QLDC ASBUILTS

Three Waters & Open Spaces

SPECIFICATIONS AND ARCGIS PRO USER GUIDE

February 2023

Asbuilt Specifications and ArcGIS Pro User Guide (3W, OS)

This document has been prepared for the benefit of Queenstown Lakes District Council (QLDC). No liability is accepted by the Queenstown Lakes District Council with respect to its use by any other person.

This disclaimer shall apply notwithstanding that the document may be made available to Professional Service Providers and Contractors preparing asbuilt plans to Council's specification.

Document Status Sheet	
Queenstown Lakes District Council Private Bag 50072 Queenstown 9348 Phone: +64 3 441 0499 Email: services@qldc.govt.nz Web: https://www.qldc.govt.nz/	**Prepared by:** Z Brown (QLDC, Parks Contracts) S Boswell (Consultant, Three Waters) T White (QLDC, Geospatial) A Tomlinson (QLDC, Strategy and Asset Planning)

Revision Schedule					
Rev No	**Date**	**Description**	**Prepared by**	**Reviewed by**	**Approved by**
A	31/03/20	Issued for Review	AH	ZB, TW	XX
B	10/06/20	Inclusion of Open Spaces specs	AH, ZB	TW	ACH
C	10/08/20	Logo update to standards	ZB	AH	
D	18/03/21	Updates to lateral ownership	AH	AH	
E	30/11/2021	- Vertical Datum section updated to reflect requirement for all elevation data to be submitted in NZVD2016. - Flipped the headings around for 5 Getting Started and 5.1 Asbuilt Template Package. - Changed 5.2.1 Raw GPS/Trimble Data to 5.2.1 Raw GNSS / Total station data - Updated reference in 5.2.1 from 4.2.3 to 5.2.3. - In 5.2.1 included "in your survey equipment" - In 8.1 added point "Select "Copy all data: Editable" under Select a Configuration." - Moved last point above the screenshot - Renamed 8.3 Sharing your asbuilt data package online to "Share your Asbuilt URL" - Added line in 8.3 - "Remember to share the link to subdivision@qldc.govt.nz so they are aware the asbuilts have been submitted." - Minor document formatting - 5.2-added line to discourage using combined template when only one asset class being submitted.	SB, ZB	TW	ACH
D	27/01/2023	- Open Spaces schema updates - Clarification of the requirements for a separate submission of 3W Facility Assets, and related documents. - Additional information regarding land parcel submissions, including detail on rural building platforms - Minor document formatting	ZB, AT, TW	TW	AT, ACH

CONTENTS

1 INTRODUCTION

1.1 BACKGROUND

In 2019 QLDC introduced TechnologyOne Enterprise Asset Management (EAM) as its Asset Management System. EAM has strict requirements for the assets' attributes, field names and field types. In October 2019 QLDC began updating its Asbuilt Plan Specification Requirements to address these format requirements.

In 2018, due to the rapidly increasing number of Asbuilt submissions, QLDC investigated the possibility of improving the process in which Asbuilt data is incorporated into their GIS and Asset Management System.

It was proposed that by enabling users to convert CAD Asbuilt drawings into GIS ready data prior to submission, QLDC staff would save significant time in post-processing. The provision of an online data portal would also assist in expediting submissions.

The introduction of the ESRI ArcGIS Pro software now facilitates these demands. This document details its application, and the processes developed by QLDC in regard to improving Asbuilt Plan and Data quality.

From time to time these documents may be updated and the latest versions will be available through Council's website www.qldc.govt.nz

1.2 PURPOSE OF THIS GUIDE

To date, Asbuilt plans received by QLDC have generally been in AutoCAD format. While CAD is an excellent design tool for engineers and surveyors, limitations with feature attribution diminishes its data collection efficacy for asset management purposes. Combined with historical compatibility issues with GIS formats, this often resulted in data being recorded or processed incorrectly, or even lost in translation during transferal to QLDC repositories. Despite these difficulties, CAD remains an important tool for submitters. The intent of this guide is to demonstrate an integrated use of CAD and GIS that simplifies Asbuilt plan production, submission & post- processing, while simultaneously improving data quality.

It is QLDC's intent to stop receiving CAD files as Asbuilt submissions. However, this Guide enables the user to continue to prepare drawings with CAD software and convert to GIS. The introduced ability to convert plans for compatibility with the QLDC GIS system, represents a logical step forward. Users are able to view and confirm the quality of their Asbuilt data in the GIS environment, prior to submission.

This is not intended as a comprehensive instruction in the use of ArcGIS Pro - focus remains directly on the outcomes required for QLDC. A highly capable software platform, ArcGIS Pro also performs many other functions beneficial to technical professions. Users are encouraged to explore the possibilities.

1.3 SCOPE

This specification and guide is related to the submission of both **Three Waters** (distributed assets) and **Open Spaces** Asbuilt data.

Three Waters Facility Assets are covered by a separate submission spreadsheet, if your project covers both facilities and distributed assets, then you will need to make two separate submissions.

Roading is covered separately, however some Open Spaces (e.g. lighting) and Three Waters (e.g. sumps/catchpits) assets require submissions to both GIS and the Roading Asset Register (RAMM). Refer to 4.2 for further details. This ultimately depends on which department(s) of QLDC is going to maintain the asset, if you are unclear, please contact Council to discuss.

1.4 RELATED DOCUMENTS

Open Spaces	Open Spaces Asset Data Schema Schema-OpenSpaces_YYYYMMDD.xlsx	Data schema, inclusive of domains and domain values of Open Spaces assets.
Three Waters	Three Waters Asset Data Schema Schema-ThreeWaters_ YYYYMMDD.xlsx	Data schema, inclusive of domains and domain values of distributed Three Waters assets.
	Three Waters Facility Asset Identification Policy	A framework of principles to be applied to the representation of three water facility assets
	Three Waters Facility Asset Register	Asbuilt submission sheet for Three Waters Facilities
Roading	RAMM Roading Asset Register	Asbuilt submission sheet for roads, carparks, lighting, sealed footpaths, and associated structures.

2 General Data Preparation

COORDINATE SYSTEM

As it is most likely data will pass through CAD software to begin with, it is best to define the coordinate system within the CAD software prior to importing to ArcGIS Pro. This ensures the geometry is imported to the correct location. Requirements below:

- New Zealand Transverse Mercator 2000 (NZTM2000) projection; New Zealand Geodetic Datum 2000 (NZGD2000).

VERTICAL DATUM

- Levels to be provided in terms of relation to the official reference surface of **New Zealand Vertical Datum 2016 (NZVD2016)**
- Refer here for further information https://www.linz.govt.nz/regulatory/25009

ACCURACY OF SURVEY

The following horizontal accuracy is required:

- X & Y coordinates ± 300mm (Northing & Easting)

The vertical accuracy requirements depend on the grade the asset is laid at. A high vertical accuracy is required for drainage and sewer assets laid at grades flatter than 0.55% (1:180).

- High vertical accuracy requirement: Z coordinates ± 20 mm (Lid & Invert levels etc)
- Normal vertical accuracy requirement: Z coordinates ± 40 mm (Lid & Invert levels etc).

*Note: The spatial data (the positions of points and lines) can be drawn and presented to Council as two dimensional data (X & Y values). Council has no requirement for the Z dimension to be graphically captured. In other words the digital asbuilt record can be provided with all data projected flat onto a Z-dimension of 0.00. 3D polylines are not necessary. It is important to note that all of the z-dimension information is conveyed to the GIS through the required Z attributes such as “Upstream” or “Downstream Invert Elevation” for pipes and “Surface or Lid Elevation” for manholes. The vertical accuracy requirement for the asbuilt data translates to accuracy for these values.

Appropriate methods and measurement techniques should be chosen to ensure the required level of accuracy is achieved. Some methodologies (such as standard GPS techniques) will not achieve the high vertical accuracy requirement.

3 ESRI GIS SOFTWARE

QLDC maintain an ESRI Enterprise **G**eographic **I**nformation **S**ystem (**GIS**).

3.1 ARCGIS PRO

ArcGIS Pro is a GIS software package that is freely available to approved QLDC partners. Licenses are issued and administered by QLDC, for the purpose of creating, editing and sharing GIS data.

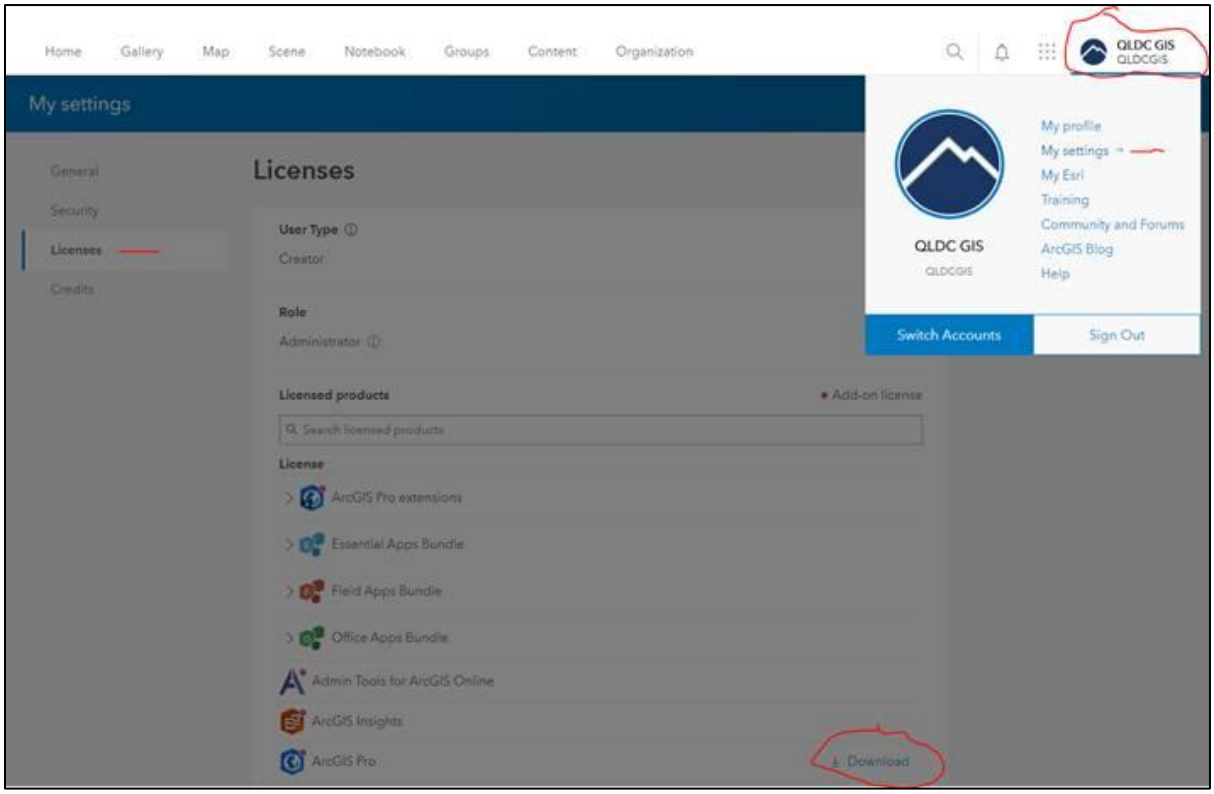
ArcGIS Pro is utilized by QLDC for data conversion between AutoCAD and ESRI GIS formats.

You can learn more about ArcGIS Pro at the following location:
https://pro.arcgis.com/en/pro-app/

To become a QLDC GIS Partner, please contact the QLDC GIS Team:

gis@qldc.govt.nz
(03)441-0499

On approval, you will be issued with a personal sign-in ID and password access. Once logged into ArcGIS Online the ArcGIS Pro software can be downloaded and installed from your **Settings** page:



3.2 ARCGIS ONLINE

ArcGIS Online is an online, collaborative web GIS that allows you to use, create, and share maps, scenes, apps, layers, analytics, and data. You get access to Living Atlas of the World, apps, and Esri's secure cloud, where you can add items and publish web layers.

ArcGIS Online provides the basis for the QLDC GIS Data Portal, used for online submission and managed sharing of Asbuilt data and plans.

