

***Standard Specification
for the Laying of
Sewer Lines and Appurtenances
in the Hurunui District***

1. SCOPE OF WORK

This Specification applies to the laying of sewer pipes and all associated appurtenances (Network Equipment only) on Hurunui District public wastewater Networks. It is intended to give guidance to individual Applicants, small-scale sub-divisions for the laying of new reticulation and contractors laying shorter sections of new lines, pumping equipment and upgrading existing facilities.

These Specifications do not represent an exhaustive schedule of requirements and shall not replace any other Standards, Codes, Regulations or Legislation that may apply to Buildings, Services, Construction, Pipe Laying or Trade Practices. The Christchurch Metropolitan Code of Urban Sub-division [Section IV] and Waimakariri District Code of Practice [Section 5] may be used to complement these Specifications.

Installations are to be of a standard that allows for a minimum useful operating life for pipes and appurtenances of 60 years and for pumping chambers and structures, 50 years. Electrical equipment has a design life of 25 years and pumps, 10 years.

Separate contracts will apply for upgrading larger diameter and substantial lengths of pipe or work on large sub-divisions and the relevant installation details will be incorporated in tender or construction documents.

Variations sought to these Specifications must be approved by Council, before any work commences.

2. SHUTDOWNS AND INTERFERENCE WITH NETWORK EQUIPMENT

Shutdowns that will interfere with supply to other Consumers must be kept to an absolute minimum and work is to be carried out in a short a time as possible. All Consumers, where possible, shall be notified of intended shutdowns and the expected duration. Notification will be effected by Council.

Approval shall only be granted when the Applicant [or their contractor] has all the plant, equipment, labour and materials necessary for the task on site. The plant and equipment must be of adequate capacity for the job and in good working order.

An Applicant may be required to make provision for bypass collection of wastewater where works disrupt collection for extended periods. In all other instances, there shall be no overflow to storm-water drains, open land or waterways. If the flow is temporarily stopped, it must be contained within the network drains. Under no circumstances shall wastewater back-up into consumer equipment within Dwellings. No one associated with carrying out works on wastewater networks shall interfere with equipment, without permission from Council.

3. HEALTH AND SAFETY

All Applicants carrying out work on private title and all Contractors (including Council) shall provide evidence of Health and Safety in Employment procedures and shall adhere to these at all times. All parties carrying out works on public land or private title where people may have access shall take full measures for protecting the public and workers from potential hazards that may exist on site. Any safety measures must consider (but not exclusively) fencing and filling of open trenches, risk of trench collapse, debris and rubbish from work sites, stacked pipes, open pits, electrical connections, sewage and sewage spills and machinery on site. All applicants are to nominate who is to be responsible for the site works during the period where works are to be undertaken.

4. MATERIALS

All materials used for Network Equipment replacements or new extensions must comply with these Specifications and to recognised industry standards or in the absence of suitable Specifications or standards, in agreement with Council for the use of certain materials required for each job. All materials used on the Network, from the Point of Discharge, shall become Network equipment upon commissioning works.

4.1 PIPE

All sewer main and lateral pipes shall be PVC as the preferred material and PE, where additional connections are not anticipated. RRJ jointing is to be used for pipe to pipe connection. AC is not to be used, unless old material stocks are in good condition and concrete is to be limited to applications specifically agreed with Council on an application by application basis. Ceramic pipes may be used for private lines (Consumer Equipment) and for Public Sewers only if approved by Council. Ceramic pipes must be collared with an approved rubber seal ring and be fully bedded in selected granular back-fill. Metal pipes may be used, particularly where structural strength is required, but they must be limited to concrete lined or industry approved plastic lined coated cast or ductile iron.

All pipe must be manufactured to NZS 7602 (HDPE), AS/NZS 4130 (MDPE) [where approved for use], NZS 7649 (PVC) and NZS 3107 (pre-cast concrete drainage and pressure) and any amendments or replacements of these as they are introduced. Other standards will apply where alternative materials are used.

