SCIRT Rebuilding Infrastructure

LEARNING LEGACY

Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

SCIRT Webmap User Guide

Story: SCIRT Geographic Information System (GIS) Viewer

Theme: Finance and Business Systems

A document which explains how to use the SCIRT GIS Viewer.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz

Programme funded by
Christchurch City Council
New Zealand Government

city care Our people. Making it work.
Downer Relationships creating success
Fulton Hogan
McConnell Dowell Creative Construction
Fletcher

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SCIRT Webmap User Guide

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1. Login

This section outlines how to get access to the SCIRT GIS.

1.1. How to request a login for the SCIRT GIS Viewer?

Access to the SCIRT viewer is only allowed if the work you are doing is SCIRT related.

Requests for access to the SCIRT GIS Viewer are approved through the External Information Request (EIR) process and have to be signed off the management team at SCIRT and client organisation.

With all requests for access to the SCIRT GIS the following information is required when making a request for access to the SCIRT GIS Viewer:

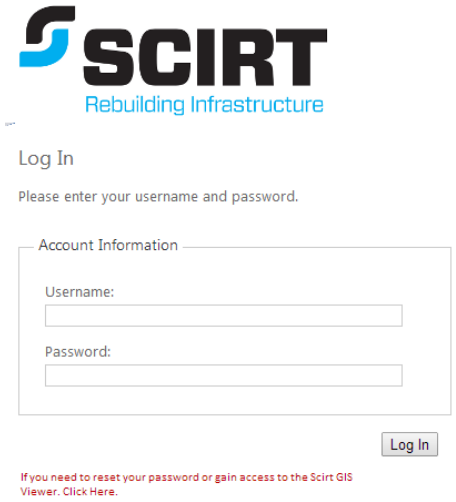
1. Name
2. Home organisation
3. Role within home organisation
4. Email
5. Reason why you need access to the SCIRT GIS Viewer.

EIR's need to be raised by the party putting in the request Table 2 details who you need to contact.

Requests from	**EIR to be submitted by**
Delivery team Sub-contractors to delivery team (Drain Surgeons, Hydrotech, CCTV operators)	Delivery Team Coordinator: City Care – Tony Borkus Downer – Emmanuelle Maucor Fletcher – David Fitzmaurice Fulton Hogan – Evan Perrin McConnell Dowell – Brendon Cowles
Sub-contractors to 'SCIRT' e.g. resource consent, arborist	Anita Collie (SCIRT) via CCC
Sub-contractors on SCIRT wide programme e.g. Lateral Inspection Programme	Specific SCIRT contact e.g. Andrew Crofts
Utilities providers (Enable/Chorus/RockGas)	David Bain - SCIRT
CCC staff Consultants to CCC	CCC Unit Managers: Stormwater - Keith Davison Wastewater and Watersupply - John Moore Roading and Retaining Walls - Steffan Thomas
CERA/CCDU	CCDU representative
NZTA	NZTA representative
Research students	Specific SCIRT contact, CCC Unit managers, or send them to the source of the data e.g. CCC for services data, ECAN for ECAN data
Other requests (auditors/ECAN/other councils)	Depends on who the request is from, what they need it for – these types of random requests can be dealt with on a case by case basis

Table 2: External Information Request contacts

1.2. Logging into the viewer



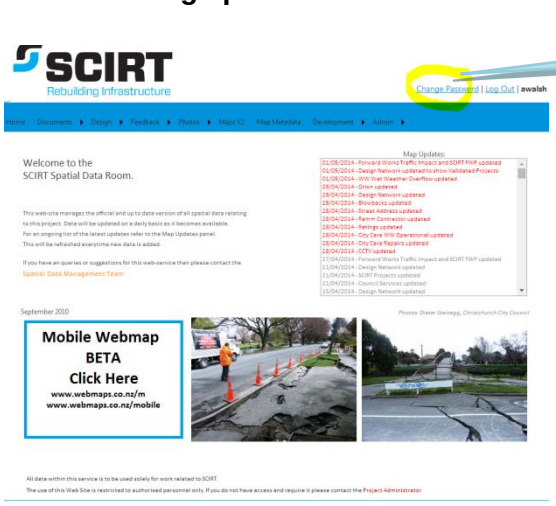
The viewer is accessed from https://www.webmaps.co.nz/StrongerChristchurch

When your request for access has been approved you will be sent a username and password from one of the GIS team.

2. Home Page

This section details the home page and the information it contains.

2.1. Change password

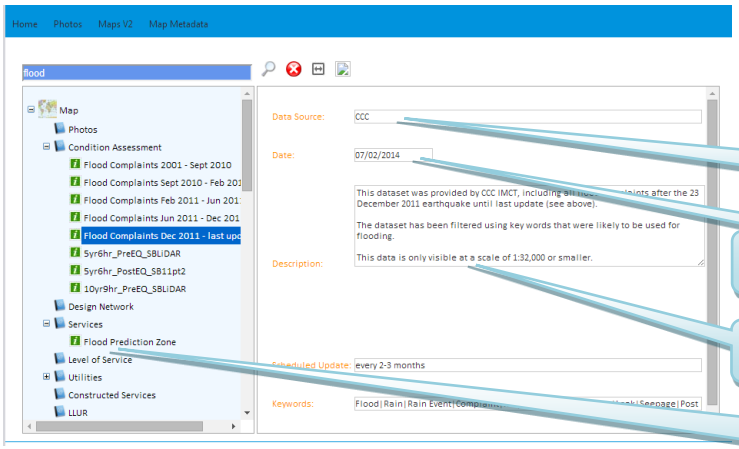


You will need to change your password after you first login.

Use the logout and change password tab on the home page to change your password.

Your password must be at least 6 characters long.

2.2. Map metadata



List of the layers available on the maps page of the viewer. The map metadata is searchable and has details about

Data source

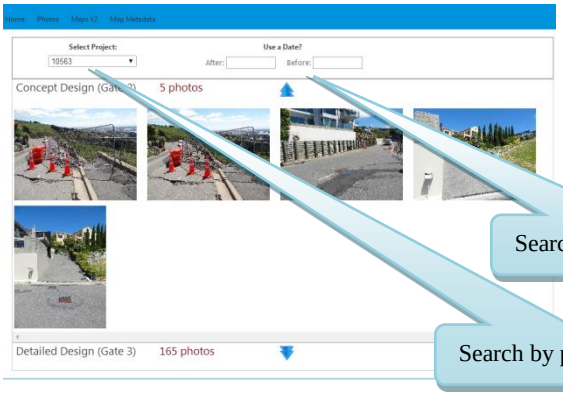
Date last updated

Details about the layer

Name of service and location on Active or Add to layer list

e.g search for flood – look for green icon, click on layer name ‘flood complaints Dec 2011 – last update’ to see details about that layer, go to maps page and view layer on Active Layer list/Condition Assessment.

2.3. Photos



Photos taken with GPS cameras are available on the Active Layer List/Photos.