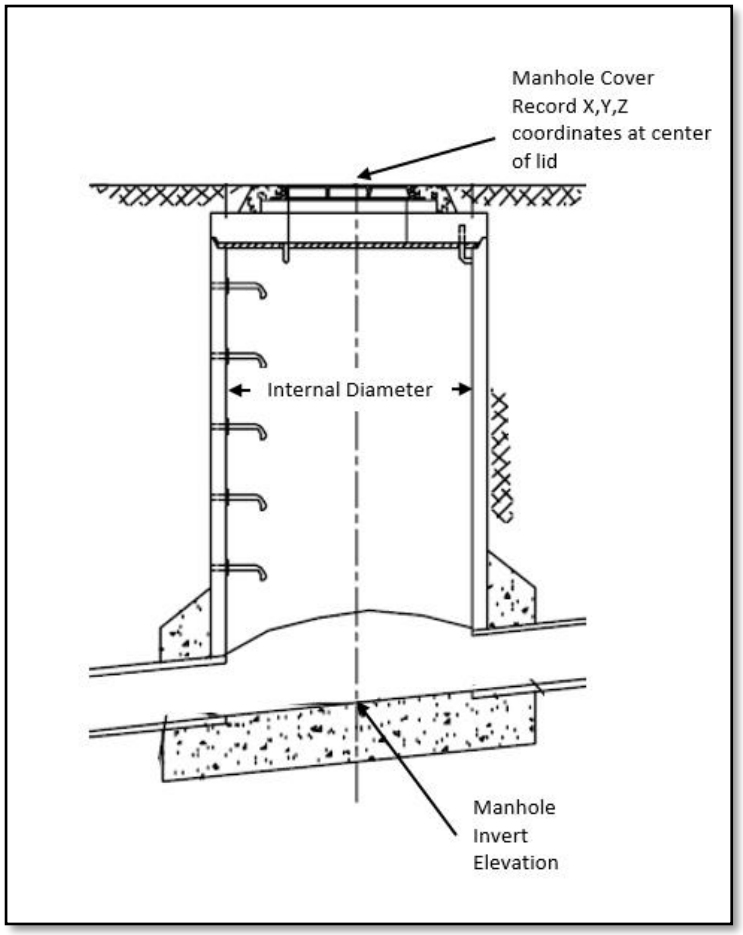
More information about ArcGIS Online can be found at:

https://doc.arcgis.com/en/arcgis-online/reference/what-is-agol.htm

4 THREE WATERS ASSETS

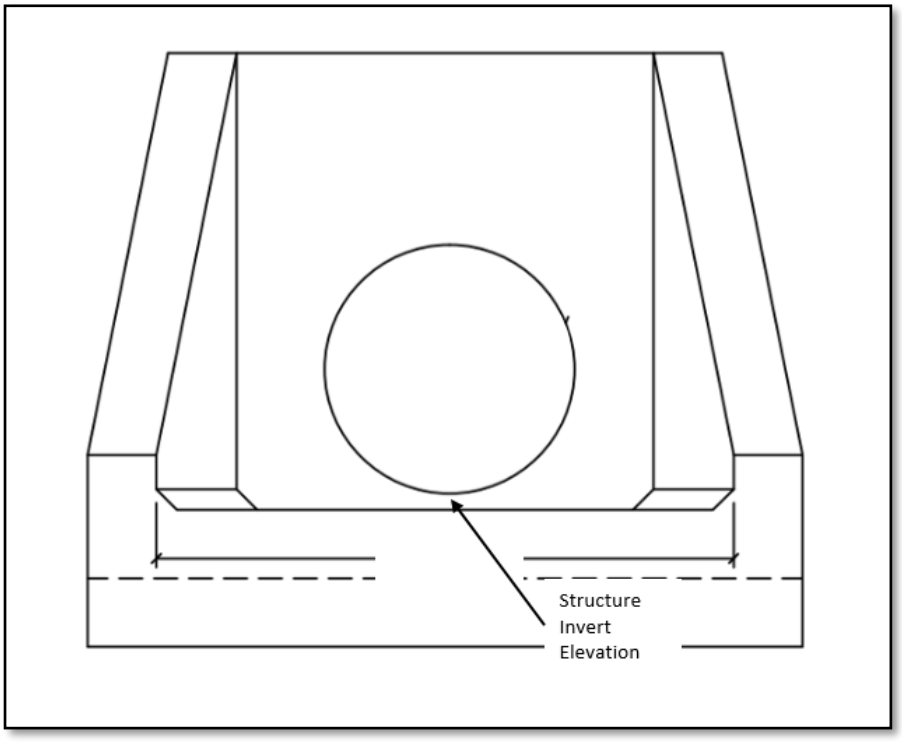
4.1 STORMWATER

- swManhole – Access chambers including manholes and lampholes represented by a point. Circular chambers have a single internal diameter, rectangular will have a second internal dimension.



- swNode – Junctions, ends, and miscellaneous nodes such as change in pipe material or significant grade changes represented by a point.

- swStructure – Inlet and outlet structures on the ends of stormwater pipes such as wingwalls and aprons represented by a point. Also used to indicate the open end of a stormwater pipe with no structure. In these cases the invert level of the structure is the invert of the pipe.

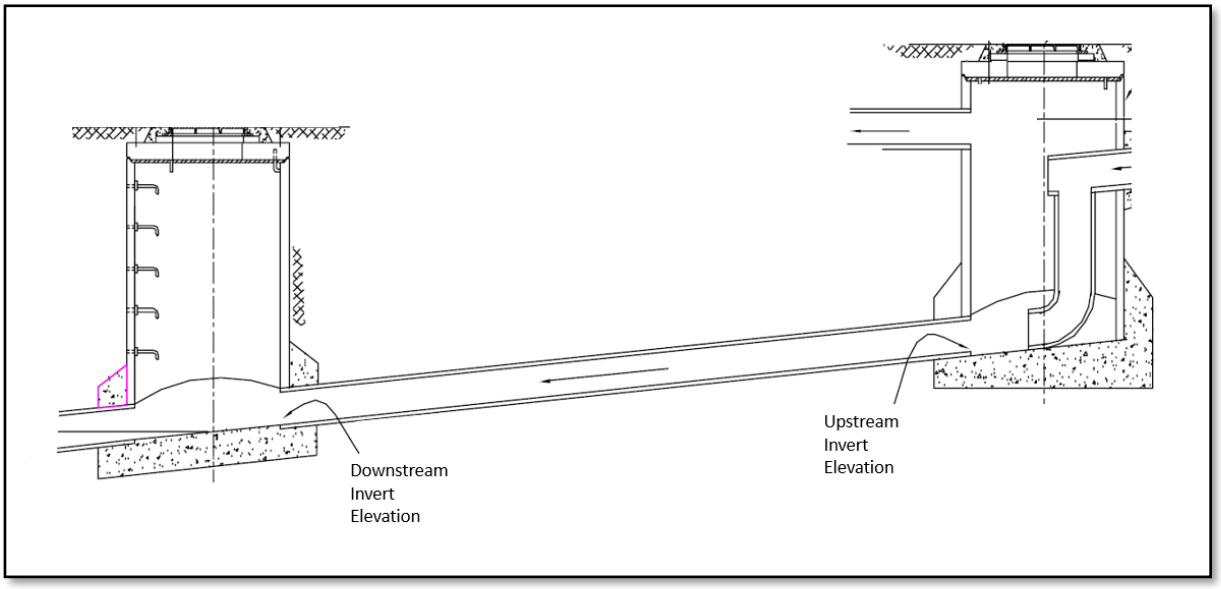


- swInlet – Mudtanks, catch-basins, catch-pits represented by a point. Usually a pit with a grated opening. See swManhole for lid and invert elevation locations. In the event of a double grated mudtank, include a point for each grate.

- swValve – Valves to control the flow of stormwater. Usually at pipe outlets or within stormwater treatment systems such as engineered wetlands.

- swMeter – Meters that measure the flow of stormwater.

- swMain – Any medium to large diameter pipe or culvert between manholes or end structures represented by a line feature.

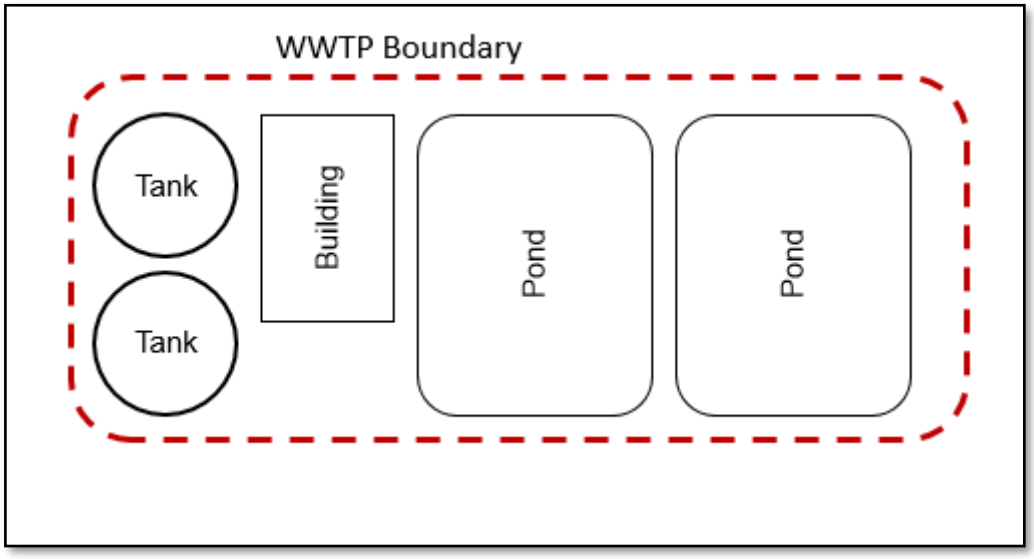


- swLateral – A small diameter pipe leading directly from a property to a swMain or swManhole represented by a line. Ownership should be split at the property boundary for these assets if drawn beyond the property boundary.
- swChannel – a natural or constructed drainage channel represented by a line.
- swTreatmentDevice – See Appendix 1: SW TREATMENT DEVICE DRAWING
- swTreatmentDeviceArea – See Appendix 1: SW TREATMENT DEVICE DRAWING

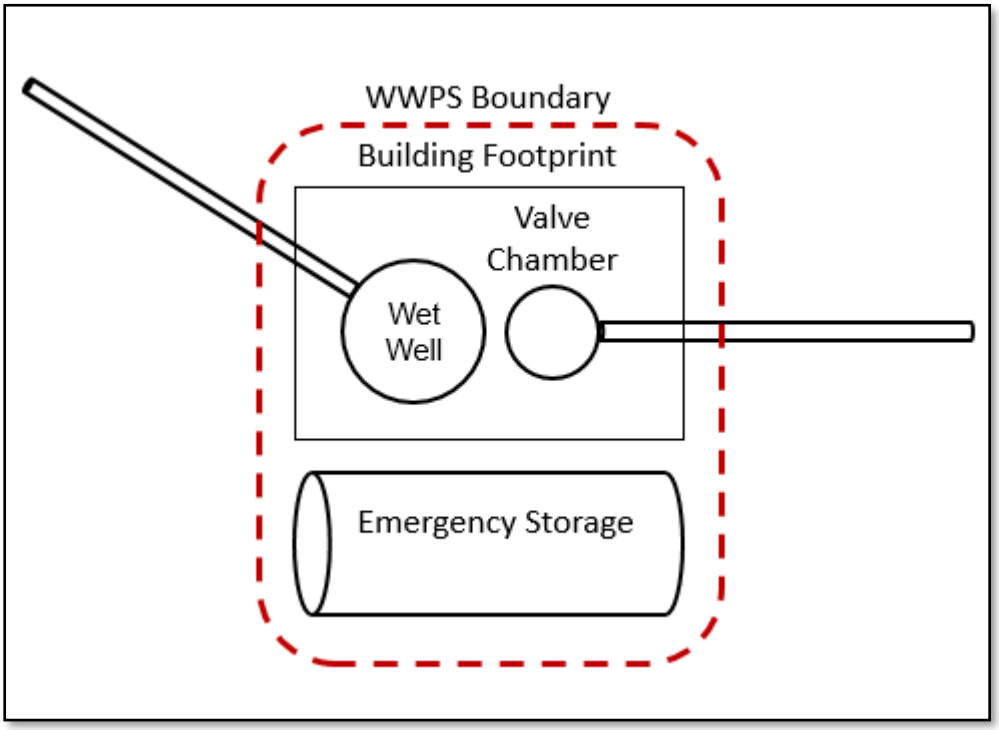
4.2 WASTEWATER

- wwManhole – Access chambers including manholes and lampholes represented by a point. Circular chambers have a single internal diameter, rectangular will have a second internal dimension.
- wwNode – Junctions, ends, and miscellaneous nodes such as change in pipe material or significant grade changes represented by a point.
- wwValve – Valves controlling the flow of wastewater. Can also include non return valves for property connections.
- wwMeter – Meters measuring the flow of wastewater.
- wwMain – Any medium to large diameter pipe between manholes represented by a line feature.
- wwLateral – A small diameter pipe leading directly from a property to a wwMain or wwManhole represented by a line. Ownership should be split at the property boundary for these assets if drawn beyond the property boundary.

- wwTreatmentPlant – A generic polygon encompassing the entire boundary of the treatment plant and associated structures.

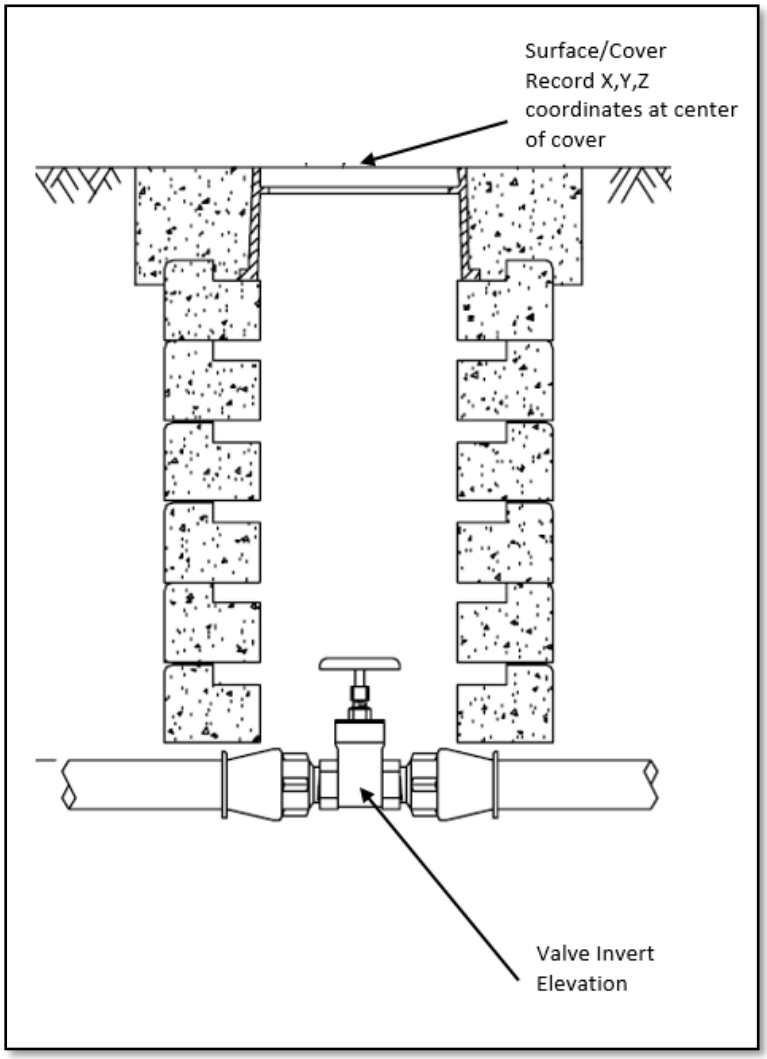


- wwPumpstation - A generic polygon encompassing the entire boundary of the pumpstation.

