Wellington Water

Commissioning Guideline for Pump Stations

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This document was developed for Porirua, Hutt, Upper Hutt and Wellington city councils, South Wairarapa District Council, Greater Wellington Regional Council and Wellington Water Limited.

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Description	Name	Date	Signature
Prepared by	Simon Todd, Senior Mechanical Engineer, Stantec	20/06/2022	
Document Owner	Tim Harty, Manager Customer Planning	10/11/22	
Reviewers	Kate Wynn, Senior Design Engineer	23/06/2022	
	Emily Greenberg, Project Manager Standards	10/11/22	
Approver	Paul Winstanley, Engineer Utilities	9/09/2022	Paul Winstanley

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1 INTRODUCTION

Wellington Water Limited (Wellington Water) is a shared service, council-controlled organisation, which is jointly owned by Hutt, Porirua, Upper Hutt and Wellington City Councils, South Wairarapa District Council and Greater Wellington Regional Council. On behalf of these councils, the three waters network (stormwater, wastewater and water supply) is managed under a trusted advisor model.

This document gives an overview of the process and responsibilities in commissioning and integrating new pump station assets into the Wellington Water network. It is not intended to replace a detailed commissioning plan; the responsibility for developing that plan lies with the Developer of the asset.

All approvals of testing and commissioning are Wellington Water's unless written notification stating otherwise is received from Wellington Water.

This document shall be read in conjunction with the following Wellington Water documents:

(a) Regional Standard for Water Services
(b) Regional Specification for Water Services
(c) Register of Approved Products for use in Water Services Infrastructure
(d) Regional As-built Specification for Water Services
(e) Regional Draughting Manual for Water Services
(f) General Electrical Specifications

1.1 Definitions

Term	Description
Council	The participating territorial authority within which the boundaries of the proposed scheme or renewal is located; or a delegated representative thereof (e.g. Wellington Water).
Developer	An individual or organisation having the financial responsibility for the project and includes the owner, contractor and constructor.
Network	All pipes, fittings, pumping stations, reservoirs, structures, treatment facilities and any other appurtenant components or facilities directly associated with water supply, wastewater or stormwater
Subdivision	The subdivision of land as defined in the Resource Management Act 1991.
Wellington Water	Wellington Water (abbreviated from Wellington Water Limited), when referred to as an entity, shall also mean the relevant territorial authority in relation to water services asset ownership and approvals; or the Engineer or Principal in relation to contractual approvals.

2 KEY PARTIES

Key Parties involved in the overall commissioning process are provided in Table 1.

Table 1: Key Parties Involved in the Commissioning Process

Organisation	Roles	Responsibilities
Developer		Responsible for completion of the physical works to build the new asset. Vests asset to Council once project is constructed.
Wellington Water	Land Development Team	First point of contact for land development opportunities.
	Utilities Planning Engineer	Review and approval of assets to be integrated into the public three waters network.
	Controls Engineer	Software programming for standardized installations e.g. small pump stations. Review of bespoke site control programming. Integration of asset with public three waters network SCADA systems.
	Community Engagement Team	Notification of disruption of services to communities.
	Customer Operations Group	Operation of the public three waters network.
Electricity Vendor		Owner of the transformers and meters providing electricity to public three waters network assets. They have their own requirements which must be met for connection to their assets.
Council	Account Manager	Account managers for public three waters network asset power supplies.
	Roading Team	Controllers of local roading. Responsible for approving traffic management plans.
	Network Owner	Ultimate owner of the network and potential owner of the asset being created.
Capital Journeys		Controller of State Highway in the Wellington regions. Responsible for approving any traffic management plans associated with state highways.
Approved Contractors		Connections to key existing infrastructure must be made by contractors approved by the infrastructure owner or manager.

3 NEW BUILD COMMISSIONING OVERVIEW

3.1 Design

3.1.1 Design Compliance Review

Prior to construction commencing, the Developer shall submit at their own cost their design documentation to the Wellington Water Land Development Team for review. The documentation shall include as a minimum:

(a) Evidence of compliance with Wellington Water Regional Standards, Regional Specification and associated documents

(b) Evidence of compliance with New Zealand Legislation and Regulatory Requirements where applicable

(c) Evidence of compliance with National Standards referred to in Wellington Water documentation where they are more stringent than the Wellington Water's Regional Standard and/or Specification

(d) Nominated equipment brands and models. All instrumentation and electrical equipment require approval before purchase. All electrical components are indicated on the electrical standard design

A minimum processing period of 2 weeks for acceptance shall apply.