Minimum pipe sizes are 100mm ID for gravity laterals and minor sewers (number of potential connections, grade and length dependant). Sewer mains to be no less than 150mm ID, or larger as required by Council, which are to be agreed during the application process. Gravity lines are to be sewer grade and wall thickness is to be determined for each application. Where PE, ceramic or concrete pipe is used, the internal diameters shall not be less than the nominal size of standard pipes used on each section of line (100, 150, 175, 200, 225, 250, 275, 300, 350, 375, 400, 450, 500, 600, 750, 900mm).

Pumped rising lines are to be no less than 50mm PVC or PE and with a minimum pressure rating of PN12. Design pump flow velocity on pumped rising mains is to be no less than 1.5m/sec with new pump performance ratings for each application.

The sizing of main sewer lines, laterals, junctions and all other pipe connections shall be clearly shown on a plan with each application for a connection. Locations for these shall, not alter from the approved plans unless approved in writing by Council prior to any works being undertaken.

As built plans, drawings and technical information will be required from each new sub-division application before the improvements are signed off by Council. These requirements may also apply to non-standard connection applications (discretionary with Council for each application).

4.2 FITTINGS

All fittings to be proprietary sewer types and to be RRJ connected, with compression or welded types for PE. Solvent SOE joints can only be used with prior approval from Council. All metal fittings are to be coated internally and externally with a recognised epoxy or plastic heat applied material (example Rilsan). All coatings are to comply with NZ, Australian or BS standards for potable water containment. Bolted or screwed type connections are not to be used in contact with the wastewater flow unless approved for a specific application by Council.

4.3 APPURTENANCES

4.3.1 Manholes

Manholes are to be standard finish concrete pre-fabricated units for all applications, unless approved by Council for areas where traffic loads and restricted vehicle and machinery access permit in-situ poured construction.

Timber, metal or plastic materials are not acceptable. Pipe connections must use starter and finisher joints where interfacing with concrete, each no longer than 1200mm and are to have roughened surfaces where other areas of concrete bonding are required.

Manholes are to be placed no further than 90m apart and where any new extensions are distant to existing manholes, the Applicant shall provide additional manholes to ensure that these distances are not exceeded in any part of a Public Sewer. Manholes shall also be provided where there is a:

- Change of pipe size.
- Change of pipe grade (2° or more).
- Where more than two connections feed to a sewer main (public or private).
- A change of pipe direction of more than 10°.

In some instances, an inspection point or rodding eye may replace a manhole, but these will need to be approved by Council before work commences.

All manholes are to be benched and access covers are to be metal (cast/ductile) full weight sections or concrete where traffic loads are not possible. Traffic loads shall be taken as possible in any area where vehicles, machinery and construction equipment may have access.

4.3.2 Inspection Points and Rodding Eyes

These are to be standard fittings for these applications. Non-standard fittings for sewer lines are not acceptable.

4.3.3 Interceptor Traps

These are to be fitted where any separable pollutant from any premises is likely to cause nuisance or congestion of public sewers. Size, type and configuration to be agreed between Council and the Consumer, or Applicant. Material to be concrete and sufficient strength for the proposed location (traffic loads, dead loading, hydraulic uplift) and sizing or configuration to provide removal of at least 80% of the peak loading of grease, oil, fat, silt or settleable material expected from the activity.

Unless a specific engineer's design or producer statement can be provided, Council reserves the right to insist on a minimum size of trap chamber, number of chambers and the configuration of baffles.

4.3.4 Valves and Flow Constraints

No Applicant or Consumer shall place a permanent valve or flow constraining device in any sewer line. Where valves and blanking plates are used to isolate sections of a sewer line or to allow pressure testing of any equipment, these shall be either removed or rendered inoperable (cannot be readily closed) before the work is completed.

4.3.5 Flow Meters

No Applicant or Consumer shall place a flow meter in any Consumer sewer, where such a meter is smaller than the nominal size of the service line or has projections into the cavity and shall not install the same into Network sewers in any instance.

