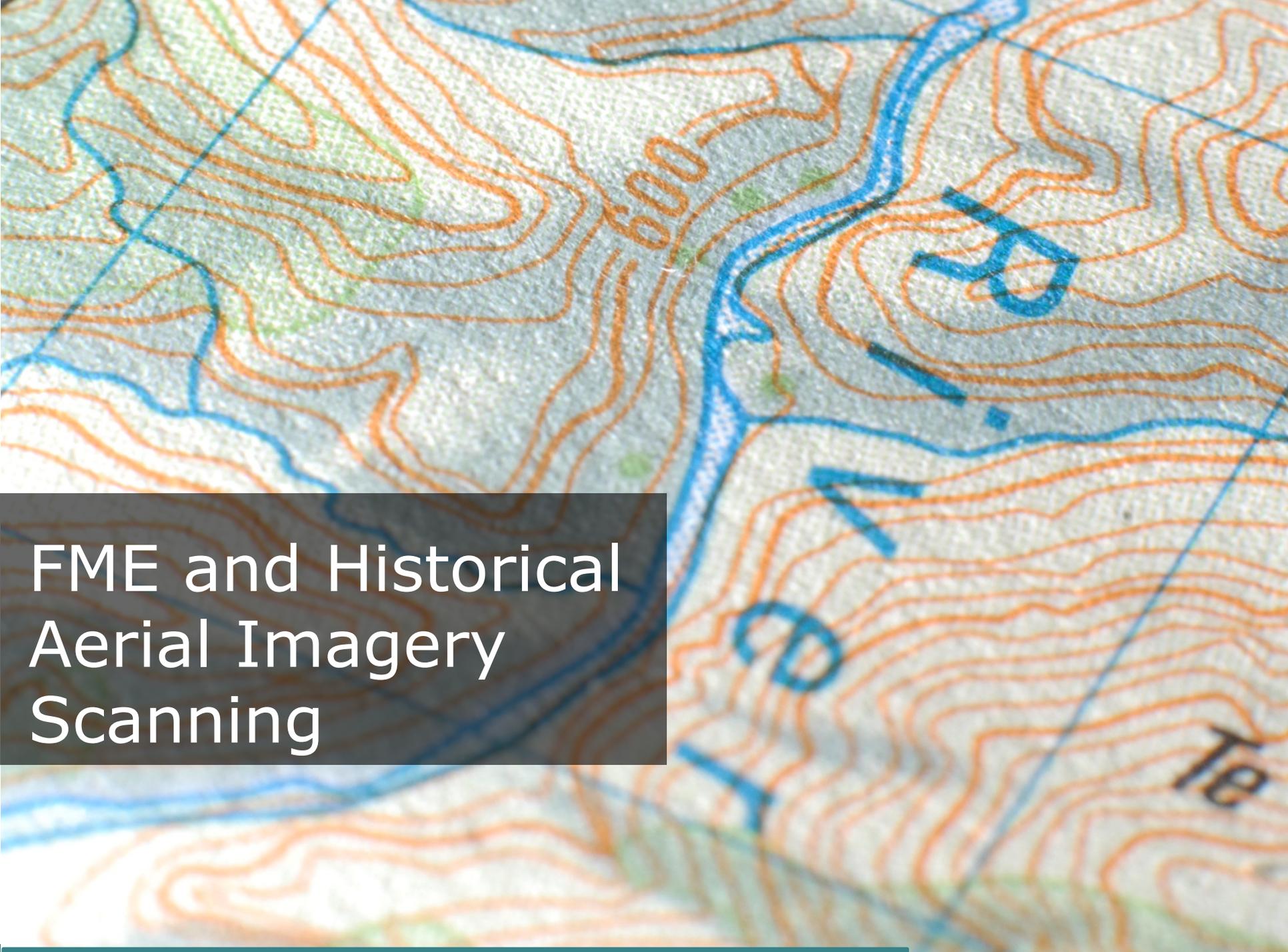


FME at LINZ

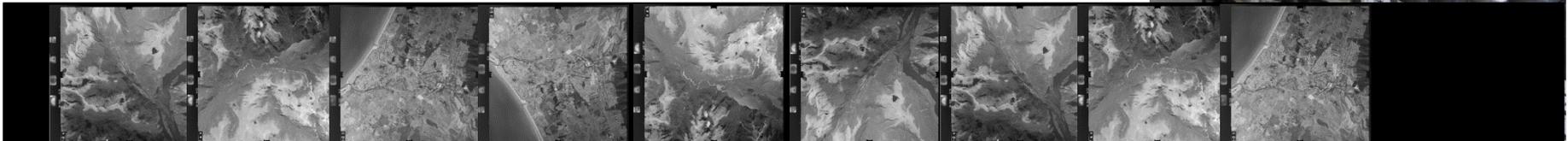
Deb Jones | Senior Location Data Analyst, Imagery and
Elevation



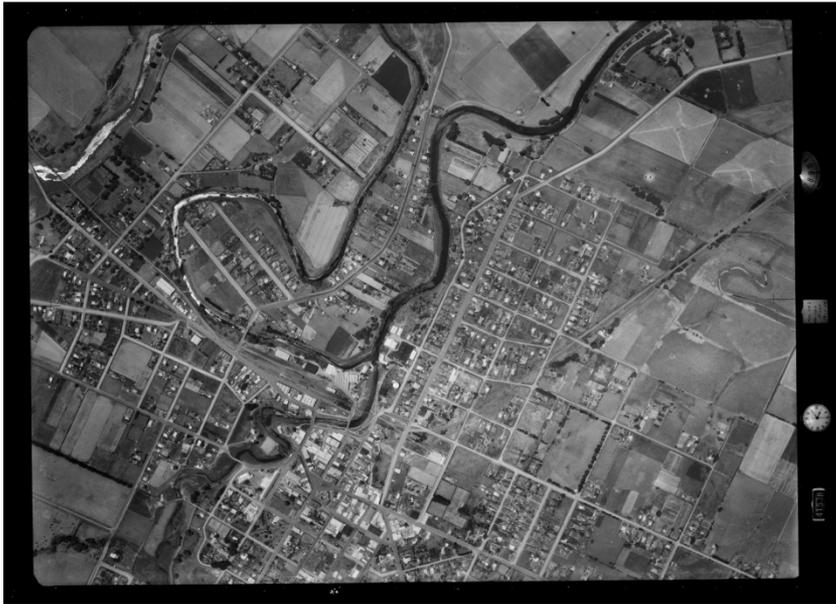
FME and Historical Aerial Imagery Scanning

Background

- 1930s to 2005 aerial imagery was captured on films by NZ Aerial Mapping (NZAM).
- Films stored at NZAM. Contact prints provided to LINZ.
- Limited access.
- Films an unstable storage medium.
- In 2014 a project was set up to scan these films to produce digital copies of the images.



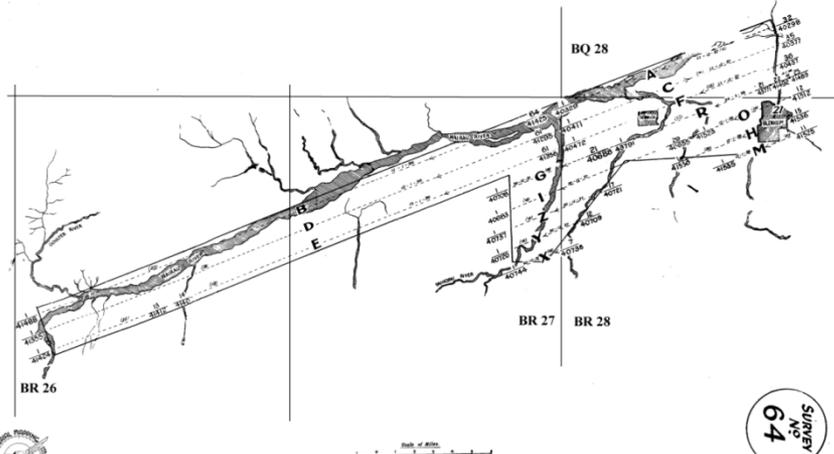
Historical Imagery Metadata



WAIRAU RIVER , 1937 - 38

SURVEY
NO
64

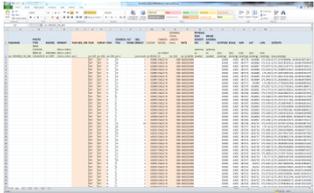
Camera Lens : 10" Altitude : 9000' Scale : 1:11000 Flown : See Runs Film : See Runs Crown Copyright



SURVEY
NO
64

- When/Where/What
 - Survey, run, photo_no, camera, camera_sequence_no, nominal_focal_length, altitude, scale, date, film, lat/lon, shape
- Quality
 - Film_sequence_no, format, source, film_condition, image_anomalies
- Storage
 - Raw_filename, released_filename

Process



LINZ supply metadata for films to be scanned.



