

# Regional Draughting Manual for Water Services

December 2021 Version 2.0



## Document Control

This document was developed for the Hutt, Porirua, Upper Hutt and Wellington City Councils, South Wairarapa District Council and Greater Wellington Regional Council.

### Version History

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0.2	Updated Issue for panel review	10/2018
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2.0	Reviewed and updated to align with refreshed Regional As-Built Specification (RABS), Regional Standard for Water Services (RSWS) and Regional Specification for Water Services (R.Spec)	12/2021

### Document Acceptance

Description	Name	Date	Signature
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# 1. Introduction

The Regional Draughting Manual is a guide that primarily provides technical information for the production of drawings for the Wellington Water Limited (Wellington Water) Consultancy Panel being GHD Ltd, Stantec Ltd and Connect Water Ltd. It is also a key reference document for other companies that provide Draughting services for, or on behalf of, Wellington Water.

This Manual is to be read in conjunction with the Regional Standard for Water Services (RSWS), the Regional Specification for Water Services (RSWS) and the Regional As-Built Specification for Water Services (RABS) all available at [www.wellingtonwater.co.nz](http://www.wellingtonwater.co.nz).

## 1.1 Purpose

This document outlines the objectives and procedures for the preparation of drawings for all disciplines on Wellington Water projects.

The creation of drawings involves creating, maintaining, controlling and sharing reference files and design models (if applicable). This document also outlines the standards and procedures that are to be adhered to.

## 1.2 Objectives

The objectives of the drawing production are:

- to produce cost effective drawings;
- to accurately portray the design intent;
- to produce drawings which are consistent with the intended use; and
- to provide clear, consistent documentation which is easily understood by users and minimises requests for additional information from Contractors.

Key steps to meeting these objectives include:

- producing a cartoon set to define the content on each sheet, the number of drawings within the set, programme and budgeting prior to starting the drawings;
- establishing the level of information required for the purpose (i.e. preliminary drawings to confirm the concept design versus detailed design drawings for a contractor to construct from);
- focusing on multidisciplinary co-ordination; and
- remembering that drawings define scope and specifications define quality.

## 1.3 Scope

This procedure applies to all drawings / CAD files and models prepared for Wellington Water and covers:

- Drawing setup
- Draughting standards
- Drawing Issue Sets
- Printing and issuing of drawings
- 3D models

Drawings created are to follow appropriate best practice, and appropriate company drafting procedures to produce a consistent drawing standard with other Wellington Water Consultancy Panel detail design drawings.

Note: Although this document makes multiple references to AutoCAD, it does not mean AutoCAD must be used to produce drawings for Wellington Water. General references and requirements have been included where possible.

## 1.4 Coordinates and Datum

The following coordinate system and datum shall be used for all Project drawings:

- Design drawings can be produced using any coordinate system.
- As-built drawings must be produced using the New Zealand Transverse Mercator 2000 coordinate system.
- Datum can be supplied in either Mean Sea Level Datum Wellington 1953 (WELLHGT1953), or New Zealand Vertical Datum 2016 (NZVD2016).

Note: Wellington Water is in the process of migrating to the NZVD2016 standard and will provide an update to this manual once adopted. NZVD2016 levels can be submitted to Wellington Water before it is fully adopted.

## 1.5 Hand Sketches

Once construction is underway, the site design team may be required to create hand sketches. Once verified and complete, a hard copy is to be filed and a PDF is to be created for issue to Wellington Water.

# 2. Drawing Set-up

Drawings produced and issued for the construction, or maintenance of water service infrastructure assets within Wellington Water's jurisdiction are to be of a sound engineering draughting standard.

## 2.1 Drawing Template

If using AutoCAD, you can use the Wellington Water standard drawing template in order to meet the requirements indicated in section 3 below. It is envisaged that each company will insert their own company logo and details into the template supplied.

*Ref: WW file name: WWL\_A1\_Cover.dwt and WWL\_A1\_H.dwt = \*.dwt*

Other Standard drawing support files for the print set ups, drawing list spreadsheet and print files can be found in the attached zip file AutoCAD files.zip embedded into this document below.



AutoCAD Files.zip

The panel company lead draughtsperson shall ensure Wellington Water project template files are maintained in a specific location that all draughters can access within their organisation. Please refer to this document for the latest version of the templates.

## 2.2 Drawing Issue Format

- Each drawing shall have a unique drawing number. This also applies to cad files that contain multiple layout tabs for multiple drawings (as often used for General Arrangements and Longitudinal Sections).
- When multiple layout tabs / multiple drawings are used, the CAD file name should reflect the range of drawings (e.g. WWL-100\_110.dwg contains drawings WWL-100 thru WWL-110).
- The drawing titles 3rd line should indicate if a drawing is part of a set (e.g. sheet 1, sheet 2 etc).

# 3. Draughting Standards

## 3.1 Sheet Sizes

- Within the CAD environment, the original sheet size for all drawings is A1 (841 x 594mm).
- Drawings are to be reduced to A3 size for record and issue, unless specifically requested.
- Schematics, electrical drawings and process and instrumentation drawings should be A3, with print easily legible at that size for ease of plant maintenance and operations.

## 3.2 Drawing Scales

The scale for a drawing shall permit easy and clear interpretation of the information depicted.

Scales for both A1 and A3 (reduced) prints shall be included on the drawing. A dynamic scale bar with common scales is provided in the template (\*.dwt) file referenced in section 2.1.