Further information can be found in:

(a) Regional Standard for Water Services

(b) Regional Specification for Water Services

Wellington Water acceptance of the design documentation is a prerequisite for construction to be progressed.

3.2 Construction

3.2.1 Power Supply Commercial Contract

The Developer is responsible for arranging the electricity supply and ICP number for the site with the relevant Electricity Vendor.

(a) Wellington Water can assist in arranging for the ICP Number to be issued for the site

(b) The Developer shall be responsible for payment of connection charges and power usage until compliance against the relevant standards has been signed off by Wellington Water and the asset is vested

Where assistance with obtaining an ICP is required, the Developer shall notify the Wellington Water Utilities Planning Engineer of the power requirements including as a minimum:

(a) Site Location

(b) Expected power consumption

(c) Preferred date of power supply connection

The Utilities Planning Engineer will supply the Developer with the Electricity Vendor details relevant to the site. A minimum processing period of 4 weeks shall be allowed for this process.

3.2.2 Site Power Supply Connection

Following issue of an account ICP number, the site can be connected to a power supply. The power supply will be provided via a transformer, pillar box and/or a CT meter. The Wellington Water Utilities Planning Engineer shall be consulted and has ultimate approval of the design of the electricity supply as being suitable for integration with the Council's assets. The Utilities Planning Engineer will provide the Electrical standard control drawing layout and the contractor will update it to suit the pump KW size for approval.

The Developer shall submit to the Wellington Water Utilities Planning Engineer of the site, details including as a minimum:

(a) Preferred transformer location (ground mounted transformers only)
(b) Transformer rating
(c) Preferred Pillar and/or CT meter location
(d) Preferred date of installation
(e) Details of any easements in place for power cabling

The installation process is as follows:

(a) Installation of the transformer and metering shall be by the Electricity Vendor's approved contractors
(b) Final connection to the Electricity Vendor's network is by the Electricity Vendor's approved contractors only
(c) Costs for this process shall be borne by the Developer

A minimum processing period of 4 weeks shall be allowed for this process.

Additional information on arranging a new connection can be found on the Electricity Vendor's website.

3.2.3 Supporting Documentation for Installation Compliance Inspection

A prerequisite for connection to Wellington Water's network is the provision of adequate documentation for the asset. This shall be provided in draft format to the Wellington Water Land Development Team Engineer for review prior to any commissioning activities involving Wellington Water staff occurring.

The Developer shall at their expense provide the following documentation for acceptance:

(a) Construction Inspection and Test Plan Results
(b) Commissioning Plan
(c) Draft Operations and Maintenance (O&M) plans
(d) Draft Process and Instrumentation Diagrams (P&IDs)
(e) Draft As-builts
(f) Factory Acceptance Test results for all factory assembled electrical equipment e.g. switchboards

A minimum processing period of 2 weeks shall be allowed for this review process.

Further information can be found in:

(a) Regional Standard for Water Services

(b) Regional Specification for Water Services

(c) General Electrical Specifications

3.2.4 Installation Compliance Review

Prior to commencement of commissioning activities, the Developer shall advise the Wellington Water Utilities Planning Engineer that the works are ready to begin commissioning. A prerequisite to this activity is the submission and acceptance of the documentation noted in Section 3.2.3 At the Wellington Water Land Development Engineer's discretion the process will follow:

(a) An on-site inspection of the installed plant for compliance with Wellington Water Standards and Specifications

(b) Commissioning with SCADA

(c) Review of remote readings (at least one week's worth)

(d) Final site walk-over with a Wellington Water Utilities Planning Engineer

A notification period of 1 week shall apply to arranging any inspections.

Written acceptance of the installation will be provided by the Wellington Water once they are satisfied that the installation complies with the accepted plans.