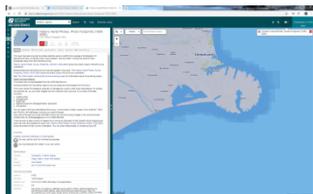
WSP-OPUS scan films (creating tiff files), edit metadata (Excel), and send to LINZ.



LINZ stores back-ups of files received by film.



Metadata is updated (PostGIS).



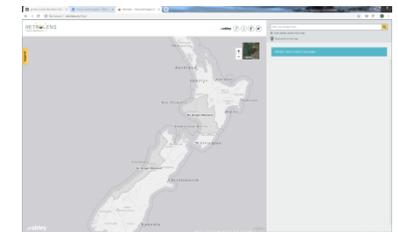
Metadata is published on LDS.



A copy of the tiff files is renamed by survey number and stored.

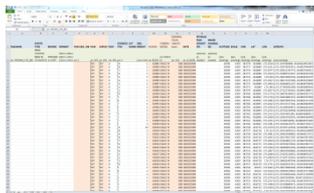


Copies of renamed tiff files are sent to participating councils and Abley.



Outside of the scope of this project, the LGGA make the images available via the Retrolens.nz website (provided by Abley). www.land.govt.nz

Where FME is used



LINZ supply metadata for films to be scanned.



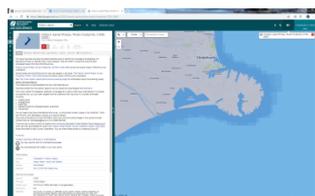
WSP-OPUS scan films (creating tiff files), edit metadata (Excel), and send to LINZ.



LINZ stores back-ups of files received by film.



Metadata is updated (PostGIS).



Metadata is published on LDS.

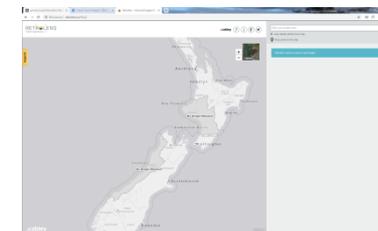


Quality Checks

A copy of the tiff files is renamed by survey number and stored.

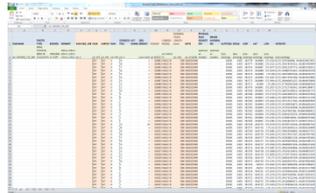


Copies of renamed tiff files are sent to participating councils and Abley.



Outside of the scope of this project, the LGGA make the images available via the Retrolens.nz website (provided by Abley). www.land.govt.nz

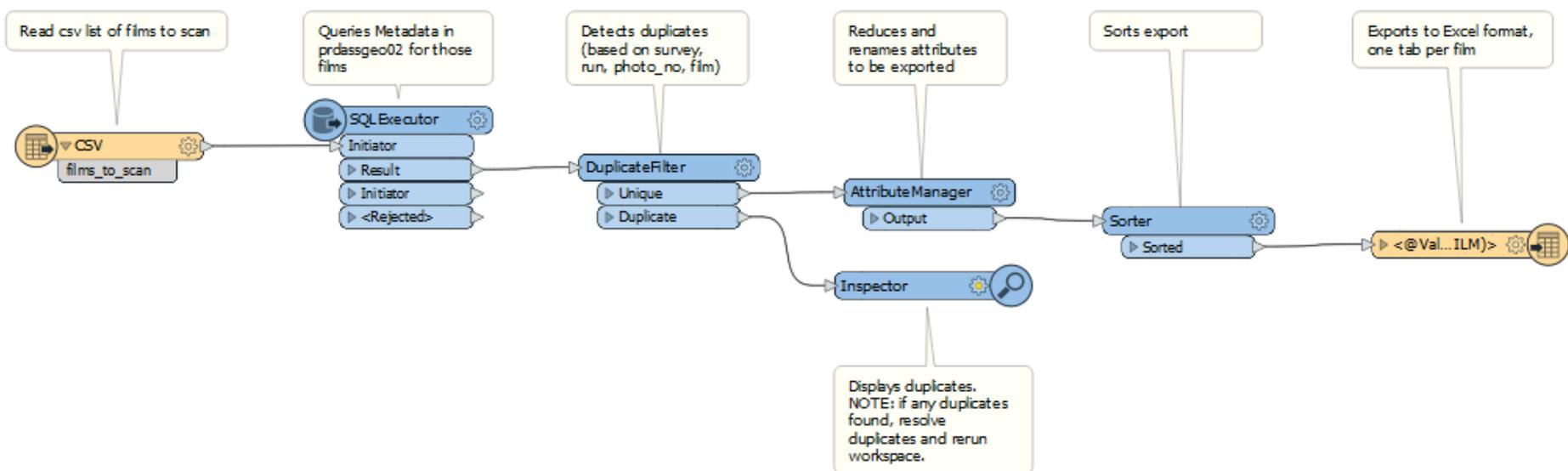
Metadata supply to OPUS



LINZ supply metadata for films to be scanned.

- Reading list of films from CSV, querying database to obtain metadata, writing to Excel.
 - CSV reader, SQL Executor
 - Duplicate filter, attribute manager, sorter
 - Excel writer

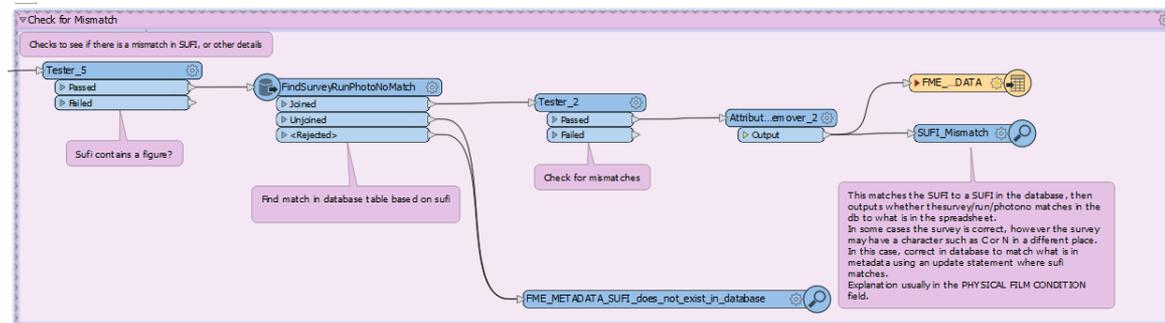
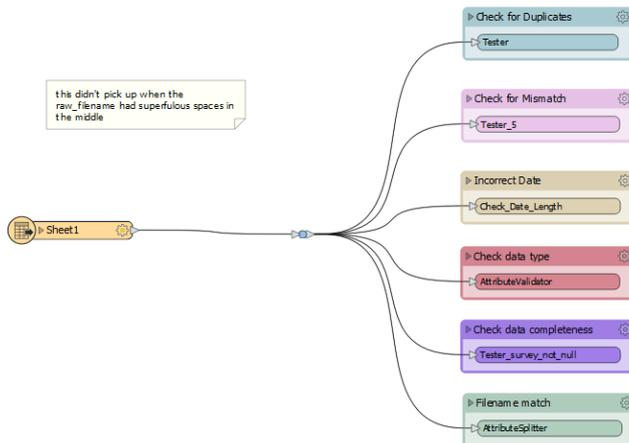
NOTE: Before running this workspace, update films_to_scan.csv with the list of films you want scanned



Check input spreadsheet

- Reading metadata in Excel, checking against database and quality rules, displaying errors.
 - Excel reader, SQL Executor
 - Testers, attribute validators, duplicate filter, attribute splitter, attribute creator, attribute remover
 - Inspectors

Note: No data is updated by this workbench in the metadata spreadsheet or database



Metadata is updated (PostGIS).

