To Tatou Vai

Connection Code

for

Water Connections

February 2025

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1 Authority

This Connection Code for new water connections is herein referred to as the "Code". It has been prepared to assist To Tatou Vai (TTV) in ensuring that installations involving its water network and reticulation align with good practice and comply with standard installations adopted by similar jurisdictions regionally and internationally. Whilst it adopts the principles contained in the Australia and New Zealand standards, and to a large degree the standard within it, this code incorporates the local context including the land tenure system and practices by similar utilities in the Cook Islands.

2 Purpose

The purpose of this Code is to specify standards and requirements for the connection of customers to the Water network. TTV will use this Code in the formulation of its business practices and monitoring of, or making of water connections. The Code applies to connections to the water network.

3 Connection and Service Provisions

3.1 Providing Connections

At locations where a network water supply system is available, TTV will undertake works to enable the customer to connect to the water network. This may involve extending that network to the customers property.

For connection purposes customers will be classified as either domestic or commercial based on the activities taking place on that property.

- TTV will provide one connection per property in order to protect the integrity of the reticulation system.
- The connection will be of such a size that it will provide sufficient water to meet the basic needs of the customer.
- Each connection will be pressure tested at a pressure of 800kPa from the water main to the property before the customers connection is commissioned.
- For large water users or for essential services (such as hospitals) two or more connections may be considered.
- A connection may be a **standard connection**, or a **non-standard connection**. A non-standard connection is subject to individual agreement between the customer and TTV which may conflict with this code or the Customer Agreement. In such cases, the non-standard agreement will take precedence.

When a customer wishes to connect to the water network, TTV will apply the process of a new water connection.

3.2 Connection Responsibilities

Figure 1 below shows the typical layout of the water connections to the TTV network, showing the location of the:

- service pipe relative to the submain and the drive way
- meter assembly relative to the property boundary
- point of supply (at the submain)

TTV is responsible for the maintenance of the assets up to the point of supply and the customer is responsible for maintenance from the point of supply with the exception of the meter assembly.