You can also view photos through the photos tab on the home page.

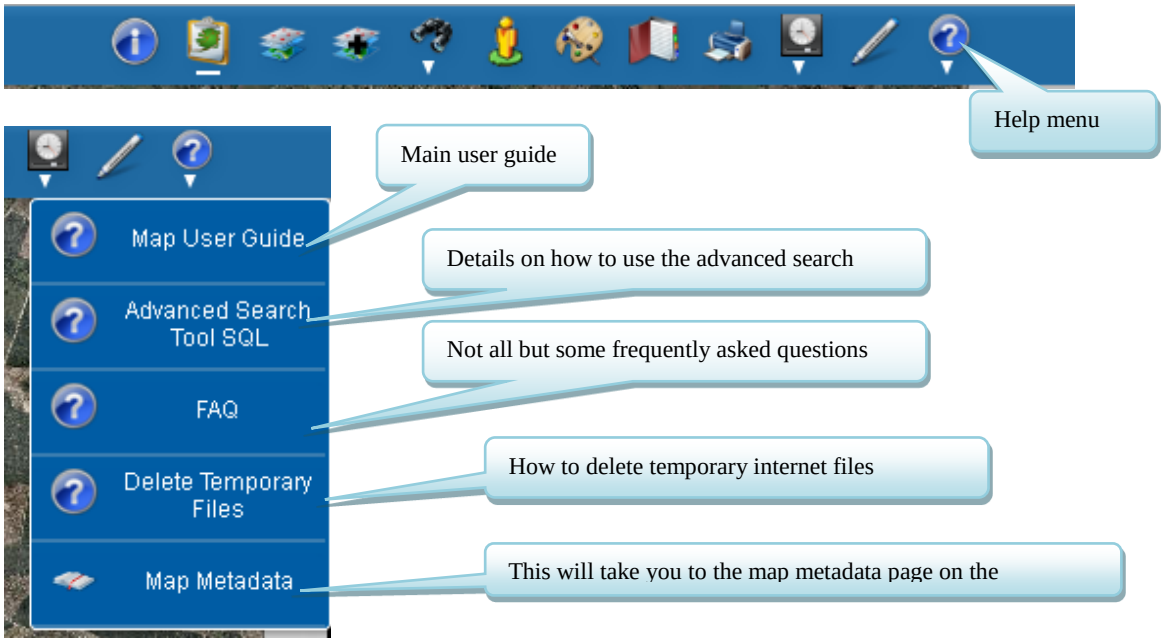
Search by date taken

Search by project number

3. Troubleshooting and where to get help

3.1. Help menu

On the main toolbar of the maps page there is a help menu with a number of help guides.



3.2. Delete temporary internet files

Sometimes things stop working and deleting your temporary internet files is GIS team's equivalent of switch it off and switch it back on again!

Please read the Delete Temporary Internet files guide under the help menu to see which details how to delete your temporary internet files in

- Internet explorer
- Firefox
- Chrome

Please note you will need to close the maps page before you delete your temporary internet files.

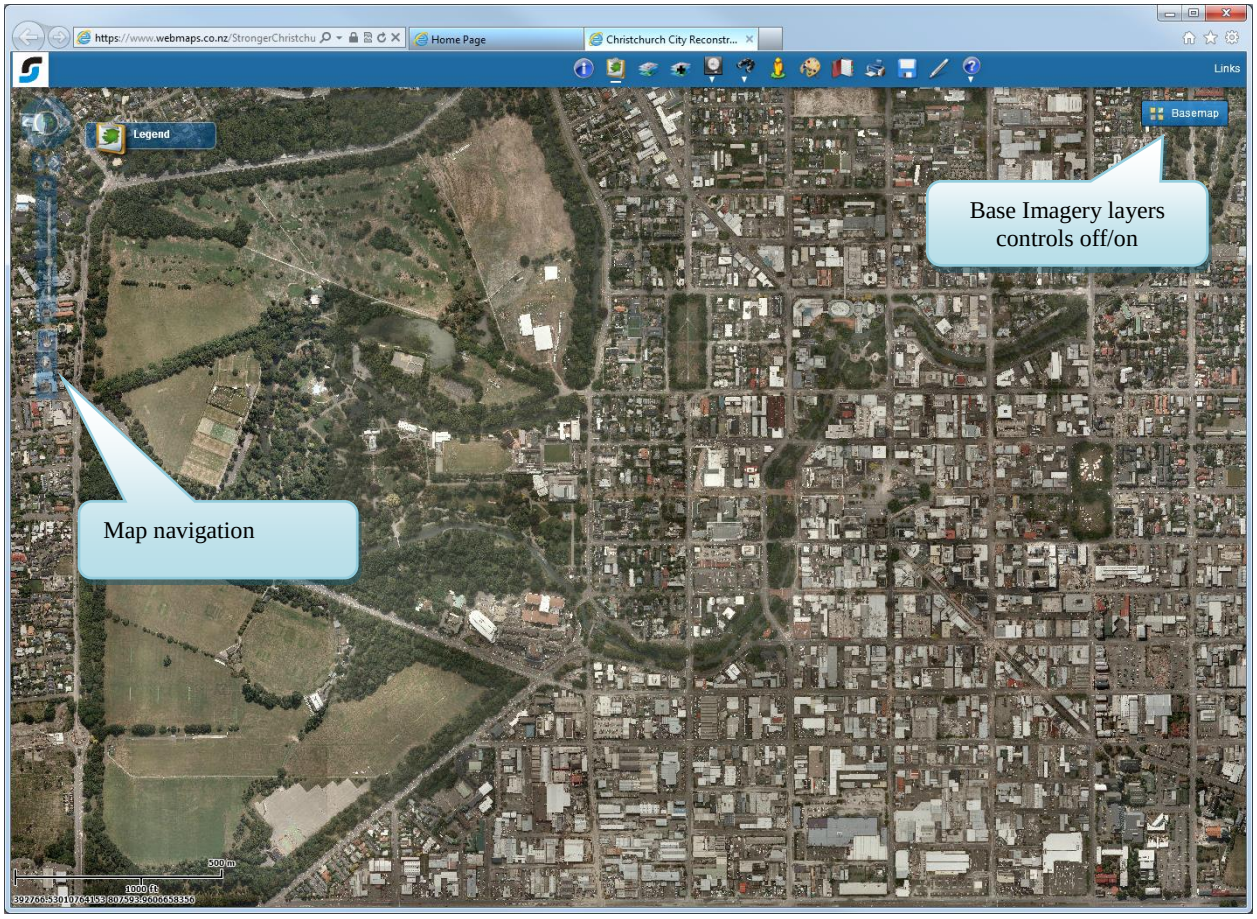
If deleting your temporary files has not worked delete any shortcuts that you had for the viewer and type www.webmaps.co.nz/strongerchristchurch into your browser and start again.

