Waikato Regional Council Spatial Information Section

to the NZEUC, Auckland, August 2018

A year on since adopting ArcGIS …

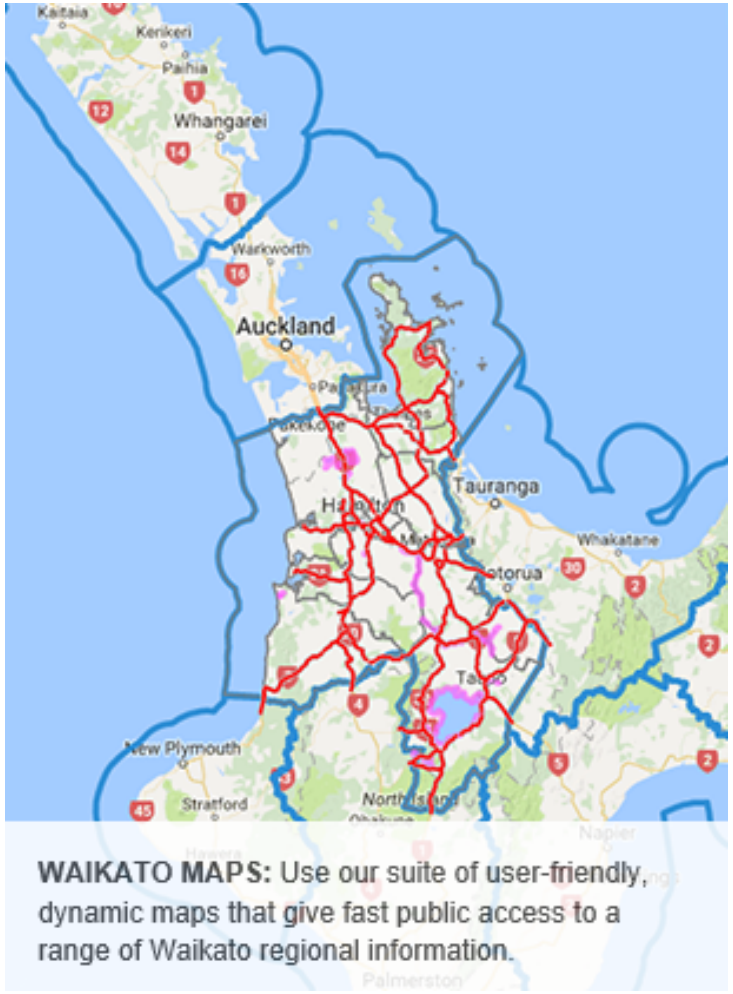
… what benefits have we realised?

Waikato REGIONAL COUNCIL
Te Kaunihera ā Rohe o Waikato

Improved web maps

Maps and tools for the public…

Waikato WaikatoMaps



https://www.waikatoregion.govt.nz/services/maps/

Improved web maps

Catchment Management Zones

The zones used by Waikato Regional Council to manage the region's catchments.

Consents and Permits

The location and details of active consents and permits.

Contours

Contour map contains both topograhic contours and WRC LiDAR contour data. Contours are aggregated into 1m, 5m, 10m, 20m and 100m interval level

Drainage

Drainage supervis
and drain informat

Groundwater

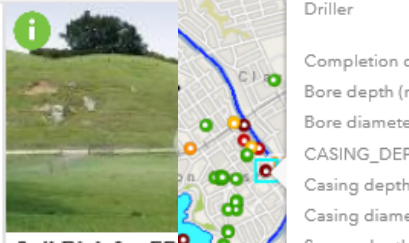
Groundwater map shows shows the location and number of groundwater wells in the Waikato region and related lithology information of each wells.

Iwi Information

Iwi acknowledgement areas in the Waikato Region.

Regional Map

Generic Map for the Waikato Region



Soil Risk for FD

This map shows th
applying Farm Dai
soil.