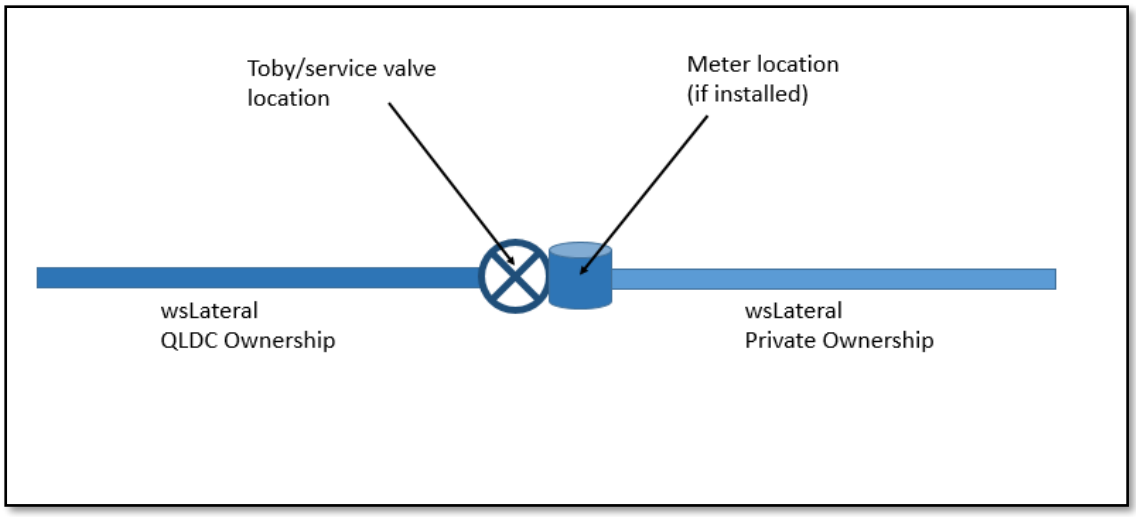


4.3 WATERSUPPLY

- wsValve – Line and boundary valves represented by a point. The invert elevation of the valve should be measured at the connection point the fixture.

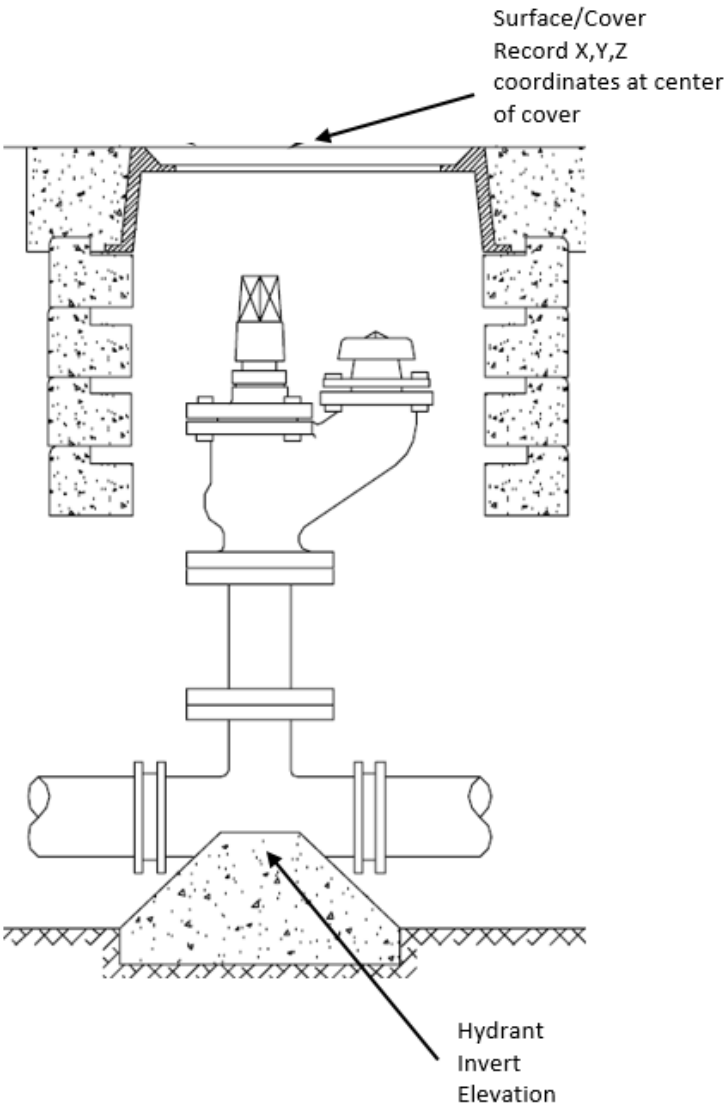


- Toby or service valve locations should be collected at the center of the valve/toby box cover. Invert and surface elevations are not required for service valves. IF meters are installed as part of the manifold installation they should be shown as a separate asset.



- wsMeter – Device measuring flow through a lateral pipe or bulk main represented by a point. See wsValve diagram for measurement points.

- wsHydrant – Firefighting connection represented by a point. Invert Elevation should be measured from the invert of the pipe at that location.



- wsNode – Bends, tees, junctions, reducers, thrust blocks represented by a point feature.

- wsBackflow – see wsValve

- wsMain – Water distribution pipes that do not include laterals from property boundaries. Represented by a line.

    - Trunk Mains **≥** 200 mm
    - Principal Supply Mains **≥** 100 mm and **<** 200 mm
    - Rider Mains **<** 100 mm and supplied from a principal supply main.
    - Rising, Rising Falling, Falling Mains – any diameter

- wsLateral – Usually a smaller diameter pipe (DN20-DN50) servicing a property. Ownership should be split at the point of service (service/toby valve) for these assets.

- wsPumpstation - A generic polygon encompassing the entire boundary of the pumpstation.

- wsReservoir - A generic polygon encompassing the entire boundary of the reservoir and ancillary equipment.

- wsMiscellaneous – A polygon used to represent a cabinet that is not already located within a watersupply facility polygon, usually containing telemetry components.

- wsTreatmentPlant - A generic polygon encompassing the entire boundary of the treatment plant.

5 OPEN SPACES ASSETS

The table below is a summary of Open Spaces features requiring asbuilt submission. Refer to the **Open Spaces Asset Data Schema** for a detailed description of the feature attributes, domain of values and requirements.

Feature Class	Vector Type	Feature
Vested_Reserves	Polygon	**Lots to be vested** with QLDC as reserve
Furniture	Point	**Picnic tables, seats, benches**
Structures_Ln	Line	**Boardwalks*, bridges*, fences, steps, walls**
Structures_Pt	Point	**Art and monuments, bike pumps, bike stands, bollards, cattlestops, culverts, cut-off drains, drink fountains, gates, pergolas, rotundas, shade sails, shelters, signs, stiles**
Irrigation_Ln	Line	**Pipe**, electrical cabling**
Irrigation_Pt	Point	**Emitters, plumbing**, solanoids, control boxes**
Playground_Area	Polygon	Entire extent of **playground area**. Encompasses play surfaces and equipment
Playground_Equipment	Point	**Playground equipment**
Playground_Safety_Surface	Polygon	**Playground safety surfaces**
Sports_Areas	Polygon	Extent of **Bike park, bowls green, cricket ground, cricket net, cricket wicket, golf course, half court, petanque, pump track, rugby/football, skate park, sport court multi, sport wall, sports field, swimming pool, tennis/cricket practice wall, tennis court**
Sports_Equipment	Point	**Posts, post sleeves, nets**
Garden	Polygon	**Gardens,** hedges, gravel gardens, stormwater swales
Natural / Bush Areas	Polygon	**Natural / Bush** areas including establishing rehabilitation sites
Grass	Polygon	**Grass/turf** from natural to sports fields
Hedge	Line	**Hedges**
Tree	Point	**Park trees, Street trees**, Trail Trees**
BBQ	Point	**BBQs**
Carparks	Polygon	All **carparks*** and **vehicle accessways*** for the purpose of the adjoining park or reserve. Includes street parking.
Services	Point	Services in reserves only – **Power outlets, septic tanks, stormwater sumps (mudtanks), water pumps, water taps**. Usually an underlying Three Waters or Aurora asset

Toilets	Point	**Toilets**
Tracks	Line	**Tracks & trails** – footpaths and cycleways, sealed and unsealed*
Water_Body	Polygon	**Ponds, streams, lakes**

*Assets on land to be vested as **reserve** which require a RAMM sheet submission as well as Open Spaces GIS Asbuilt submission:

- Sealed footpaths/cycleways and associated culverts, drains, bridges
- Sealed/unsealed carparks or accessways
- Bridges/boardwalks
- Amenity lighting including illuminated bollards

Assets on land to be vested as **road which require Open Spaces GIS Asbuilt submission:

- Trees & Irrigation
- Grass berms & garden beds

6 ASBUILT TEMPLATE PACKAGE

6.1 GETTING STARTED

Once the ArcGIS Pro software is successfully installed and licensed on your workstation you will need the necessary files and templates to begin creating the asbuilt.

- Open your preferred web browser and navigate to the Land Developments and Subdivisions page on the QLDC website.

- Scroll down to the **Asset Registers/Specifications** section and click on the link for "QLDC Three Waters and Open Spaces Asbuilt Submission Package" to download a zip file of all the files and templates needed to begin creating the asbuilt. Extract all from this zip file to a working folder of your choice. Try to avoid moving the files from the extracted location as you may break the link between the project and geodatabase files.

  Note: These files may be updated on a quarterly basis for improvements and should therefore be downloaded each time a new project begins. Any changes will be communicated through the Asbuilt email subscription service. The signup for this service is on the same Subdivision website under the "Sign up for updates" tab.

6.2 IMPORTING FIELD DATA TO ARCPRO

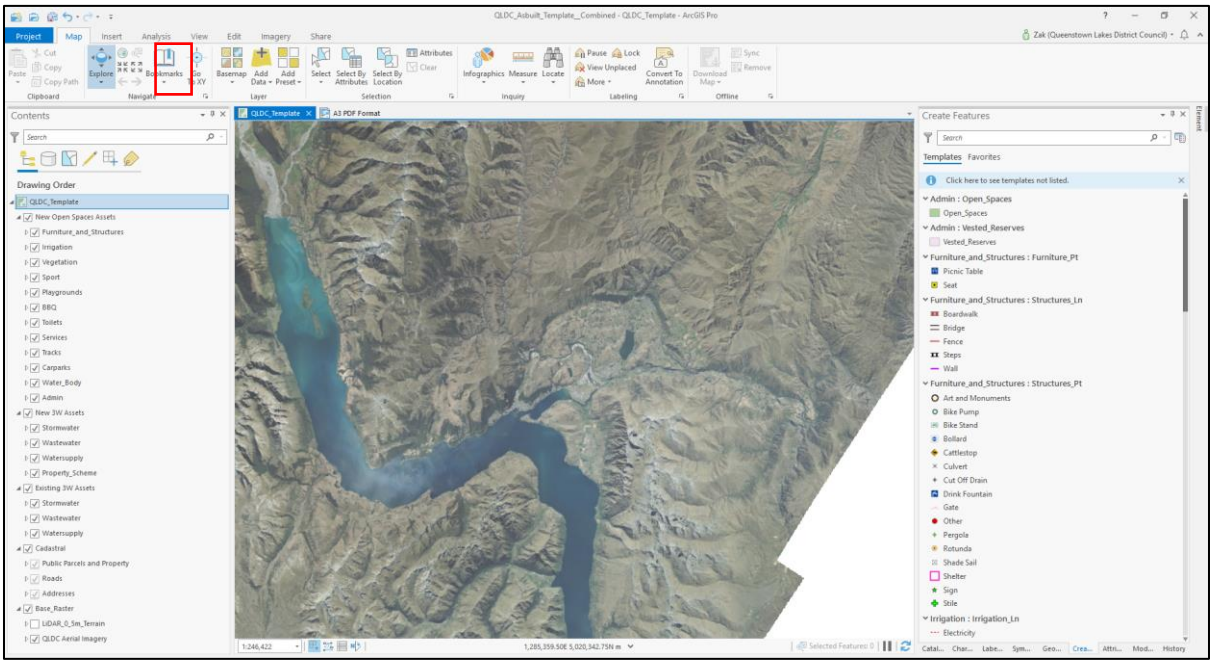
- Begin by clicking on the appropriate QLDC_Asbuilts_Template file in your newly copied project folder. This template will allow you to import various data formats and convert them to ArcGIS format using an ArcPro project. There are three to choose from:
  - _3W.aprx – this is a Three Waters specific template.
  - _OS.aprx – this is an Open Spaces specific template.
  - _Combined.aprx – this is a Three Waters and Open Spaces combined template. Only use this when you are submitting **both** Three Waters and Open Spaces data.

- You will be prompted to sign-in to ArcGIS Pro by the following panel:

- You will need to sign-in using the credentials provided by QLDC similar to the ones shown below:

  Username: **Joe.Bloggs_QLDC**
  Password: **Password**

  The template will open =>



- Using the “Explore” tool, zoom to your area of interest.
- Most of the methods to add surveyed field data to ArcPro can be accessed through the “Add Data”

button highlighted in the graphic above.

- The following are different methods for importing field data to ArcPro:

6.2.1 RAW GNSS / TOTAL STATION DATA

- Depending on what software is used for field data collection there is often an option to export directly to an Esri shapefile format.
- Save these files in a known location on your computer.
- Use the “Add Data” button to add the shapefiles to the ArcPro project and proceed to Section 6.2.3.