4. Disclaimers

This page lists the sources of data and any restrictions placed on the usage of the data by each source. Please read and understand these disclaimers before proceeding. If you check the 'Don't show again' box this window will not show again unless there are further additions to the disclaimers.

5. Map Interface

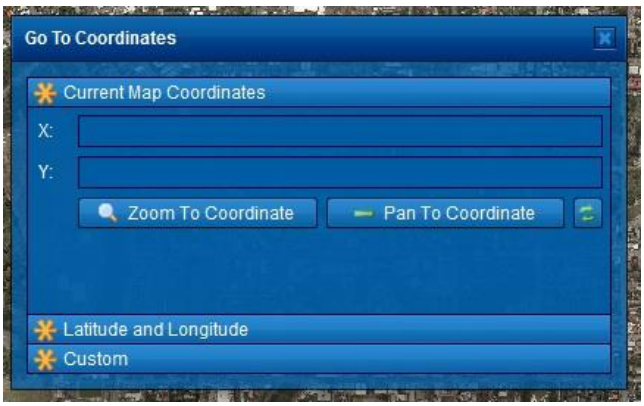
This section outlines the functions and tools that are part of the Maps tab. All of the spatial data related to this project can be accessed in this one place. The spatial team regularly processes and updates additional data to be incorporated into the master database.



1.1. Coordinates

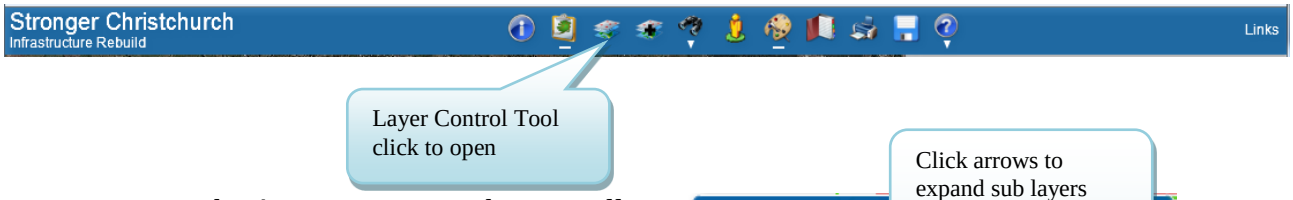
To copy the current cursor coordinate location to the clipboard right click on the map and select either map or projected coordinates. As a default all coordinates are projected as 'NZGD_2000_Mount_Pleasant_Circuit'. This function is accurate to within ½ a meter.

To zoom or pan to a coordinate location, right click on the map and select 'Go to XY coordinates'. Type in the XY coordinates in the appropriate box and either zoom or pan to the location. You can enter Current Map Coordinates, Latitude and Longitude, NZTM or Mount Pleasant coordinates.



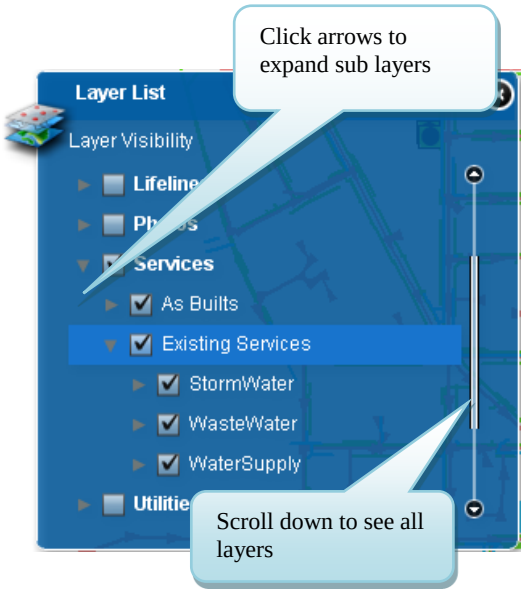
1.2. Active Layer List

The Active Layer List functions as a main menu. There are many layers held within the database as outlined above, to see these you will need to open the active layer list.

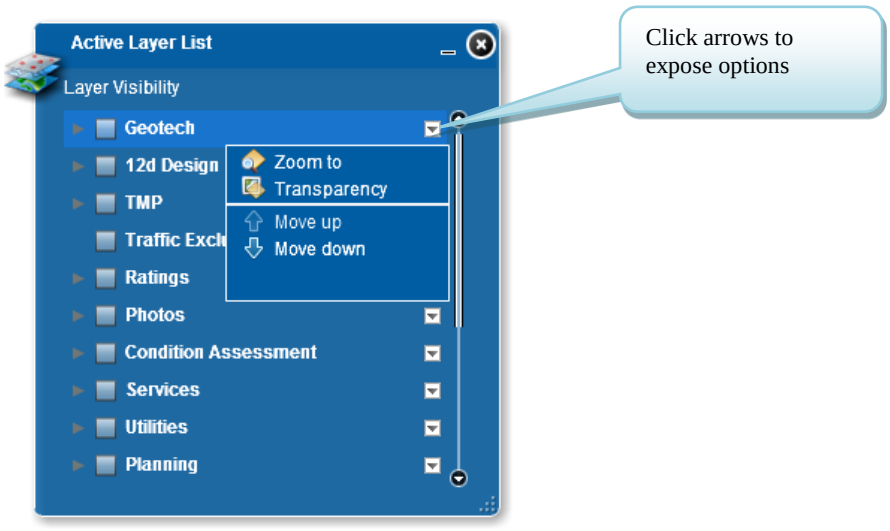


Menu items in the Active Layer List have small grey arrows pointing to the right, this indicates that there are more sub layers to this main layer. Click on the arrow to expand the list. The layer list display is a fixed height so it will create a scroll bar along the right to allow the user to scroll down the list

Once you have the list of layers you wish to display you are able to minimise the Layer List box by clicking the small horizontal dash at the top right. If you wish to close it totally click on the **X.**