4.3.6 Other Devices

Use of any device not indicated in 4.3.1 – 4.3.5 shall be detailed by Applicants on their application plans and approved by Council, or if they are required for approval of any connection, set as a condition to a Consent by Council, before works are undertaken.

4.4 STORAGE DEVICES

4.4.1 Private Pumping Chambers

Storage devices as part of Consumer Equipment are to be limited to private pumping chambers and, where required as part of a consent, to specifically designed and approved flow buffering devices. Private pump chambers must be concrete, approved fibreglass or PE plastic with a minimum pumping capacity of 600l per consumer and up to a maximum of 3 Standard discharge connections.

Chambers are to be installed below ground and with suitable base preparation (granular material) and side wall filling and floatation bracing to prevent hydraulic uplift when empty (groundwater) and sufficient protection to avoid collapse due to soil or hydraulic pressure on the wall or floor. The chamber must have sufficient strength for traffic and dead weight cover loadings. It is recommended that a producer statement or engineers certificate be secured for any installation. Council hold no responsibility for safety or integrity of any private pumping chamber.

4.4.2 Public Pumping Stations

Public pumping chambers shall be approved as part of any consent given or specific agreement with Council for the expected number and type of connections, an estimate of peak daily flows and maximum 24 hour wastewater volumes. The size, configuration and design parameters shall be set out on specifically for each application and are to be determined on an application by application basis and with supporting engineering design or supplier specifications, provided to Council that either have an engineers signature or producer statement. Any pump chamber must provide a minimum of 12 hours holding capacity at peak average daily volumes of wastewater from the design number of connections it is to service.

4.4.3 Flow Buffering Device

Any requirement for flow buffering to meet the flow or volume conditions of the discharge type as described in clause 3.4 of the Wastewater Network Bylaw shall be set as a consent or agreement condition for such a discharge and the size, configuration and design parameters shall be set out specifically for each application.

4.4.4 Flush Tanks or Sluice Points

Where sewer pipe grades are flatter than 1:200, provision may be required for the installation of a flush tank or a (where a suitable source of water is available in close proximity) a sluice point so that the sewer line can be flushed with water occasionally to remove solids accumulation.

Flush tanks must be above ground and have a 100mm minimum outlet size (or larger if required by Council). Unless requested otherwise with an application, the flush tank should hold 4.5m³ of clean water and be permanently connected to the terminal end of the sewer line it is to serve.

Sluice points will be detailed specifically where required.

4.5 PUMPS AND ELECTRICAL INSTALLATIONS

For private pumps, design compliance is to be with the Building Act and Building Codes.

For public installations, pumping stations shall be duty-standby configurations with pumps being vortex or chopper types, able to handle the vagaries of wastewater solids that appear. Pumps are to be installed by an experienced contractor and shall be placed on proprietary guide rails or with recognised and approved connection methods. Pumps must not sit free on the pumping chamber floor without lateral movement constraints.

All pumping appurtenances and controls are to be enclosed in a pump shed or above ground water proof enclosure. Electrical work shall be carried out by a registered electrician and be enclosed in waterproof cabinets. No electrical equipment shall be placed outside the shed.

Pump installations that are to be Network Equipment must have a design certification and provided with a manual or operating documentation covering the pump models, serial numbers, design capacities and maintenance manuals and electrical wiring diagrams, details of electrical equipment used with specifications and a list of service agents for key components in the facility.

4.6 SUPPLY OF MATERIALS

For any new installation, materials can be supplied by either the Applicant or Council. In any instance, material used must comply with these Specifications and where necessary, be approved by Council before any works are undertaken. Council reserves the right to reject any works where materials and configurations used are outside these specifications or industry standards.

5 EXCAVATION

For any individual connection involving excavation, the applicant shall cover the costs of keeping the excavation free of water, pumping, timbering and shoring for installation, removal of excavated materials from site, (where these are necessary) and excavating to required depth plus all items incidental to the work.