  *Note: To reduce data entry time, set up field data collection templates in your survey equipment to match the required feature classes, field names, and field domains. Anything with matching field names can be copied into the appropriate feature classes.

6.2.2 AUTOCAD FILES

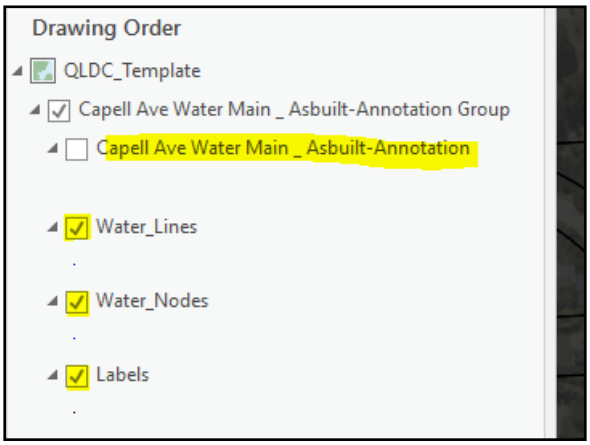
- Click on the “Add Data” 

button highlighted in the graphic above and navigate to the .dwg file for this project. Highlight it and press OK in the bottom left of the screen. You should now see the feature groups that were created as part of the .dwg file:
  - XXX-Annotation Group
  - XXX-Point Group
  - XXX-Polyline Group
  - XXX-MultiPatch Group
  - XXX-Polygon Group

  *Note: These feature groups may differ depending on the software used.
- If the .dwg file was created in the correct coordinate system (NZTM 2000 projection) all of the .dwg features should now be showing on the map. If this is not the case double check that the coordinate system is correct in 12D or AutoCAD.

*Note: The spatial data (the positions of points and lines) can be drawn and presented to Council as two dimensional data (X & Y values). Council has no requirement for the Z dimension to be graphically captured. In other words the digital asbuilt record can be provided with all data projected flat onto a Z-dimension of 0.00. AutoCAD 3D polylines are not necessary. It is important to note that all of the z-dimension information is conveyed to the GIS through the required Z attributes such as “Upstream” or “Downstream Invert Elevation” for pipes and “Surface or Lid Elevation” for manholes. The vertical accuracy requirement for the asbuilt data translates to accuracy for these values.

- Limit what is shown from the .dwg feature groups by dropping down on the small arrows next to each feature group and unchecking any unnecessary features. Unnecessary features are considered anything that does not represent a physical asset (i.e. annotations, flow direction arrows, valve detail polygons, etc…).
  Note: These can be turned back on for reference at any point during this process.



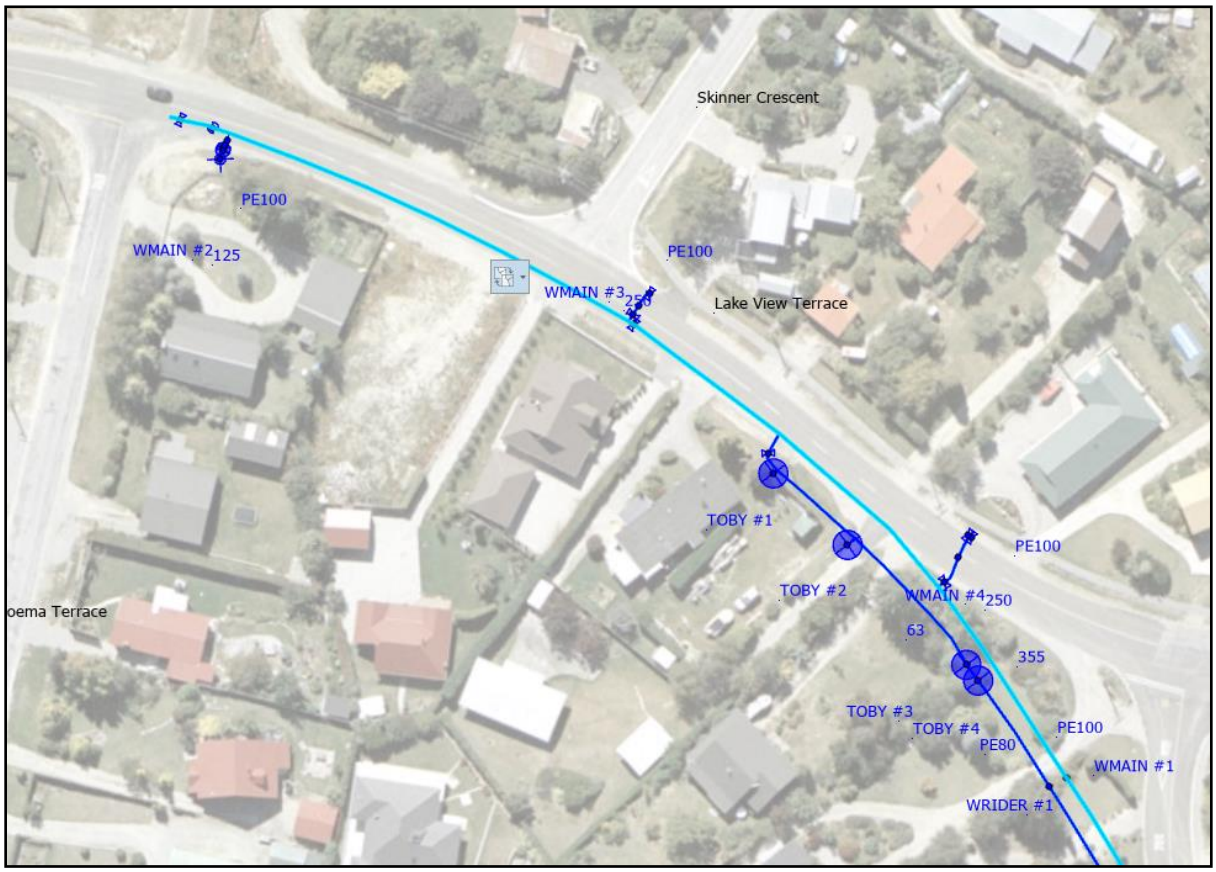
- Some common errors that occur when working with CAD data in ArcPro.
  - Ensure that any polygons are created in the .dwg file as “Closed”. Otherwise they may not be converted to ArcGIS polygons.
  - If a .dwg file has already been added to ArcPro then edited in an external CAD software, it can cause a “shift” in the spatial location of the data in ArcPro. This usually shows up as a 1.5 metre shift in a single direction. To fix this issue, save the .dwg file under a different filename and re-add it to the ArcPro map.

GIS Geometry
Geometry in GIS for Open Spaces data is simple in comparison to what would be expected in an engineering drawing. All points and lines submitted must be centrepoints and centrelines respectively. It may be easiest to convert these in your CAD software prior to importing to ArcGIS Pro. See Appendix 2 for tips how to do this within ArcGIS Pro.

6.2.3 COPYING FIELD DATA TO GIS FEATURE CLASSES

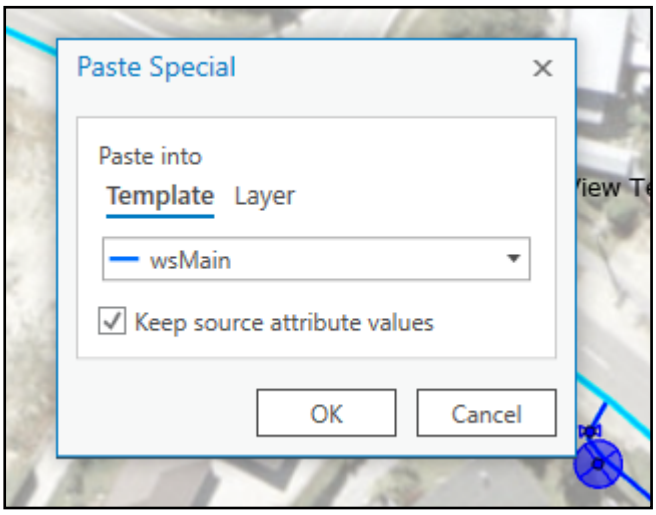
- Using the “Select” tool 

in the Selection toolbar click on a feature you would like to convert. The feature will now be highlighted in cyan blue as shown below:



***Tip: Multiple features of the same feature class can be selected at this step by holding down the Shift key and clicking multiple features.**

- At the top left of the screen click the “Copy” button
- Drop down on the “Paste” arrow and select “Paste Special”. This will bring up a Paste Special pop-up asking which Template to paste the feature into.



***Note: If the Template you want to paste into is not showing up, there are a few things to check.**

- **Double check that you have only selected one type of feature (point, line, or polygon). Try clearing your selection and starting fresh.**
- **Make sure that the target feature class is checked on (visible) in the map.**

- Drop down on the arrow next to the Template name, select the appropriate feature type, and press OK. In this case we have selected a water supply main (wsMain) from the Three Waters dataset.

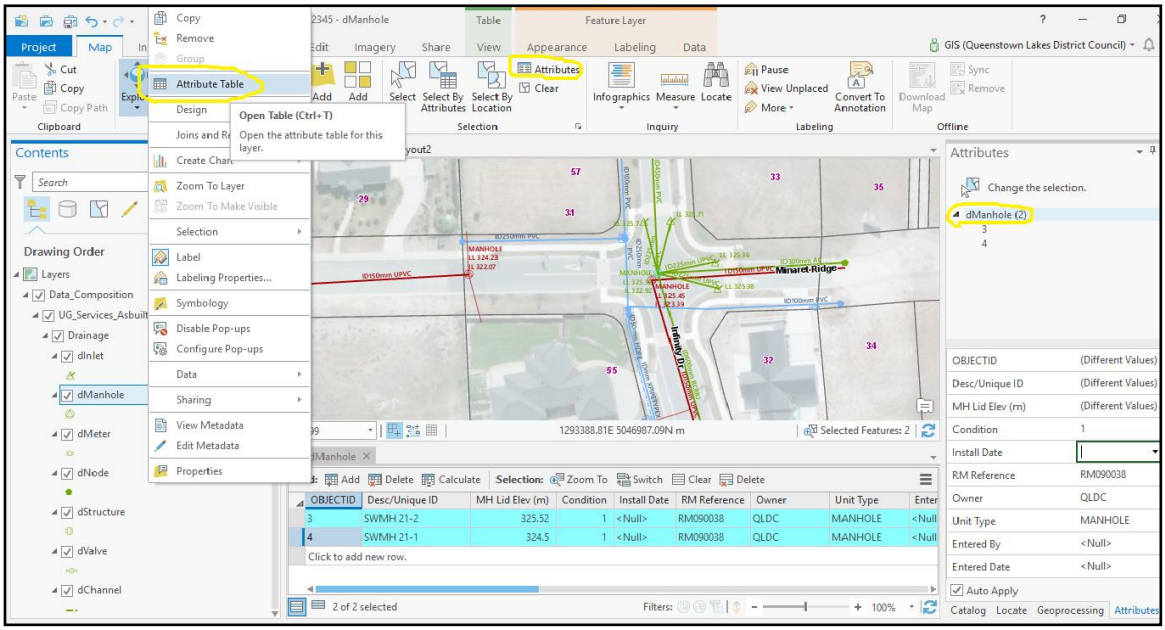
- This feature has now been converted to ArcGIS format. This process can now be followed for all necessary features.

- These steps have only converted the geometry of the feature. The attributes for each will still need to be entered against each new feature. The following section outlines how to edit these new features.

7 EDITING ASBUILT DATA

7.1 EDITING GIS FEATURE ATTRIBUTES

- Open the attribute tables for each feature layer in the left-hand Contents pane by right-clicking and selecting “Attribute Table”. For a different view select the “Attributes” tab in the main “Map” menu ribbon. An attribute editing panel will open in the right-hand of your screen.



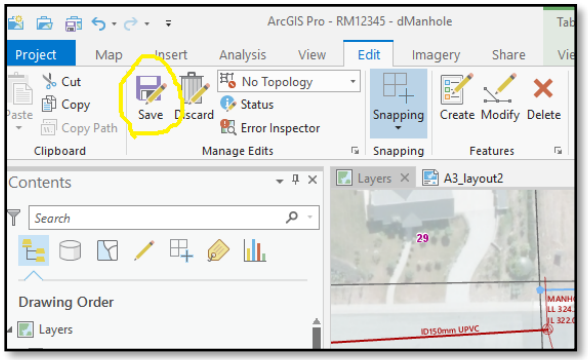
- Ensure all feature attribute tables are completed. Further instruction on how to open, edit and save data in the tables are available at the following location:

https://pro.arcgis.com/en/pro-app/help/editing/edit-feature-attributes.htm

***Tip**

Feature attributes may be edited simultaneously in ArcGIS Pro. For example, to enter the Install date for multiple features, simply select all relevant records by (ctrl) clicking in the left-hand box of the attribute table, and then select the feature type in the Attribute pane on the right-hand side of the screen. A date can then be selected from a look-up calendar, which will be applied to all selected records.