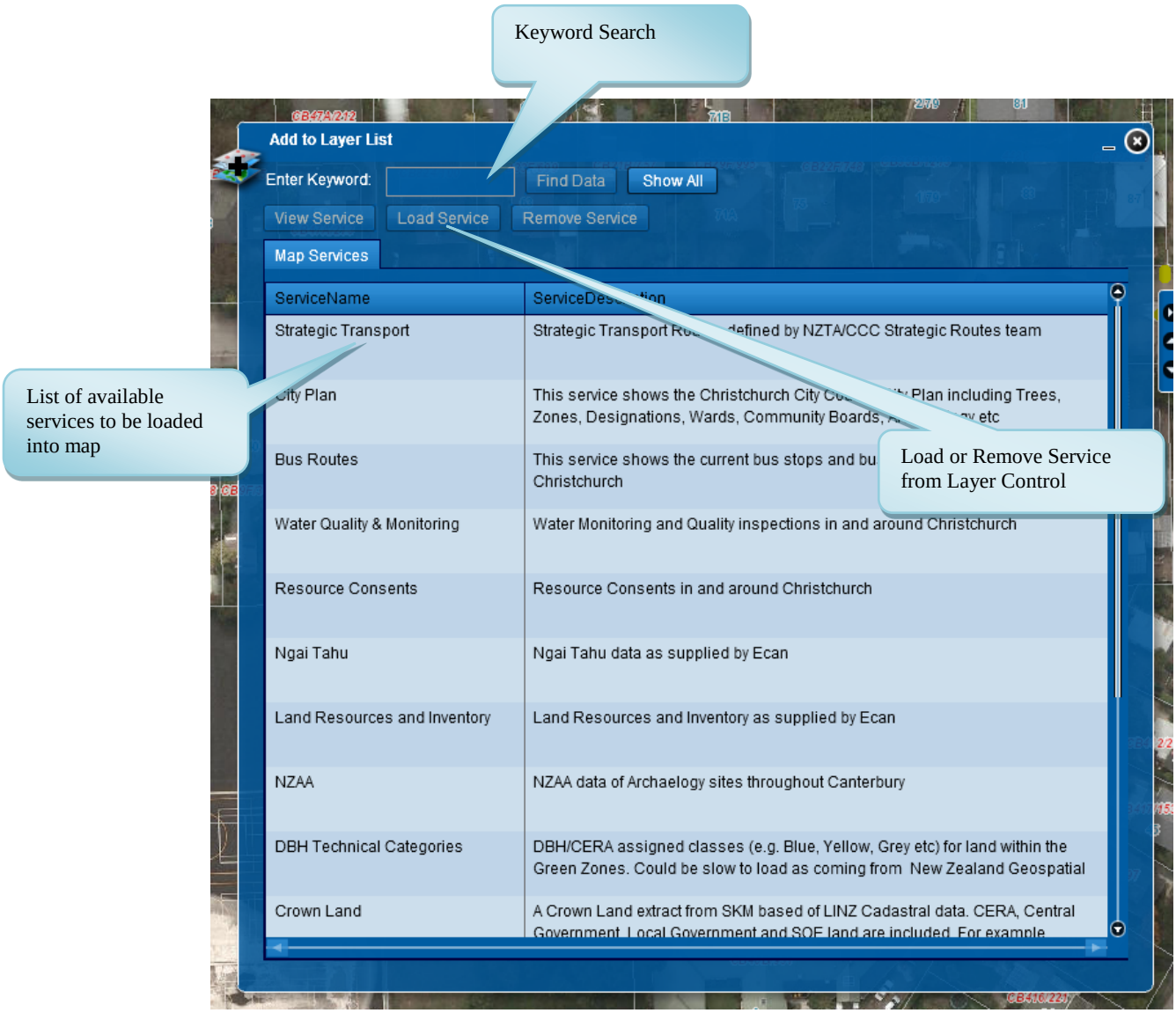
Users can also click on the down arrow on the right hand side which exposes a menu. This features available allow the user to change the transparency of the service of move the service up and down, so as to allow the preferred display on data.



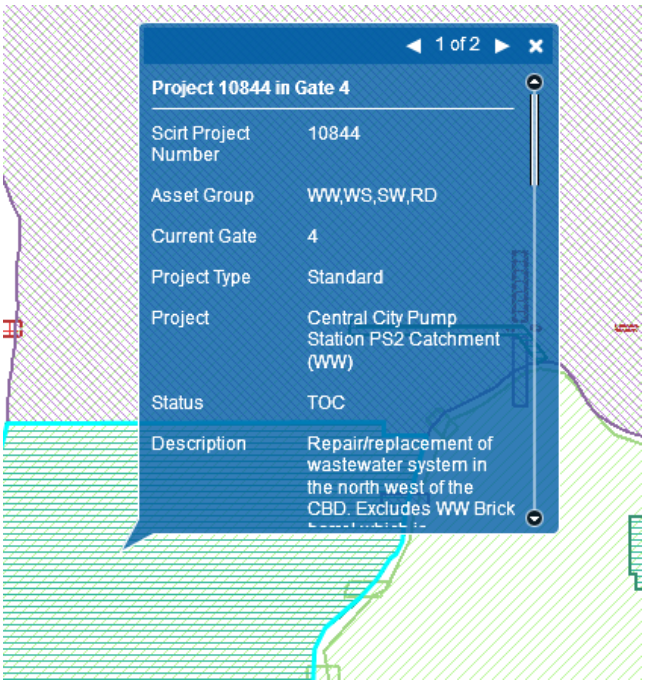
1.3. Adding Services to Layer Control

There are additional layers available to the layer control and this icon contains a significant amount of extra information that may be useful.

A user can then click on the relevant service they want to add to the map and load the services. The service will then appear in the active layer control. Please note some layers may be visible on the map when added to the layer control, while others will have to be activated in the layer control before they are visible.



1.4. The Identify Tool and Popups

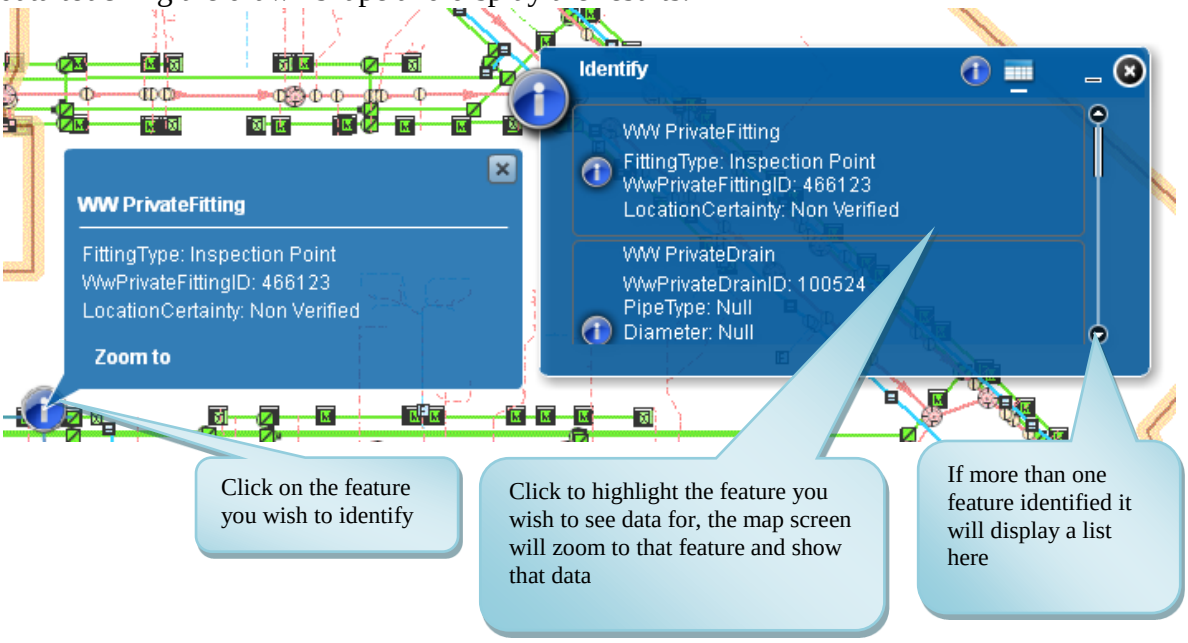


Many of the layers within the database have attributes associated with them. You have two options available to view these. You can either just directly click on the feature on the screen which will "popup" information related to the feature.