### 3.2.1 Indication of Scales

- Where all scales on a single drawing are the same, indicate the scale used for A1 in the title block and indicate half of the scale used for A3 (e.g. 1:250 (A1) 1:500 (A3)).
- If scales differ on a single drawing, put "AS SHOWN" for A1 in the title block and "1/2 SHOWN" for A3.
- Where it is necessary to have a detail not drawn to scale, then in place of the ratio scale the title shall read N.T.S (meaning not to scale).
- In all instances place the scale in the Section or Detail title.

### 3.2.2 Exaggerated Scales

- Where different scales are used for horizontal and vertical dimensions, such as in long sections, then each scale shall be shown with a prefix of either HORIZ or VERT.
- The exaggerated scale shall clearly show grades, high and low points, existing features and services, proposed pipeline and equipment etc.
- An exaggerated dynamic scale bar with common scales is provided in the template (\*.dwt) file referenced in section 2.1.
- The long section table shall follow the format shown in the sample included in the Appendix of this Manual.

### 3.3 Layer Naming

Each layer shall be given a descriptive name such that another draughtsperson may easily interpret it (e.g. a road kerb is to be called “Kerb”).

### 3.4 Line Thickness and Spacing

The thickness of a line shall be such that when the drawing is reduced or reproduced, the lines are still clearly legible.

### 3.5 Line Type

These are to be set by layer as appropriate. The standard line types and colours are provided in the legend of the title block template file in AutoCAD (\*.dwt) format as shown in the sample included in the Appendix of this Manual.

Type	AutoCAD Colour	RGB code
Potable / Water supply	160 (blue)	0, 63, 255
Wastewater	10 (red)	255, 0, 0
Stormwater	94 (green)	0, 129, 0
Gas	N/A (Olive)	143, 143, 0
Communications	200 (Purple)	192, 0, 255
Power	30 (Orange)	255, 127, 0
Kerb lines	11 (Pink)	255, 127, 127
Property boundaries	0 (Black)	0, 0, 0

### 3.6 Plot Styles

Two plot style table files (ctb) shall be used depending on the plot size as follows:

Plot Style Name	Plot Size
WW_A1.ctb	A0 & A1
WW_A1-A3.ctb	A3 & A4

### 3.7 Pen Assignments

Pen weights are to be assigned by layer.

### 3.8 Dimensioning

Dimensions and lettering shall read from the bottom or right-hand side of the drawing sheet.

#### 3.8.1 Dimension Style



The dimension settings are in the dimension style called “STANDARD” and is the only dimension style that is to be used. It is loaded in the drawing templates (\*.dwt). This maintains uniformity across all drawn documents.

### 3.8.2 Angular Dimensions

Angular dimensions shall be expressed in decimal degrees.

## 3.9 Notation

Each necessary note to convey the designer’s intentions of the end product shall be specified. No more notes than those necessary for complete definition shall be given. The recommended minimum height of characters on drawings are indicated in the table below:

Character use	Character height (A1)
Hold labels, important text	7mm
Title designations, title descriptions	5mm
Subtitles, headings, view & section/detail designations (cross reference sheet number)	3.5mm
General notes, typical text	3mm
View & section/detail reference (cross reference sheet number)	2.5mm

### 3.9.1 Text Styles

There are currently three text styles loaded into standard template drawings as follows:

Text style	Font name	Width factor	For use as
Arial Black	Arial Black	1	Street names and watercourses
STANDARD	Arial Narrow	1	All other text
ISO	Arial Narrow	1	All other text

*NB .SHX fonts may not be used – Notation including asset numbers created with .SHX fonts cannot be searched for once files are converted to PDF.*

### 3.9.2 Thickness of Character Lines

The thickness of characters shall be as follows:

Text Height	AutoCAD Colour	RGB code
3	2 (Yellow)	255, 255, 0
3.5	2 (Yellow)	255, 255, 0
5	3 (Green)	0, 255, 0
7	4 (Cyan)	0, 255, 255
2.5	7 (White)	255, 255, 255

### 3.9.3 Notes

- Text shall be uppercase, top and left justified as a general preference.

- Leaders and text justification shall be consistent throughout the project.
- A leader shall be used to point to the feature concerning that note.

### 3.9.4 General Notes

Where information needs to be noted concerning the entire drawing, then general notes shall be added (there should be clearly numbered). The first note shall always be “DO NOT SCALE OFF DRAWINGS”.

Where information needs to be noted concerning the entire series of drawings, then a sheet containing general notes shall be added to the beginning of the series (note, series refers to a group of sequentially numbered sheets in a single sub-discipline).

### 3.9.5 Position of Notations

Within a set of drawings, the location of the items below is to be consistent. The recommended position of notations shall be as follows:

Notation Type	Position
North Point	Top right
Key Plan	Top left
General Notes & Legend	Right
Status Stamp	Bottom right

## 3.10 Drawing Presentation

- Drawings should show the amount of detail necessary for the purpose.
- All plans shall preferably be orientated south towards the left and north towards the right.
- All drawings shall be drawn with the same orientation.
- Sections and elevations should be chosen to show the most appropriate amount of detail.
- All plans, sections and details must be clearly and uniquely identified.
- Duplication of information on a set of drawings should be avoided as this can lead to ambiguities should changes occur.

### 3.10.1 Cross Referencing

When referencing a detail on another drawing with a detail call-out, use the drawing number only.

### 3.10.2 Titles

Where sections or details do not appear on the same sheet as the section markers or detail callout, then a reference shall be added by inserting the relevant drawing number in the bottom half of the title. Otherwise use a hyphen for same sheet referencing.

- The title should give a brief description of the detail. A scale note shall be shown under the title.
- Titles should be laid out in an orderly flowing manner, so the reader can easily find information.

Note: Titles on plans do not require a reference ball unless they are a partial plan.