All trenching shall have vertical sides unless otherwise permitted or ordered by Council. The trench shall be of sufficient width to easily and safely allow operations necessary for the laying and jointing of pipes, fittings and placing and compaction of backfill material.

In all instances, excavation shall be carried out by a registered drain-laying contractor or under the direct supervision of the same.

No Contractor [or Applicant] shall have more than 40 metres of trench opened at any time and at night or weekends, this open trench shall be reduced to a maximum length of 10 metres where trenches are on public or community accessed land.

When the Contractor (or Applicant) is not on site, all trenches shall be fenced off or filled in, with hazard warning signs about the work site. Warning lights shall be placed at strategic points where open trenches are located on road reserves, footpaths or parking areas.

The party installing new reticulation will be responsible for locating and avoiding services including water, sewer, power and telephone cables. Should damage occur to these it will be the applicant's responsibility to have these repaired at his expense.

All road and rail crossings shall require a permit. For District roads, this can be obtained from Hurunui District Council. For State Highways, crossing permits shall be obtained from Transit NZ or their agents. All specifications for road crossings shall be adhered to. Failure to comply with specifications on the permits may require the applicant to re-lay the pipe at their own expense.

6 DE-WATERING

Should subsoil water appear in the excavation it must be kept down below the level of the pipe base or foundation. For this purpose the contractor or applicant shall provide and use in the work, all necessary pumps, motors or other engines, pipes and every appliance necessary for the purpose

The Contractor shall not permit any flooding of property, footpaths, or roadways to result from his operations or through the use of any pumping equipment. He shall provide flumes, pipes or other approved means for effectively conveying the water to the nearest adequate and approved outlet. Under no circumstances shall any water be allowed to drain into any existing sanitary sewers.

If the Contractor's operations result in the pumping of sand or silt and Council considers the pipes or other services or structures in the vicinity of the works are endangered, pumping shall be stopped until the contractor makes suitable arrangements for preventing the removal of these materials. Should any sand or silt be pumped the Contractor shall provide an adequate trap prior to disposal.

7 PIPE AND APPURTENANCE INSTALLATION

7.1 PIPELAYING AND JOINTING

All pipes shall be laid in accordance with the manufacturers specifications or to the particular requirements of Council or consulting engineers (for Council contract works or sub-division contracts). Standards AS/NZS 1260 [1999] (PVC for Drain, Waste and Vent), As/NZS 2566.1 [1998] (Buried Flexible Pipelines), AS/NZS 2033 [1980] (Installation of Polyethylene Pipe Systems), As/NZs 1477 [1999] (Polyethylene Pipes for Pressure Applications) are to be complied with (where applicable). Good workmanship shall apply in the installation of all new reticulation and appurtenances.

In all instances, pipe fitting, jointing, laying and the connection of laterals and fittings shall be carried out by a registered drain-laying contractor for all installations that are to be Network Equipment. Where appropriate, The Plumbers, Gasfitters and Drainlayers Act [1976] and Regulations [1977] shall apply to installation methods and procedures. Installation techniques are to be to minimum standards required by the governing authority for such contractors and this will extend to laying techniques and depths for specified external loadings.

Pipes are to be laid on minimum acceptable grades, with consideration also to the anticipated and potential number of connections , the length of the pipe section and the possibility of future extensions of any pipe-work for new sub-divisions (refer to cost sharing options in Terms and Conditions, clause 8.6). As a guide, the following grades and provisions will apply

- Up to 4 standard connections on 100mm line grade = 1:80 or more
- Between 5 – 6 standard connections on 100mm line grade = 1:60 or more
- More than 6 standard connections, use 150mm line grade = 1:120 or more
- Flush tanks or sluice points grade < 1:200.
- Specific design required for more than 2 standard connections where grade is greater than 1:10.

No construction of any kind or laying of pipes on the excavation bottom shall commence until the natural bottom of the trench has been inspected by Council. All sewer pipes are to be laid on a base of selected granular material and are to be haunched to 2/3 pipe height with bedding material before back-filling native material.