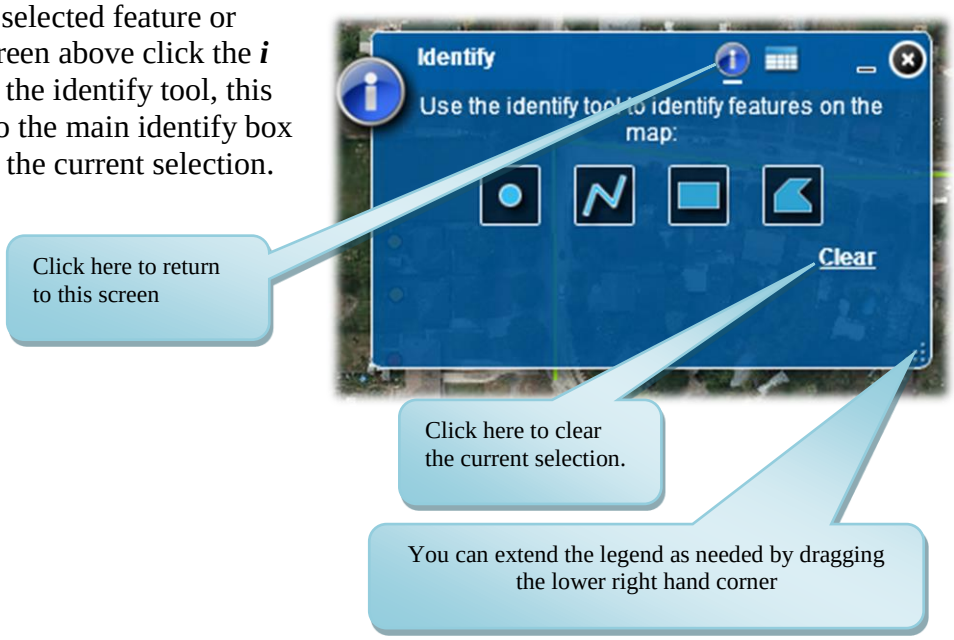
Or you are able to click the screen with the identify tool to display these.

Once you have selected the identify tool from along the top of the screen you will be presented with a tool box that you can expand or move as needed. The tool allows you to click on features on the screen and see what additional data is associated with that particular feature. If you have multiple layers turned on it will select data from all of the layers and display within the tool box with a scroll bar.

The user is able to draw a shape on the screen from the four types above and it will select all data touching the drawn shape and display the results.



To clear the current selected feature or features from the screen above click the ***i*** symbol at the top of the identify tool, this will take you back to the main identify box where you can clear the current selection.



1.5. The Legend

The legend is dynamic, changing depending on which layers are checked in the active layer list. It will appear automatically at the upper left when the map page is opened, but you can close it if you'd like. If you decide to use it again you can click the legend icon at the top of the screen.

You can position the legend anywhere on the screen by clicking and dragging.

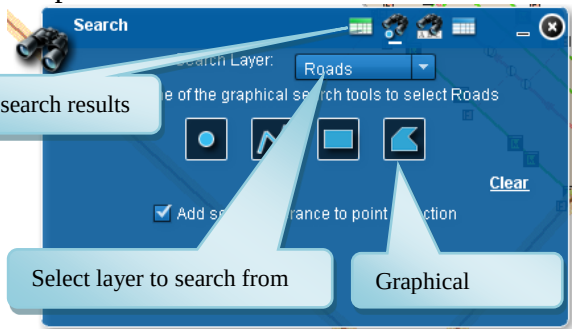
1.6. Search Tool

The search tool is divided into many sections. Photos search allows users to find photos based on keywords, project number, date, or spatial location. Make sure you are using the corresponding search layer field from the drop down menu. Standard search is for the three water networks that make up the council services. Land search is for cadastral layers such as roads, parcels and addresses. Conditions Assessment search allows searches for damaged infrastructure. SCIRT Projects search is for the projects layer, Roading search includes carriageways and bridges, and Salesforce search is for referencing the work packages and damage register points. The advanced search can be used to create queries made of multiple attributes.

You are able to search graphically by drawing a shape around an area, or by text if there is a specific asset or location that you are searching for. Both of these methods are only available for certain layers at this stage.

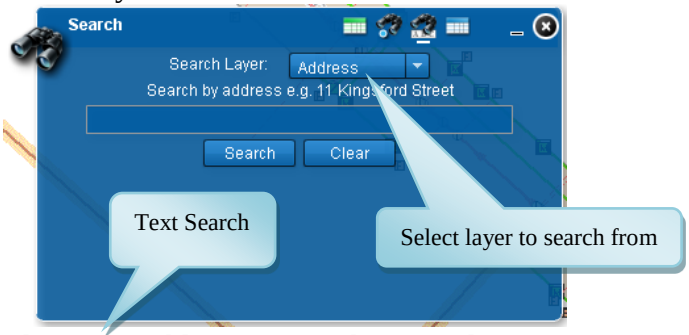
Click the binoculars to open the search tool box.

Graphical Search



The user is able to draw on screen the shape from the four types above and it will select all searchable data within the graphical search areas and display the results

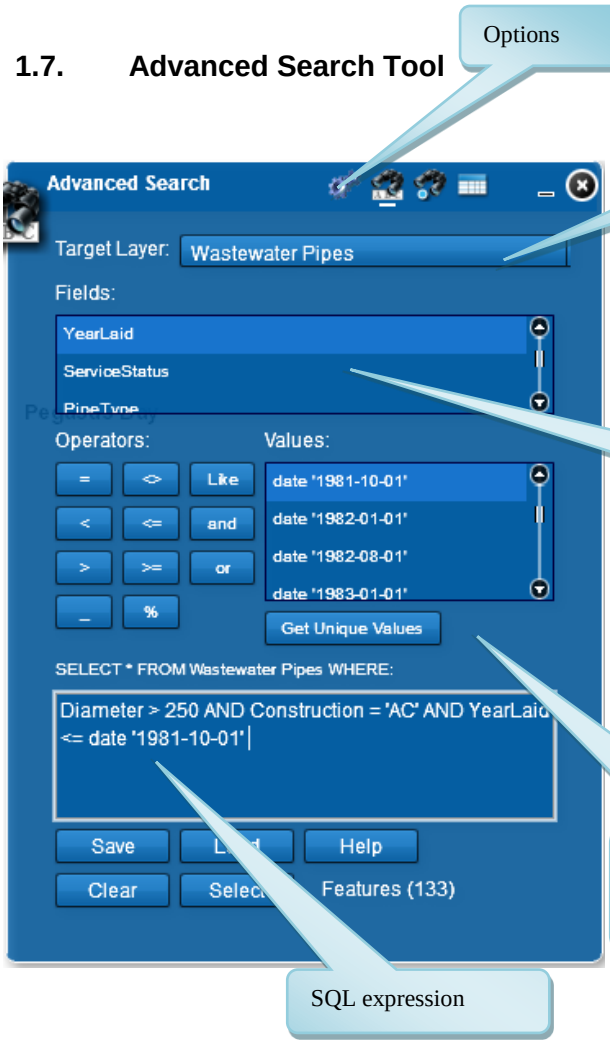
Search by Text



The user is able to type in the asset they wish to search for (available only for certain assets).