- **All edits to features and attributes need to be saved by clicking on the “Edit” menu in the main ribbon, and then selecting the save button.**



7.2 EDITING GIS FEATURE GEOMETRY

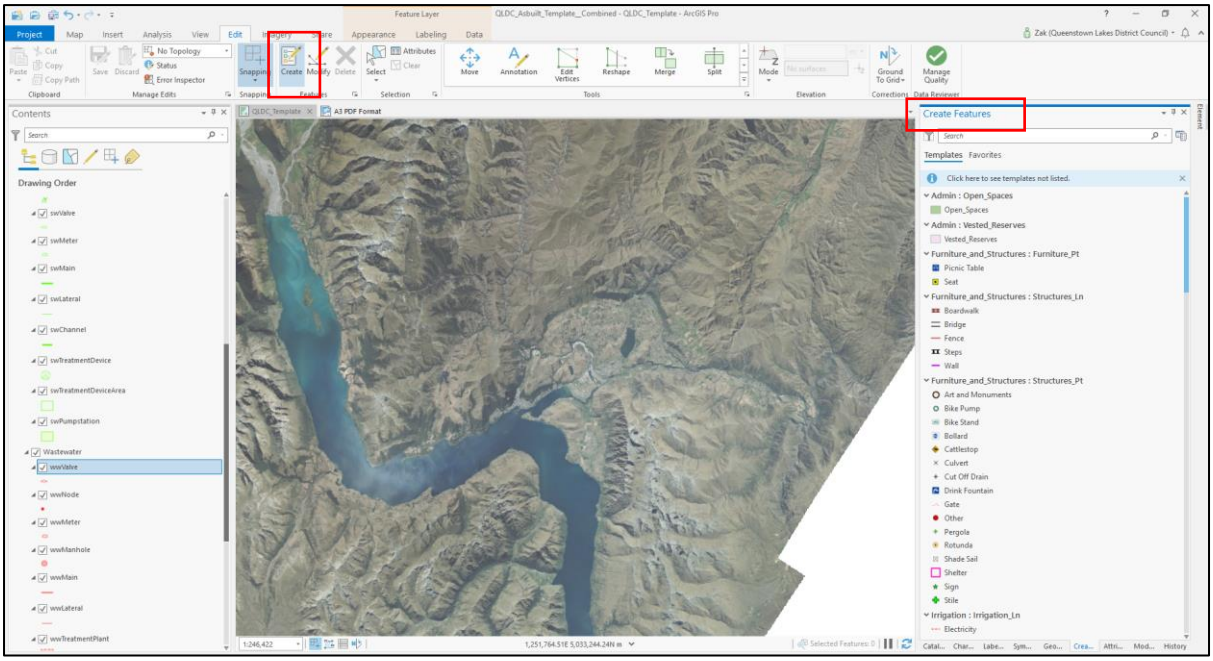
- To edit feature geometry, click on the “Edit” menu in the main ribbon, then click “Modify”. A comprehensive menu of tools will appear. Remember to “Save” or “Discard” as required. More information on this can be accessed at the following location:

http://pro.arcgis.com/en/pro-app/help/editing/introduction-to-modifying-features.htm

7.3 CREATING NEW GIS FEATURES

- To add new GIS features, click on the “Edit” menu in the main ribbon, then click “Create”. A list of feature class templates will appear. These can be selected and added to the current job. Once added, edit the feature attributes as detailed in section 7.1. Remember to “Save” or “Discard” as required. More information on this can be accessed at the following location:

https://pro.arcgis.com/en/pro-app/help/editing/introduction-to-creating-2d-and-3d-features.htm



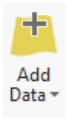
- See Appendix 1: DATA QUALITY CHECK for an automated tool to check the completeness of the data entered into ArcPro.

8 LAND PARCELS

8.1 ADDING LAND PARCELS/BUILDING PLATFORMS

Subdivided land parcel schemes are not available to QLDC in digital format until they are uploaded by LINZ. To expedite processing, it is requested that land parcel boundaries are included with the GIS data submission. These submissions are only a temporary reference for QLDC engineers until LINZ data becomes available.

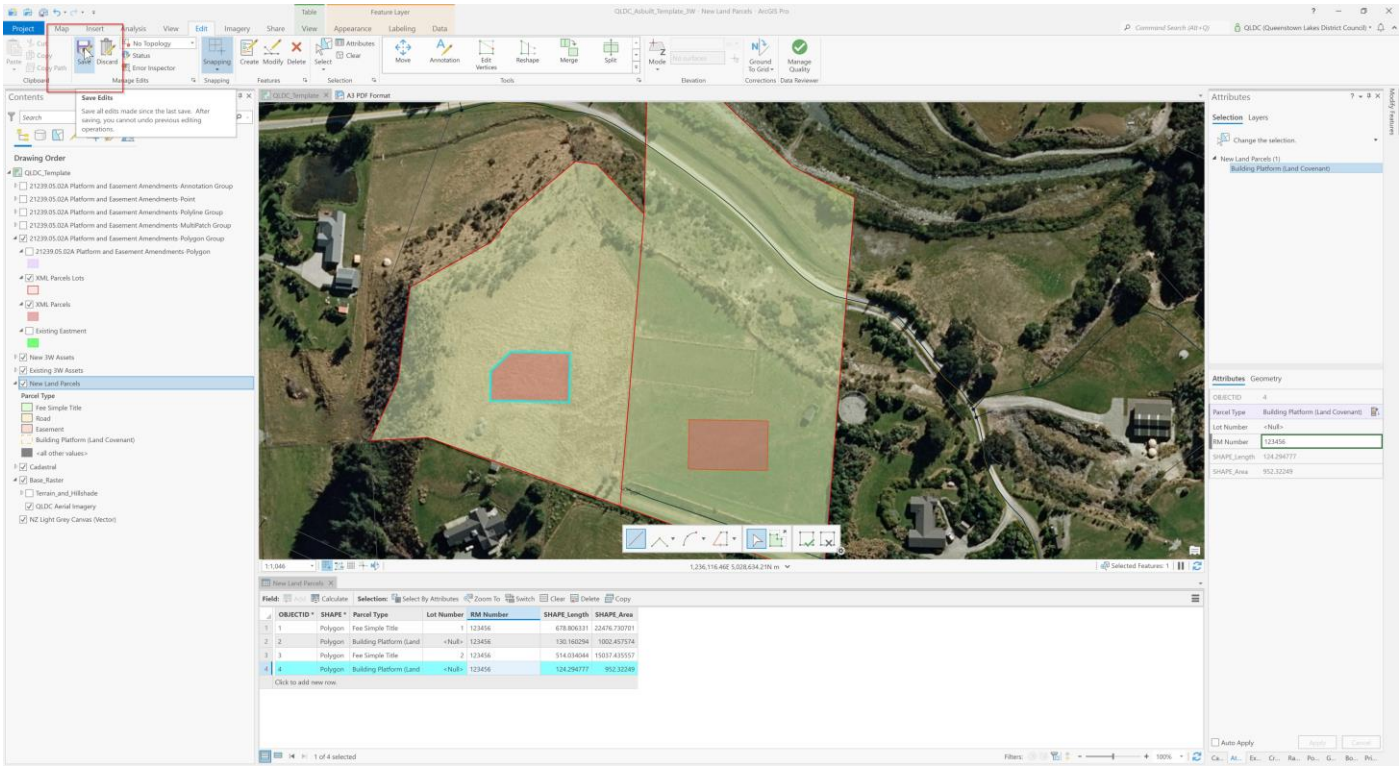
Additionally, Rural Building Platforms are now required to be submitted as GIS data, rather than a separate DWG/DXF file.

- Using the 

Button on the main Ribbon, select an AutoCAD DWG/DXF file containing the subdivision lot layout/rural building platforms (if this was not included in the original DWG/DXF file)

- As described in 7.3, create polygon features for each parcel by selecting the appropriate “New Land Parcels” feature template (Fee Simple Title, Road, Easement, or Building Platform) and snapping to the imported CAD boundaries

- When all land parcels are completed, open the attribute table for the layer “New Land Parcels”. Edit the attributes (as per section 7.1)



- If there are a large number of land parcels to be created, an alternative to creating new features and snapping to existing boundaries is to select the appropriate polygons, and copy/paste them into the appropriate feature template from the “New Land Parcels” layer, as per the instructions in 6.2.3.

  If using this method, you will either need to ensure you only select one parcel type at a time, e.g. Fee Simple Titles, or you will need to paste all parcels as one type and edit the ‘Parcel Type’ attribute to correct errors

- Remember to save your edits

8.2 VESTED RESERVES

Any subdivided lots that are to be vested with council as reserve must be captured in the “Vested_Reserves” layer. Follow the steps in 6.2.3 to copy the reserve parcel(s) from the “New Land Parcels” layer you just created into the “Vested_Reserves” layer and fill out required attributes in the attribute table.

9 ASBUILT SUBMISSION

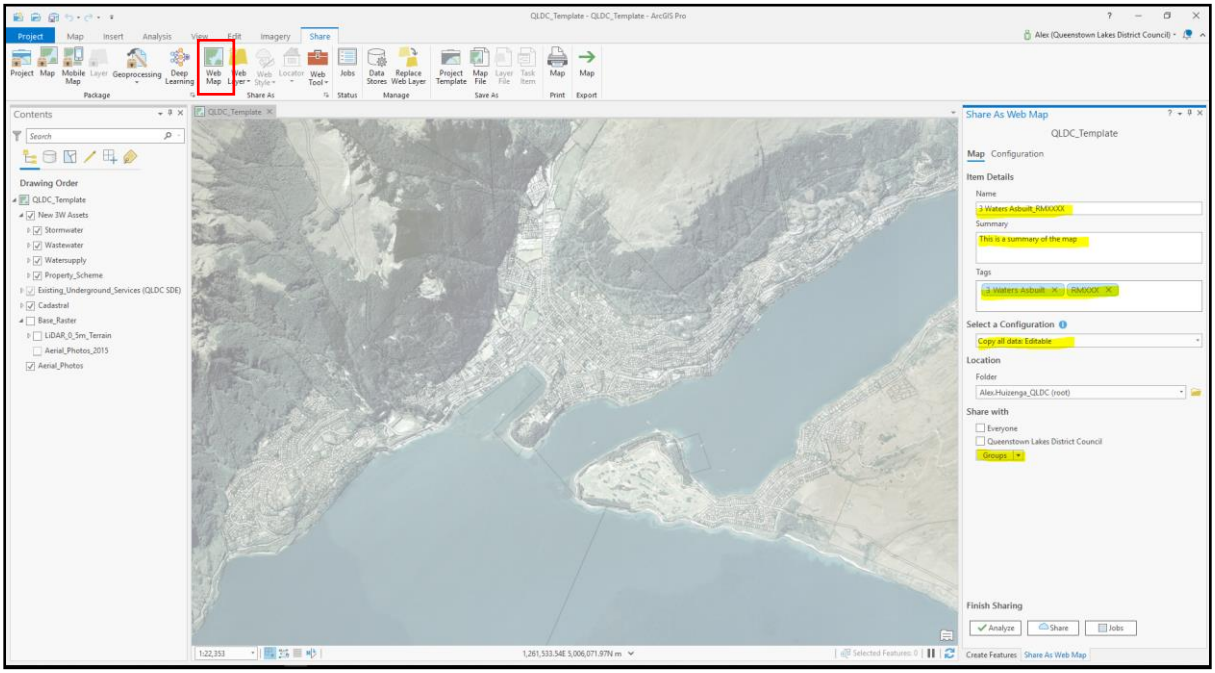
There are two steps to submitting asbuilts:

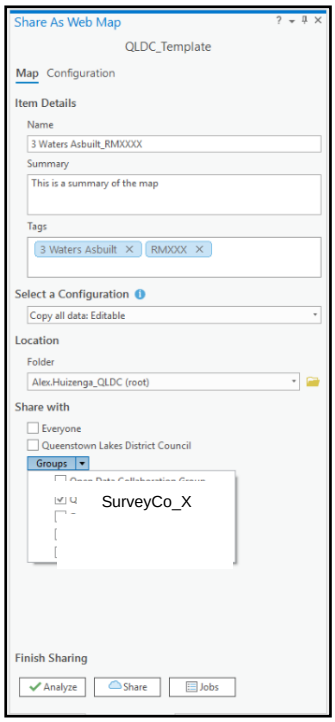
1. Submit online Web Map
2. Notify subdivision@qldc.govt.nz of submission, with link to Web Map.

9.1 CREATING AN ARCGIS ONLINE WEB MAP

To submit an Asbuilt to QLDC online, an ArcGIS Web Map must first be created.

- Open the "Share" tab from the top ribbon and click the "Web Map" button.
- In the Name field input [asbuilt type] + [development/project] + [RM/Contract No.] Examples:
  - "**3W Asbuilt_Northlake_(RMXXX or Contract XXX)**" 3 Waters only
  - **"3W OS Asbuilt_Alpine Estate_(RMXXX or Contract XXX)"** 3 Waters + Open Spaces
  - **"OS Asbuilt_Shotover Country_(RMXXX or Contract XXX)**" Open Spaces only
- Add a brief summary of the project.
- As a minimum, Tags should consist of "**3 Waters Asbuilt"** and/or **"Open Spaces Asbuilt"** and **"(RMXXX or Contract XXX)**". (This will assist in searchability once uploaded).
- Select "**Copy all data: Editable**" under Select a Configuration.
- Go to the "**Groups**" dropdown under Sharing Options and ensure that the box is ticked next to your company's Group name. There should only be one option unless you have other ArcGIS Online groups on your account.





- Finish by selecting "**Analyze"** and then **"Share"**. Your data will be uploaded to QLDC's AGOL account to be reviewed and also your personal account.