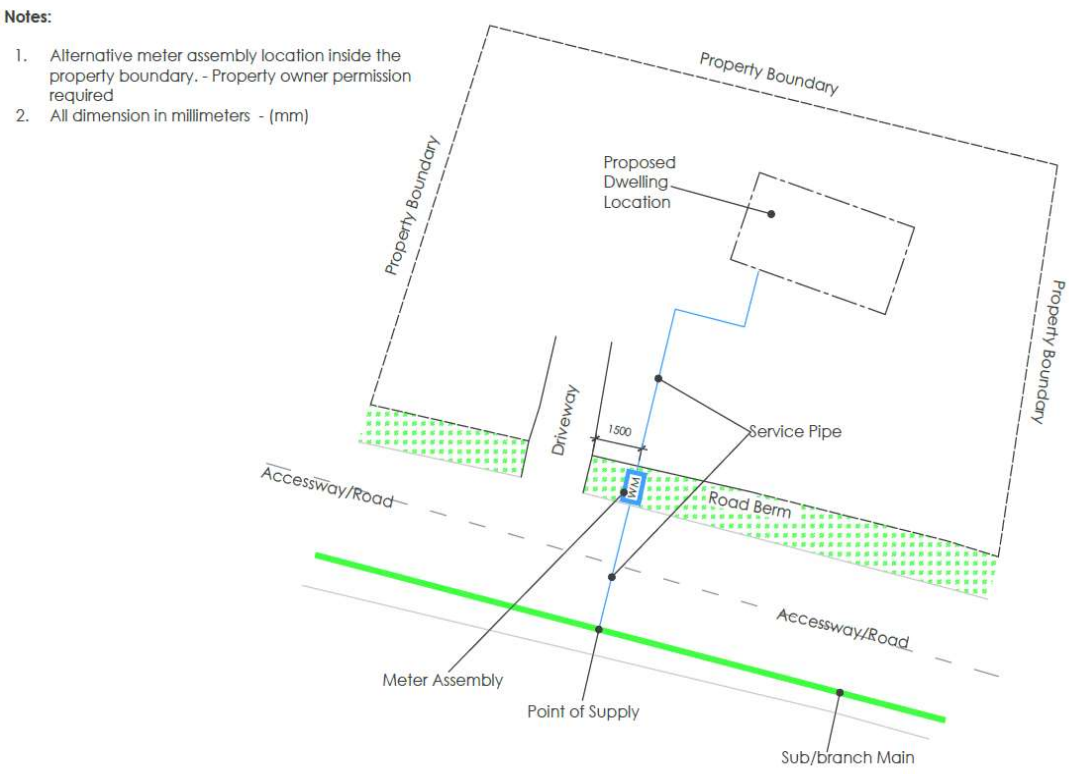

Figure 1: Typical layout of the water connection to the TTV network

4 Meter Locations

A water meter will be installed outside the property boundary that abuts a road or other access way that contains a water network. In the event that this standard cannot be met, in consultation with the property owner, the meter may be installed inside the boundary at no more than 1,500 mm from the boundary.

The water meter will be placed in such a position that the service pipe is perpendicular to the general alignment of the submain. The service pipe is installed with 1,500 mm clearance on either side of the property driveway.

Water meters must be easily accessible for meter reading and for maintenance. Property owners cannot erect any structure that may impede access to the meter.

5 Installation

5.1 Configurations

The installation of a service pipe should comply with the following;

a) An isolation valve must be installed on the service pipe in front of the meter. A gate valve may be installed between the point of supply and the meter assembly as an additional control device.
b) Where there is a sewer pipe the service pipe must be laid above it;
c) The service pipe must not be used as an electricity earthing facility;
d) Where the service pipe is crossing another utilities service, it must cross at a vertical separation of not less than 100 mm;
e) The service pipe must be laid perpendicular to the property boundary;
f) The flow within a service pipe must be controlled by the isolation valve;

g) Service pipes must not be embedded into concrete structures or pathways;
h) Service pipes may traverse the public or access road while being installed into the customer's property. It cannot be installed along the public or access road.

In all cases the number of tappings of a sub main should be minimised and there must be at least 600mm between tapping points to protect the integrity of the pipeline.

5.2 Minimum Cover

The minimum depth of cover of a service pipe should be as per the current TTV Standard Water Connection drawings.

5.3 Installation and Bedding and Backfill

The service pipe should be installed as per Figure 2 below. There should not be any hard objects resting against the service pipe itself. Material used for the final backfill should be free from rocks or organic matter.