Outputting the Search Results to a grid allows you to save the results to either a CSV or TXT file. Make sure you type '.csv' or '.txt' at the end of your file name.

1.7. Advanced Search Tool



The Advanced Search tool allows for complex querying of the data in a pseudo-SQL environment. Users can query specific field(s) within the data and get detailed results. A results layer will be added to the top of the layer list and allows users to turn on and off the last successful query using the advanced search tool.

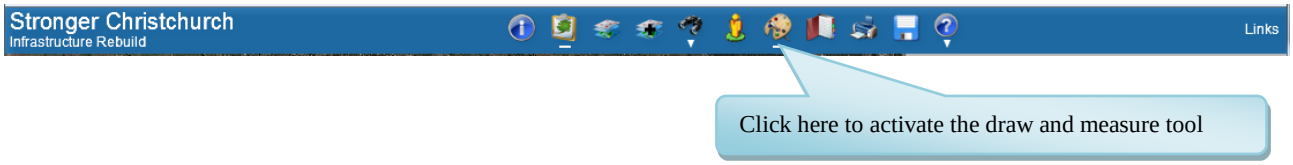
This tool requires at least a basic knowledge of SQL principles. Please read "Advanced Search Tool SQL" for more information

1.8. Google Street View

This tool opens a street view in a new tab.

If street view is not working you may just have to allow the pop ups on your browser to access street view.

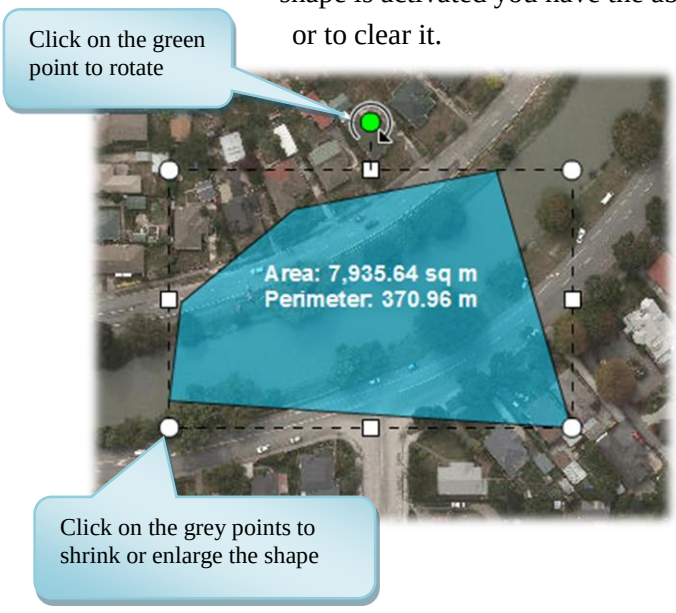
1.9. Draw and Measure



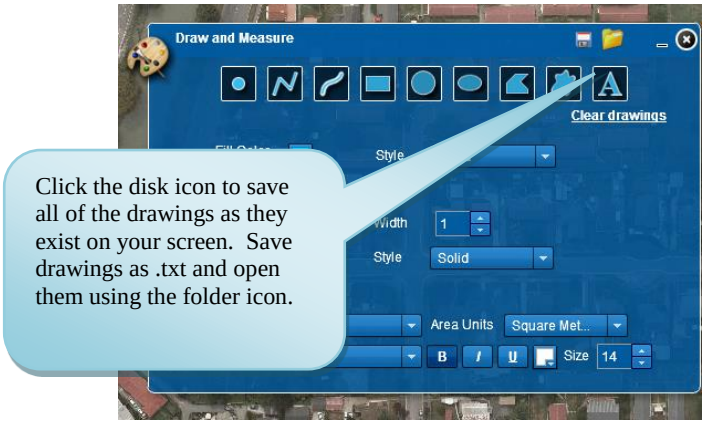
The draw and measure tool allows you to sketch up over the map display with lines, shapes and text. You are also able to measure on screen.

You are able to edit each drawing individually by left clicking on it once. This will activate the shape to add, remove, or move vertices. The measurements will change to reflect the new shape.

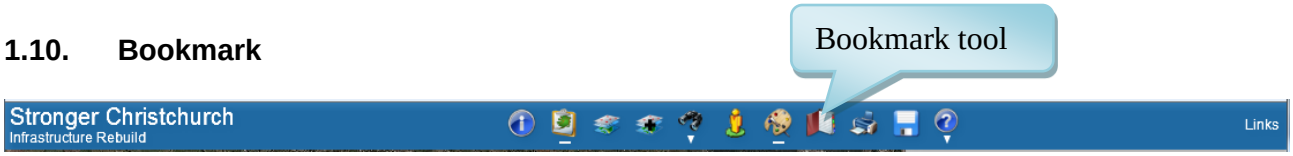
You are able to resize and rotate each drawing individually by left clicking on it twice. Once the shape is activated you have the ability to right click on the shape to see its measurements or to clear it.



You can save your drawings to use the next time you log in to your map, or you can send the drawings to other people.

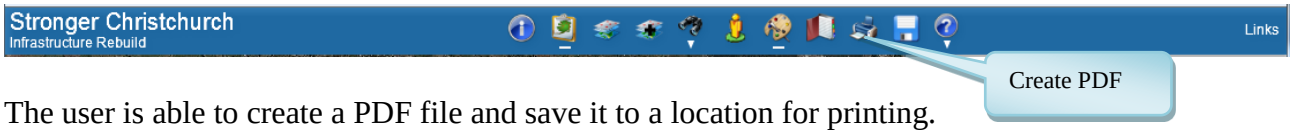


1.10. Bookmark

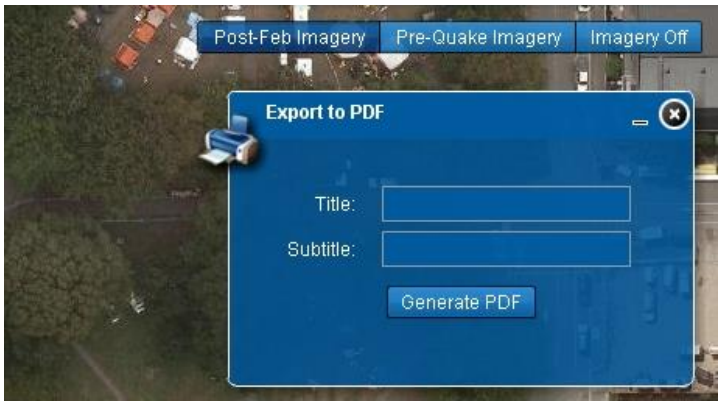


The book mark tool allows you to bookmark locations into a list to look at later. It allows these to be exported and also emailed to someone else to bring into their environment.

