – Off Street Parking
- AS/NZS 2890.6:2009 Off Street Parking for People with Disabilities
- SNZ HB 8630:2004 Tracks and Outdoor Visitor Structures
- New Zealand Transport Agency's Pedestrian Planning and Design Guide (2007)
- AS/NZS 1158.1:2005 Road lighting.
- Engineering Appendix One: Vehicle Crossings
- Engineering Appendix Four: Working in Roads and Trench Construction

18.2 Clause 3.2.4.2 - Link context

- Add to definition of 'Lane'

  Can include local walkways, beach accesses and residential lanes.

- Add to definition of 'Local road'

  Can include significant walkways, and cycleways between local commercial and employment centres, and schools.

18.3 Clause 3.3.1 - Design requirements

- This section sets out Council's infrastructure design standards except that all road reserves shall be a minimum of 20m wide. A road, lane or right of way serving up to 12 dwelling units and has no through traffic can be 10m to 12m wide.
- Council's Best Practice and Engineering Appendix documents sit outside this document and their ability for regular review must be preserved. The versions available on Council's website therefore will be the sole controlled versions. The onus is therefore on users to be familiar with and refer to the latest version of the Best Practice and Engineering Appendices.
- Pedestrian access ways and cycleways may also be required for connectivity purposes.

18.4 Clause 3.3.3 Pavement structural design

- Pavement depths shall be as established through use of the design documents, but the minimum pavement thickness shall be 300mm, unless otherwise approved by the Council.

18.5 Clause 3.3.3.2 California bearing ratio tests

- Use of scala penetrometer tests or Clegg Impact Test (CIT) to establish subgrade CBR values requires the specific approval of Council. Correlation of results to actual soaked CBR tests may be required.

18.6 Clause 3.3.6 Parking, passing and loading

- Council has adopted the parking provisions set out in AS/NZS 2890.1:2004 for off street parking and AS/NZS 2890.6:2009 for off street parking for people with disabilities.

18.7 Clause 3.3.11.1 Footpaths and access ways

- Pedestrian access ways shall generally have a legal width of 6 metres, with a specifically designed formation width no less than 2.2m and boundary fences being no higher than 1.2m for those sections more than 10m from the road frontage. A section 221c notice may be required for compliance.

18.8 Clause 3.3.11.3 Footpath and cycle path surfacing

- In some situations such as in Rural and Greenbelt Residential, Council may accept other surfaces for cycle paths other than concrete and asphaltic concrete.

18.9 Clause 3.3.11.4 Berms

- Add to the existing paragraph

  (f) Provide landscape amenity including allowing adequate space for the planting of berm trees, generally a minimum distance of 2m between kerb and footpath.

18.10 Clause 3.3.12 Rural Numbering

- On-site rural street numbers shall be provided by the developer for all rural and greenbelt residential subdivisions as approved by Council. All rights of way and the like with more than 4 dwelling units shall be required to install road name signage at the developer's cost.

18.11 Clause 3.3.14 Road lighting

Council has adopted the lighting provisions set out in AS/NZS 1158.

Traffic route lighting shall be designed in accordance with local roads, pedestrian areas, cycleways and paths in reserves. Lighting shall be designed in accordance with AS/NZS 1158.3.1:2005 Road lighting-Pedestrian area (Category P) lighting.

The Council requires a street lighting design that is specific to the project, including confirmation (with supporting documentation) of its compliance or otherwise with the requirements of AS/NZS 1158, the schedule of maintenance to be adopted, e.g. the luminaire cleaning and lamp replacement intervals, and a cross-section drawing showing the proposed type of pole, outreach and luminaire.

The following shall be shown on the engineering drawings submitted for approval:

a) the existing and proposed electrical load of the street lighting circuits.

b) the form and location of control i.e. the relay.

c) whether it is a unmetered or metered supply.

d) voltage drop calculations.

e) cable and duct sizes.

f) the lighting design details showing that the design conforms with AS/NZS 1158, mounting heights, offsets, outreach lengths, tilt angles and spacing.

g) a lighting schedule.

Note for Categroy V lighting, isolux drawings are required. For Category P lighting a spacing schedule from the lighting supplier will be required.

A schedule shall be provided detailing the lighting to be installed covering:

h) light manufacturer, model and optic used.

i) pole manufacturer and type.

j) light and pole finish, i.e. painted, powder coat, galvanised and colour (for painted the manufacturer paint guarantee shall be supplied).

k) any other equipment or work required to ensure a complete installation.

l) lamp manufacturer, type and wattage.