### 3.10.3 Sections and Details

Section and detail symbol blocks are embedded in the title block template for ease of use. Numbers or letters shall be used as the section and detail designations to your company's preference, and this must be consistent throughout the set.

### 3.11 Drawing Stamps

Each Drawing shall include a drawing stamp in the bottom right of the sheet.

The drawing template (\*.dwt) files include a dynamic stamp which has typical approved stamps, and a colour stamp.

The colour stamp with the words "Original Drawing in Colour" shall be used where the drawing contains colour represented items (e.g. aerials, services). It is not required if the drawing only contains a coloured logo).

Two further stamps are supplied with the template (\*.dwt) files referenced in section 2.1:

- 'Under Revision' watermark which should be:
  - **Off** for formal issues (generally out of office),
  - **On** at all other times.

Note: turn off and on by freezing/thawing the layer **Border-013**, do not unlock the layer.

- Manual 'Check Box' Stamp - to be used for internal checking. This stamp is on same layer as above, and therefore is off for formal issues.

## 4. Drawing Sets

The completed drawing set for a project shall include, in order, the following:

### **Cover sheet including Project Title, Location Plan, Transmittal (Appendix A)**

- The transmittal is a spreadsheet (can be linked), that includes a complete listing of the project documents, issue, size and date, recipients and reason for issue. It is provided in the AutoCAD (\*.dwt) coversheet template file.
- The only reason to not use the transmittal on the coversheet would be for projects that contain a very large number of documents. In this instance the transmittal is to be on subsequent drawing sheets.

### **Safety in Design Health & Safety Risk Assessment sheet(s) (SID) (a project deliverable)**

- The completed Wellington Water SID spreadsheet(s) should be copied into the drawing sheet(s), not linked, so that the correct colouration is displayed (this applies to AutoCAD, for Revit – use the Ideate Bimlink addon).
- Only one SID page per drawing sheet should be included for legibility.

### **Standard Notes, Abbreviations and Legends sheet(s) (Appendix E)**

- Examples of these are provided for use and include various special notes for existing services etc.
- These notes sheets will be kept as uniform as possible with addition of project specific notes as required.

### **Alignment plans / longitudinal Sections sheet(s) (Appendix F)**

- The use of faded aerials as background is accepted.
- Longitudinal sections shall follow the format as indicated in the example included in the Appendix of this Manual.

- Project design details (as required)
- Sets may include separate sections as required for (but not limited to) civil, structural, electrical, mechanical.
- Drawing number conventions to follow individual company standards.

## 5. Printing and Issuing Drawings

### 5.1 Printing – to PDF and from PDF

#### 5.1.1 Generic Requirements

- The PDF name shall match the DWG name (e.g. xyz.dwg and xyz.pdf). It is acceptable to add the revision number (e.g. xyz Rev1.pdf).

#### 5.1.2 AutoCAD Guidance

- Plot to PDF using 'DWG to PDF' within the AutoCAD plotting environment **without layers and to scale**.
- Hardcopy prints are made from those PDF's. Do not use 'print to fit'.
- Plot using views in Paperspace. These views are predefined in the Template files.
- Pen weights / colour dependent Plot Style Tables (CTB) files are included in the setup and should be accessible by AutoCAD to provide consistent plot outputs (refer section 3.6 and 3.7 of this Manual).

### 5.2 Signatures

Before any drawing is issued, the correct approval signatures must be present as per company procedures.

### 5.3 Revisions

Each drawing when issued must have a new revision letter / number and revision and/or hold clouds as required. Issue types include:

- Preliminary issues, for information: A, B, C etc.
- For Tender: 0 (zero), 0A, 0B etc.
- For Building Consent, For Construction 1, 2, 3 etc.
- As Built: AB

### 5.4 Transmittal Notices

A document transmittal shall accompany all external issued drawings (the first drawing sheet in a project set shall include this transmittal). Refer to the template referenced in section 2.1, and the example shown in Appendix A of this Manual. It is the responsibility of the draughter to maintain this prior to issuing.

## 6. As Built Process & Documentation

Refer to the *Wellington Water Limited - Regional As-Built Specification for Water Services (RABS)* document, available at <https://www.wellingtonwater.co.nz>.

## 7. 3D Models

3D Design Models including, but not limited to, Civil 3D, MX, 12D, Revit are to be delivered on request to Wellington Water. Inclusions shall be discussed with the requester prior to delivery.

## Appendices

The following pages provide the expected drawing sheet details to be included on all drawings submitted to Wellington Water.

- A. Coversheet template example
- B. Drawing border Template example
- C. Drawing border explanation
- D. Drawing border extras
- E. Example standard notes sheet
- F. Long section example

# A. Coversheet Template Example

PROJECT1  
PROJECT2

Add Location Plan Here

○ THIS JOB DESCRIPTION

**DRAWING REGISTER, DISTRIBUTION AND TRANSMITTAL**

DISTRIBUTION		NUMBER OF COPIES	
your company	name (internal)		
CLIENT	WELLINGTON WATER		
CONTRACTOR	company/name		
CONTRACTOR	company/name		
DRAWING ISSUE STATUS OPTIONS: FOR INFORMATION ONLY FOR APPROVAL FOR TENDER ONLY NOT FOR CONSTRUCTION ISSUED FOR CONSTRUCTION AS BUILT (CONSTRUCTION RECORD)	ISSUE STATUS	FOR INFORMATION ONLY	FOR APPROVAL ONLY
	DRAWING PRINT SIZE:	A1	A3
	ISSUE FORMAT:	PDF	
		DD	10 13
CAD FILE REFERENCE:	this drawing number here		
	MM	10 10	
	YY	16 2016	
DRAWING NUMBER	DRAWING TITLE		
123-456-7890	COVER SHEET, DRAWING REGISTER AND TRANSMITTAL LOCATION PLAN		
123-456-7891	SAFETY IN DESIGN RISK ASSESSMENT (SHT 1)		
123-456-7892	GENERAL NOTES AND LEGENDS		
123-456-7893	PROJECT NAME - SERVICE PLAN - SH		
123-456-7894	PROJECT NAME - SERVICE PLAN - SH		
0	0		