1.11. Export to PDF (Print)

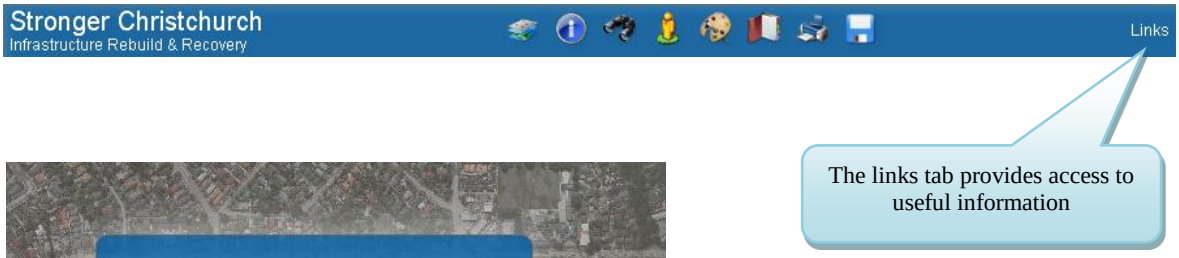


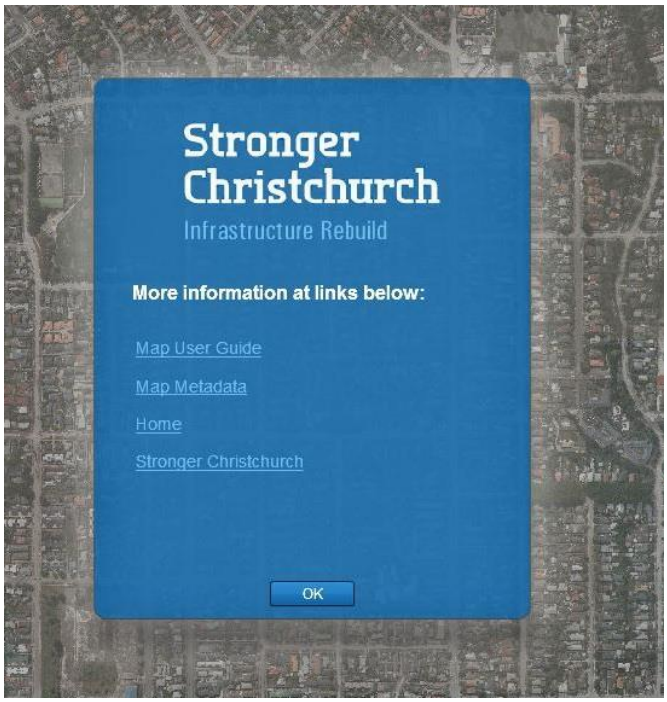
The user is able to create a PDF file and save it to a location for printing.



The map will print with the standard Stronger Christchurch template and disclaimer.

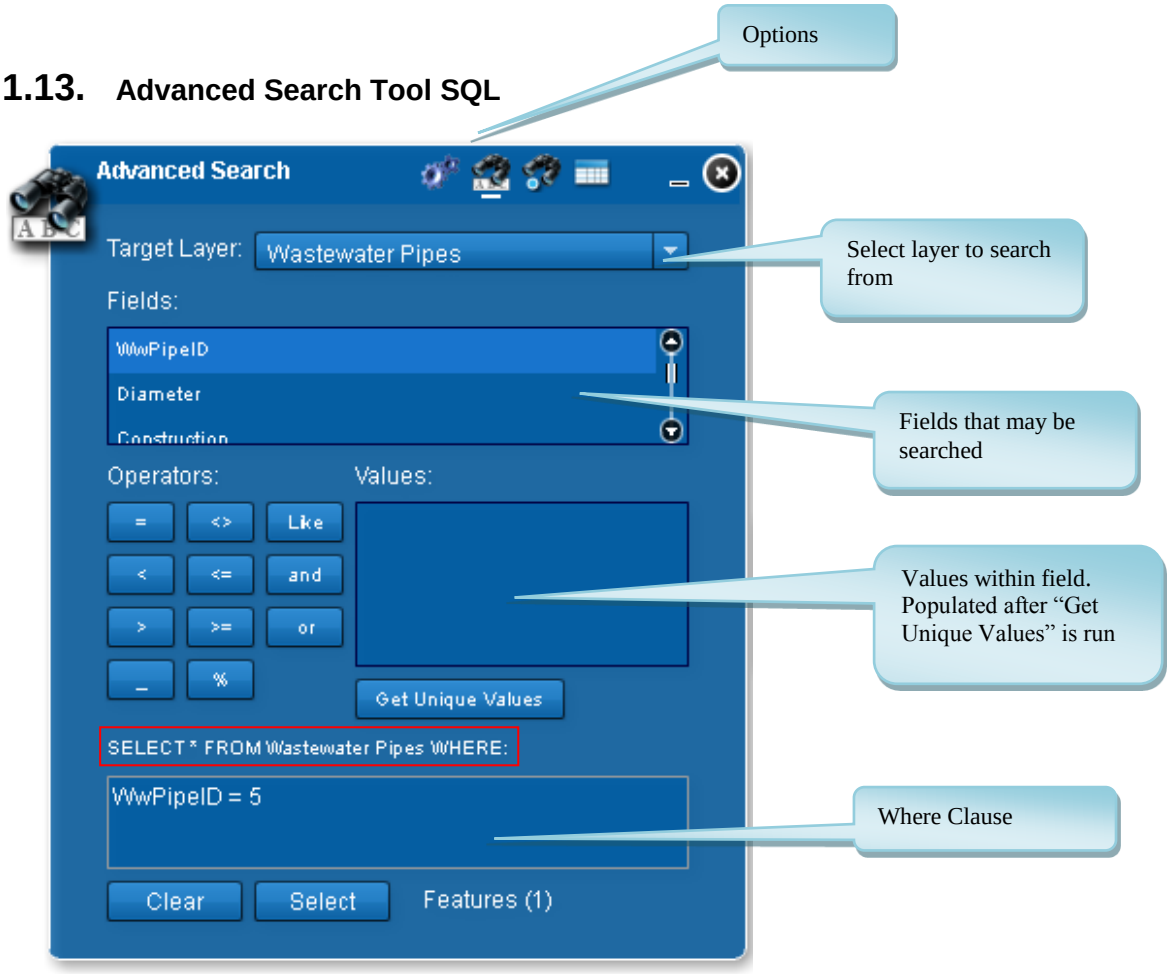
1.12. Links Tab





Through the links tab you can easily access this user guide, map metadata (gives sources and descriptions of each layer of data), the spatial viewer homepage and the SCIRT website.