Note galvanised poles should have ' tuffcoat finish around base'.

18.12 Clause 3.3.15 Bridges and Culverts

- Add to existing paragraph

  (g) Bridges over watercourses with recreation access on one or both sides shall provide barrier free access for recreation users. This access may require extra facilities on the road or extra clearance height and/or width of the bridge.

18.13 Clause 3.3.16 Private ways, private roads and other private accesses

- Add to the first paragraph

  Accesses shall be considered in the overall streetscape design and not compromise on-road parking.

18.14 Clause 3.3.16.1 Plan and gradient design

- Add a further paragraph

  Vehicle crossings shall not negatively impact the function of footpaths. Vehicle crossings shall be designed in such a way as to minimise alterations to footpath crossfalls and gradients. Refer to principles presented in New Zealand Transport Agency's 'Pedestrian Planning and Design Guide' (section 14.11).

18.15 Clause 3.3.16.3 Pavement design

- A surface treatment design shall be submitted for approval, prior to seal application.

18.16 Clause 3.3.19.7 Sumps

- Sumps shall be used to collect stormwater before discharging to soak pits. Stormwater collected from pavements and the like shall not discharge directly into soak pits and must have some form of sediment trap.

18.17 Clause 3.4.2.3 Basecourse

- NZTA M/4, AP40, or NZTA Approved Regional Basecourse may be used. The approved regional basecourse is as specified in NZTA M/4: 2006 Table 4 -Wellington 1 Greywacke. Any proposed variation from these materials, such as the use of cement-stabilised metal-courses, will require specific design and approval.
- Add to existing paragraph

  or,

  (c) Council approved recycled materials provided it is equivalent or superior in performance to NZTA specified M/4 materials. Council approval of an alternative material does not convey approval in general and each proposal will be judged on its merits.

- Add further paragraph

  Testing results confirming that the basecourse meets specification shall be provided to the Council prior to road surfacing.

18.18 Clause 3.4.3.2 Road surface tolerances and texture

The average roughness over the project is no greater than 70 NAASRA (count/km) and no individual reading shall exceed a maximum of 80 NAASRA for chip seals. The NAASRA readings are to be determined from the Quarter Car Lane IRI calculated over a 100m section, converted to NAASRA by New Zealand Transport Agency's conversion factor.

For structural asphaltic concrete or other bituminous surfacing, the average and maximum 100 metre lane roughness requirements are to be reduced to 50 and 60 NAASRA counts/km respectively.

18.19 Clause 3.4.4.1 First and second coat seals

- Add before first paragraph

  Council requires a first and second coat chip seal for all chip sealed roads.

  The first coat shall be a two coat wetlock seal to an approved seal design. The second coat shall be done two years after issue of the section 224 (c) certificate and at completion of the defects liability period. Council will arrange for this work to be done as part of their annual sealing programme. The cost of this work will be confirmed at section 224 (c) certificate and paid by the consent holder prior to issue of the section 224 (c) certificate.

18.20 Clause 3.4.4.3 Hot laid asphaltic concrete surfacing

As well as meeting the TNZ M10 specifications the asphaltic concrete in the pavement after completion of final rolling shall have statistically ≥ 90% of its area with air voids not less than 3% or more than 6% total air voids. In addition, the entire area of asphaltic concrete shall have not less than 1.5% or more than 7.5% total air voids. Any sections of pavement that do not meet these requirements shall be removed and replaced with material supplied and compacted to specification requirements by the developer at their own expense.

18.21 Clause 3.4.5 Subgrade checking

A series of subgrade tests are to be carried out within any proposed development and supplied to Council in a written format. These tests are to be carried out by a suitably qualified person and submitted, showing the strength of the underlying subgrade material. This is to be undertaken for any roading assets that are to be vested in Council.

If the subgrade CBR testing has not been done at the design stage, it may be carried out on the completion of the raw earthworks when the subgrade has been exposed .The number of tests will depend on the type of subgrade exposed but in any event at least two tests shall be provided including details of the test location.

In cases where the subgrade has been tested as part of the design, the subgrade condition shall be reviewed on exposure and the pavement thickness adjusted accordingly. The minimum pavement depth shall be 300mm.

18.22 Clause 3.4.7 Sub-base

When pavement stabilisation is involved, the contractor will provide a report confirming that the sub-base/existing pavement is preconditioned to its optimum moisture content prior to stabilisation and that testing has been done to confirm that any added water has been uniformly distributed through the material to be stabilised. Typically one test every 200 square metres to confirm the spread rate and one test every 500 square metres to confirm depth of stabilisation shall be undertaken. The Quality Assurance for the pavement layer construction shall be to the Specification TNZ B/2: 1991.