Check input spreadsheet

Update database

Update database

PostGIS



Metadata is updated
(PostGIS).

- Reading metadata in Excel, checking against database and quality rules, generate image filenames, export errors to Excel, update PostGIS database.
 - Excel reader, SQL Executor
 - Testers, attribute validators, duplicate filter, attribute splitter, attribute creator, attribute remover, string concatenator
 - Excel writer, database updater

Quality Checks

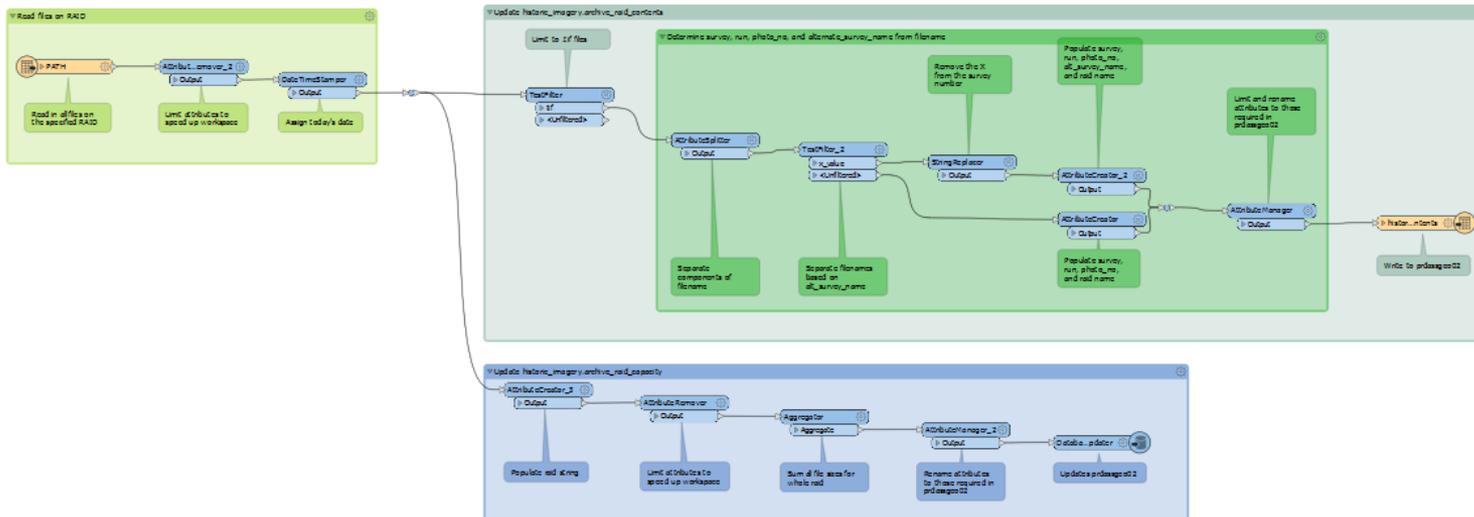
- Reading files on RAIDs, creating metadata, writing to database.
 - Directory and File Pathnames Reader
 - Transformers; testers, attribute splitter, attribute creators, attribute removers, attribute managers, datetime stamper, string replacer
 - PostGIS Writer

Quality Checks

WARNING: Updates the Database

Takes approx 8 min to run on full RAID.

The drive letter will auto update to whichever drive the raid is in.
You can update subfolders only by changing the path, e.g. E:\SNI500-1999\Waikato\SNI504 will update archive_raid_contents for just survey 1504. If you do this, disable everything within the Managing archive raid capacities bookmark or you'll overwrite the 'used' value in the archive_raid_capacity table.