https://www.waikatoregion.govt.nz/services/maps/

Variation 5 Taupo

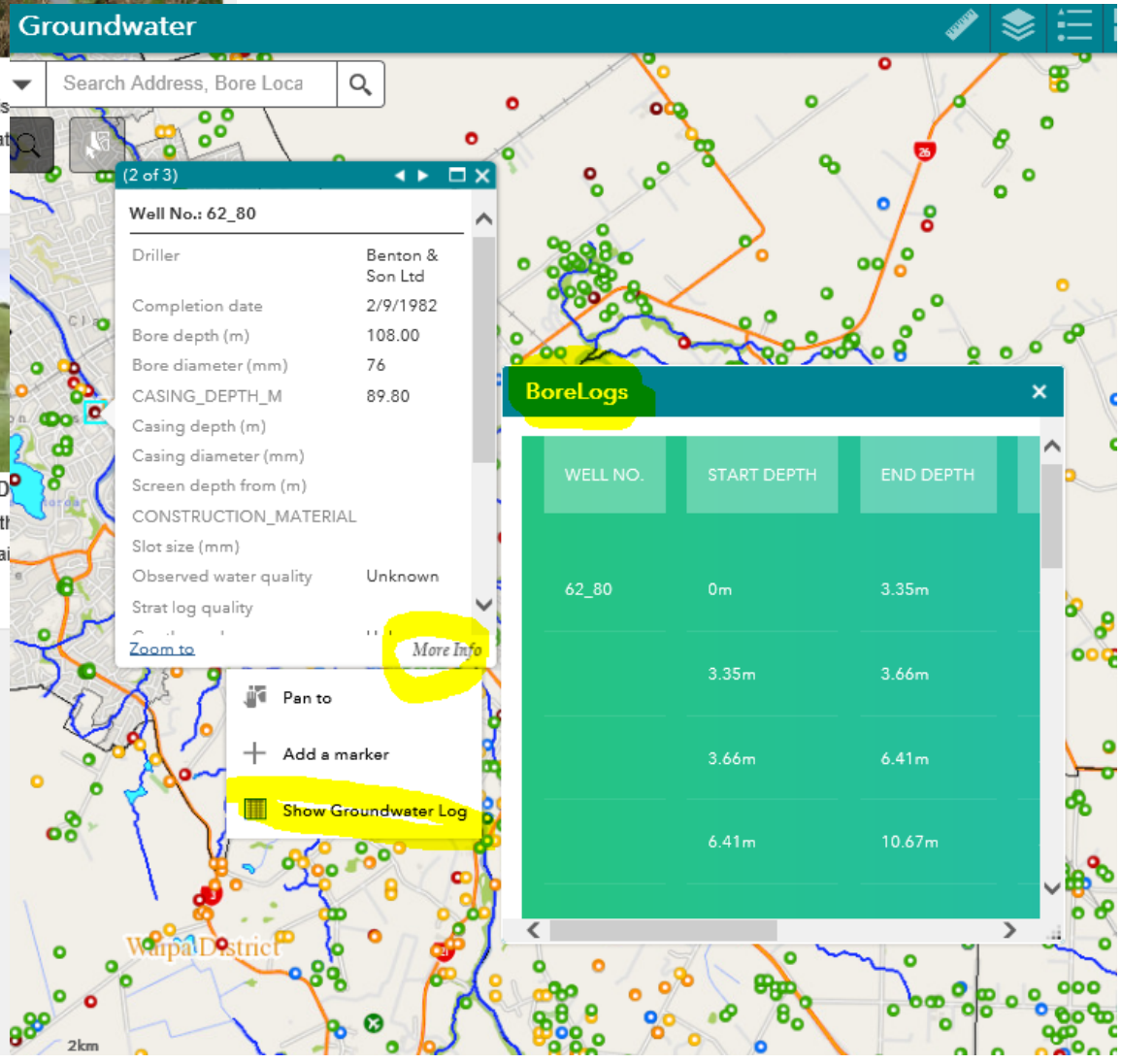
Lake Taupo catchment boundary and near shore zone boundary as used for the Waikato Regional Plan Variation 5 – Lake Taupo Catchment.

Vegetation Biodiversity

A range of biodiversity information including land cover, biodiversity vegetation, bioclimatic zones, soil group classification and soil drainage.