18.23 Clause 3.4.10 Basecourse preparation for surfacing

- Amend the sentence:

"The surface of the road at the time of surfacing shall be clean, dry, uniform, tightly compacted and shall present a stone mosaic appearance. Immediately prior to any form of surfacing, a strip one metre wide contiguous in from each channel or seal edge towards the crown, all of the unsealed shoulder and all of the entranceways to be chip sealed, shall be sprayed with an approved, ground sterilising weed killer spread at rates strictly in accordance with the manufacturer's instructions and at the upper end of the rate for "roadsides".

The application of systemic (ground sterilising) agents must comply with Environmental Risk Management Authority's current application standards and controls. Check with the manufacturer, distributor or ERMA if you are not sure.

18.24 Clause 3.4.11 Deflection testing prior to surfacing

The Council requires Benkelman beam deflection testing prior to surfacing. The standards required are as set out in Table 3.4 of NZS 4404.

The Council may also require deflection testing on the subgrade.

18.25 Clause 3.4.14 Footpaths and cycle paths

- Crushed concrete or glass may be used as a foundation for footpaths.
- Tactile pads are required at pedestrian kerb crossings.

  RTS 14:
  http://www.nzta.govt.nz/resources/road-traffic-standards/docs/draft-rts-14-revision-2007.pdf

  NZTA Pedestrian Planning and Design Guide
  http://www.nzta.govt.nz/resources/pedestrian-planning-guide/

- The Council may require footpaths to be reinforced where they are adjacent to mountable kerbs.
- For vehicle crossings, see Council's Engineering Appendix One, Vehicle Crossings.

18.26 Clause 3.4.18 Progress inspections

- As a minimum the following inspections are required:
  - Subgrade, prior to placing of subbase.
  - Benkelman beam testing.
  - Basecourse prior to surfacing.

18.27 Clause 3.4.20 As-Built and completion documentation

- Add new paragraphs

  Engineering drawings must be legible, clear, readable, complete and comply with Council's Engineering Appendix Five, As-Built in addition to the RAMM data.

The as-built records for the tabulated asset types, using pocket RAMM, shall be loaded into Council's RAMM database. Details of approved contractors, currently able to carry out this work, can be obtained from Council.

Before compiling any as-built RAMM data, the following information must be obtained from the Council:

- Road ID
- Road name
- Start displacement.

The as-built information for all roads to be vested in Horowhenua District Council must be provided in accordance with the council's RAMM Specification for New Road Assets. As-built information shall be certified by a registered surveyor. As-built information shall include:

- Road feature information including the location, specification and details of: footpaths, bridges, culverts, retaining walls, sight rails/guardrails, road markings, signals, street lighting, signs, sumps and other storm water facilities, vehicle crossings, road traffic features (such as islands, roundabouts, traffic calming measures etc.), landscape features, seating and any other amenities and features.

- Road construction information including thickness of pavement layers and the results of any strength testing or grading certificates.

- Road surfacing information for sealed roads including binder type and application rate, cutter type and quantity, adhesion agent type and quantity, type and quantity of other additives, the width, length and area of each road sealed, chip size, the design basis for the binder application rate and a discussion on any reason for differences between the design and applied rate.

- Lighting

  A Lighting Design Review Form – This has a series of relevant questions relating to the design and compliance.

  - Declaration of Conformity – This is for the cabling and wiring to show the design conforms with the Electricity Regulations and Codes of Practice.

  - A RAMM Form to identify the installed equipment and add the asset to RAMM and issue a unique asset number.

  New subdivision roads will not be accepted by Horowhenua District Council as publicly maintained assets until the as-built information has been approved.

C3.4.20

Horowhenua District Council, as with most other NZ road controlling authorities, uses the Road Assessment and Maintenance Management (RAMM) software package to record road feature information. It is important that assets are recorded in this way to enable funding from Central Government for road improvements and maintenance. All roads within new developments that are to be vested and maintained by Council must be included in the RAMM database. This ensures that Council applies for the correct amount of government maintenance funding in the future. Funding from Central Government removes some of the financial burden for road maintenance from the local ratepayers, thus it is important that the database is up to date.

18.28 Additional Requirements

- Work undertaken on Council owned roads shall be undertaken in accordance with the National Code for Utilities in the Transport Corridor, including appropriate procedures outlined in the Engineering Appendix Four, Working in Roads and Trench Construction.