*Note: The issues that arise during the Analyze step of the process are not always clear and may not always prevent submission. Errors, marked with red X's will prevent submission. Warnings, marked with a yellow exclamation mark will not prevent submission. A few things to check prior to submission are:

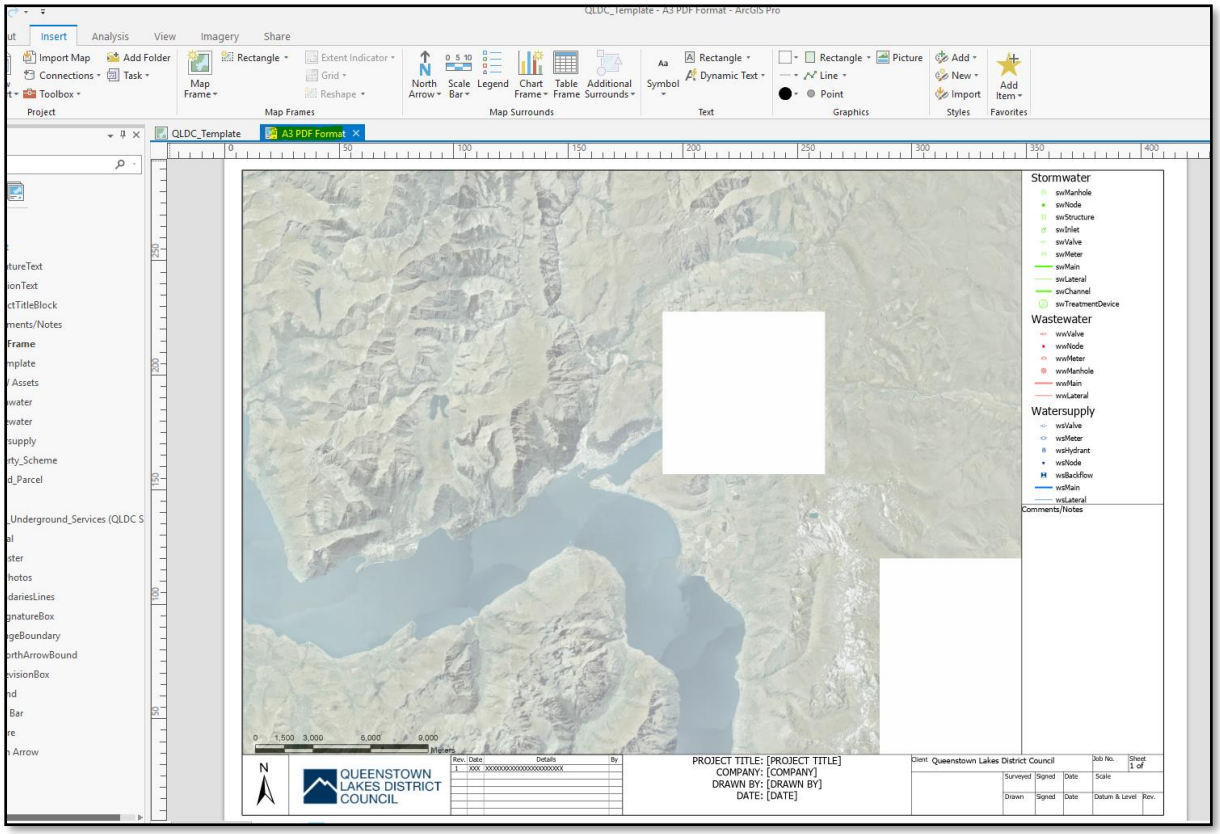
- All layers have a valid data source. This can be an issue if a link to the data source has been broken and shows up as a red exclamation mark (!) next to the layer. If this is the case please contact QLDC for assistance.
- In some cases, leaving CAD files in the map can cause warnings. Removing the .dwg files will fix this issue.

More information on sharing GIS data is available at the following location;
http://pro.arcgis.com/en/pro-app/help/sharing/overview/introduction-to-sharing-packages.htm

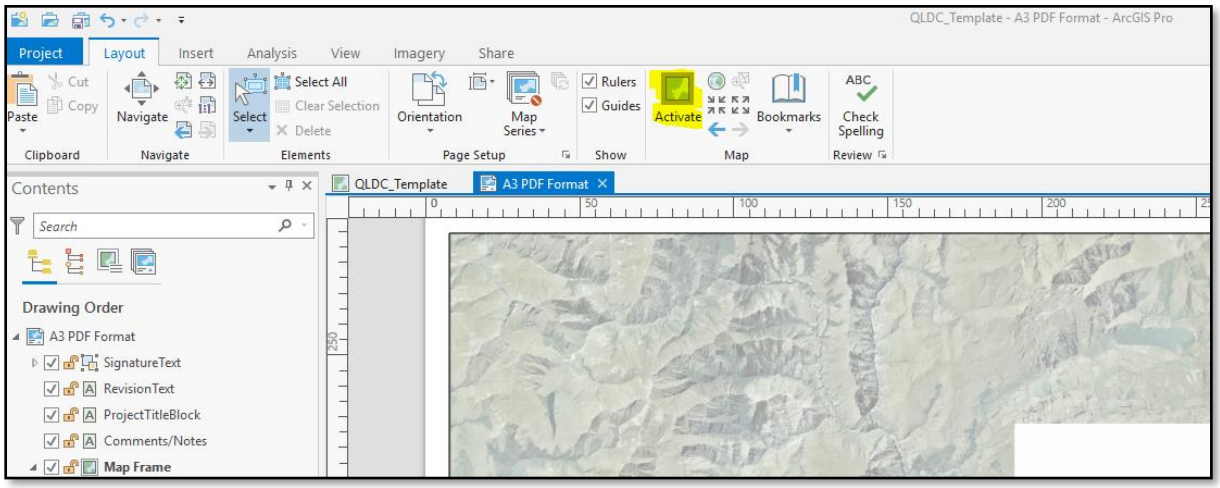
9.2 CREATING A PDF MAP

If a PDF map is also a requirement for an asbuilt submission a Layout view is also provided in the ArcPro project. The template provided is an A3 Landscape format.

- At the top of the map area on the screen there is a tab labelled "A3 PDF Format". Click this tab and the layout view is visible.

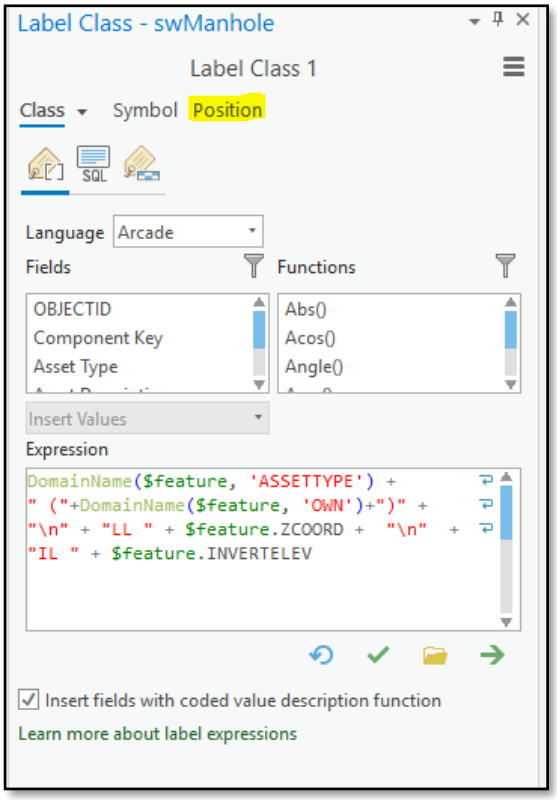


- If the map has not automatically panned to the area of work click the Layout tab at the top of screen and click the “Activate” button shown below. This will allow you to scroll and pan to the correct location.



- Ensure you have zoomed to the correct level that the asset labels show up on the map. If necessary, more than one PDF can be created to show the full extent of the project area.

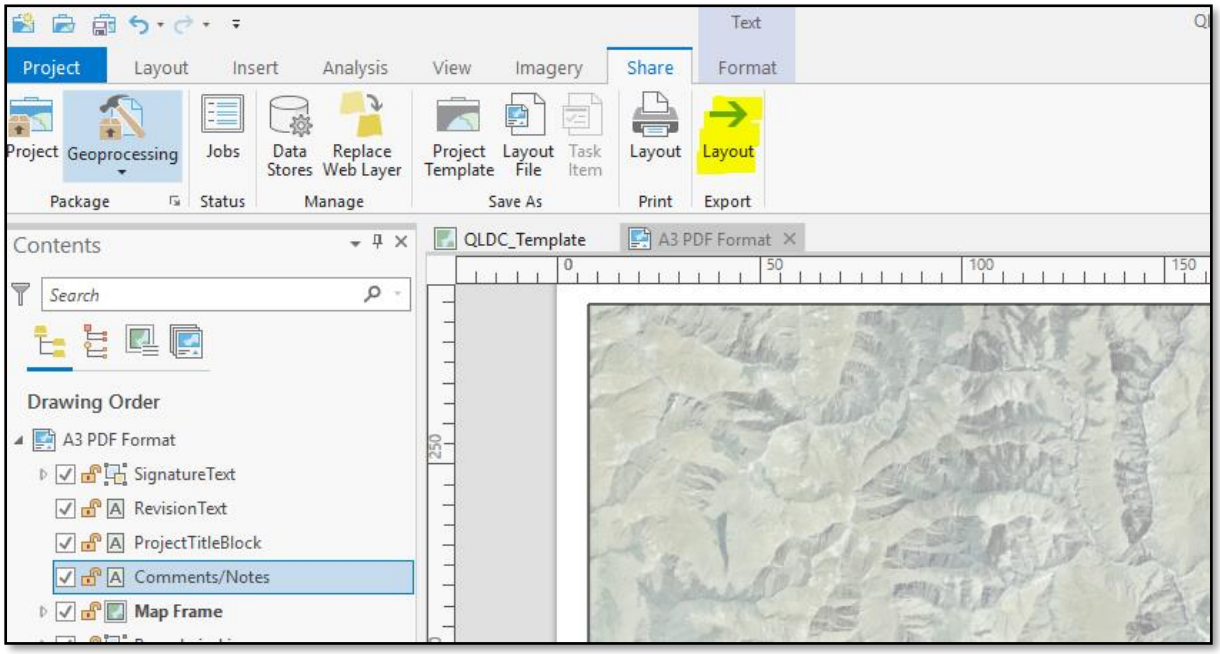
- ***NOTE:** If the labelling of the feature classes is not visually appealing (manholes covered by labels, labels covered by other labels, etc…) the labelling properties can be edited by right clicking on the feature in the Contents pane and clicking “Labelling Properties…”. The following menu will appear:



Do not change the Expression that labels the feature but go to the “Position” tab at the top of the screen. A menu will appear that will allow the orientation of the labels to be changed.

- To fill in the project title, signature box, revisions box and comments sections simply double click on those areas with the “Select” tool chosen at the top of the screen.

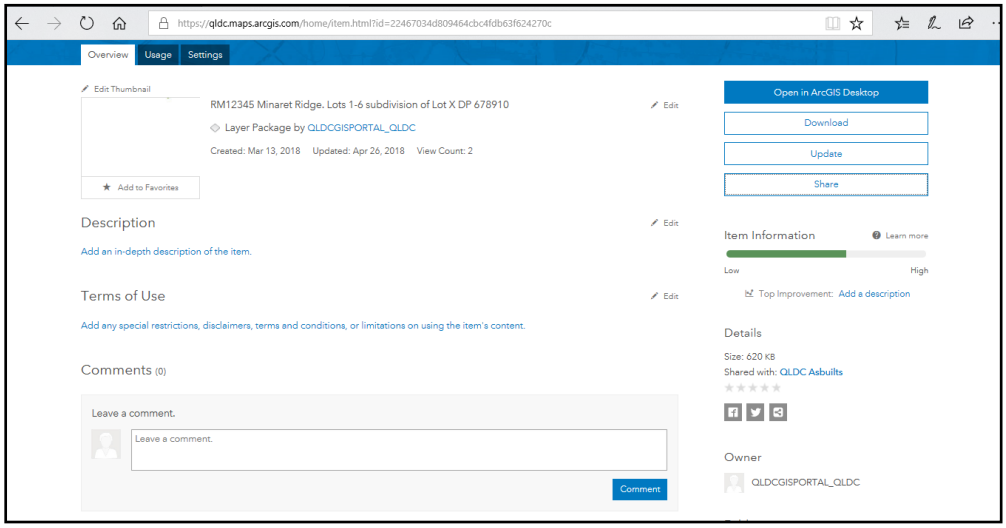
- To save the layout as a PDF go to the “Share” tab at the top of the screen and click the green arrow “Layout” button. This will bring up a dialogue box to save as a PDF.



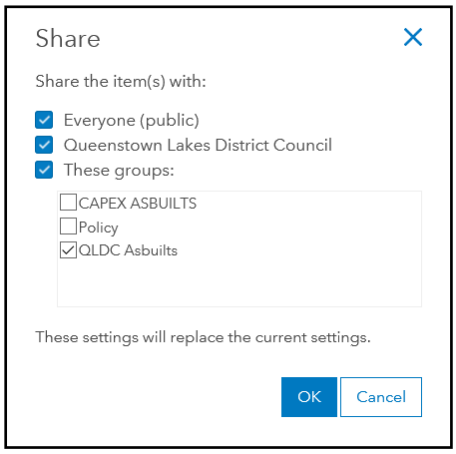
9.3 SHARE YOUR ASBUILT URL

Once the map is published you can further manage your sharing options by signing in to your personal **ArcGIS Online** account in your web browser. Data may be downloaded - or shared directly with other ArcGIS Online account holders by editing the **Share** options and emailing a link of the Web Map or layer package URL to the intended recipient.

Further details here:
https://doc.arcgis.com/en/arcgis-online/share-maps/share-maps.htm



If you want to share your GIS data with other parties external of QLDC, click the Share tab and select the “Everyone” (public) option.

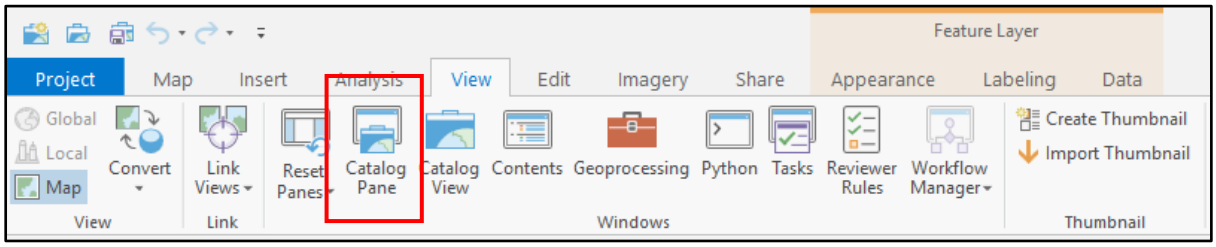


Remember to share the link to subdivision@qldc.govt.nz so they are aware the asbuilts have been submitted.