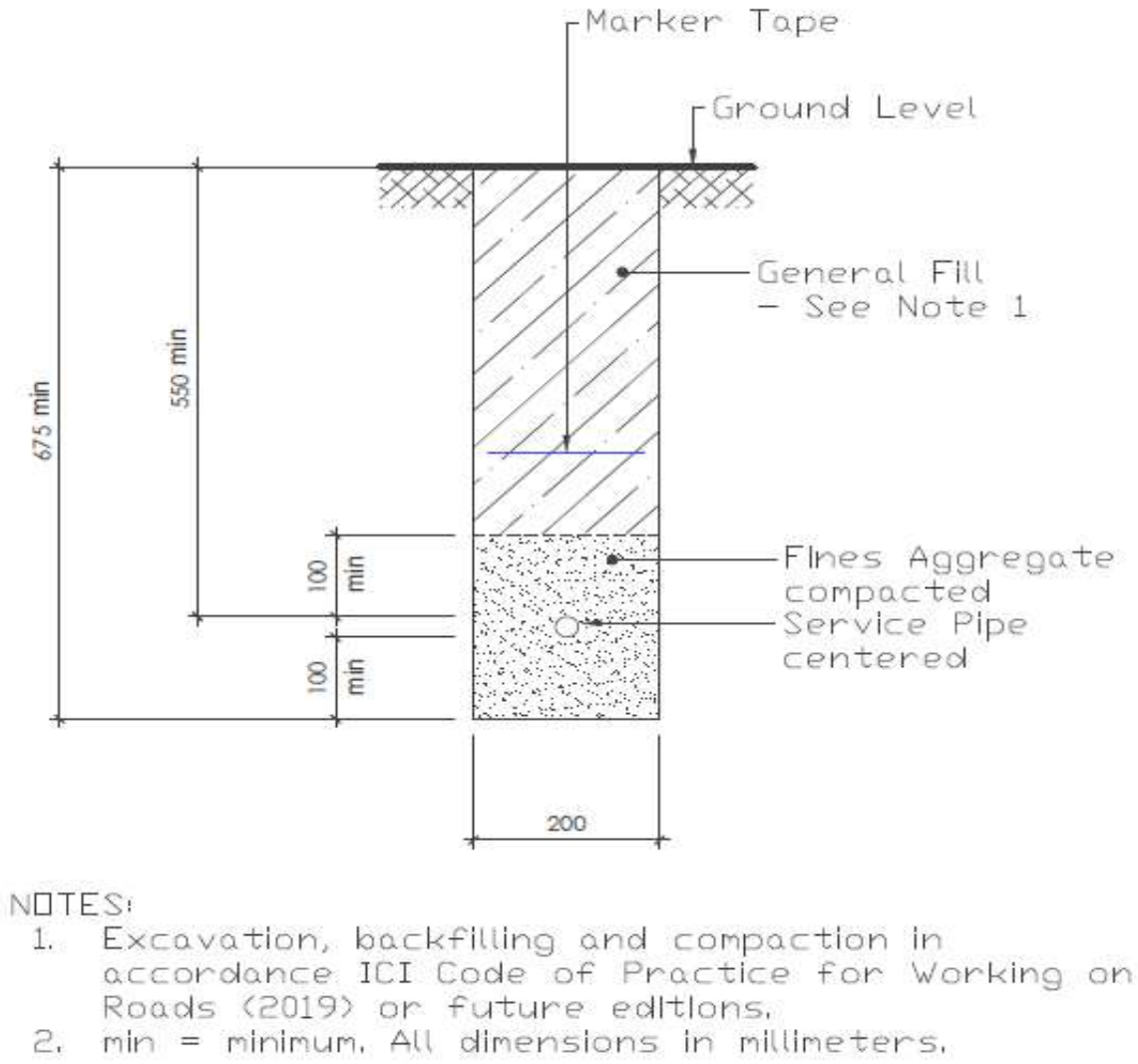

Figure 2: Standard trench for water service pipe

Service pipes installed in contaminated or corrosive ground should be shielded, with the type of shielding depending upon the pipe material. Plastic pipes must not be used in ground contaminated with

hydrocarbons, such as oils and fuels (for example, plastic pipes cannot be used to service a petrol station and a metal pipe should be used).

At completion, the newly created service pipe must be flushed to remove any foreign matter. The service pipe should then be pressure tested. The results from both tests are to be documented.

The service pipe should not show any leakage, drips or weeps when subjected to a pressure of 800kPa for 10 minutes. The pressure test should be carried out before a new service pipe is buried.

5.4 Materials and Joints

The materials used in the service pipe should be as per TTV standard drawings, in particular:

Service pipe: Medium Density Polyethylene (HDPE) PE100 Coils to ISO 4427 series / 12.5 bar
Service pipe Joints: High Density Polyethylene (HDPE) Compression AS/NZ 4129 / 16 bar

6 Meter Assemblies

Meter assemblies will be installed as per the current TTV's Standard Water Connection drawings. The features of the meter assembly will be as follows:

- Meter box,
- Lockable isolation valve to facilitate meter installation and maintenance;
- High Density Polyethylene compression connector;
- High Density Polyethylene connection pipe;
- Water meter;
- Back flow prevention device.

The meter assembly, including the meter will be provided and installed by TTV only. The meter assemblies will either be above ground or below ground depending on the circumstances relating to the site. The meter size will be determined by TTV. The water meter must comply with TTV standards and installed by TTV. The meter assembly is only accessible by TTV.

7 Standardised Connection Sizes

The standard connection size will be DN20 mm which is suitable for all residential and most commercial properties.

Larger water users may require a larger diameter connection and this should be assessed on a case-by-case basis and approved by TTV.

Pressure within a building (internally plumbed) should be kept below 45m and it may be necessary to install an inline pressure limiting valve to achieve this.

The velocity of water in a service pipe should be kept below 2.0 m/s which may also require the addition of an inline pressure limiting valve. This must be assessed on a case-by-case basis.

8 Backflow Prevention

Backflow prevention refers to the control of potentially harmful contaminants entering TTV's water supply from cross connections in a customer's premises or backflow of contaminants into the water supply system.

TTV recognises the importance of maintaining the integrity of its water supply and therefore considers backflow prevention a priority.