  Council may require the arrangement of bonds to cover work being undertaken within existing roads. The amount of the bond shall be Council's estimate of the value of the works undertaken in road reserve and held to cover the costs incurred by the Council in the event of default or prolonged opening. The bond shall be released upon Council being satisfied with the practical completion of the road opening.

  Permeable pavements may be considered where water table levels and soil conditions allow. Specific design of the pavement shall be provided for approval.

Weed control

Prior to final handover to Council the developer shall undertake weed spraying.

- In urban roads the developer shall spray weeds and/or grass and/or other growth over or within berms, kerb and channel, along the edge between the carriageway and channel, on footpaths, around service openings such as fire hydrants, sumps, valves etc, and around the base of poles, road signs and structures.
- In unkerbed streets and rural roads the developer shall spray weeds grass and other growth over or within metalled shoulders at least 1m from carriageway edges and paths, along the edge between sealed surface and metal shoulder, entranceway surfaces and 1m either side of the seal, water tables, side drains, culverts and the base of roadside furniture such as signs, marker posts, chevrons and poles.
- The application of pesticides must comply with Environmental Risk Management Authority's current application standards and controls. Check with the manufacturer, distributor or ERMA if you are not sure of the products classification and control regime.

19. SCHEDULE 4: ALTERED REQUIREMENTS TO SECTION 4 NZS 4404:2010 STORMWATER

Horowhenua District Council has adopted Section 4 of NZS 4404:2010 with the following additions and/or alterations.

19.1 Clause 4.2.4 - Catchment management planning

- Replace existing third paragraph with

  The implications of future development on adjoining land should be on the basis of replicating the pre-development hydrological regime, for the 50%, 20%, 10%, 2% and 1% AEP design storm, whereby the maximum rate of discharge and peak flood levels post-development are no greater than pre-development.

19.2 Clause 4.3.4 - System design

- See Part Two section 10 of this document for design requirements.

19.3 Clause 4.3.4.2 - Secondary systems

- Replace existing third paragraph with

  Ponding or secondary flow on local roads shall be limited to a 200mm maximum height at the centre line and velocity such that the carriageway is passable in a 1% AEP design storm.

19.4 Clause 4.3.6 - Stormwater pumping

- In general, Council will not approve pumping of stormwater for new developments.

19.5 Clause 4.3.7 - Low impact design

- Low impact design is good practice and must be considered.

19.6 Clause 4.3.7.6 -Vegetated swales

- Add to existing paragraph

  (h) Species to be planted - consideration to be given to hydro-seed or hydro-mulch application.

  (i) Measures required to protect the integrity and/or functionality of the swale while vegetation establishes.

19.7 Clause 4.3.7.9 - Soakage devices

- Council considers 0.5 to be an appropriate reduction factor to be applied to the rate of soakage determined through a soakage test.

- Add further paragraphs.

  Council requires on-site disposal through soak pits unless this may cause adverse effects and alternatives are approved.

  The Council may require measures such as small diameter outlets or subsoil drains from the soak pits to allow the slow drain down after a storm event when groundwater is high and inhibits natural drain down.

19.8 Clause 4.3.9.1 - Location and alignment of public mains

- Easements are required for protection of public stormwater pipelines that are located in private property and shall be centred on the as-built position of the pipeline. The easement shall be a minimum of 2 times the depth of the pipe to invert plus the outside diameter of the pipe or 3m wide, whichever is greater. The easement shall provide unlimited and unrestricted access for the Council to undertake maintenance work.

  In shared trench situations the easement boundaries shall be a minimum of 1.5m from the outer services.

19.9 Clause 4.3.9.4 Minimum Cover

- Minimum cover shall be in accordance with manufacturers requirements, but shall be no less than 500mm unless specifically designed.

19.10 Clause 4.3.9.6 - Culverts

- Add paragraph

  Council's preference is for single culverts or bridges, not multi-cell culverts.

  Culverts on watercourses with recreation access must not impede barrier free access along the watercourse and may require to be specifically designed for fish passage.

  The minimum culvert diameter shall be 450mm, unless otherwise approved by Council or 300mm for entranceways if no formed drain.

19.11 Clause 4.3.9.8 - Outfall water levels

- Generally outfall water levels will be determined from stormwater modelled results.

19.12 Clause 4.3.11 - Connection to the public system

- Add to existing paragraph:

  (j) If a connection for a property is approved to the kerb or the overflow from a property's on-site disposal/attenuation system is made to a kerb, the kerb connector shall be either galvanised steel or stainless steel.