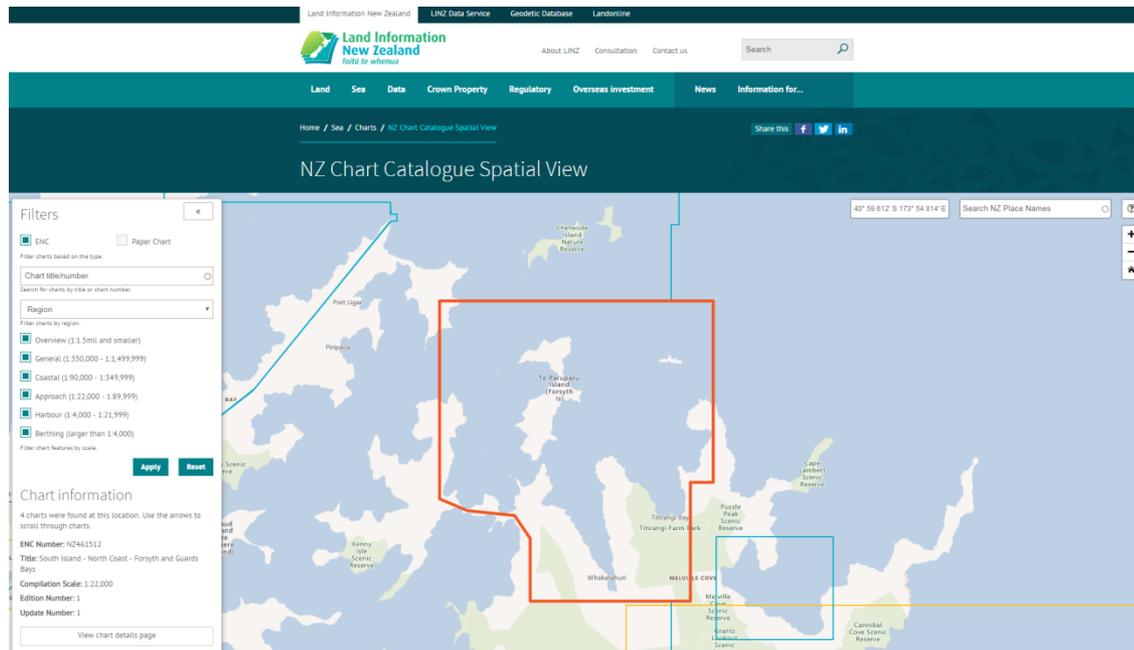




Use of FME
elsewhere in LINZ

Hydrography

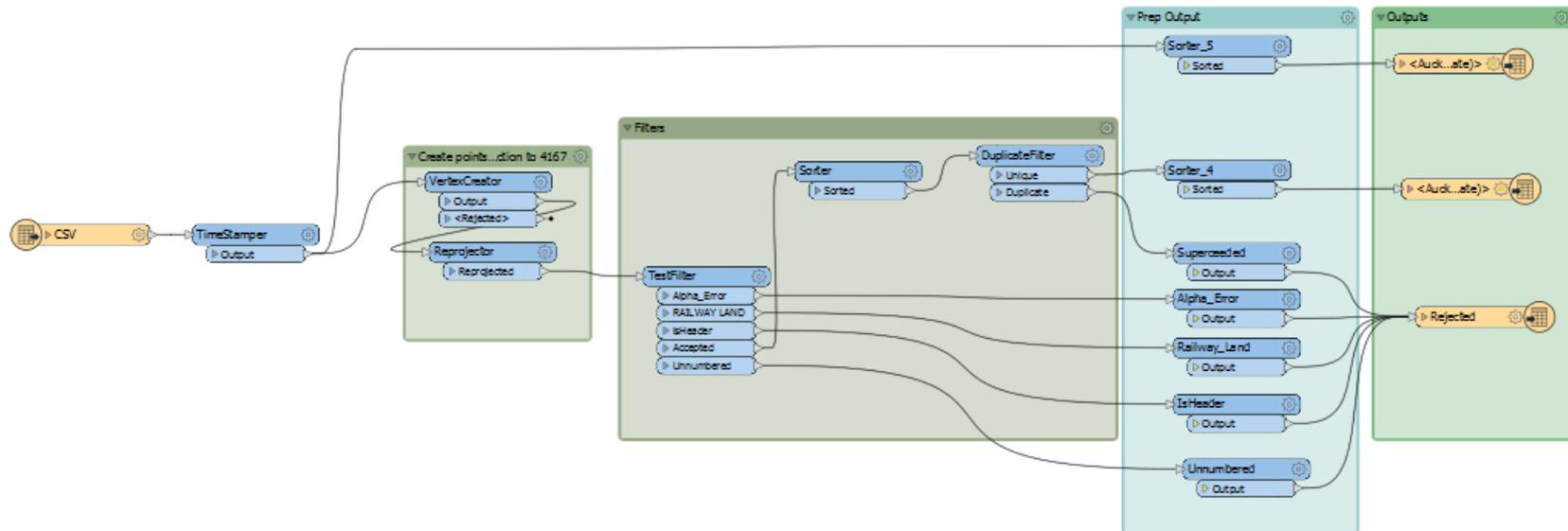
- Currently FME used to read an extract from HPD Caris (chart software), compare to an LDS layer, and identify changes.
- Staff recently trained in FME and will now look to streamline their end-to-end process.



The screenshot displays the 'NZ Chart Catalogue Spatial View' web application. The interface includes a navigation bar with links for 'Land', 'Sea', 'Data', 'Crown Property', 'Regulatory', 'Overseas investment', 'News', and 'Information for...'. A search bar is located in the top right corner. The main content area features a map of New Zealand with a red rectangular selection box highlighting a specific region. On the left side, there is a 'Filters' panel with options for 'ENC' (checked) and 'Paper Chart'. Below the filters, there is a 'Chart information' section displaying details for the selected chart: 'ENC Number: NZ461512', 'Title: South Island - North Coast - Forsyth and Guards Bays', 'Compilation Scale: 1:22,000', 'Edition Number: 1', and 'Update Number: 1'. A 'View chart details page' button is located at the bottom of the information section. The map shows various geographical features and reserves, including 'Cherwade Island Nature Reserve', 'Te Pahi Ngāi Tahu', 'Tairāwhiti', 'Whakāwhiri', 'Melville Cove', 'Purple Peak Scenic Reserve', and 'Cannibal Cove Scenic Reserve'.

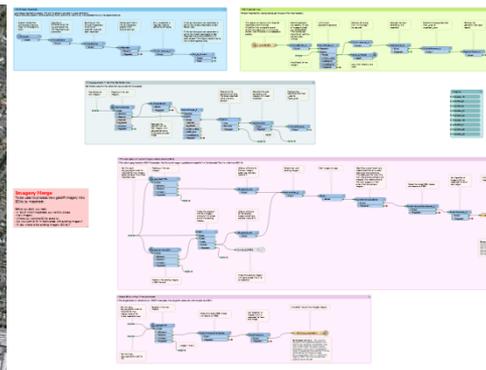
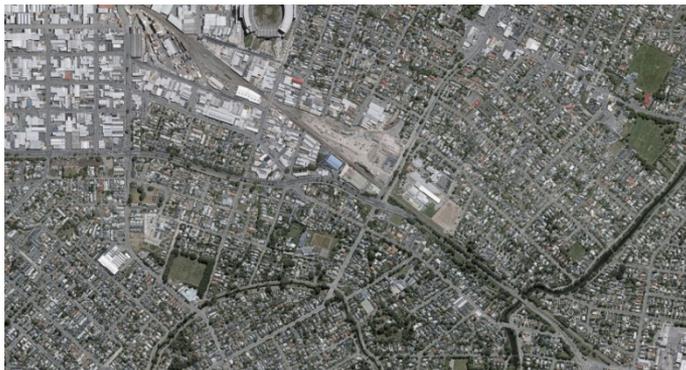
Addressing

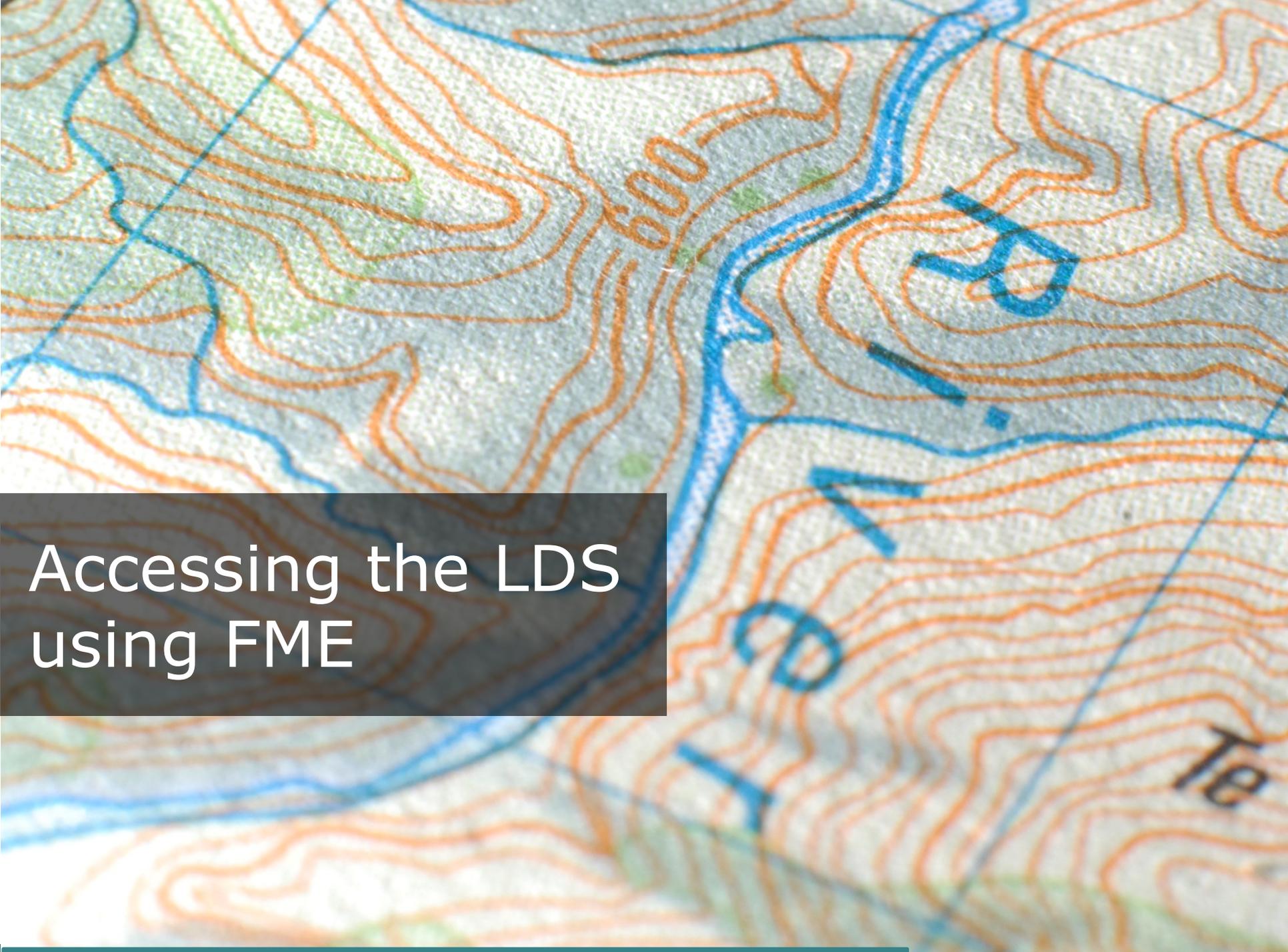
- Current use for;
 - Auckland Council CSV
 - Palmerston North City Council Arc Open Data portal, GeoJSON reader
- 4 staff recently trained in FME and will now look to utilise more widely.