8.1 Type of site containment backflow prevention device

The type of site containment backflow prevention device that is required on a property is dictated by the potential hazard that may arise from particular types of businesses or uses operating on that property ("risk activities").

8.2 Type of Backflow Prevention

For most domestic and commercial properties, a low hazard dual check valve is sufficient as the backflow prevention device, and it will be installed as part of the meter assembly.

Where a domestic or commercial property presents a medium or high risk of backflow, and for a fire service, a separate higher hazard backflow prevention device must be installed.

There will be periodic inspections of backflow prevention devices on the properties. In the event the device is no longer adequate to the site, the customer will be required to upgrade their device.

9 Other Connection Matters

9.1 Wet and Dry Tappings

Dry water pipelines may be tapped using a dry tapping. Once a water pipeline is charged it should only be wet tapped. Tappings must only be carried out by TTV. The removal of tappings and the plugging of pipelines must only be undertaken by TTV.

9.2 Damaged, Missing or Stolen Meters

As soon as any damage or loss of a water meter has occurred, the customer is required to notify TTV. The replacement of the meter will be undertaken by TTV.

TTV will reinstate a damaged assembly including any applicable valves, fittings and backflow prevention devices.

9.3 Removal of Water Meters

Only TTV is permitted to remove water meters.

9.4 Pressure Limiting Valves

A pressure limited valve may be required to be incorporated into the water connection where the static pressure in a pipeline at the outlet of the meter exceeds 450kPa.

9.5 Pump

Under no circumstances should a pump be installed directly to the water network

Customers may install downstream water systems to augment or regulate their taking and use of water. A water connection will not be permitted to be connected to the following:

a) A tank unless there is a sufficient airgap or other conforming backflow prevention device (see below);
b) A pump cannot be connected directly to the TTV network. If needed, a pump should only be connected to the outlet of a tank which is fed from a water connection but only under the conditions that apply in (a); and
c) An internal plumbing pipe that is also connected to another source of supply unless an approved backflow prevention device is installed.

The following also applies:

a) No device or system that may cause contamination of a water supply system should be connected directly or indirectly to any part of the water connection without an appropriate cross-connection or backflow prevention device suitable for the degree of hazard;

b) Tanks storing: (1) drinking water; and (2) water for other purposes should be physically and hydraulically separated;
c) Where water from one source is mixed with water from another source a backflow prevention device must be fitted;
d) Where a backflow prevention device is fitted upstream of a point, a further backflow prevention device is not required downstream;
e) Backflow prevention devices should be tested during commissioning and maintained in working order and should be tested periodically by TTV;
f) Where an air-gap is used in tank to prevent back flow the air-gap must be as follows;
    i. The vertical distance from the free surface to the bottom of the water service pipe should be at least three times the water service pipe diameter; and
    ii. There must be an overflow pipe of sufficient size to maintain the air gap in full (inlet) flow conditions. 65 mm is the minimum overflow outlet diameter permitted.

Tanks may be installed within a property to store water, possibly from multiple sources. A cistern on a toilet qualifies as a storage tank.

Tanks should not be located directly beneath any sanitary plumbing. The minimum design requirements for a tank are shown in Figure 3 below. This tank has both a potable and a non-potable supply. A "safe tray" may be installed if a tank rupture or spill can cause considerable damage.