19.13 Clause 4.4.2 - Information to be provided

- The information requirements outlined in the first set of sub-paragraphs (a) to (e) and subparagraphs (f), (h) and (i) from the second set are to accompany resource consent applications. The other information requirements are generally required for plan and specification approvals, but may be required for assessment of resource consent applications.

- The information is additional to any that is required in other parts of this document.

19.14 Clause 4.5.4 - Inspection and acceptance

Once the road surface is to finished level and prior to any road surfacing, the developer shall arrange for all public stormwater pipes of 1200mm diameter or less to be inspected by CCTV. The Developer shall provide a DVD and defects report to Council in accordance with the NZ Pipe Inspection Manual. The filming shall be done travelling upstream with a trickle of water flowing downstream to allow hollows and steps to be easily seen. All defects are to be fixed to the satisfaction of Council at the developer's cost. Where faults are found and repaired Council may instruct the developer to re-film those lengths to ensure there are no further problems.

19.15 Additional Requirements

- Easements are required for protection of public stormwater pipelines, subsoil drains, waterways and secondary flow paths, when these are located in private property and shall be centred on the as-built position of the feature/pipe.

  Easements associated with the waterways or open drains, attenuation or disposal areas, and secondary overflow paths shall provide enough room for a mechanical excavator and truck to gain unlimited and unrestricted vehicular access to undertake maintenance work.

- Work undertaken on Council owned roads shall be undertaken in accordance with Council's Engineering Appendix Four, Working in Roads and Trench Construction in the first instance and the National Code for Utilities in the Transport Corridor.

20. SCHEDULE 5: ALTERED REQUIREMENTS TO SECTION 5: NZS 4404:2010 WASTEWATER

Horowhenua District Council has adopted Section 5 of NZS 4404:2010 with the following additions and/or alterations.

20.1 Clause 5.3.4.3 - Topographical considerations

- Add paragraph

  Design of proposed and future reticulations should avoid the use of pump stations. All gravity options must be explored and shown not to be practical before any consideration will be given to the use of a pump station.

20.2 Clause 5.3.5.1 - Design Flow

(a) Residential flows

- Replace sub-clause (i) with:

Allow for dry weather flow of 250 litres per day per person, unless otherwise approved by Council.

- Replace sub-clause (iv) with:

Allow for 2.5 people per dwelling, unless otherwise approved by Council.

20.3 Clause 5.3.6.2 - Seismic design

Specifically designed flexible joints shall be incorporated in all pipe work adjacent to any rigid or large structure (pumps, manholes, chamber bridges, etc). Underground structures shall be designed to resist floatation from high water table and earthquake liquefaction.

20.4 Clause 5.3.6.8 - Trenchless technology

- Replace sub-clause (o) with:

  Clearances from services and obstructions shall be greater than 1.0m.

- Replace sub-clause (p) with:

  The depth at which the pipeline is to be laid to ensure minimum cover is maintained (i.e. no less than 0.9m for gravity mains, and no less than 0.75m for pressure mains)

20.5 Clause 5.3.7.1 - Pipe location

- Replace clause (a) with:

Council's requirements for pipe locations are that they should be kept within the road reserve or other public open space, except where topography does not practically permit this and to the alignments as shown on Council's Engineering Appendix Four, Location of Utility Services

20.6 Clause 5.3.7.4 - Pipes in private property

- Replace second paragraph with:

  The design shall allow access for all equipment required for construction and future maintenance. Except where obstructions or topography dictate otherwise, pipes shall run parallel to boundaries at minimum offset of 1.5m from the centre of the pipe and be 2.0m from any structure including landscape features.

- Add the following clause:

  Easements are required for protection of public wastewater pipelines that are located in private property and shall be centred on the as-built position of the pipeline. The easement shall be a minimum of 2 times the depth of the pipe to invert plus the outside diameter of the pipe or 3m wide, whichever is greater. The easement shall provide unlimited and unrestricted access for Council to undertake maintenance work.

  In shared trench situations the easement boundaries shall be a minimum of 1.5m from the outer services.

20.7 Clause 5.3.7.5 - Minimum cover

- Cover requirements shall be in accordance with manufacturer's requirements but shall be no less than 0.9m in roads, and no less than 0.75m in non traffic areas, or as otherwise required by Council.

  Where the above minimum cover is impractical then specific designed solutions are required.

  Laterals at a property boundary shall be deep enough to provide gravity service and sufficient cover for mechanical protection, i.e. no less than 600mm.

  The minimum clearance to water services is 1.0m.