Imagery Merge

- Use Raster Mosaicker within FME to merge multiple Geo TIFF images, and an existing ECW, to produce one ECW.
- For internal purposes, for cartographers to use when producing the Topo 50 Maps and for addressing analysts to use when placing address points or roads.
- Basic process in use, still working on improvements.

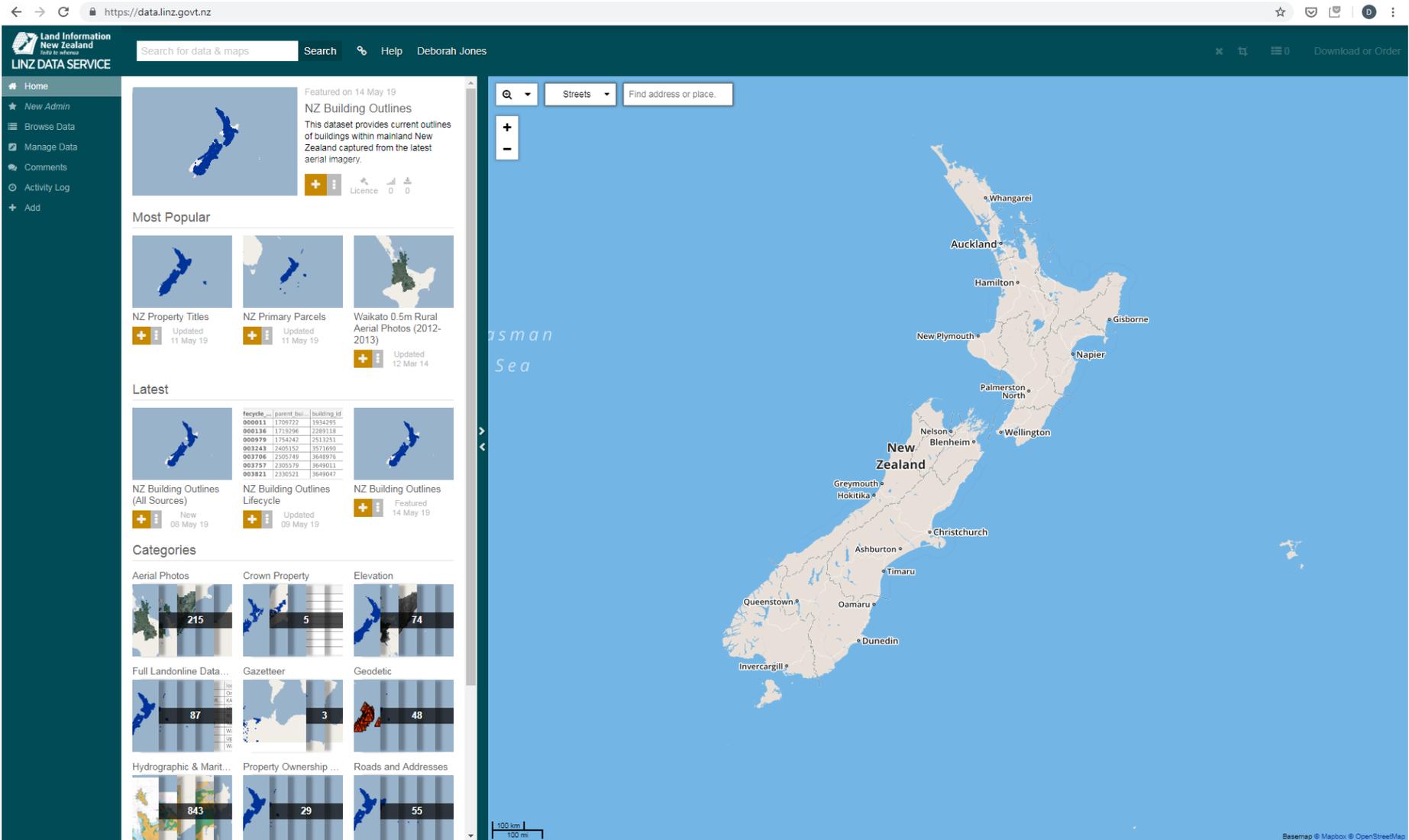




Accessing the LDS
using FME

LINZ Data Service (LDS)

<https://data.linz.govt.nz>



The screenshot displays the LINZ Data Service (LDS) website interface. The top navigation bar includes the LINZ logo, a search bar, and user information (Deborah Jones). The main content area is divided into several sections:

- Featured:** A highlighted dataset titled "NZ Building Outlines" with a description: "This dataset provides current outlines of buildings within mainland New Zealand captured from the latest aerial imagery." It includes a thumbnail map and a "Licence" button.
- Most Popular:** Three featured datasets: "NZ Property Titles" (Updated 11 May 19), "NZ Primary Parcels" (Updated 11 May 19), and "Waikato 0.5m Rural Aerial Photos (2012-2013)" (Updated 12 Mar 14).
- Latest:** Three datasets: "NZ Building Outlines (All Sources)" (New 09 May 19), "NZ Building Outlines Lifecycle" (Updated 09 May 19), and "NZ Building Outlines" (Featured 14 May 19). A table of data is visible:

fcycle_...	parent_bui...	building_id
000011	1709722	1934295
000136	1716296	2289118
000978	1754442	2513251
003243	2405152	3521660
003706	2505749	3648976
003757	2305579	3649031
003821	2330521	3649047

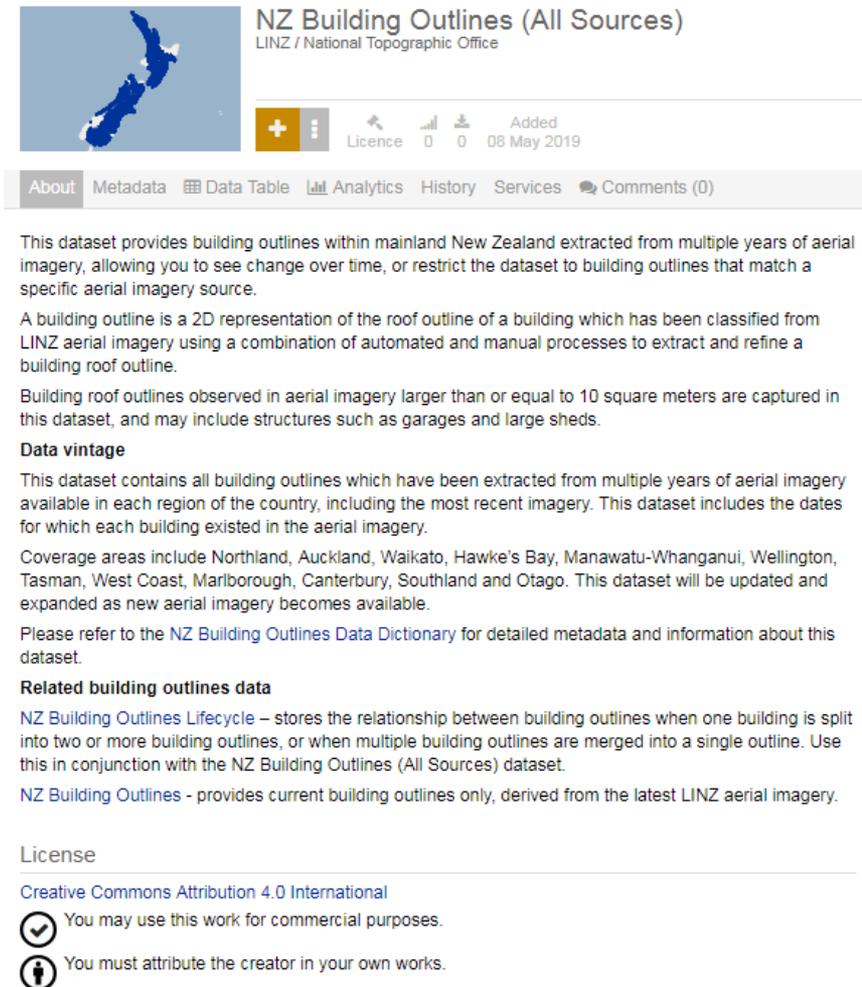
- Categories:** A grid of data categories with counts: Aerial Photos (215), Crown Property (5), Elevation (74), Full Landonline Data... (87), Gazetteer (3), Geodetic (48), Hydrographic & Marit... (843), Property Ownership... (29), Roads and Addresses (55).