Under no circumstances shall a section of pipe be allowed to see-saw or rest on a high point on the excavated floor of a trench before back-filling commences. The bedding must fully cradle the pipe above the excavated trench floor and this shall extend to accommodate the larger diameters of the socket ends of pipes.

All pipelines shall be kept clean and free of all dirt, rubbish and entry by small animals. If required the Contractor or applicant shall have all pipes thoroughly cleaned by approved methods before pressure testing or plugged to prevent debris entering the reticulation.

Where a line is to be flow or pressure tested, the Applicant or Contractor should allow for fittings, chambers or tapping devices to be placed on the lines to facilitate this.

The capital cost of any installation is to be met by the Applicant for all new works to the nearest point of connection to the public sewer reticulation.

A delay in approving an individual application may arise should upgrading of existing public sewer lines be required. The Hurunui District Council will be responsible for arranging a suitable contractor to undertake this work or to do the work themselves.

Should some pipework for an individual application be required to be laid on a neighbouring property, permission of the landowner may (in some instances) need to be obtained by Council staff. Prior to work commencing, an on site meeting is to be arranged with the Council field staff to discuss sewer location and placing of manholes and other appurtenances, specific requirements of Council and any problems that may be foreseen.

When the pipe is ready to be laid, twenty-four hours notice is required to be given to Council staff so that supervision of laying can be arranged. Pipeline criteria regarding depth and position will be required as stated. Any reinstatement of trenches on neighbouring properties and road sides will be the applicant's responsibility.

7.2 ASBESTOS CEMENT PIPE

Any person who may be working with or near asbestos cement pipes shall take particular care not to inhale, ingest or contaminate themselves with this material. Persons working with this material shall obtain the appropriate guidelines from the Department of Labour, Ministry of Health or Hurunui District Council, that relate to Asbestos Regulations 1983.

7.3 MANHOLE RODDING EYE & INSPECTION POINT INDICATORS

Where indicated on any plans approved by Council, the developer or Applicant shall construct the above appurtenances to a specified or industry level of installation and are not to vary the location of these without written permission of Council.

When each section of sewer has been completed to the satisfaction of Council the Applicant shall place a concreted plate or permanent marker post opposite each manhole, rodding eye or inspection point. Indicators shall face the street and be sited as near as possible to the street/property boundary, but shall not be any more than 1.8m distant to the fitting. They shall on the same side of the street as the main.

7.4 THRUST BLOCKS

At each bend, tee or terminal end of all pumped rising mains, a thrust block will be required, unless specifically excluded in writing by Council. The thrust block shall be 25mpa concrete and shall be poured against undisturbed ground and shall extend at least 150mm above and below the fitting or section of pipe being supported. If this is not possible, approved material shall be carefully backfilled and compacted in layers around and behind the thrust block.

The thrust blocks must have developed adequate strength before the main is tested and shall not be loaded for at least 48 hours after they have been poured. The thrust block shall not be less than 0.1m³ for 200mm pipes and larger or 0.05m³ for 175mm pipes and smaller.

8 REMOVAL OF EXCESS MATERIAL FROM SITE

The Contractor or Applicant shall arrange for the suitable disposal of excavated spoil and other debris from any works site.

9 CONNECTIONS TO EXISTING SYSTEM

In all instances, unless Contract documents state otherwise, connections of new or laterals to the existing network shall be carried out with Council staff supervision or by Council staff or contractors. All connections carried out by contractors or the Applicant are to be done by registered drain-layers and with approved or standard fittings and are to be fully water tight and to grade or position. All new connections from service lines to a larger sewer shall be above the invert level of the main sewer line. Any new connection shall be clearly marked upon backfilling for Council to survey and record on its database.

10 PRESSURE TEST FOR NEW SUB-DIVISIONS

The Applicant shall at his own expense perform a pressure test on pumped rising mains if this is requested by Council as a condition of a consent or agreement and may require Council or their representative to be present. Pressure tests shall only apply to all new lines, particularly those lines that are to be under road seal or public reserve areas. The Applicant shall be responsible for repair of any leaks or blowouts on lines installed as part of their application to connect to any Network for a period of no less than 12 months.