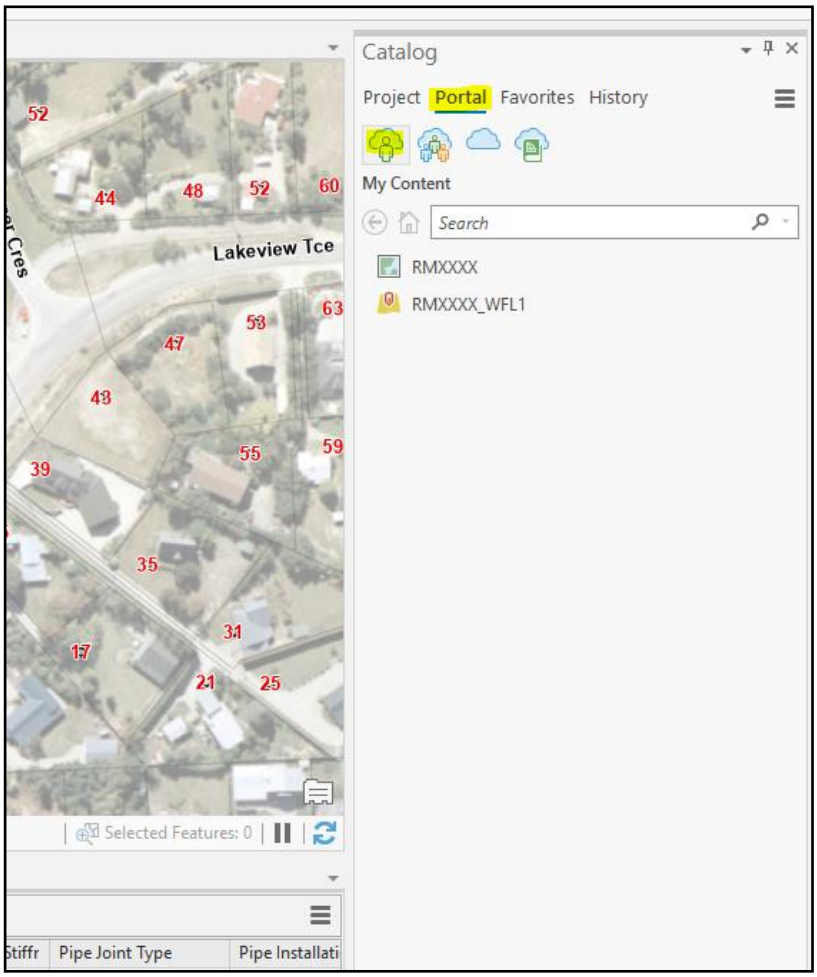
9.4 UPDATING DATA POST SUBMISSION

Once the asbuilt package has been submitted online reviewers at QLDC may make edits to the online content. This will not update in your original map. In order to see these edits and make follow up edits of your own these online features will need to be added to your project.

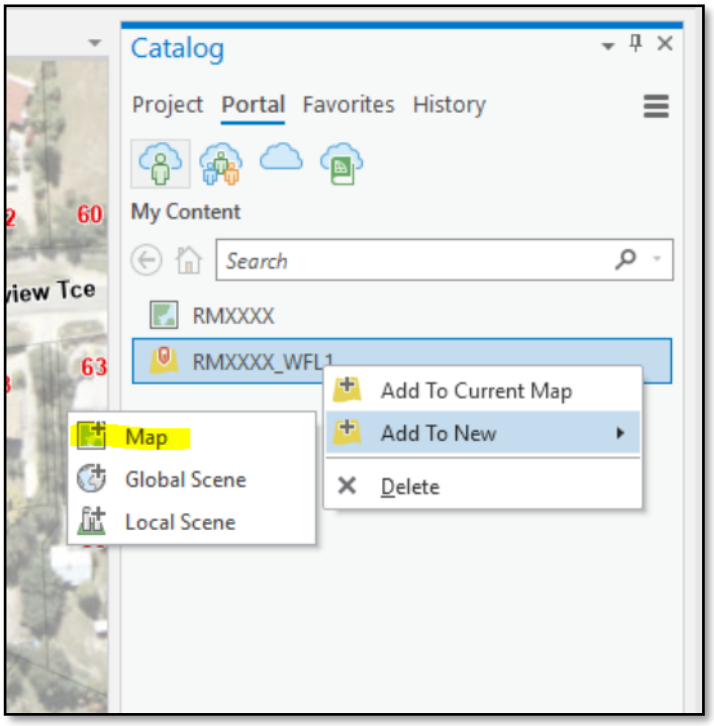
- Open your original map project.
- On the “View” menu ribbon item at the top of the page select the “Catalog Pane” button



- On the right hand side of your page go to the “Portal” tab in the Catalog Pane and select the “My Content” icon.



- Add the online features to a new map in your project by right clicking on the item with the "_WFL1" suffix and selecting Add To New → Map. This item is a hosted Feature Layer that was created when the web map was created in Section 6 and will include any edits done in the online environment.



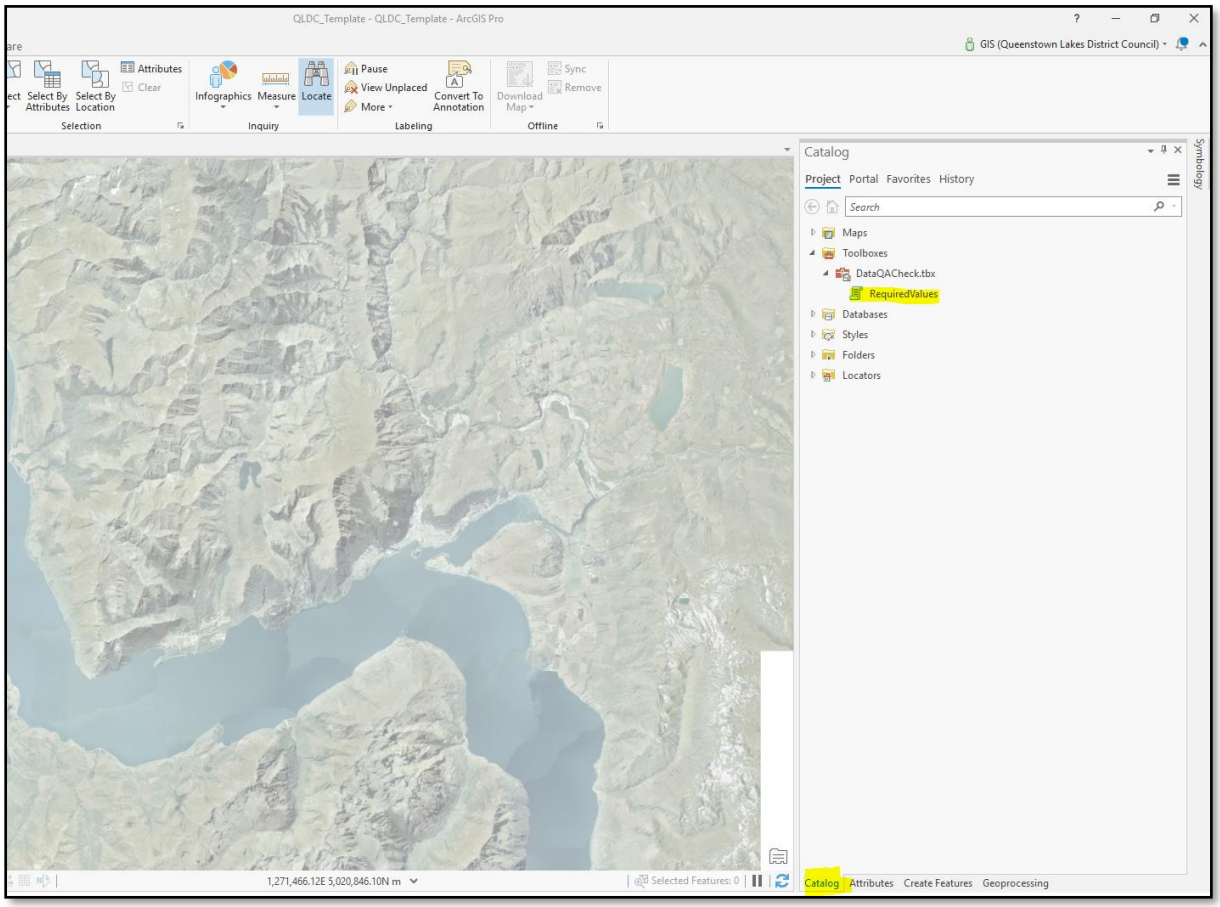
- This will add a new map tab that will contain the hosted Feature Layer. Any changes made to these features will be reviewable by QLDC, but will not affect the data in your original map tab.

APPENDIX 1 – THREE WATERS SPECIFICS

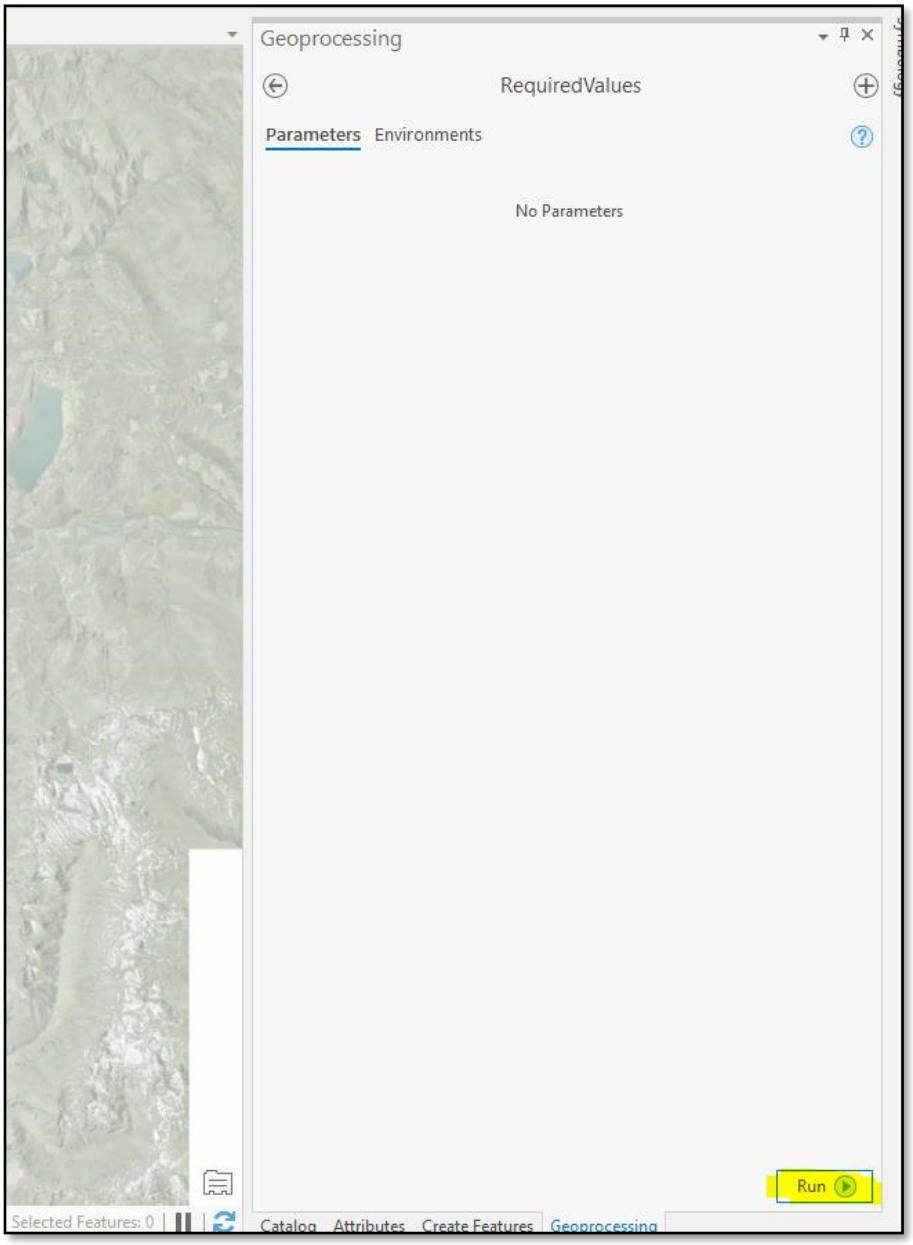
DATA QUALITY CHECK

Prior to submitting the Asbuilt to QLDC online, use the DataQACheck toolbox to check for data quality in your submission. This tool goes through all of the feature classes with new features and checks the required fields for gaps in the data.

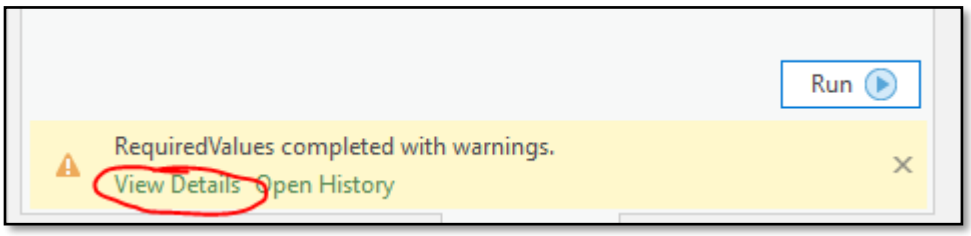
- On the right hand side of the screen navigate to the Catalog tab and drop down on the Toolboxes folder until the “RequiredValues” script is visible.