Water Classification

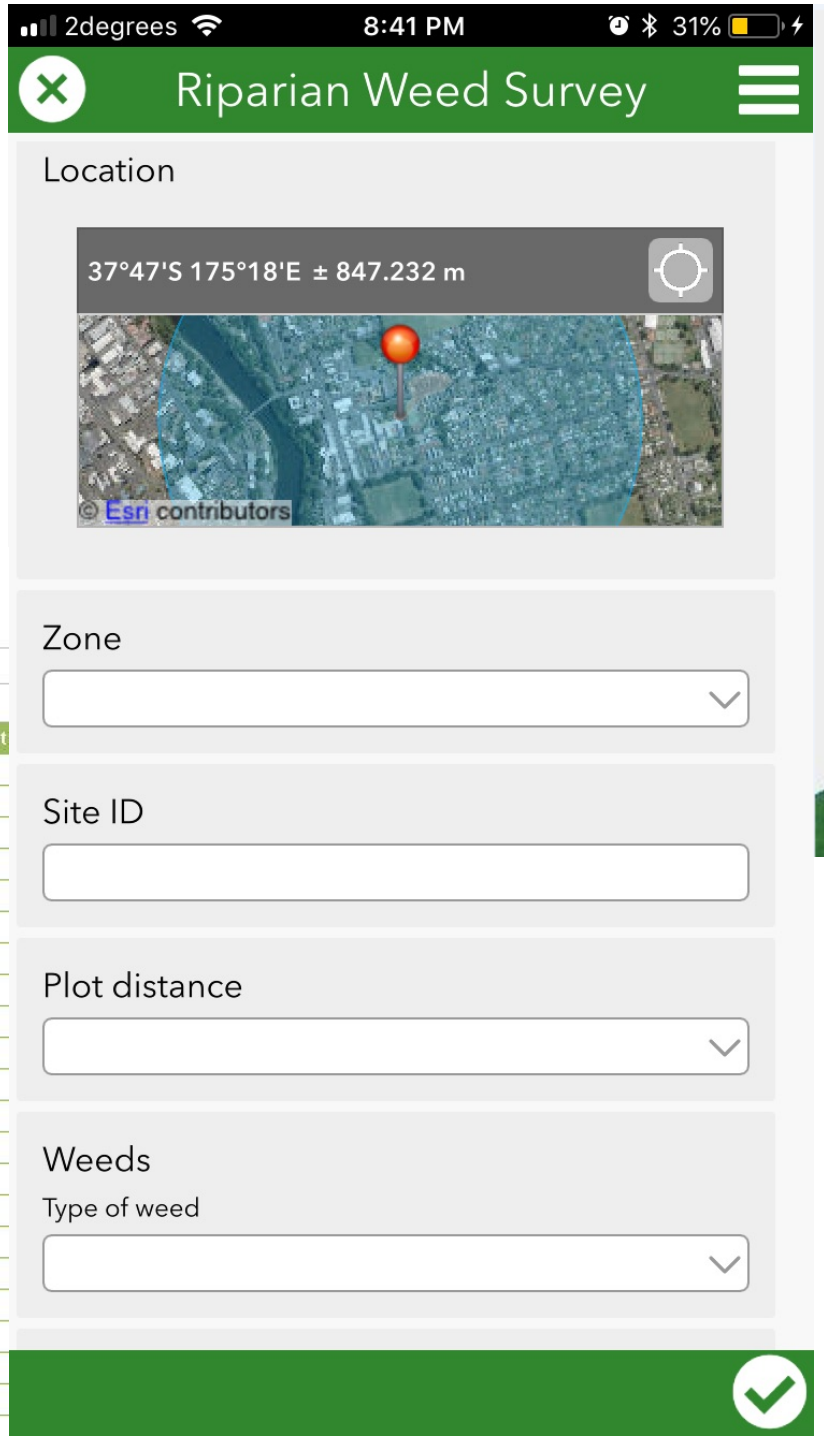
This map displays river boundary areas in the coastal regions and the classification of water bodies as set by the Waikato Regional Plan.