The right side of the interface shows a map of New Zealand with major cities labeled: Whangarei, Auckland, Hamilton, Gisborne, Napier, Palmerston North, Wellington, Nelson, Blenheim, Christchurch, Ashburton, Timaru, Oamaru, Dunedin, Queenstown, and Invercargill. A search bar at the top of the map area contains "Streets" and "Find address or place." A scale bar at the bottom indicates 100 km and 100 m. The footer text reads "Basemap © Mapbox © OpenStreetMap".

LINZ Data Service (LDS)

<https://data.linz.govt.nz>

- About
 - Describing the layer
- Metadata
- Data Table
 - View the data in a table view (searchable)
- History
 - Providing the ability to download changesets
- Services
 - Providing the ability for your software tool to query and retrieve data directly from LDS.



NZ Building Outlines (All Sources)
LINZ / National Topographic Office

08 May 2019

About Metadata Data Table Analytics History Services Comments (0)

This dataset provides building outlines within mainland New Zealand extracted from multiple years of aerial imagery, allowing you to see change over time, or restrict the dataset to building outlines that match a specific aerial imagery source.

A building outline is a 2D representation of the roof outline of a building which has been classified from LINZ aerial imagery using a combination of automated and manual processes to extract and refine a building roof outline.

Building roof outlines observed in aerial imagery larger than or equal to 10 square meters are captured in this dataset, and may include structures such as garages and large sheds.

Data vintage

This dataset contains all building outlines which have been extracted from multiple years of aerial imagery available in each region of the country, including the most recent imagery. This dataset includes the dates for which each building existed in the aerial imagery.

Coverage areas include Northland, Auckland, Waikato, Hawke's Bay, Manawatu-Whanganui, Wellington, Tasman, West Coast, Marlborough, Canterbury, Southland and Otago. This dataset will be updated and expanded as new aerial imagery becomes available.

Please refer to the [NZ Building Outlines Data Dictionary](#) for detailed metadata and information about this dataset.

Related building outlines data

[NZ Building Outlines Lifecycle](#) – stores the relationship between building outlines when one building is split into two or more building outlines, or when multiple building outlines are merged into a single outline. Use this in conjunction with the [NZ Building Outlines \(All Sources\)](#) dataset.

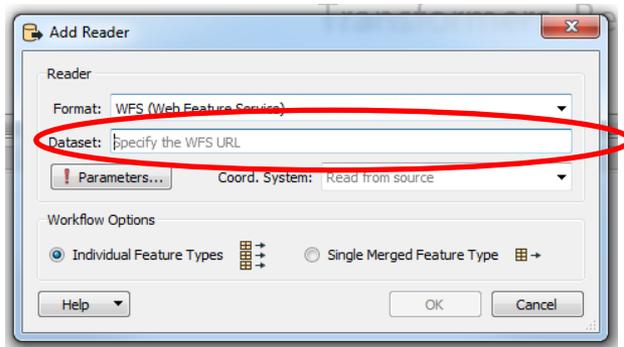
[NZ Building Outlines](#) - provides current building outlines only, derived from the latest LINZ aerial imagery.

License

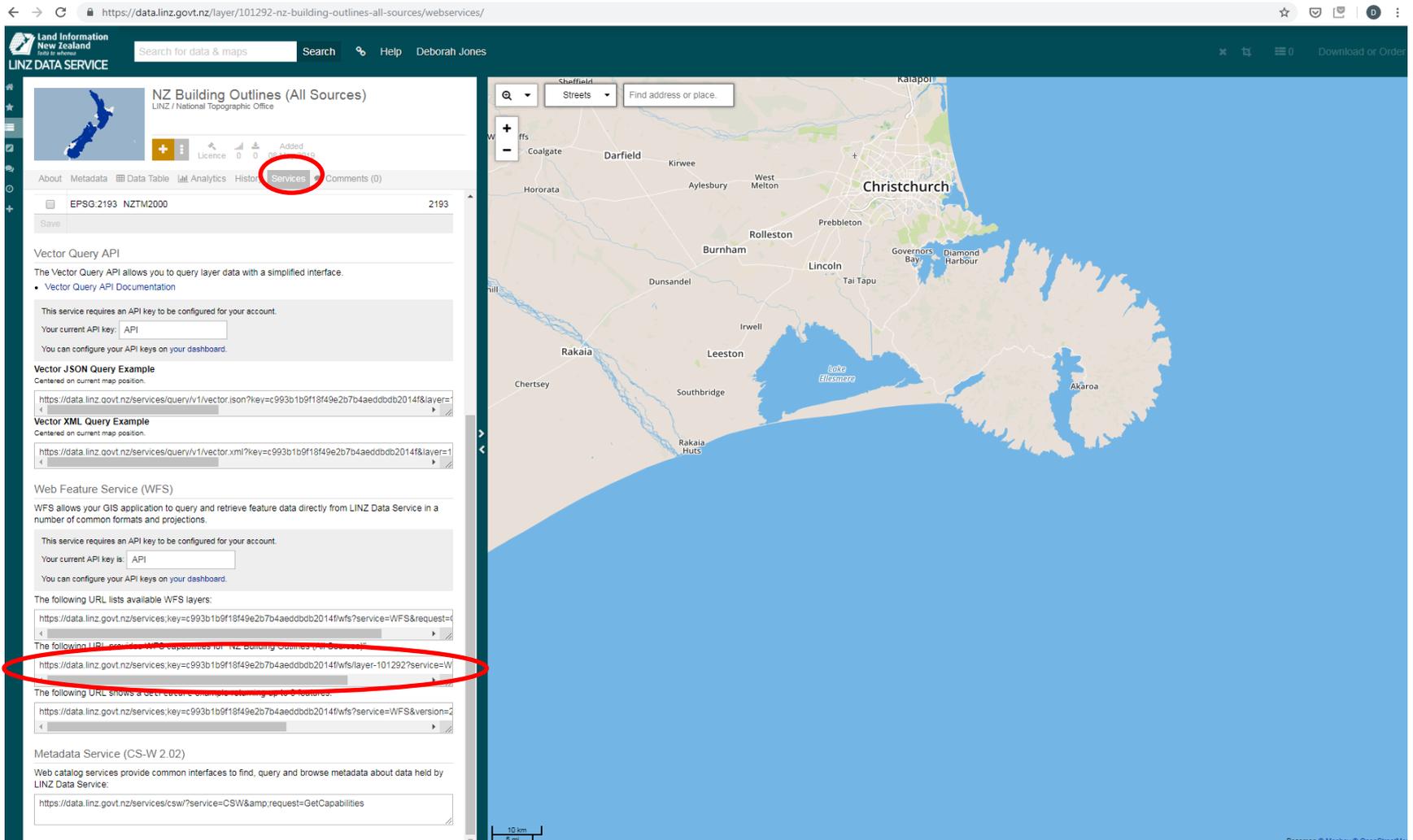
Creative Commons Attribution 4.0 International

- ✓ You may use this work for commercial purposes.
- 👤 You must attribute the creator in your own works.