Further information can be found in:

(a) Regional Standard for Water Services

(b) Regional Specification for Water Services

(c) Register of Approved Products for use in Water Services Infrastructure

3.2.5 Controls Programming

Wellington Water have a range of standard Remote Terminal Unit (RTU) based control blocks that can be used for the control of pump stations. The Wellington Water Automation Engineers shall be engaged by the Developer at the Developer's expense to commission these for the site. Written permission from Wellington Water shall be sought by the Developer should they wish to employ others for this task.

If deemed necessary by the Wellington Water Utilities Planning Engineer, then more complex sites will require bespoke controls, likely utilising a PLC for the site. The Developer shall develop the programme at their expense and provide the code to the Wellington Water Controls Engineer for review. Wellington Water reserve the right to use Wellington Water Controls Engineers or their own approved contractor to develop the programme. This work will be at the Developer's expense.

A minimum processing period of 2 weeks shall be allowed for this review process.

The Developer shall arrange for offline testing of the code and provide the option for witnessing of this testing by the Wellington Water Controls Engineer.

A notification period of 1 week shall apply to arranging this inspection.

The Developer shall liaise with the Wellington Water Automation Engineer to confirm a suitably strong radio signal is available at the site and confirm a suitable radio channel for

communications. Wellington Water is responsible for integrating the new site telemetry with the existing SCADA system. This is done at Wellington Water's expense.

The Developer shall arrange for any site radios and or RTU's to be delivered to the Wellington Water Automation Engineers for set-up prior to installation at site.

SCADA commissioning shall be completed by Wellington Water unless the Developer receives written permission from Wellington Water to permit commissioning be completed by a 3rd party.

A minimum processing period of 2 weeks shall be allowed for this process.

3.3 Commissioning

3.3.1 Dry Commissioning

The Developer shall complete dry commissioning, consisting of testing and calibrating of equipment without introducing the process fluid, as set out in the Developer's commissioning plan. Results of these activities shall be collated for review by the Wellington Water Utilities Planning Engineer as part of their witnessing of the wet commissioning.

Prerequisites for dry commissioning may include the following:

(a) Pressure Vessel Design Certifications
(b) FAT results
(c) HAZNO certification (e.g. Generator fuel tanks, Chemical storage)
(d) Electrical Declaration of Conformity issued
(e) Load test certificates
(f) SWL Crane tests and certification
(g) Backflow prevention certificates (for wastewater pump stations)

3.3.2 Off-line Wet Commissioning

Off-line wet commissioning involves running the asset to test and adjust performance while not connected to the Wellington Water network. This shall include pipeline pressure tests and calibration of all systems that are required to be calibrated. The Developer shall be responsible for all wet commissioning activities.

Prerequisites for wet commissioning shall at a minimum include the submission and approval of the following:

(a) Inspection & Test Plan
(b) Commissioning Plans
(c) Draft O&M manuals
(d) Draft As-builts
(e) Resource Consents in place and active
(f) Electrical Code of Compliance (CoC), including Record of Inspection (ROI) certification
(g) Instrument scaling and setpoints

The Developer shall arrange for a representative from the Wellington Water Utilities Planning Engineer to be present to witness all tests.

A notification period of 72 hours shall apply for witnessing of tests.

Further information can be found in:

(a) Regional Standard for Water Services

(b) Regional Specification for Water Services

(c) Regional As-built Specification

(d) General Electrical Specifications

3.3.3 Disinfection of Drinking Water Assets

All drinking water assets shall be disinfected in accordance with Wellington Water's Regional Specification for Water Services.

3.4 Integration of Asset with Wellington Water Networks

3.4.1 Prerequisites for Integration

Following successful offline wet commissioning, the asset shall be eligible for integration with the public water network.