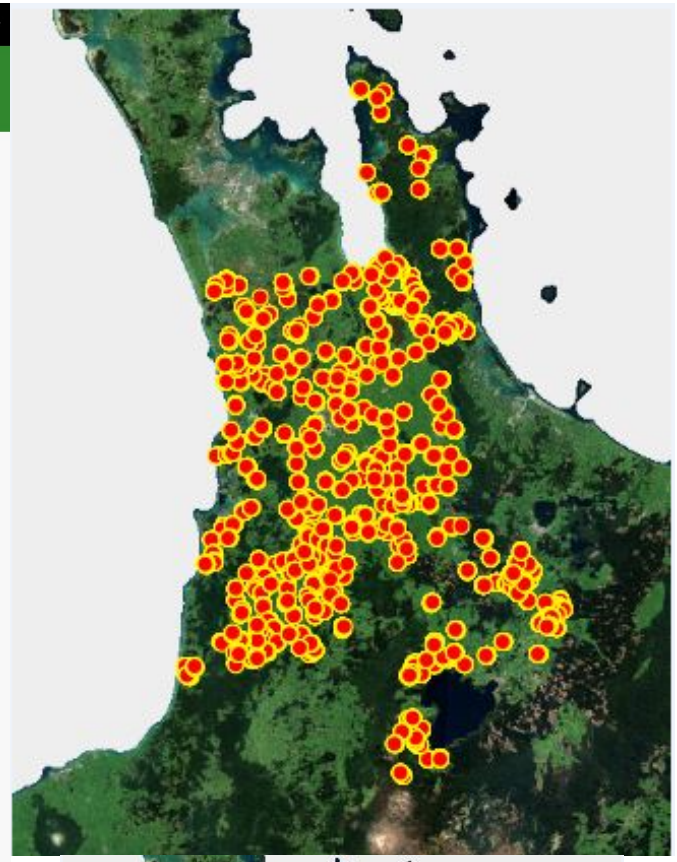


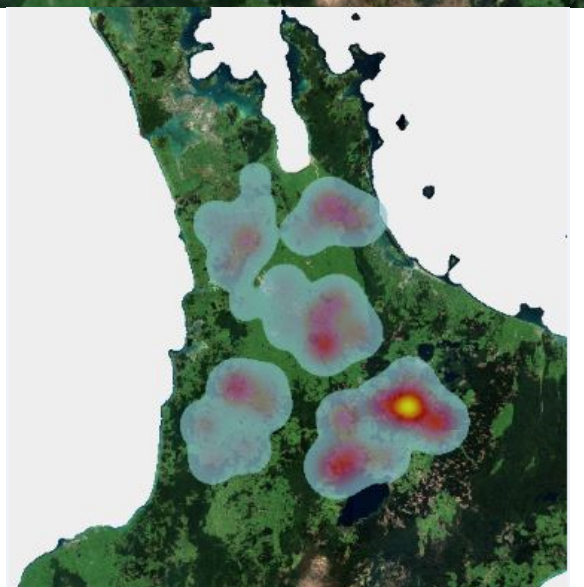
Mobile technology

- Survey123 & ArcCollector
- User-driven data capture forms
- User can provide draft design via Excel
- Uses common base layers
- Sync AGOL data as required
- Easily deployable – smart phones

	A	B	C	N	O
1	type	name	label	choice_filter	repeat_count
2	start	survey_start			
3	end	survey_end			
4	today	today			
5	date	date	Date		
6	geopoint	location	Location		
7	select_one Zone	Zone	Zone		
8	select_one Site_ID	Site_ID	Site ID	zone=${Zone}	
9	select_one plot	Distance	Plot distance		
10	select_multiple weed_type or other	weed_type	Weeds		
11	select_one rating	rating	Rating (1-5)		
12	text	weed_note	Notes		
13					
14	begin group	properties	@location properties		
15	decimal	latitude	Latitude		
16	decimal	longitude	Longitude		
17	decimal	direction	Direction		
18	end group				
19					
20	image	image	Capture Photo / Browse to Photo		
21					
22					