Reading LDS using WFS Reader



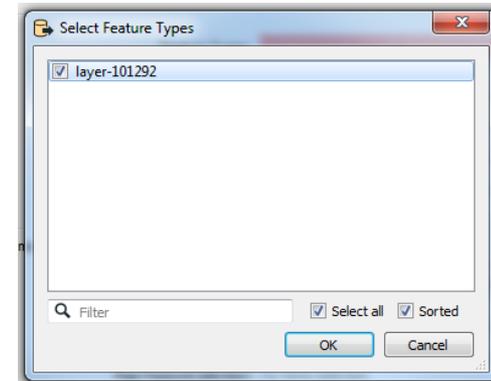
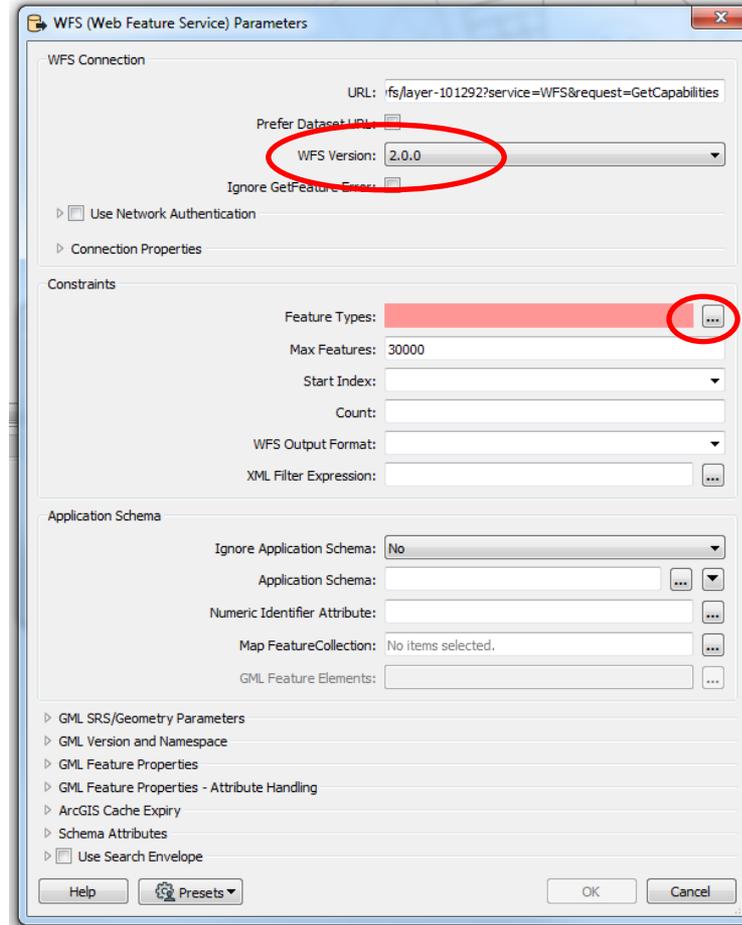
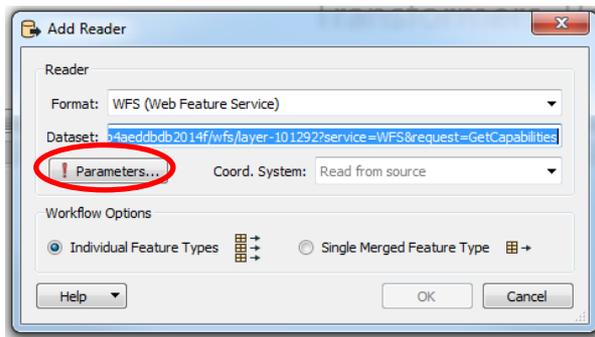
Reading LDS using WFS Reader



The screenshot shows the LINZ Data Service interface. The left sidebar displays the layer 'NZ Building Outlines (All Sources)' with a 'Services' tab highlighted in red. The main map area shows a map of Christchurch, New Zealand, with various suburbs labeled. The 'Services' tab in the sidebar contains the following information:

- Vector Query API**
 - This service requires an API key to be configured for your account.
 - Your current API key is:
 - You can configure your API keys on your dashboard.
- Vector JSON Query Example**
 - Centered on current map position.
 - `https://data.linz.govt.nz/services/query/v1/vector.json?key=c993b1b9f18f49e2b7b4aeddbb2014f&layer=`
- Vector XML Query Example**
 - Centered on current map position.
 - `https://data.linz.govt.nz/services/query/v1/vector.xml?key=c993b1b9f18f49e2b7b4aeddbb2014f&layer=1`
- Web Feature Service (WFS)**
 - WFS allows your GIS application to query and retrieve feature data directly from LINZ Data Service in a number of common formats and projections.
 - This service requires an API key to be configured for your account.
 - Your current API key is:
 - You can configure your API keys on your dashboard.
 - The following URL lists available WFS layers:
 - `https://data.linz.govt.nz/services/key=c993b1b9f18f49e2b7b4aeddbb2014f/wfs?service=WFS&request=`
 - The following URL provides WFS capabilities for 'NZ Building Outlines (All Sources)':
 - `https://data.linz.govt.nz/services/key=c993b1b9f18f49e2b7b4aeddbb2014f/wfs/layer-101292?service=W`
 - The following URL shows a GetCapabilities request for the layer:
 - `https://data.linz.govt.nz/services/key=c993b1b9f18f49e2b7b4aeddbb2014f/wfs?service=WFS&version=2`
- Metadata Service (CS-W 2.02)**
 - Web catalog services provide common interfaces to find, query and browse metadata about data held by LINZ Data Service:
 - `https://data.linz.govt.nz/services/csw?service=CSW&request=GetCapabilities`

Reading LDS using WFS Reader



Reading LDS using WFS Reader

*WFS - NONE (Untitled) - FME Workbench 2019.0

File Edit View Readers Transformers Writers Run Tools Help

New Open Save Run Stop Cut Copy Paste Undo Redo Select Pan Zoom In Zoom Out 100% Extents Maximize Full Screen Reader Writer Transformer Bookmark Auto-Layout Center Middle Publish Republish Download

Navigator

- layer-101292?service=WFS&request=GetCapabilities [WFS]
- Transformers (1)
- Bookmarks
- User Parameters (18)
- Workspace Resources
- Workspace Parameters
- Workspace Search...