Prerequisites for integration are:

(a) Wellington Water acceptance of the wet commissioning activities

(b) Provision of final versions of O&M and As-Builts

(c) Provision of training

(d) All required disinfection procedures and lab results completed and accepted by Wellington Water

(e) Where applicable drinking water supplies tested and approved

(f) All necessary easements are in place

(g) Any RPZ device testing and certification completed

(h) Post-construction residual risks register

(i) Signed construction quality control sheets

(j) Final Functional Description (FD) supplied separately to the O&M manual,

(k) Engineering compliance statements

(l) A registry of make and model of materials used at site i.e. Pumps, valves and pipework (a template is available from Wellington Water)

(m) A registry of all electrical component's make and model, including all site parameters for electrical protection and control

(n) All component, products and material warranties and guarantees shall be transferred to Wellington Water when vested

3.4.2 Network Connection

Final connections to the public water network shall be made by Wellington Water approved contractors only. The Developer shall engage these approved contractors directly at the Developer's expense.

For new connections to the drainage networks in Hutt City, Upper Hutt City, Porirua City and South Wairarapa, the physical connections to the drainage system must be undertaken by a registered drainlayer, and inspected by Wellington Water.

For new connections to the drainage networks in Wellington City a registered drainlayer constructs the new pipework to and exposes the main or connection point, but the physical connection to the public wastewater and stormwater networks is made by Wellington Water.

In the case of interactions with the public water network (e.g. flows from other areas to be held back), Wellington Water Customer Operations Group personnel shall be made available to operate the network as required.

Procedures for the shutdown process are outlined in the Wellington Water documents Water Supply Shutdown Process and Regional Specification for Water Services.

Further information can be found in:

(a) Regional Specification for Water Services

(b) Water Supply Shutdown Process

(c) Wellington Water Website

3.4.3 Site Acceptance Testing

Site Acceptance Testing (SAT) is to follow the completion of the Network Connection and prior to site handover.

The Developer shall arrange for a representative from the Wellington Water Utilities Planning Engineer to be present to witness all tests.

A notification period of 72 hours shall apply for witnessing of tests.

The Developer shall be responsible for recording the SAT process and outcomes, and shall submit this to Wellington Water within 1 week of completing the SAT.

3.5 Site Handover

The Developer shall be responsible for the plant operation until written notification of acceptance of hand over of the site is received from Wellington Water.

The asset shall be vested to Local Territorial Authority and managed by Wellington Water Customer Operations Group once the following conditions have been met:

(a) Once the Connection to the Wellington Water network is complete

(b) The Developer has provided evidence of having met the required standards and specifications

(c) This evidence has been approved by the Wellington Water Utilities Planning Engineer

(d) For Subdivisions, Section 223/224 Subdivision Certificates have been issued

The Developer shall arrange with the Wellington Water Land Development Team for the changeover to Wellington Water standard padlocks, or with buildings, transference of door access codes. The changeover will be conducted by the Wellington Water Customer Operations Group.

After handover, maintenance issues will generally be dealt with by Wellington Water Customer Operations Group, including invoking any warranties on equipment installed on the site.

Developers may be called upon to rectify defects during any defects period applicable to the asset.

4 MODIFICATION TO EXISTING ASSETS

4.1 General

In general terms, modification to existing assets follow the same commissioning process as for a new build. The main differences will be:

(a) Existing operation must be maintained unless agreed otherwise with Wellington Water.

(b) Shared access to sites requires a delineation of work areas and related hazard management.

(c) In the case of a power supply upgrade, Wellington Water shall submit a Power Application form to the energy Manager for the relevant Council, and they then approve this application to the Electricity Vendor. The Electricity Vendor will then supply the CT's and the electricity meter to the Developer's electrical subcontractor. The costs for these are then put onto the ICP account for this site and Council is responsible for payment. Inspection of the final installation by the Wellington Water Utilities Planning Engineer is at the Developer's cost. The Developer and Wellington Water Utilities Planning Engineer are responsible for the change over of power account details to the Council power accounts.

(d) Disruption to services may be more complex if existing equipment is to be upgraded.

(e) Wellington Water Customer Operations Group shall be notified of any issues with existing equipment e.g. damage by the Developer.

(f) The Developer shall be required to make personnel available on call to respond to issues causes by their activities or pay a fee to Wellington Water for the Customer Operations Group to monitor and respond to these issues. In either case the Developer shall submit a plan for Wellington Water approval outlining how they intend to keep the site operational during their work activities.

(g) The Developer shall be responsible for updating the existing Operations and Maintenance manuals and As-builts for the site.