Mobile technology

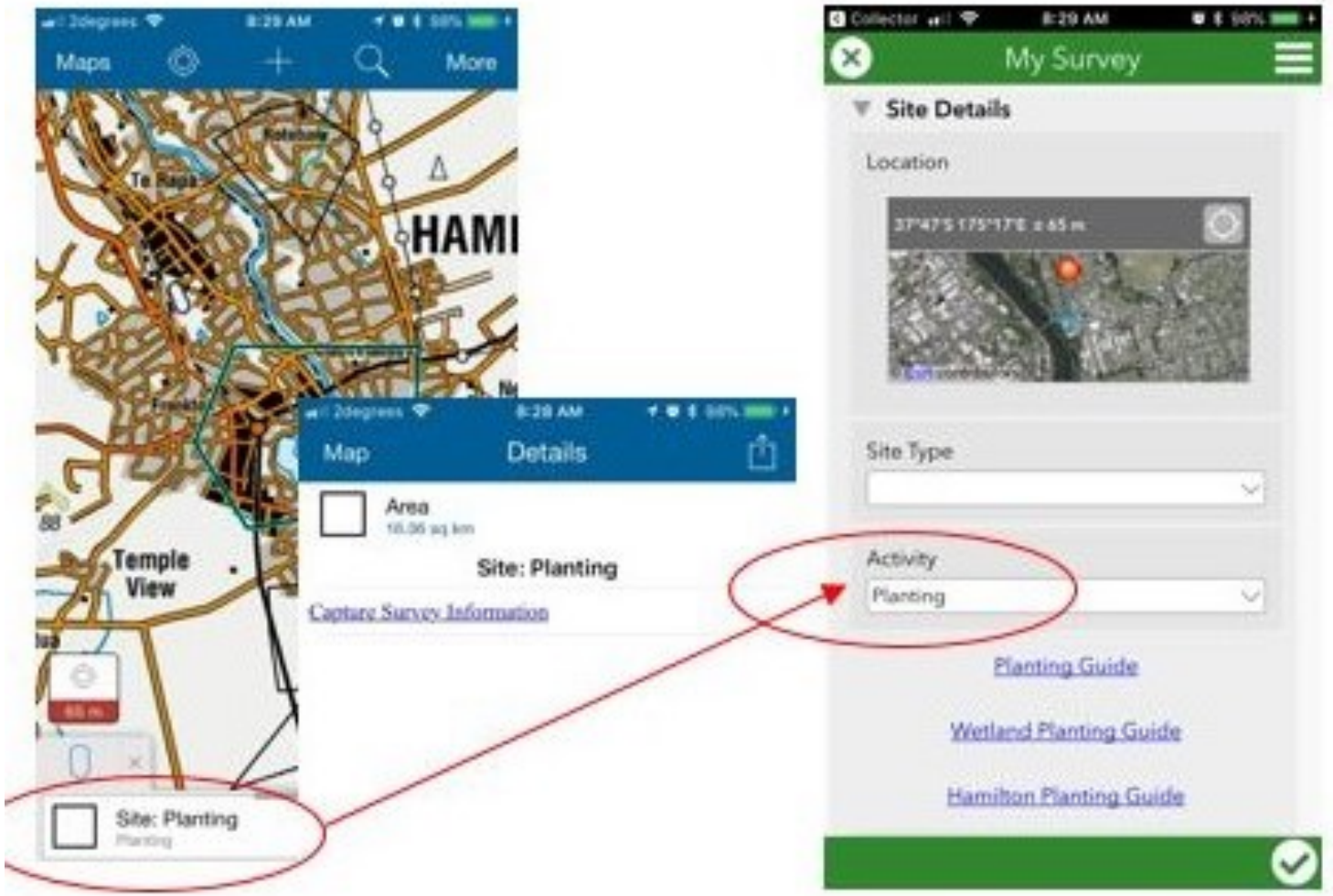
Some applications

- Alligator Weed Survey
- Bio-Security Property Identification
- Biodiversity Community Group Survey
- Bus Stop Identification Survey
- Catchment Condition Survey
- Coastal Structures Survey
- Evergreen Buckthorn Weed Survey
- Farm Environment Plan Survey
- Navigation Aides and Signage Survey
- Riparian Weed Survey
- Taupo Wave Extent Survey
- Scallop and Fishing Hotspot Survey

Combining Collector & Survey123 in one app

Biodiversity Community Group Survey

- Capture planting area in Collector …
- Automatically populates that field in Survey123 with that activity!
- Continue point and attribute capture in S123