Transmittal Spreadsheet


**CHECK PRINT**  
DATE: 11 Feb 2019 9:14 AM  
PROJECTNAME: ---

DISTRIBUTION	SIGN	DATE
ORIGINATOR		
DRAFTER		
CHECKER		

		UNDER REVISION	COVER SHEET LOCATION PLAN DRAWING LIST & TRANSMITTAL	CIVIL CW_A1_COVER

## B. Drawing Border Template Example

THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF CONNECT WATER. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED IN THE DRAWING. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF CONNECT WATER.



**NOTES:**

- DO NOT SCALE OFF DRAWINGS.
- REFER TO GENERAL AND STANDARD NOTES AND LEGENDS ON DRAWINGS.  
jobnumber-XXXX-CE-002\_003\_004

Company Disclaimer  
(Connect Water shown)

The Company Logo and Disclaimer are the only differences between Panelist drawing sheets

Company Logo  
(Connect Water shown)

VERTICAL 1:200  
SCALE 1:200 AT ORIGINAL SIZE

HORIZONTAL 1:500  
SCALE 1:500 AT ORIGINAL SIZE

**CONNECT WATER**

Quality Control  
**Connect Water**  
or WSP (See Appendix A)  
PO Box 10 001 The Domain  
Wellington 6142  
T 04 477 2000

Design	SEE 1 ABOVE	Approved For Construction	
Check	AS SHOWN		
Design	SEE 2 ABOVE		
Check			

**Wellington Water**

UNDER REVISION

No.	Description	By	Date
1	UNDER REVISION		

CIVIL	CW_A1_H
Drawing Printed: 11 Feb 2019 8:16 AM	Document: C:\P\1001

CHECK PRINT  
DATE: 11 Feb 2019 8:16 AM  
PROJECTNAME: ---

DISTRIBUTION	SIGN	DATE
ORIGINATOR		
DRAFTER		
CHECKER		

ORIGINAL DRAWING  
IN COLOUR

FOR INFORMATION  
NOT FOR CONSTRUCTION



# C. Drawing Border Explanation

**REPRODUCTION SCALE ONLY FOR CHECKING PRINTED SHEETS AT A1**

**REPRODUCTION SCALE ONLY FOR CHECKING PRINTED SHEETS AT A3**

**DYNAMIC SCALE BAR**

**DYNAMIC SCALE BAR FOR AN EXAGGERATED LONGSECTIONS**

**LOGO PER PANNELIST**

**REQUIRED WHERE MORE THAN ONE DESIGNER**

**PROJECT TITLE**

**SHEET TITLE**

**DISCIPLINE**

**DRAWING NUMBER**

**DATE**

**SCALE 1:200 AT ORIGINAL SIZE**

**VERTICAL 1:200 AT ORIGINAL SIZE**

**HORIZONTAL 1:1000 AT ORIGINAL SIZE**

**CONCEPT DESIGN NOT FOR CONSTRUCTION**

**CO-ORDINATION NOT FORMALLY ISSUED**

**DEVELOPED DESIGN NOT FOR CONSTRUCTION**

**FOR APPROVAL NOT FOR CONSTRUCTION**

**FOR CONSENT**

**FOR CONSENT NOT FOR CONSTRUCTION**

**FOR BUILDING CONSENT**

**RESOURCE CONSENT NOT FOR CONSTRUCTION**

**FOR CLIENT REVIEW NOT FOR CONSTRUCTION**

**FOR CONSTRUCTION**

**FOR INFORMATION NOT FOR CONSTRUCTION**

**FOR PRICING NOT FOR CONSTRUCTION**

**FOR REVIEW NOT FOR CONSTRUCTION**

**FOR TENDER NOT FOR CONSTRUCTION**

**FOR TENDER / CONSTRUCTION**

**PRELIMINARY NOT FOR CONSTRUCTION**

**AS BUILT DISCARD ALL PREVIOUS COPIES OF THIS DRAWING**

**SAFETY AUDIT NOT FOR CONSTRUCTION**

**FOR CERTIFICATION NOT FOR CONSTRUCTION**

**DETAILED DESIGN NOT FOR CONSTRUCTION**

**ORIGINAL DRAWING IN COLOUR**

**PRELIMINARY NOT FOR CONSTRUCTION**

**NOTES:**

- DO NOT SCALE OFF DRAWINGS.
- REFER TO GENERAL AND STANDARD NOTES AND LEGENDS ON DRAWINGS: jobnumber-NAN-AA-MNN

**COMPANY SPECIFIC DISCLAIMER - DIFFERENT TEXT AND LOCATION PER PANELIST**

**CHECK PRINT**

DATE: 11 Apr 2017 4:38 p.m.  
PROJECTNAME: ...

DISTRIBUTION	SIGN	DATE
ORIGINATOR		
DRAFTER		
CHECKER		

**FOR USE ON SHEETS THAT INCLUDE COLOUR (DOES NOT INCLUDE COLOUR)**

**OPTIONS**

Printed By: Andrew McLaughlin  
Drawing Path: ...  
Drawing Title: 11 Apr 2017 4:38 p.m.