1.13. Advanced Search Tool SQL



The Advanced Search tool allows for complex querying of the data. It uses a pseudo-SQL environment to perform these queries; meaning that it performs several SQL based functions but not all (e.g. Length, Join, etc).

In the above screenshot, the area shown in the red box is the initial part of the query and will only change based on the target layer chosen. This immediately limits the user to a where clause rather than an entire sql statement. **Please note that the results are limited to 1000 records**

The Basics of SQL

The screenshot above shows the Where Clause: *WwPipeID = 5*

In this example WwPipeID is the field within the Wastewater Pipe layer we are searching and the operator is =, while the 5, means we are looking for the WwPipeID with a value equal to 5.

The basic formula is:

Field	*operator*	value
WwPipeID	=	5

Field Type

Please note that it is important to understand the type the field you are searching.

Character fields are searched with single speech marks around the value:

WwPipeID = **'**5**'**

While number field do not include single speech marks

WwPipeID = 5

Even though a field may only contain numbers, it may still be a character field. If a field contains any characters it has to be a character field

N.B. Clicking on "Get Unique Values" while a specific field is selected within the "Fields" area will populate the "Values" box. If the data is surrounded by single quotes you will know it is a string field, if no single quotes exist it will likely be a number field

Case Sensitive

The values that are used within the where clause are case specific. For instance, when querying the wastewater pipes

Construction = 'BB' will return all Brick Barrel pipes

Construction = 'bb' will return nothing

If you have values that could be both upper and lowercase you can use the Upper() or Lower() command. E.g.

Construction = Upper('bb') is the same as *Construction = 'BB'* and will return all Brick Barrel pipes

lower(Construction) = 'bb' would turn the construction values to lowercase before they are queried and this would return all the Brick Barrel pipes

Operators

Operators are symbols that specify the type of query to be performed on the data, this include

= Equal to

< Less than

> Greater than

< > Not Equal

< = Less than or equal to

> = Greater than or equal to

And Compares/Associates two values of expressions. e.g. *Construction = 'BB' And Diameter = '900'* returns Brick Barrel pipes with a diameter of 900mm

Or Compares/Associates two values of expressions e.g. *Construction = 'BB' or Construction = 'PVC'* returns Brick Barrel and PVC pipes (N.B. there are over 1000 records, so only the first 1000 are shown). You will also notice that Construction field is mentioned twice in that example…… *Construction = 'BB' or "PVC'* will not work.

In You can use "in" to search for multiple values within the same field. E.g. *Construction in ('BB', 'PVC', 'ABS')* is the same as *Construction = 'BB' or Construction = 'PVC' or Construction = 'ABS'*

Like This is used for wildcard searches which use **%** or **_** symbols. If you don't use either % or _ within the statement, Like will be the equivalent of = but will run slower. E.g. Construction like 'BB' is the same as Construction = 'BB', although it will take longer to run.

The following Table will be used for the following examples

Name
CHRIS
CHRISTINA
CHRISTOPHER
BOB

JOHN

_ The underscore symbol is used to find a single character e.g. *Name Like 'CHRI_'*

would return

CHRIS

% The percentage symbol is used to find multiple characters e.g. *Name Like 'CHRI%'*

would return

CHRIS

CHRISTINA

CHRISTOPHER

The symbols can be used anywhere with the query value e.g. *Name Like 'B_B'* would return

BOB

e.g. *Name Like '%TINA'* would return

CHRISTINA

Between This is used to select all the features including and between values mentioned. E.g. *Diameter between 10 and 100* or another example *Date between date '2012-01-15' and date '2012-02-27'*

Further information

It is important to understand how **And/Or** work. For instance

Construction = 'PVC' or Construction = 'UPVC" and Diameter = 500 will return **all PVC pipes**, as well as UPVC pipes with 500mm diameter

(Construction = 'PVC' or Construction = 'UPVC") and Diameter = 500 will return PVC and UPVC pipes with a diameter of 500mm

Date fields

While field may appear to show a date, it may either be a date or text field. A text field won't be easy to search by a date range but if it is a date field you can use operators like between and a number of SQL statements to search specific date ranges. To tell if it is a date field in the advanced search, click "Get Unique Values" and if the values show *date 'YYYY-MM-DD'* then it is a date field.

Other Examples of SQL:

Find pipes with Earthenware or Brick Barrel construction from 1882

Construction in ('EW', 'BB') and yearlaid like '1882%'

Find Earthenware pipes with a diameter of 150 to 500mm (**returns the first 1000**)
Construction = 'EW' and (Diameter >= 150 or Diameter <= 500)

Find all pipes with a construction value other than PVC that were installed in 1987
Construction <> 'PVC' and Yearlaid like '1987%'

Find all pipes, other than PVC and UPVC, with a diameter of 300mm
(Construction <> 'PVC' and Construction <> 'UPVC' or Construction is null) and Diameter = 300
Note the use of **And** between the two construction values that use <>. If we were finding construction = to PVC and UPVC it would instead be shown as **Or.** Also notice the *Construction is null*, which finds any features that don't have any construction value listed. Null is different from empty, which would be *Construction = ''*.
A simpler way to write this where clause would be by using **not**
*Construction **not** in ('PVC', 'UPVC') and Diameter = 300*

For any help, please see the GIS team.

1.14. Frequently asked questions

Q) Why isn't the imagery loading?
A) The imagery should load straight away, if it doesn't appear to be loading you may want to close the window and click on the maps tab again.
Q) I can see the imagery but no layers are turning on.

A)

- The layer list is a nested system, make sure you click on all levels of the tree to see the layers. Ex: You will not be able to see 'WasteWater' unless you have also checked 'Existing Services' and 'Services' before it.
- Check to make sure you are at the proper scale to see your layer. Ex: The 'Trees' layer on the City Plan is only visible at a scale of 1:4,000 or smaller. Reference the map metadata to check if your target layer is set to a zoom scale.

Q) How can I change the colours of the layers?

A) We're sorry but you can't. Currently the software does not allow users to change the colour of the features.

Q) How can I find a list of the available data?

A) A good place to start is by searching Map Metadata (under help). Map Metadata reflects the same structure as the layer list on the maps page and it allows keyword searches. This allows you to find out the location of the data. You can also find a written list of all layers of data in the help manual.

Q) When was the data last updated?

A) Updates occur regularly, the Map Metadata (under help or links on the map page) gives specific dates that data layers are current to.
Q) Why doesn't my file open after I export it to csv (pdf, txt…)?
A) You have to specify the file type at the end of the name. Make sure you save the file as 'file.csv' instead of 'file' and then you will be able to open it or send it as an attachment.

- Bookmarks are **.xml**
- Shapes in the draw & measure tool are **.txt**
- Exports from advanced search are **.txt**
- Advanced search queries are **.xml**