20.8 Clause 5.3.7.6 - Horizontal curves

In general horizontal curves are not acceptable, unless written approval is sought from the Wastewater Services Manager. Council may consider special case situations where normal straight alignments are impractical. In these cases specific designs, supported by appropriate information shall be provided to enable the Council to evaluate the proposals.

20.9 Clause 5.3.7.7 - Vertical curves

- Vertical curves are not acceptable, unless written approval is sought from the Wastewater Services Manager.

20.10 Clause 5.3.7.10 - Clearance from structures

- For clarification, the ‘zone of influence’ is considered to be at least within 2m of the building foundations.

20.11 Clause 5.3.8.4.4 - Internal falls through MHs

- External drop structures are not acceptable. The use of internal drop structures is discouraged. An acceptable solution is a section of steeper graded line between two manholes.

20.12 Clause 5.3.8.4.6 - Flotation

- Replace existing section with:

  Extensive areas of the coast have high water tables and are potentially subject to liquefaction. All buried structures shall be designed to provide a safety factor against flotation of 1.25 unless otherwise advised.

20.13 Clause 5.3.10 - Connections

- Council accepts responsibility for that part of the pipe outside private property within road reserve. Where within private property, to the edge of the easement or 1.5m where no easement is in place.

20.14 Clause 5.3.10.3 - Number of connections

- Add following to existing section

  Each unit on a cross lease shall have an individual lateral connection.

20.15 Clause 5.3.11 - Pumping stations and pressure main

- Pump stations will only be considered where gravity drainage is not feasible. Stations shall be located on publically owned land and be fully fenced with drive on access (with turning ability).
- In general, Pump Stations shall comply with Council's Engineering Appendix Three, Pumping Stations.

20.16 Clause 5.3.12 - Pressure sewers and vacuum sewers

- Add the following paragraphs after the first paragraph.

  Common pressure main systems are subject to Council approval and will usually only be considered if a normal gravity system is not achievable.

The pressure main shall be sized to achieve a flow of 1.0m/s when half of the connected pumps are operating. In larger systems it is normal to vary the pipe size along the length of the pipeline, according to the number of connected pumps.

Grinder type pumps or an approved alternative shall be used for all private pumping stations connected to a common pressure main system of less than 100mm diameter.

The diameter of the common pressure main at the point of connection shall be larger than the diameter of the lateral connecting the pipe from each pump to the common pressure main.

Design shall take account of the average retention times. If average retention times is over eight hours, odour is likely to occur and extra water may have to be discharged into the main.

Consideration needs to also be given to limiting increase in odours where connections are made to outlying, small Council pumped sewer systems and where discharge is to a gravity system.

20.17 Clause 5.5.5 - Leakage testing of gravity pipelines

- Council requires all gravity sewer mains and laterals to be tested, either with a water test or an air test in accordance with the procedures in Appendix C of NZS 4404. The developer's representative shall countersign Council's Pipeline Pressure Test Certificate.
- For plastic pipes (PVC) there shall be no leakage after 5 minutes.
- Council also requires testing of manholes and other maintenance structures. Any failure will require testing of other manholes and structures within the development. They shall be tested, after a 24-hour period of soaking to allow for absorption, by completely filling with water to the top surface of the roof slab. The rate of water loss shall not exceed 0.5 litres per hour per meter diameter. The developer's representative shall counter sign Council's Hydrostatic Test Certificate for Water Chambers.

20.18 Additional Requirements

- Work undertaken on Council owned roads shall be undertaken in accordance with Council's Engineering Appendix Four, Working in Roads and Trench Construction in the first instance and the National Code for Utilities in the Transport Corridor.
- Step rungs in manholes shall be 20mm diameter stainless steel.
- Once the road surface is to finished level and prior to any road surfacing, the developer shall arrange for all public sewer mains of 1200mm diameter or less to be inspected by CCTV. The developer shall provide a DVD and defects report to Council in accordance with the NZ Pipe Inspection Manual. The filming shall be done travelling upstream with a trickle of water flowing downstream to allow hollows and steps to be easily seen. All defects are to be fixed to the satisfaction of Council at the developer's cost. Where faults are found and repaired Council may instruct the developer to re-film those lengths to ensure there are no further problems.

21. SCHEDULE 6: ALTERED REQUIREMENTS TO SECTION 6: NZS 4404:2010 WATER SUPPLY

Horowhenua District Council has adopted Section 6 of NZS 4404:2010 with the following additions and/or alterations.

21.1 Clause 6.2.2 - Referenced documents and relevant guidelines

- Add further paragraph.