# E. Example Standard Notes Sheet

### GENERAL NOTES

- PIPES, CABLES AND OTHER UTILITIES, FOUNDATIONS, LEVELS, REFERENCE MARKS AND OTHER OBSTRUCTIONS INDICATED ON THIS DRAWING SET ARE BASED ONLY ON READILY AVAILABLE RECORD PLANS AND OTHER INFORMATION. THIS INFORMATION MAY NOT BE COMPLETE, ACCURATE OR UP TO DATE PRIOR TO CARRYING OUT ANY EXCAVATION OR OTHER PHYSICAL WORK. CONTRACTORS SHALL OBTAIN THE LATEST INFORMATION FROM UTILITY PROVIDERS AND CARRY OUT DETAILED EXPLORATORY WORK, TRACING, LOCATING, PROTECTION, ISOLATION AND ALTERATIONS AS REQUIRED UNDER NZS 3910 CLAUSE 5.13. CONTRACTOR MUST FOLLOW OHS GUIDELINES FOR SAFE LOCATION OF UNDERGROUND SERVICES.
- RESIDENTS SHALL BE ADEQUATELY NOTIFIED PRIOR TO WORKS COMMENCING, AND 24 HOURS PRIOR TO DISRUPTION OF SERVICE.
- ALL CARE MUST BE TAKEN BY THE CONTRACTOR NOT TO DAMAGE PRIVATE PROPERTY, OR ANY GARDENED AREA OTHER THAN THOSE NECESSARY AS PART OF THE WORKS.
- ALL WORKS ARE TO BE CONSTRUCTED USING BEST TRADE PRACTICES.
- APPROVAL MUST BE SOUGHT FROM THE ENGINEER PRIOR TO REMOVAL OF ANY FUTURE (I.E. FENCE, TREE) IN PRIVATE PROPERTY.
- ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH:
  - PCC CODE OF ROAD DEVELOPMENT & SUBDIVISION FEBRUARY 2016,
  - NATIONAL CODE OF PRACTICE FOR UTILITIES ACCESS TO TRANSPORT CORRIDORS HUTT VALLEY LOCAL CONDITIONS SEPTEMBER 2016,
  - REGIONAL STANDARD FOR WATER SERVICES NOVEMBER 2012,
  - WELLINGTON WATER APPROVED MATERIALS REGISTER 2016 AND MANUFACTURER'S SPECIFICATIONS,
  - WELLINGTON REGIONAL SPECIFICATION FOR WATER SERVICES, JULY 2016.

### WATER NOTES

- THE CONTRACTOR TO CHECK INVERT LEVELS OF EXISTING AND PROPOSED SYSTEM AND ADVISE ENGINEER OF ANY ANOMALIES PRIOR TO COMMENCING PIPE LAYING.
- WATER MAIN IS TO BE SCOURED TO REMOVE ALL DEBRIS BEFORE COMMISSIONING TESTING AND SERVICES ARE CONNECTED TO HOUSES.
- MINIMUM COVER OF 150mm AT ALL PLACES MEASURED FROM THE GROUND SURFACE. MAXIMUM COVER TO BE 1300mm.
- CONCRETE THRUST BLOCKS TO BE CONSTRUCTED ON ALL BENDS, TAPERS, TEES AND DEAD ENDS. CONCRETE TO BE 20 MPa. THRUST BLOCKS TO BE CONSTRUCTED TO MAINTAIN ACCESS TO THE BOLTS, ADJACENT JOINTS / FLANGES AND FITTINGS. CONCRETE THRUST BLOCKS TO BE SIZED AS PER REGIONAL STANDARD FOR WATER SERVICES (JULY 2016).
- ALL BACKFILL MATERIAL SHOULD BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 200mm IN LOOSE DEPTH.
- THE CONTRACTOR SHALL CARRY OUT SCALA PENETROMETER TESTING AT NOT MORE THAN 5m DISTANCES ALONG TRENCH. THE RESULTS MUST BE RECORDED AND MADE AVAILABLE TO THE ENGINEER. A COMPACTION OF NOT LESS THAN 7 BLOWS / 50mm, 4 BLOWS / 100mm AND 2 BLOWS / 150mm IN CARTRIDGEWAYS, FOOTPATHS AND BERMS RESPECTIVELY MUST BE ACHIEVED.
- DETECTOR TAPE MUST BE LAID ABOVE ALL WATER PIPES IN ACCORDANCE WITH REGIONAL STANDARDS FOR WATER SERVICES.
- CONTRACTOR TO REMOVE ABANDONED VALVES AND HYDRANTS. NOTE ALL REINSTATEMENT IS TO COMPLY WITH NATIONAL CODE OF PRACTICE FOR UTILITY OPERATORS ACCESS TO TRANSPORT CORRIDORS.
- LOCATION AND REQUIREMENTS FOR BENDS SHOWN ARE INDICATIVE. CONTRACTOR TO CONFIRM SPECIFIC LOCATIONS AND REQUIREMENTS WITH ENGINEER ON SITE.
- SERVICE CONNECTION LOCATIONS ARE INDICATIVE ONLY. SERVICE PIPES SHALL BE LAID PERPENDICULAR TO THE MAIN. ALL SERVICE PIPES SHALL BE EXTENDED TO THE NEW MAIN.