The section of line to be tested shall be filled with water, allowing air to escape, and be left for a minimum of 24 hours to allow pipes to become fully hydrated. The pressure shall then be slowly raised by means of a pressure pump or if possible, to suitable high pressure water supply until the full test pressure is obtained.

The test pressure unless stated elsewhere shall be 600 kpa. The test pressure shall be maintained for a minimum period of 2 hours. Unless stated otherwise the test may be performed with the trench backfilled. Notwithstanding the above test being performed, Council shall have the right to test for leaks by the use of an electronic leak detector or other testing equipment.

Should any leaking or defective pipes, joints or fittings be located during any test or at any stage after a length or lengths of pipe have been laid, notwithstanding that such may have been already tested, such portions must be taken up, relaid and retested and any damage done by breakage or otherwise in so doing must be made good. The cost of carrying out any reparation shall be borne by the Applicant.

11 POINT OF SUPPLY

The Point of Supply is defined in the Wastewater Network Bylaw and applies equally to these Specifications. For each type of connection, the Point of Supply shall be located as drawn in figures D1 .. D4 and are described as the location on the wastewater collection and removal system at which responsibility for maintenance and repair passes from the Council to the consumer, being

- 1m downstream of the boundary of any property for individual service laterals connecting to a public sewer where the public sewer is located further than 1m from the Consumers or Applicants property boundary and is on public land.
- 1m downstream of the boundary of any property for individual service laterals connecting to a public sewer where this is located on private property with the public sewer being covered by an easement in favour of Council
- At the point of connection to the public sewer, where the public sewer is within the Consumers or Applicants property or where the public sewer is equal to or less than 1m from the property boundary.
- For private sewer lines (for up to and including 3 standard discharge connections), the point of supply shall be where the private sewer line connects to a public sewer, irrespective of the location or distance of such a line.

11.1 CONNECTION TO A CONSUMERS POINT OF SUPPLY

No connection of a Point of Discharge shall be made until such work has been approved by Council and shall not be deemed as complete or operational, until it has been inspected by Council staff (or their agents), all consent or agreement conditions have been complied with and all fees have been paid.

11.2 INSTALLATION OF INTERCEPTOR TRAP

Interceptor traps are only to be installed where this is set as a condition on a consent or agreement between Council and an Applicant and installation requirements will be set on an application by application basis. Whether standard units or one off designed installations are used will be set by Council, on the size and nature of the discharge and the anticipated level of protection for Network Equipment.

12 BACKFILLING

No backfilling shall be carried out until Council has approved the method of backfilling and compaction or for individual connections, having been inspected by Council field staff. Backfilling shall be materials specified in Contract documents or on road crossing permits. Excavated soil shall not be used as backfill on public areas, unless authorised by Council prior to this stage of work being carried out.

No backfilling shall commence until all concrete has gained sufficient strength to support loads which will be transmitted to it and all work is ready to be covered.

Particular care shall be taken to compact the backfilling around pipework without causing unequal loading or damage of any sort. The trench is to be backfilled and thoroughly compacted to keep subsequent settlement to an absolute minimum on public land or under vehicle accessways.

Single run backfill compacted by a rubber tyre or tracked vehicle will not be accepted for contract sewer lines and such backfill shall be dug out by the Contractor [or Applicant] and relaid in accordance with this Specification at no cost to Council.

Bedding around mains and service laterals is to be thoroughly compacted by hand or approved mechanical compactor, avoiding damage to the new laid pipework.

The Applicant shall be responsible for restoration work over the full area affected by operations, including the restoration to their former condition of all carriageways, footpaths, kerbs and channels, verges road flanks, reserves and other public properties etc damaged as a result of his operations. This shall be taken to include damage caused by the temporary diversion of traffic, pumping and other such activities, as a result of works operations.