  Design shall be in conjunction with Council's Water Supply Bylaw 2008 or subsequent editions.

21.2 Clause 6.3.5.4.1 - Hydraulic roughness values

- Add further paragraph

  Hydraulic roughness value used for design purposes shall be the larger number from Table 6.1.

C6.3.5.4.1

The lower range presented in Table 6.1 represents clean, straight, new pipes which would only be applicable in the first few years of the pipeline which is to be designed to have an operational life of 100 years. As the ultimate design demand is likely to manifest towards the later years on the assets life, the design coefficients should represent an aged pipe.

21.3 Clause 6.3.5.7 - Sizing of mains

- Delete pipe size 225mm from Table 6.2.

21.4 Clause 6.3.6.2 - Prevention of backflow

Council confirms that backflow provision is required at the supply point for all properties. The actual detail for the backflow provision is determined by the potential risk. All backflow prevention shall be as per Council's Backflow Prevention Policy.

21.5 Clause 6.3.8 - System layout

- Add to Clause 6.3.8.1 General

  Easements are required for protection of public water supply pipelines that are located in private property and shall be centred on the as-built position of the pipeline. The easement shall be a minimum of 2 times the depth of the pipe to invert plus the outside diameter of the pipe or 3m wide, whichever is greater. The easement shall provide unlimited and unrestricted access for Council to undertake maintenance work.

In shared trench situations the easement boundaries shall be a minimum of 1.5m from the outer services

- Add to Clause 6.3.8.2 Reticulation layout

In rights of way serving three or more lots a DN 50 rider main shall be laid within the right of way with service connections provided to each lot at their boundaries. Fire fighting requirements may require some or the entire main to be DN 100 with appropriately placed hydrant(s).

21.6 Clause 6.3.8.7 - Shared trenching

The Council allows shared trenching with appropriate clearances.

21.7 Clause 6.3.10.3.3 - Nominated pipe PN

- Minimum pipe class shall be for Polyethylene Pipes PN12.5 and PVC-U PN9. All fittings shall have a minimum PN16 rating, unless otherwise stated all flange details shall be to AS /NZS 4087:PN16.

21.8 Clause 6.3.10.4 - Pipe materials

Note: PVC-U shall be Series 1.

21.9 Clause 6.3.12.2 Seismic design

- Add further paragraph

Much of the area is subject to liquefaction or ground deformation. All principal mains (250mm and larger) shall be metallic pipe and have a restraint jointing system.

Structures such as pump stations and reservoirs shall incorporate additional restraints against earthquakes and flexible jointing systems adjacent to such structures.

21.10 Clause 6.3.12.10.1 Minimum pipe cover

Rider main pipe cover shall be 600mm minimum, unless otherwise approved by the Water Services Manager.

The maximum depths of water mains must be indicated on construction drawings. Water main pipe cover shall be 750mm min. to 1000mm max., unless otherwise approved by the Water Services Manager.

21.11 Clause 6.3.13 Reservoirs and pumping stations

If reservoirs and/or pump stations are proposed then these should be discussed with Council at an early stage. Reservoirs will require specific design by a suitably qualified person. Pumping stations are required to meet the design criteria in WSA 03, Water Reticulation Code of Australia.

21.12 Clause 6.3.14.7.1 Scour sizes

Replace 80mm scour size with 100mm in table 6.7.

21.13 Clause 6.3.14.7.2 Scour locations

Delete sub clause (c).

21.14 Clause 6.3.16 Connections

- Add a new sub-clause 6.3.16.1

  Tapping bands shall fully encircle the pipe. Direct tapping of the pipe is not permitted. The diameter of the holes cut into the main shall not exceed:

Pipe Diameter (DN-mm)	Largest Hole in Pipe (mm)
100	20
150	25
200	32
250	40

  The hole cut in the pipe wall for the tapping band shall be neatly cut with a single drilling of the appropriate size or with the use of a hole saw.

- Add a new sub-clause 6.3.16.3 Applications for supply connections

  Each rateable property shall have only one standard 20mm ID connection/point of supply generally located centrically along the front boundary clear of any potential vehicle access, unless otherwise approved by Council (note: each separate unit on a cross lease is a separate rateable property). Any connection to Council's water supply system requires an application for a water supply connection on the standard Council Service Connection application form.

  The toby box shall have a base plate and a blue lid. The toby shall be an acuflow type mechanism, primarily due to the backflow prevention it offers.