### SEWER NOTES

- THE CONTRACTOR IS TO ENSURE ALL WASTEWATER IS CONTAINED WITHIN THE EXISTING SYSTEM AND ANY OVERTIPPING IS TO BE ALLOWED FOR IN THE CONTRACT RATES. THERE ARE TO BE NO SEWAGE SPILLS IN PRIVATE PROPERTY.
- THE CONTRACTOR IS TO ALLOW FOR ALL SHORING REQUIRED FOR TRENCHING IN ANY UNSTABLE GROUND WHICH MAY BE ENCOUNTERED.
- THE LATERAL STUB POSITIONS TO BE CONFIRMED FROM CCTV BY THE CONTRACTOR. PRIOR TO RECONNECTION TO THE NEW PIPELINE, TESTS SHALL BE CARRIED OUT TO DETERMINE LIVE LATERALS. NO DEAD LATERALS SHALL BE CONNECTED.
- EXISTING LAWN SHALL BE REMOVED AS TURF SLABS AND REINSTATED ON COMPLETION.
- CONTRACTOR TO DEWATER AS NECESSARY TO COMPLETE THE WORKS.
- CONTRACTOR TO REINSTATE ALL ROAD SURFACE MARKINGS AND IRRPMs.
- PROVIDE WATER STOPS ON STEEP SECTIONS IN ACCORDANCE WITH REGIONAL WATER SPECIFICATIONS.
- EXISTING SEWER PIPES TO BE ABANDONED SHALL BE CAPPED OFF AT BOTH ENDS WITH A CONCRETE PLUG.
- WHERE EXISTING MANHOLES ARE BEING REPLACED WITH NEW, THE CONTRACTOR SHALL RECONNECT ALL EXISTING PIPELINES TO THE NEW MANHOLE.
- THE PIPELINES ARE TO BE CONSTRUCTED AT THE INVERT LEVELS SHOWN ON THE LONG SECTIONS, WITH DEPTHS TO INVERT AND PIPE GRADES SHALL BE ADJUSTED BY THE CONTRACTOR IF NECESSARY TO ACHIEVE THE SPECIFIED INVERT LEVELS.
- THE CONTRACTOR SHALL CHECK AND CONFIRM ALL EXISTING SEWER LOCATIONS AND LEVELS ON SITE AS AN INITIAL ACTIVITY. ADVISE THE ENGINEER FOR FURTHER INSTRUCTION SHOULD THESE DIFFER FROM THE INFORMATION SHOWN ON THE DRAWINGS.
- ALL MANHOLES AFFECTED BY THE WORKS SHALL HAVE THEIR CONDITION REVIEWED BY THE CONTRACTOR AS AN INITIAL ACTIVITY INCLUDING A RECOMMENDATION AS TO WHETHER UPGRADE OR REPLACEMENT IS REQUIRED. THE ENGINEER SHALL INSTRUCT ON THE REQUIRED APPROACH THEN.

### UNDERGROUND GAS PIPES

IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF THE UNDERGROUND GAS PIPES BY HAND-DIGGING. IN THE EVENT OF BEING UNABLE TO LOCATE THE GAS PIPE, POWERCO SHOULD BE CONTACTED FOR FURTHER ASSISTANCE PRIOR TO COMMENCING ANY FURTHER EXCAVATION WORK.

MACHINE DIGGING - STRATEGIC INTERMEDIATE PRESSURE (FEEDER MAIN OPERATING AT PRESSURES GREATER THAN 700 KPa) AND MEDIUM PRESSURE GAS PIPES

(A) MACHINE DIGGING IS NOT PERMITTED CLOSER THAN 1.0m FROM ANY STRATEGIC INTERMEDIATE PRESSURE AND MEDIUM PRESSURE GAS MAINS OR SERVICES. ANY EXCAVATION WORK WITHIN THE DISTANCE MUST BE PERFORMED BY HAND DIGGING AND UNDER THE OBSERVATION OF A POWERCO APPROVED WORKS PROTECTION OBSERVER INCLUDING THE BACKFILL OPERATION.

(B) PLEASE REFER TO THE POWERCO STANDARD 'EXCAVATION WORKS IN THE VICINITY OF STRATEGIC CABLES AND PIPES' BEFORE COMMENCING EXCAVATION WORK IN THE VICINITY OF STRATEGIC GAS PIPES.

MEDIUM AND LOW PRESSURE GAS PIPES

(C) MACHINE DIGGING IS NOT PERMITTED CLOSER THAN 500mm FROM ANY MEDIUM OR LOW PRESSURE GAS MAIN OR SERVICE UNLESS THE POSITION OF THE PIPES HAS BEEN VERIFIED BY HAND DIGGING AND EXPOSING THEM FIRST.

NOTIFICATION OF WORK NEAR STRATEGIC INTERMEDIATE PRESSURE AND MEDIUM PRESSURE GAS PIPES

IT WILL BE NECESSARY FOR A POWERCO APPROVED WORKS PROTECTION OBSERVER TO BE ON SITE WHERE ANY STRATEGIC INTERMEDIATE OR MEDIUM PRESSURE MAIN OR SERVICE IS TO BE EXPOSED OR CROSSED.

(A) AT LEAST 2 WORKING DAYS NOTICE MUST BE GIVEN TO POWERCO PRIOR TO ANY EXCAVATION WORK TAKING PLACE.

(B) IT IS THE EXCAVATION CONTRACTOR'S RESPONSIBILITY TO CONTACT THE POWERCO HELP DESK ON 0800 769 372 FOR THE ABOVE NOTIFICATION.

(C) THE EXCAVATION CONTRACTOR WILL BE ISSUED WITH A WORKS AGREEMENT WHICH MUST BE COMPLETED AND SIGNED PRIOR TO ANY EXCAVATION WORK TAKING PLACE NEAR ANY STRATEGIC INTERMEDIATE PRESSURE OR MEDIUM PRESSURE GAS PIPES.