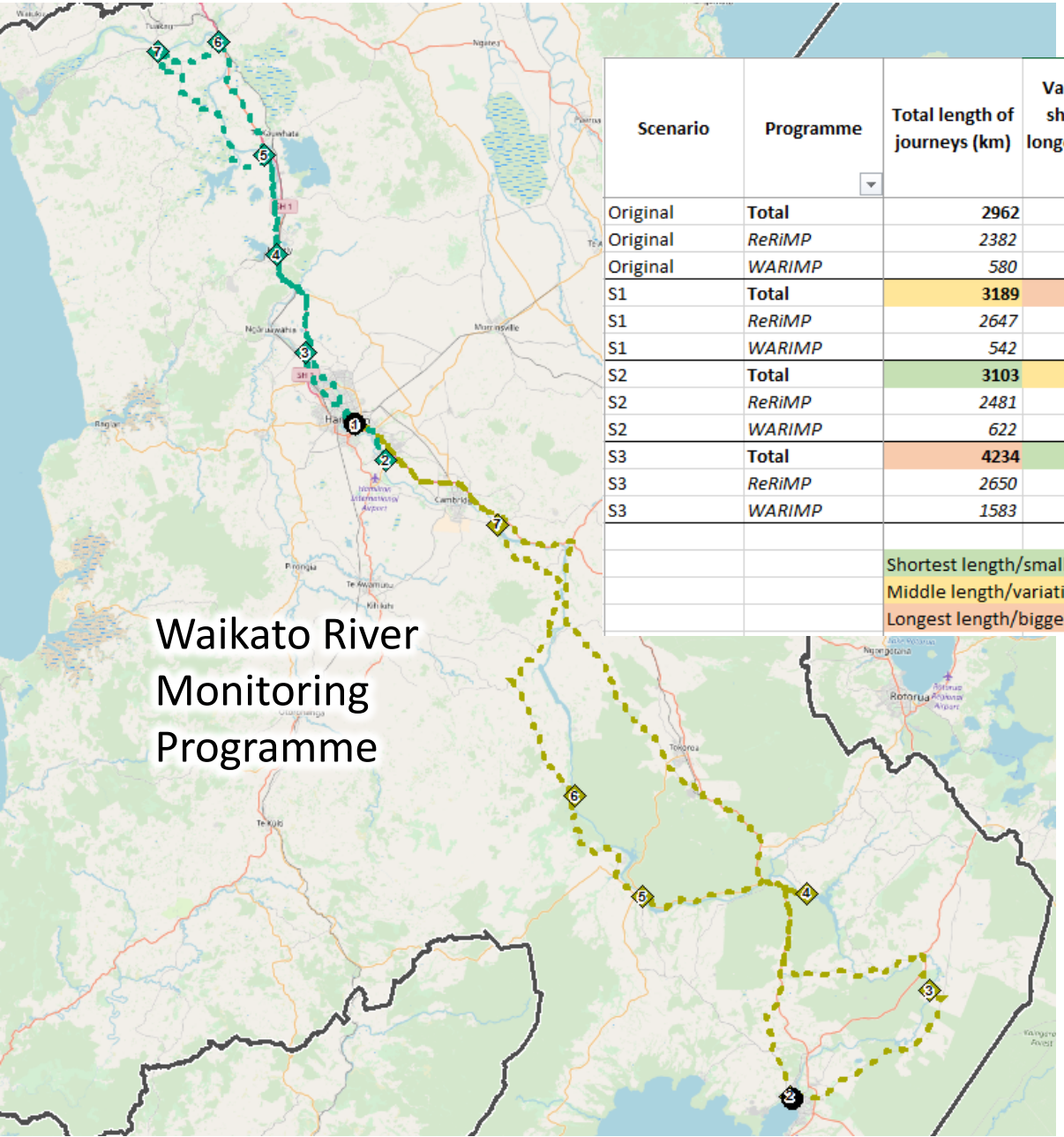
Network analysis for route optimisation

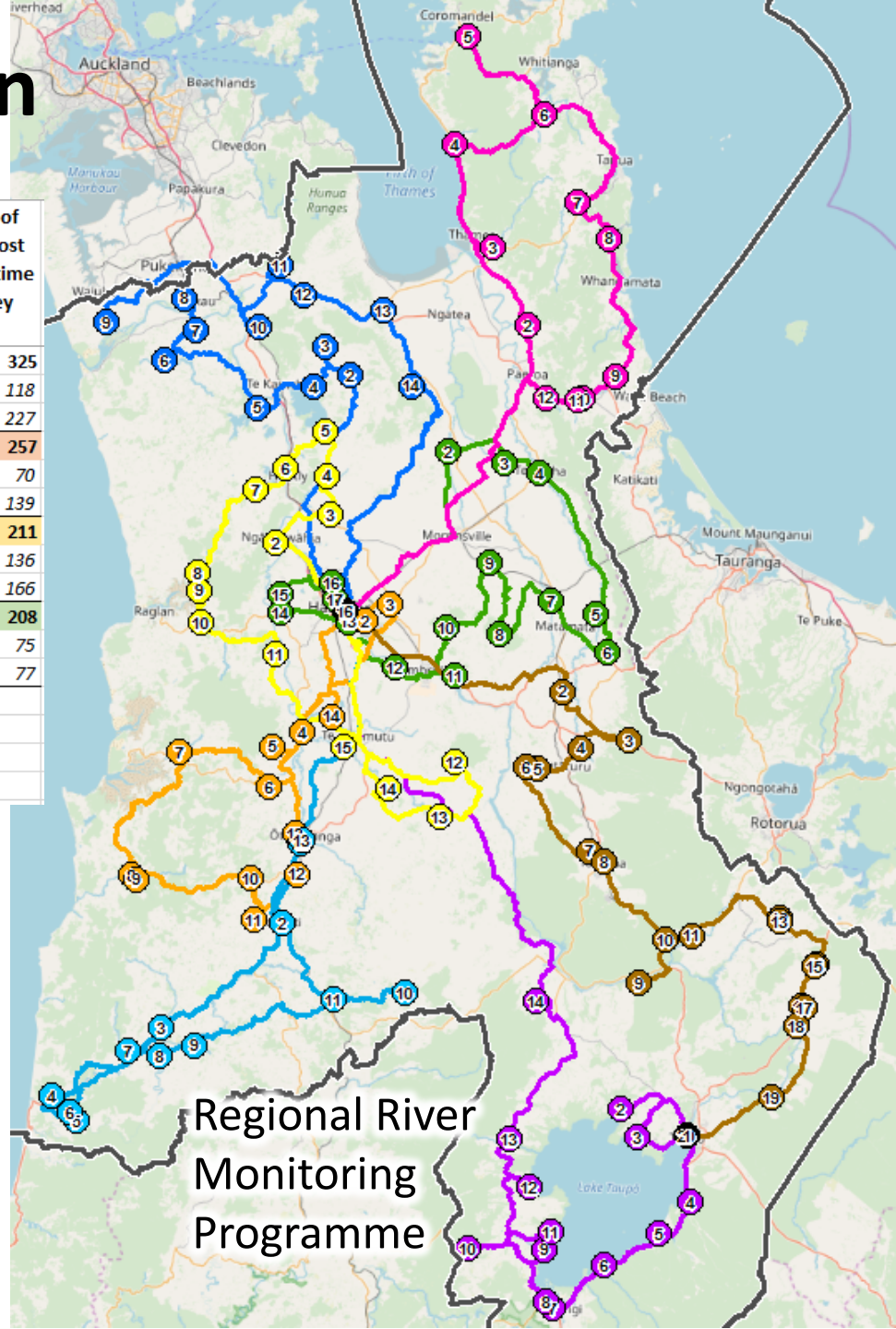
Scenario	Programme	Total length of journeys (km)	Variation of shortest to longest journey (km)	Total estimated time of journeys (mins)	Variation of least to most estimated time of journey (mins)
Original	**Total**	**2962**	**223**	**4171**	**325**
Original	*ReRiMP*	*2382*	*144*	*3466*	*118*
Original	*WARIMP*	*580*	*223*	*705*	*227*
S1	**Total**	**3189**	**220**	**4521**	**257**
S1	*ReRiMP*	*2647*	*119*	*3874*	*70*
S1	*WARIMP*	*542*	*185*	*647*	*139*
S2	**Total**	**3103**	**181**	**4456**	**211**
S2	*ReRiMP*	*2481*	*219*	*3690*	*136*
S2	*WARIMP*	*622*	*181*	*766*	*166*
S3	**Total**	**4234**	**179**	**4554**	**208**
S3	*ReRiMP*	*2650*	*162*	*3877*	*75*
S3	*WARIMP*	*1583*	*143*	*677*	*77*