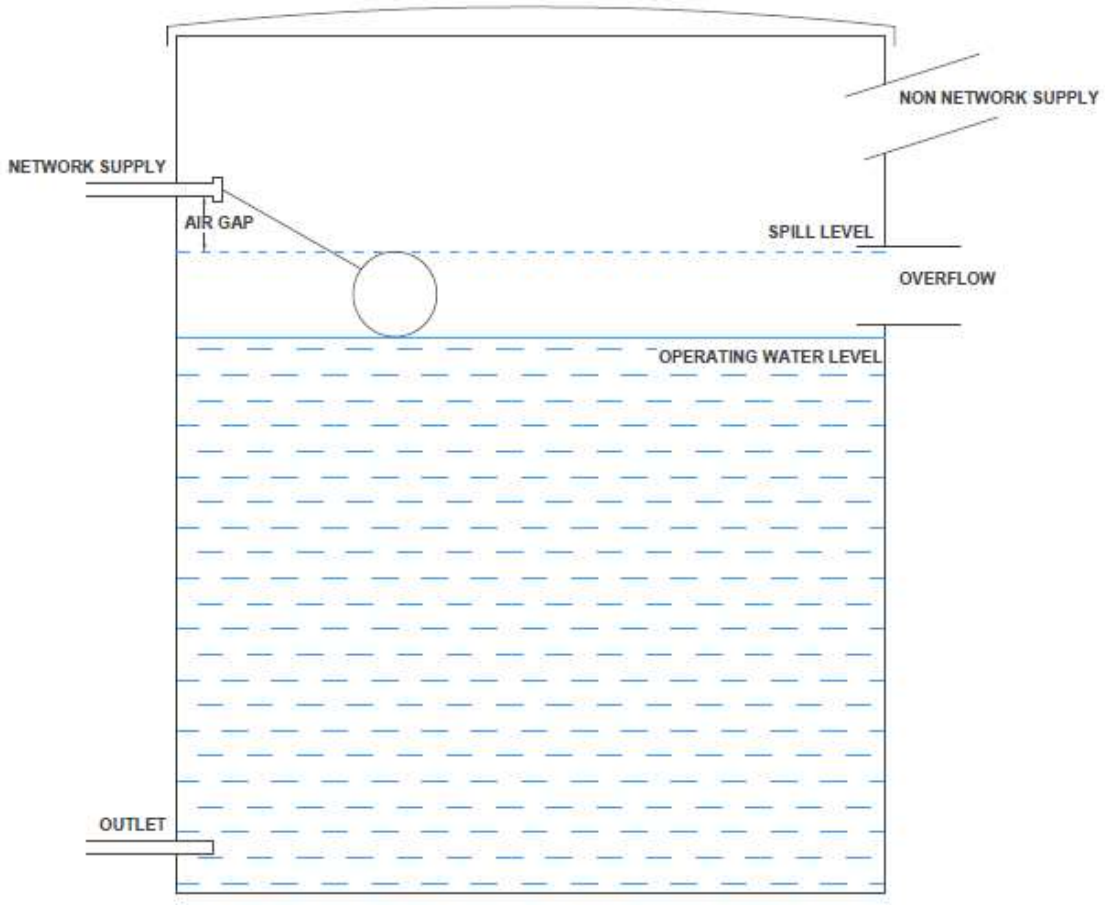

Figure 3: Example of a Storage Tank with Network and Non-Network Supplies

10 Administration

TTV requires that an application to be submitted and relevant fees paid before you are connected to TTV's water network.

If you want to connect a new property to the network, you will need to submit an application as per the TTV new water connections process.

11 Definitions

Access way: means any road, and any path, route, or way that is or has been habitually or customarily used by people to get from one place to another, as defined in the Infrastructure Act 2019.

Commercial use: means the consumption and use of water for business purposes, that include not-for-profit organisations or other institutions that sell goods and services to others.

Domestic use: Means the non-commercial consumption and use of water in any occupied dwelling by the occupants of that dwelling.

Customer: You are our customer if you own a property and one or more of the following applies:

a) your property is connected to the TTV water supply network

b) you use our network as a water supply service

Driveway: means the formed private vehicle entrance into your property from the access way or public road.

Extension of the network: means the installation of additional distribution water mains.

Non-standard connection: – A water connection that has a service pipe greater than 25 OD PE size service pipe.

Standard Connection: A water connection that has a service pipe of 25 OD PE size.

Point of supply: means the location at which the service pipe is terminated to on the submain.

Property: means a section of land that is owned, occupied or leased by the customer. A typical property is a ¼ acre in size.

Property boundary: means the extent to which a property owner or occupier owns or uses a parcel of land for its own purposes.

Restrictor: means a control device filled to the service pipe to limit the flow of water to a customer's premises.

Road: access way as defined in the Infrastructure Act 2019

Sub-main: This is the pipe to which the service pipe is terminated to, or connected to. This typically ranges in size from 50 mm to 80 mm.

Service pipe: means that section of water pipe between the point of supply and the customer's premises or house through which water is conveyed to the property. This pipe is owned and maintained by the customer.

Wet and dry tapping: means making a connection to a pipeline which is either pressurised with water or not pressurised with water respectively.