LOCATION OF OTHERS SERVICES

(A) INTERMEDIATE PRESSURE GAS PIPES  
NO SERVICES SHALL BE LAID CLOSER THAN 300mm FROM ANY INTERMEDIATE PRESSURE GAS PIPE.

(B) LOW OR MEDIUM PRESSURE GAS PIPES  
NO SERVICES SHALL BE LAID CLOSER THAN 150mm FROM ANY LOW OR MEDIUM PRESSURE GAS PIPE.

### UNDERGROUND POWER

AT LEAST 2 WORKING DAYS NOTICE REQUIRED PRIOR TO EXCAVATION. HAND DIGGING IS REQUIRED WHEN EXCAVATING WITHIN 1.5m OF CABLE. REPLACEMENT TRENCH BACKFILL MATERIAL MUST BE THE SAME AS THAT REMOVED AND MUST BE REPLACED TO THE SAME LEVEL OF COMPACTION.

### UNDERGROUND TELECOMMUNICATIONS

ONSITE CABLE LOCATE OR STAND-OVER IS REQUIRED IF WORKING WITHIN 1m OF THESE CABLES. AT LEAST 2 WORKING DAYS NOTICE REQUIRED PRIOR TO EXCAVATION. FOR LOCATE AND STAND-OVER CONTACT (800 248 344 (CHORUS), 0508 369 637 OPTION 4 (VODAFONE)).

### WW SERVICES LEGEND

- NEW WATER MAIN
- EXISTING WATER MAIN
- NEW STORMWATER
- EXISTING STORMWATER
- NEW SEWER
- EXISTING SEWER
- ABANDONED SERVICE
- NEW PRIVATE WATER
- EXISTING PRIVATE WATER
- NEW PRIVATE SW
- EXISTING PRIVATE SW
- NEW PRIVATE SEWER
- EXISTING PRIVATE SEWER
- EXISTING PRIVATE SEWER
- KERBS
- CONTOURS MAJOR
- CONTOURS MINOR
- PARCEL BOUNDARY
- VALVE NEW OR EX / REDUNDANT
- BOUNDARY VALVE
- HYDRANT NEW OR EX / REDUNDANT
- MANHOLE NEW/EXISTING
- EXISTING TOBY
- PUMP
- NEW S/S/W MANHOLE
- EXISTING S/S/W MANHOLE
- EXISTING S/S/W LINC
- EXISTING SW SLUMP
- PROPERTY NUMBER

### UTILITIES LEGEND

- GAS - POWERCO
- GAS - NOWA
- UG POWER
- 400V UG POWER
- 11kV UG POWER
- 33kV UG POWER
- OH POWER / TROLLEY WIRE
- TELECOMS / CHORUS
- VODAFONE
- FIBRE OPTIC
- CITYLINK BROADBAND
- VECTOR COMMS
- DL
- LINZ SURVEY MARK
- POLE

### MISCELLANEOUS

- FENCE LINE
- EXISTING FENCE
- SECURITY FENCE

**CHECK PRINT**

DRG: STD NOTES SHEET - 01.dwg  
DATE: 08 Feb 2019 1:44 PM  
PROJECTNAME: ----

DISTRIBUTION	SIGN	DATE
ORIGINATOR		
DRAWER		
CHECKER		

**ORIGINAL DRAWING  
IN COLOUR**

**NOT FOR INFORMATION  
FOR NOT CONSTRUCTION**

UNDERGROUND SERVICES AND LEGENDS

Scale: CIVIL  
STD NOTES SHEET - 01

A1 REPRODUCTION SCALE: 100, 80, 60, 40, 20, 0mm

A1 REPRODUCTION SCALE: 50, 40, 30, 20, 10, 0mm

A1 REPRODUCTION SCALE: 50, 40, 30, 20, 10, 0mm

A1 REPRODUCTION SCALE: 50, 40, 30, 20, 10, 0mm

A1 REPRODUCTION SCALE: 50, 40, 30, 20, 10, 0mm

### GENERAL NOTES (ALTERNATIVE)

- ALL WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH:
  - NATIONAL CODE OF PRACTICE FOR UTILITIES ACCESS TO TRANSPORT CORRIDORS HUTT VALLEY LOCAL CONDITIONS SEPTEMBER 2016,
  - PCC CODE OF ROAD DEVELOPMENT & SUBDIVISION FEBRUARY 2016,
  - NATIONAL CODE OF PRACTICE FOR UTILITIES ACCESS TO TRANSPORT CORRIDOR SEPTEMBER 2016,
  - REGIONAL STANDARD FOR WATER SERVICES NOVEMBER 2012,
  - WELLINGTON WATER APPROVED MATERIALS REGISTER 2016 AND MANUFACTURER'S SPECIFICATIONS,
  - WELLINGTON REGIONAL SPECIFICATION FOR WATER SERVICES, JULY 2016.

### IMPORTANT SERVICES NOTE

THE SERVICES SHOWN SHOULD BE CONSIDERED INDICATIVE ONLY AND ARE BASED ON RECORDS SUPPLIED BY THE UTILITY COMPANIES. PRIVATE SERVICES AND CONNECTIONS ARE NOT SHOWN.

THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL SERVICES ARE LOCATED/MARKED BY THE APPROPRIATE SERVICE AUTHORITY, OR THEIR OWN STAFF, PRIOR TO ANY SITE WORKS, AND FOR PROTECTING THESE SERVICES FOR THE DURATION OF THE SITE CONTRACT.