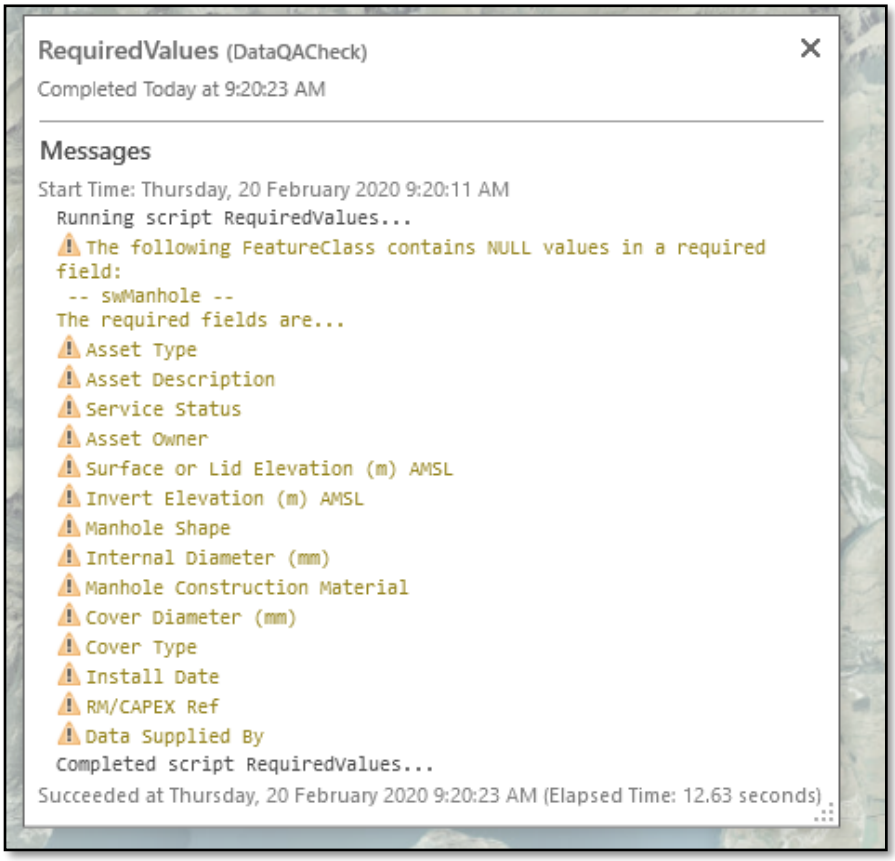
- Double click the “RequiredValues” script and wait a few seconds.
- At the bottom right of the screen click the Run button.



- If the tool finds missing values a yellow warning will appear at the bottom of the screen. Click the **View Details** text to get more information.



- A message detailing the feature class and the fields with blanks in that feature class should appear.



- Correct any missing values and repeat this section until the warnings are as few as possible.

CONTRACTOR IDENTIFIERS

Create a unique identification number / code (ID) for each point and pipe feature. Use the “Asset Description” field for unique identifiers (WMAIN #4, TOBY #3, etc…).

PIPELINE GEOMETRY

For all pipeline geometry the following are required:

- Draw pipelines in **flow directions** (i.e. start drawing the line from the source node and end at the destination node) – the flow direction detailing in GIS is based on this.

- Pipe lines should be split only at Junctions (node), Valves, Meters and at Manholes. Pipes should not be broken at bends or any other places where point features are absent. If pipe attributes change (e.g. diameter, material) a node should be placed at that junction.

  ***Note** Laterals can be shown extending into the property (beyond the toby or lamphole location) if that is what is built, and if so the lateral should be split at the toby/service valve or property boundary to distinguish ownership.

- All lines shall be continuous from node to node. **Do not use Arcs** for curved pipes – use a continuous polyline with appropriate straight line segments to represent curvature.

EXISTING ASSETS INCORRECT IN QLDC GIS

Ensure that the new geometries snap to existing features in the "Existing_Underground_Services (QLDC SDE)". If the surveyed location or attribute information of an existing asset is different from that shown in "Existing_Underground_Services (QLDC SDE)":

- Copy and paste the necessary assets to the appropriate "New 3W Assets" feature class
- Change the "Service Status" to EXISTING
- Update the geometry using steps in Section 4.2 or update the feature attributes using steps in Section 4.1

Council's GIS operators will update the surveyed position and existing feature information where these are provided.

REMOVE OR ABANDON ENTIRE EXISTING ASSETS

If there is a situation where **ALL** of an existing asset has been abandoned or removed, copy and paste the necessary assets from the "Existing_Underground_Services (QLDC SDE)" feature classes to the appropriate "New 3W Assets" feature classes and change their "Service Status".

REMOVE OR ABANDON PARTS OF EXISTING ASSETS

If only **part** of an existing asset has been abandoned or removed (in the case of a partial pipe renewal), copy and paste the necessary assets as described above. Use the "Split" tool (see Section 7.2 for more details) to split the existing pipe where the renewed section meets the old section. Update the status of the removed or abandoned section of the existing pipe to the appropriate "Service Status" and change the status of the remaining pipe to "Existing". Finally, draw the new pipe section.

SW TREATMENT DEVICE DRAWING

Stormwater treatment devices such as proprietary manhole devices, rain gardens, constructed wetlands, and detention ponds have specific geometry requirements.

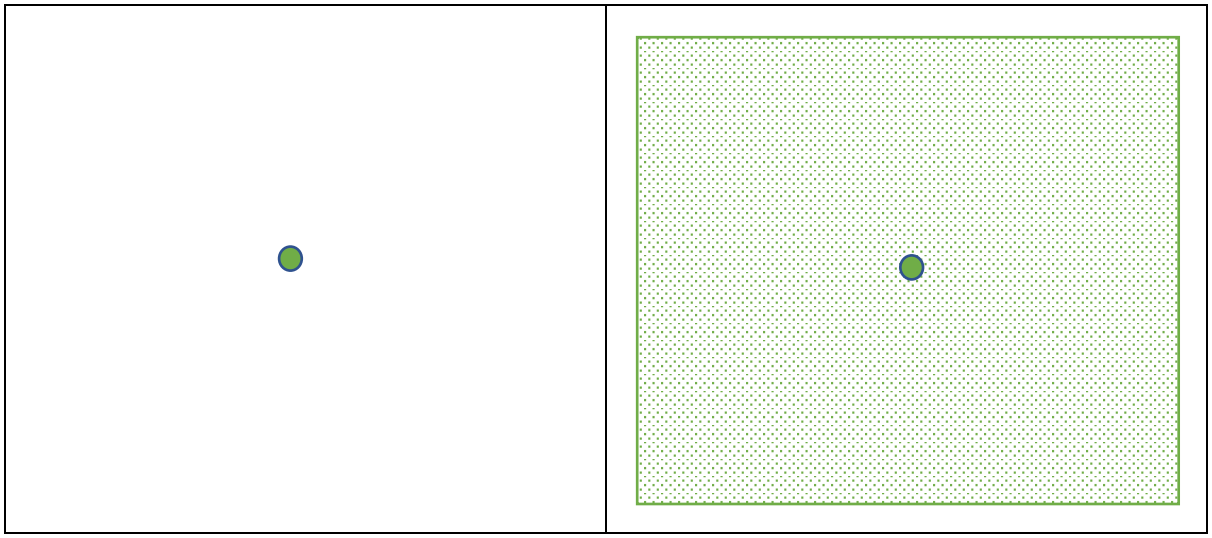
For **ALL** stormwater treatment devices:

- A point feature in the swTreatmentDevice feature class located at the center of the treatment area is required. This point feature contains all of the attribute information about the treatment device including the type and area. If the stormwater treatment device is <10 m^2 (such as small rain gardens and proprietary manhole devices) this is all that is required.

For stormwater treatment devices >10 m^2 such as constructed wetlands, soakage trenches, and detention ponds:

- A polygon feature in the swTreatmentDeviceArea covering the extent of the treatment area is also required. The only editable field in this feature class is the "Comments" field.

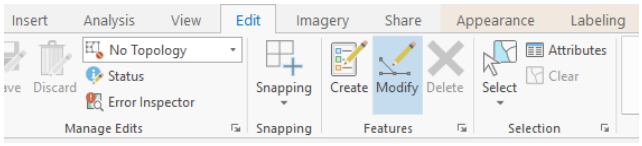
SW Treatment Device **<10** m^2	SW Treatment Device **>10** m^2



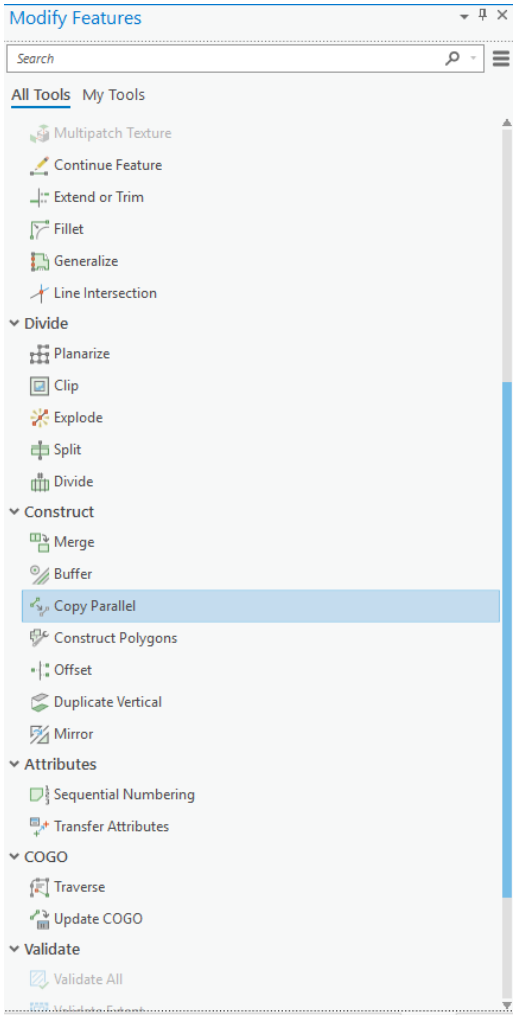
APPENDIX 2 – OPEN SPACES SPECIFICS

CREATING CENTRELINES

It is required to submit *centrelines* opposed to boundary lines for Open Spaces data. If centrelines were not generated previously in the CAD software then it can be done within ArcGIS Pro using the “Copy Parallel” tool.



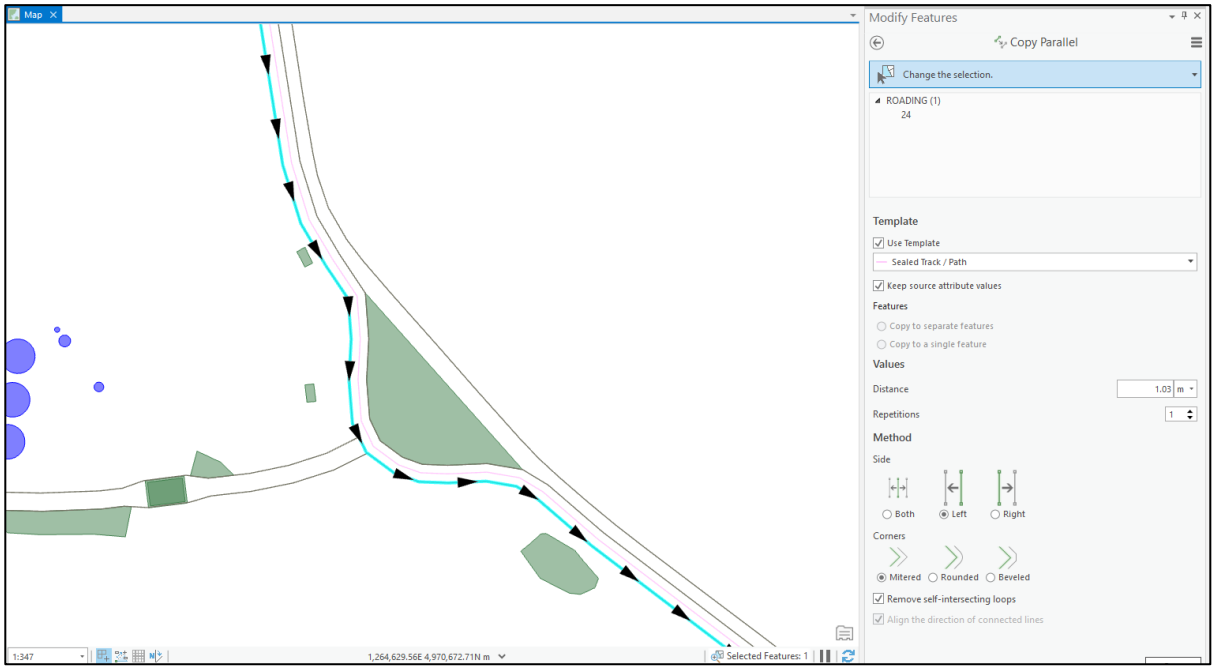
It is common for footpaths to need this conversion. In this example, select one of the outer boundaries of the footpath line geometry, select the “Modify” icon in the “Edit” tab and choose “Copy Parallel” from the “Modify Features” pane.



In the “Copy Parallel” pane select the correct template to copy feature to (in this case it will be a Track), enter in the offset distance (half the width of the footpath), and whether you want to copy the line to the left or right of selected feature.

If “Show Preview” is selected then you will see what the new feature will look like in the map. Click “Copy” to generate. Once the centerline is created in the correct template, trim and extend the ends to snap onto adjoining features if needed using other tools such as “Edit Vertices” and “Extend or Trim”.

Fill in required attributes using the steps outlined in 7.2.



REMOVE OR ABANDON ENTIRE EXISTING ASSETS

If there is a situation where **ALL** of an existing asset has been abandoned or removed, copy and paste the necessary assets from the “Existing Open Spaces Assets” feature classes to the appropriate “New Open Spaces Assets” feature classes and change their “Asset Status” accordingly.

REMOVE OR ABANDON PARTS OF EXISTING ASSETS

If only **part** of an existing asset has been abandoned or removed (in the case of a track or trail renewal), copy and paste the necessary assets as described above. Use the “Split” tool (see Section 6.2 for more details) to split the existing trail where the renewed section meets the old section. Update the status of the removed or abandoned section of the existing trail to the appropriate “Asset Status” and keep the status of the remaining trail as “In Use”. Finally, draw the new trail section.