  Where the connection is a new main Council shall make the connection at the developer's cost. Where the connection is for a service pipe to an individual property, Council shall supply and install the service pipe, including associated valves, fittings and water metre, up to the point of supply at the developer's cost.

  Council may allow some or all of the above work to be carried out by an approved contractor on a case by case basis at Council's discretion.

21.15 Clause 6.5.3.3 Detector tape

In open trenching, backfill shall be placed to 300mm above the pipe prior to laying metallic 'detector' tape.

21.16 Clause 6.5.1 Excavation

- Add further paragraphs.

  Work undertaken on Council owned roads shall be undertaken in accordance with Council's Engineering Appendix Four, Working in Roads and Trench Construction in the first instance and the National Code for Utilities in the Transport Corridor.

  Prior to carrying out any excavation work Council's as-built information shall be viewed to establish whether any Council services are in the vicinity. Council does not guarantee that the information provided is necessarily accurate or complete. Those proposing to carry out the excavation work shall conduct all necessary site checks to ensure buried services are not damaged.

21.17 Clause 6.5.4 Pressure testing of water mains

The developer's representative shall countersign Council's Pipeline Pressure Test Certificate.

21.18 Clause 6.5.5 Disinfection of water mains

Disinfection shall be undertaken as specified in Appendix D of NZS 4404. The developer's Representative shall ensure that the appropriate chlorine concentration is used and shall countersign Council's Pipeline Disinfection Test Certificate.

22. SCHEDULE 7: ALTERED REQUIREMENTS TO SECTION 7 NZS 4404:2010 LANDSCAPE

Horowhenua District Council has adopted Section 7 of NZS 4404:2010 with the following additions and/or alterations.

22.1 Clause 7.2.2 - Environmentally-responsive design

- Add further paragraph.

  Soft stormwater options such as swales, rain gardens wetlands and ponds should be considered when undertaking landscape design. These features shall be designed and constructed in accordance with approved design guides. Appropriate planting shall be included with the features used.

22.2 Clause 7.2.4 - Ecological functional and aesthetic opportunities

- Add to (a) Ecological

  (ix) Can expand ecological corridors/islands where contiguous with eco sites.

22.3 Clause 7.3.1 - Location

- Replace the first sentence of the second paragraph with.

  Infrastructural services should be planned at the same time as the landscape design so that tree and planting location and the integrity and operation of services are each not compromised by the other.

22.4 Clause 7.4 - Construction and maintenance

- Add to **clause 7.4.3** Weeds and litter control

  The application of pesticides must comply with Environmental Risk Management Authority's current application standards and controls. Check with the manufacturer, distributor or ERMA if you are not sure of the product's classification and control regime.

- Add to **clause 7.4.4.4**

  Unless otherwise approved by Council the seed mixture for berms shall be:

  - 85% amenity turf ryegrass
  - 15% red fescue

- **Clause 7.4.4.5**

  Mowing height range is a minimum height of 50mm and maximum height of 100mm except that grass swales shall have a minimum height of 100mm.

22.5 Clause 7.4.11 - Maintenance

- Add to the first paragraph of **7.4.11.1**

  The maintenance period for landscaping is a minimum three years. Council may require a bond to cover possible maintenance requirements with landscaping or planting associated with a LID device.

- Add further **clause 7.4.11.2**

  Developers are required to ensure that appropriate maintenance and replacement is undertaken on an ongoing basis during the maintenance period.

  They shall be responsible for arranging a final inspection by Council at the end of the maintenance period, to get sign-off of practical completion.

23. SCHEDULE 8: ALTERED REQUIREMENTS TO SECTION 8 NZS 4404:2010 NETWORK UTILITY SERVICES

Horowhenua District Council has adopted Section 8 of NZS 4404:2010 with the following additions and/or alterations.

23.1 Clause 8.3.2 Utilities above ground

- Note that sites for above ground utilities shall be specifically provided for by recessing the front boundary of lots and including the area within road reserve, unless alternatives are approved by Council.

23.2 Additional Requirements

- Streetlights in rural areas and in environmentally sensitive urban areas shall have anti-glare shields fitted or be of a type that restricts light dispersion into the sky.
- A copy of the Code of Compliance for the complete installation and test certificate for each lighting standard shall be provided to Council.
- All work within existing Council roads or vested land shall comply with Council's Engineering Appendix for Working in Roads and Trench Construction in the first instance and the National Code for Utilities in the Transport Corridor.

Acknowledgement:

It is acknowledged that this document originated from Kapiti Coast District Councils Subdivision and Development Principle and Requirements 2011 with subsequent amendments for Horowhenua District Council's purposes.