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Code	Description	SS Code	Code	Description	SS Code
PIPE MATERIAL			PIPE LINING		
ABS	ACRYLONITRILE BUTADIENE STYRENE		BL	BITUMEN	
AC	ASBESTOS CEMENT		CL	CONCRETE	
ACE	ASBESTOS CEMENT EVERITE		CM	CEMENT MORTAR	
ACI	ASBESTOS CEMENT ITALITE		CTL	COAL TAR (MANHOLE)	ILL, CTE
AL	ALUMINIUM		EL	EPOXY	EL
CI	CAST IRON		NL	NO LINING	
CU	COPPER		TEL	COAL TAR EPOXY	CTE
DI	DUCTILE IRON		UL	UNSPECIFIED LINING (use LL when not specified)	
EN	ENAMEL WARE				
GI	GALVANISED IRON				
LBSL	LOCKBAR STEEL		BR	BITUMEN	
MPC	MODIFIED POLYVINYL CHLORIDE		CTE	COAL TAR ENAMEL, PTCO ENAMEL, ENAMEL	MC, CC
PE	POLYETHYLENE		DC	DIMET (EPOXY)	
PEB	POLYETHYLENE BEPPE		EC	EPOXY	
PVC	POLYVINYL CHLORIDE		OC	GLANT	
RC	REINFORCED CONCRETE	CC	NC	NO LINING	
SS	STAINLESS STEEL		PC	POLYETHYLENE POLYMER TAPE	IC
ST	MILD STEEL		PV	POLYETHYLENE WRAP (use LL when not specified)	
UNK	UNKNOWN		UC	UNSPECIFIED COATING (use LC when not specified)	LC
UPVC	UNPLASTICISED POLYVINYL CHLORIDE				

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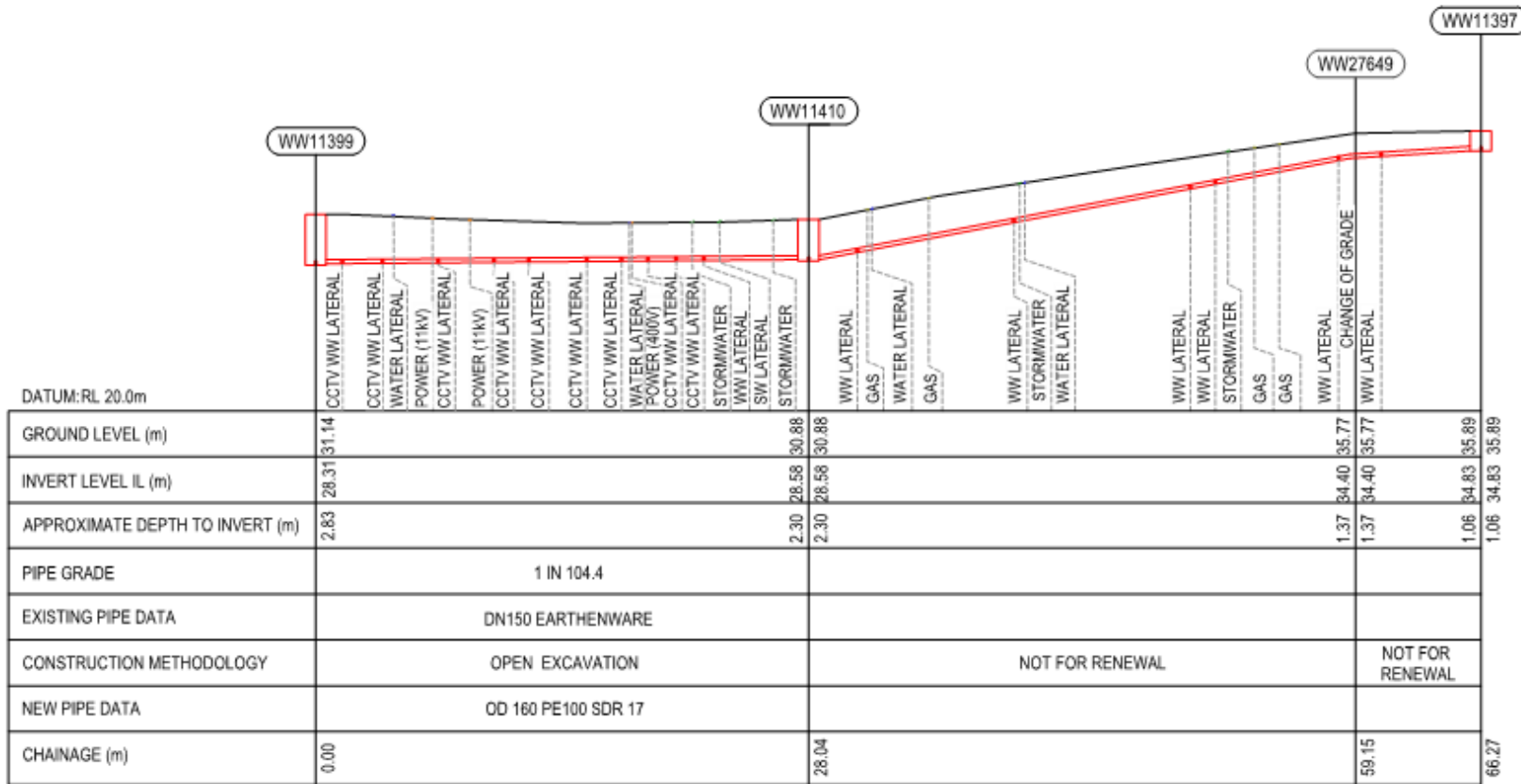
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## F. Long Section Example



**LONGITUDINAL SECTION**  
1:250

The long section should use a 'top down' convention as shown above, where items are listed from the highest level to the lowest level by row, followed by information rows. When using 3D software, templates need to reflect this format.