Start Main

layer-101292: layer-101292?service=WFS&request=GetCapabilities [WFS]
I.e. Read building outlines from LDS using WFS Reader

Inspector
I.e. Look at building outlines

layer-101292 30,000 Inspector

Visual Preview

Table

Inspector

	gml_parent_id	gml_parent_property	gml_id	building_outline_id	building_outline_id_xsi_nil	building
1	<missing>	member	layer-101292.10...	1002322	<missing>	1002322
2	<missing>	member	layer-101292.10...	1002323	<missing>	1002323
3	<missing>	member	layer-101292.10...	1002324	<missing>	1002324
4	<missing>	member	layer-101292.10...	1002397	<missing>	1002397
5	<missing>	member	layer-101292.10...	1002746	<missing>	1002746
6	<missing>	member	layer-101292.10...	1002829	<missing>	1002829
7	<missing>	member	layer-101292.10...	1003093	<missing>	1003093
8	<missing>	member	layer-101292.10...	1003240	<missing>	1003240
9	<missing>	member	layer-101292.10...	1003241	<missing>	1003241
10	<missing>	member	layer-101292.10...	1003242	<missing>	1003242
11	<missing>	member	layer-101292.10...	1003243	<missing>	1003243
12	<missing>	member	layer-101292.10...	1003235	<missing>	1003235
13	<missing>	member	layer-101292.10...	1003365	<missing>	1003365
14	<missing>	member	layer-101292.10...	1003431	<missing>	1003431
15	<missing>	member	layer-101292.10...	1003491	<missing>	1003491
16	<missing>	member	layer-101292.10...	1003492	<missing>	1003492
17	<missing>	member	layer-101292.10...	1003662	<missing>	1003662
18	<missing>	member	layer-101292.10...	1003676	<missing>	1003676

Graphics

2D 3D Slideshow Orbit Select Pan Zoom In Zoom Out Zoom Selected Zoom Extents

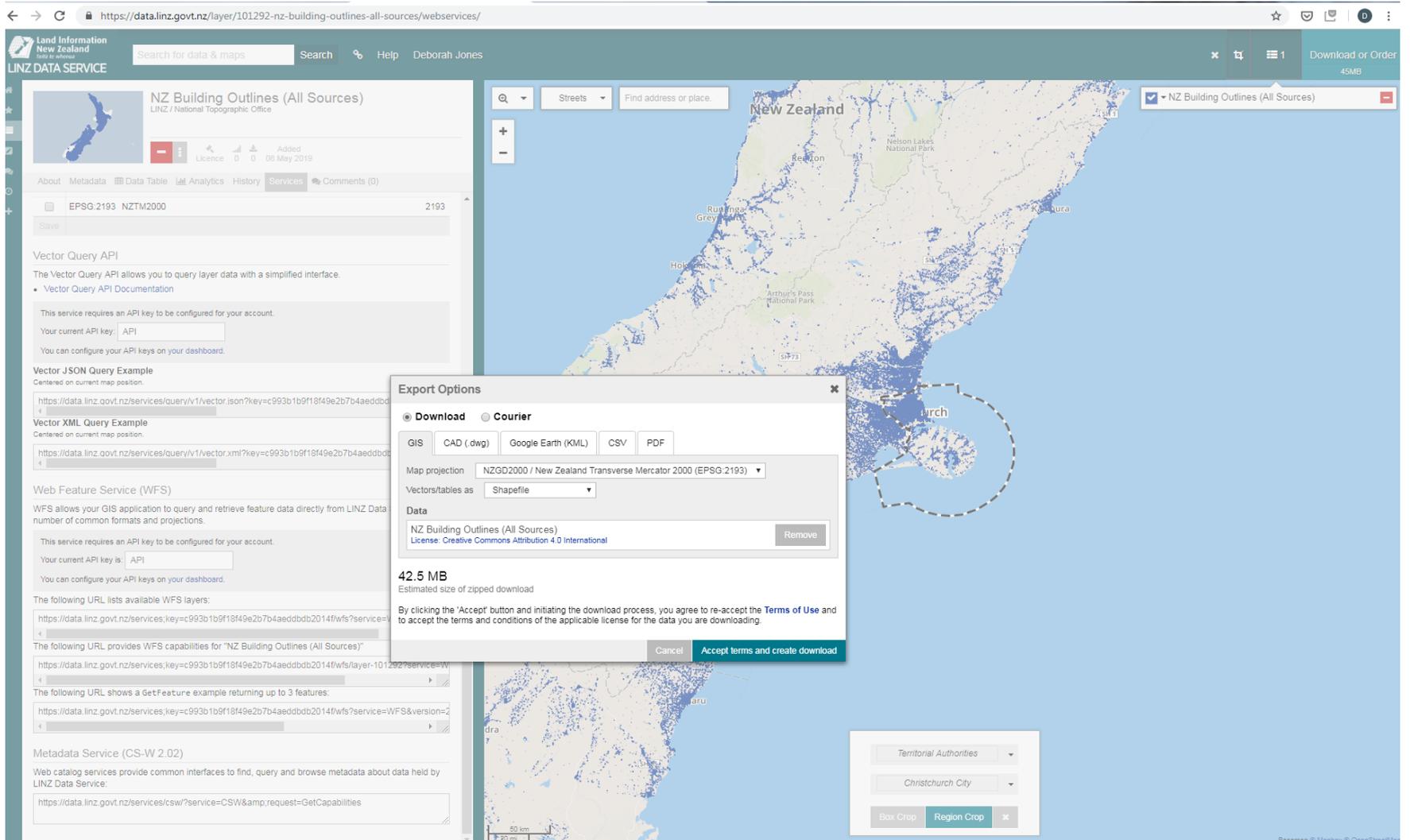
X: 1198553.6998 Y: 4755332.1250 EPSG:2193 METER

30000 row(s)

Parameter Editor Transformer Gallery Translation Log Visual Preview

Translation was SUCCESSFUL with 7 warning(s) (0 feature(s) output)

Downloading from LDS



https://data.linz.govt.nz/layer/101292-nz-building-outlines-all-sources/webservices/

Land Information New Zealand
LINZ DATA SERVICE

Search for data & maps Search Help Deborah Jones

NZ Building Outlines (All Sources)
LINZ / National Topographic Office

Added 08 May 2019

About Metadata Data Table Analytics History Services Comments (0)

EPSG:2193 NZTM2000 2193

Vector Query API

The Vector Query API allows you to query layer data with a simplified interface.

- Vector Query API Documentation

This service requires an API key to be configured for your account.

Your current API key: API

You can configure your API keys on your dashboard.

Vector JSON Query Example

Centered on current map position.

https://data.linz.govt.nz/services/query/v1/vector.json?key=c993b1b9f18f49e2b7b4aeddbb2014f&wfs?service=WFS&request=GetFeature&version=2.0&format=json&layers=101292

Vector XML Query Example

Centered on current map position.

https://data.linz.govt.nz/services/query/v1/vector.xml?key=c993b1b9f18f49e2b7b4aeddbb2014f&wfs?service=WFS&request=GetFeature&version=2.0&format=xml&layers=101292

Web Feature Service (WFS)

WFS allows your GIS application to query and retrieve feature data directly from LINZ Data number of common formats and projections.

This service requires an API key to be configured for your account.

Your current API key is: API

You can configure your API keys on your dashboard.

The following URL lists available WFS layers:

https://data.linz.govt.nz/services?key=c993b1b9f18f49e2b7b4aeddbb2014f&wfs?service=WFS&request=GetCapabilities

The following URL provides WFS capabilities for "NZ Building Outlines (All Sources)"

https://data.linz.govt.nz/services?key=c993b1b9f18f49e2b7b4aeddbb2014f&wfs/layer-101292?service=WFS&request=GetCapabilities

The following URL shows a GetFeature example returning up to 3 features:

https://data.linz.govt.nz/services?key=c993b1b9f18f49e2b7b4aeddbb2014f&wfs?service=WFS&version=2.0&format=json&layers=101292

Metadata Service (CS-W 2.02)

Web catalog services provide common interfaces to find, query and browse metadata about data held by LINZ Data Service:

https://data.linz.govt.nz/services/csw/?service=CSW&request=GetCapabilities

Export Options

Download Courier

GIS CAD (.dwg) Google Earth (KML) CSV PDF

Map projection NZGD2000 / New Zealand Transverse Mercator 2000 (EPSG:2193)

Vectors/tables as Shapefile

Data

NZ Building Outlines (All Sources)
License: Creative Commons Attribution 4.0 International

42.5 MB
Estimated size of zipped download

By clicking the 'Accept' button and initiating the download process, you agree to re-accept the Terms of Use and to accept the terms and conditions of the applicable license for the data you are downloading.

Cancel Accept terms and create download

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Christchurch City
Box Crop Region Crop

Basemap © Mapbox © OpenStreetMap

'The
power
of
where'
DRIVES NEW ZEALAND'S SUCCESS

Questions?