Shortest length/smallest variation

Middle length/variation

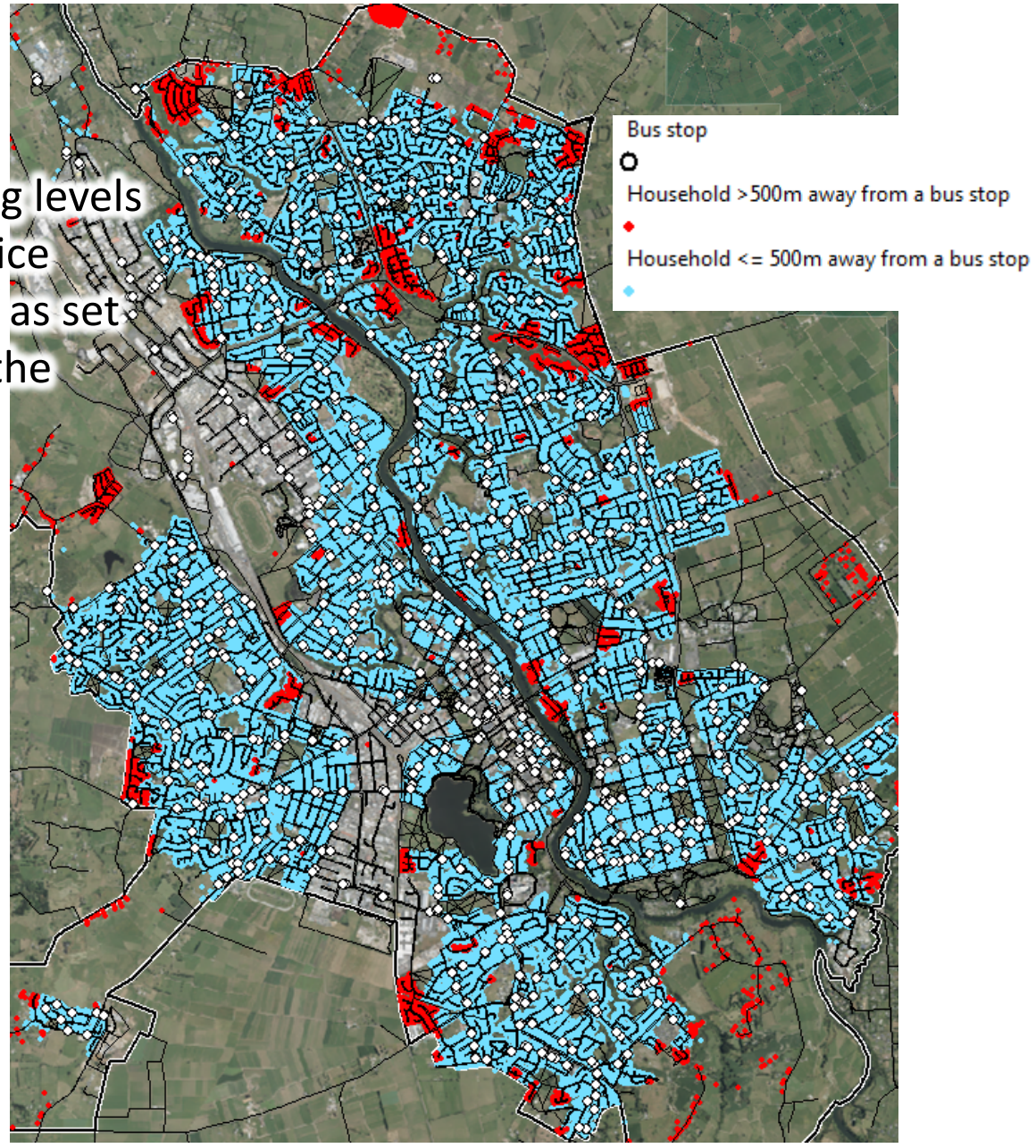
Longest length/biggest variation



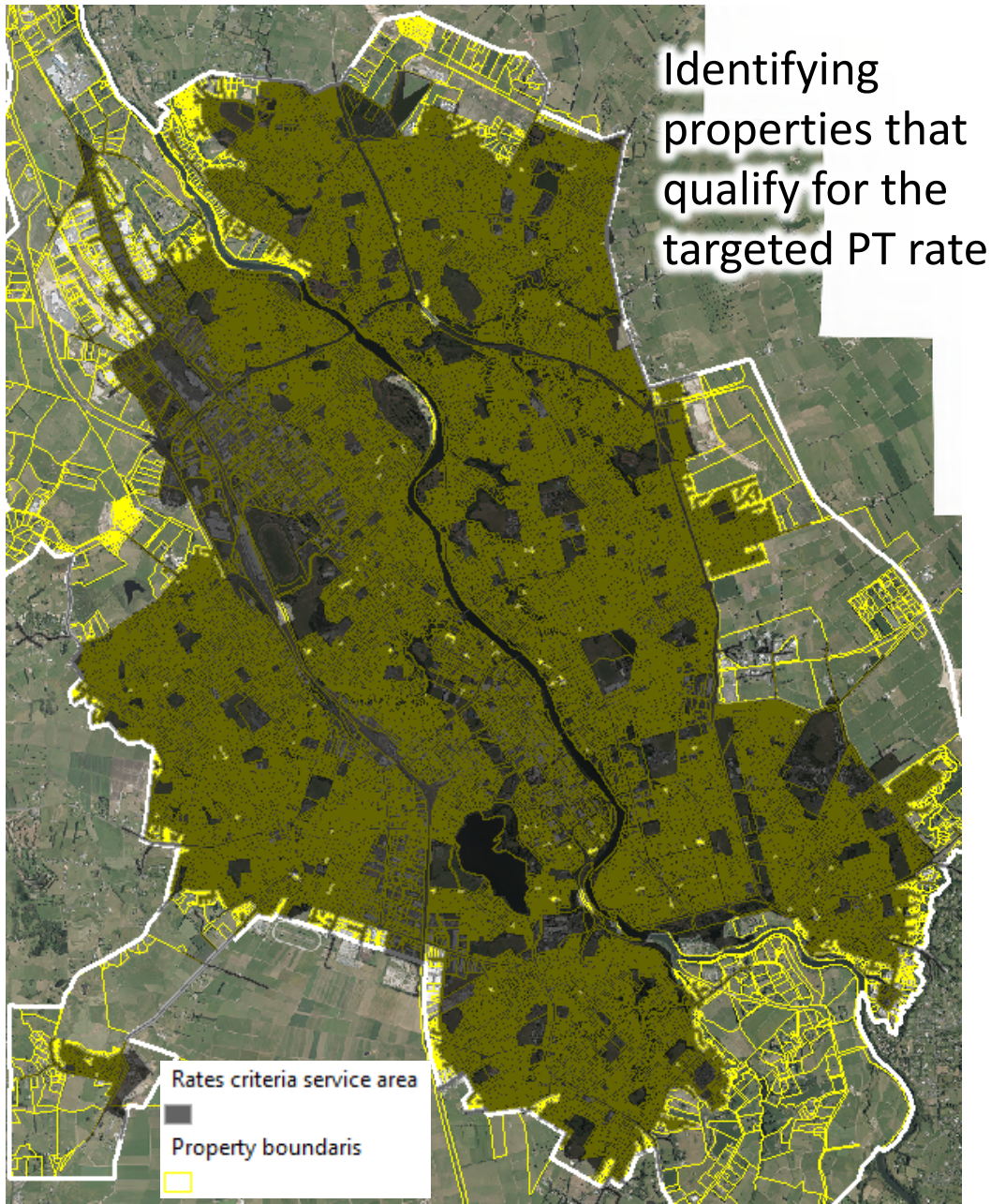


Network analysis for public transport

Tracking levels of service targets as set out in the RLTP.

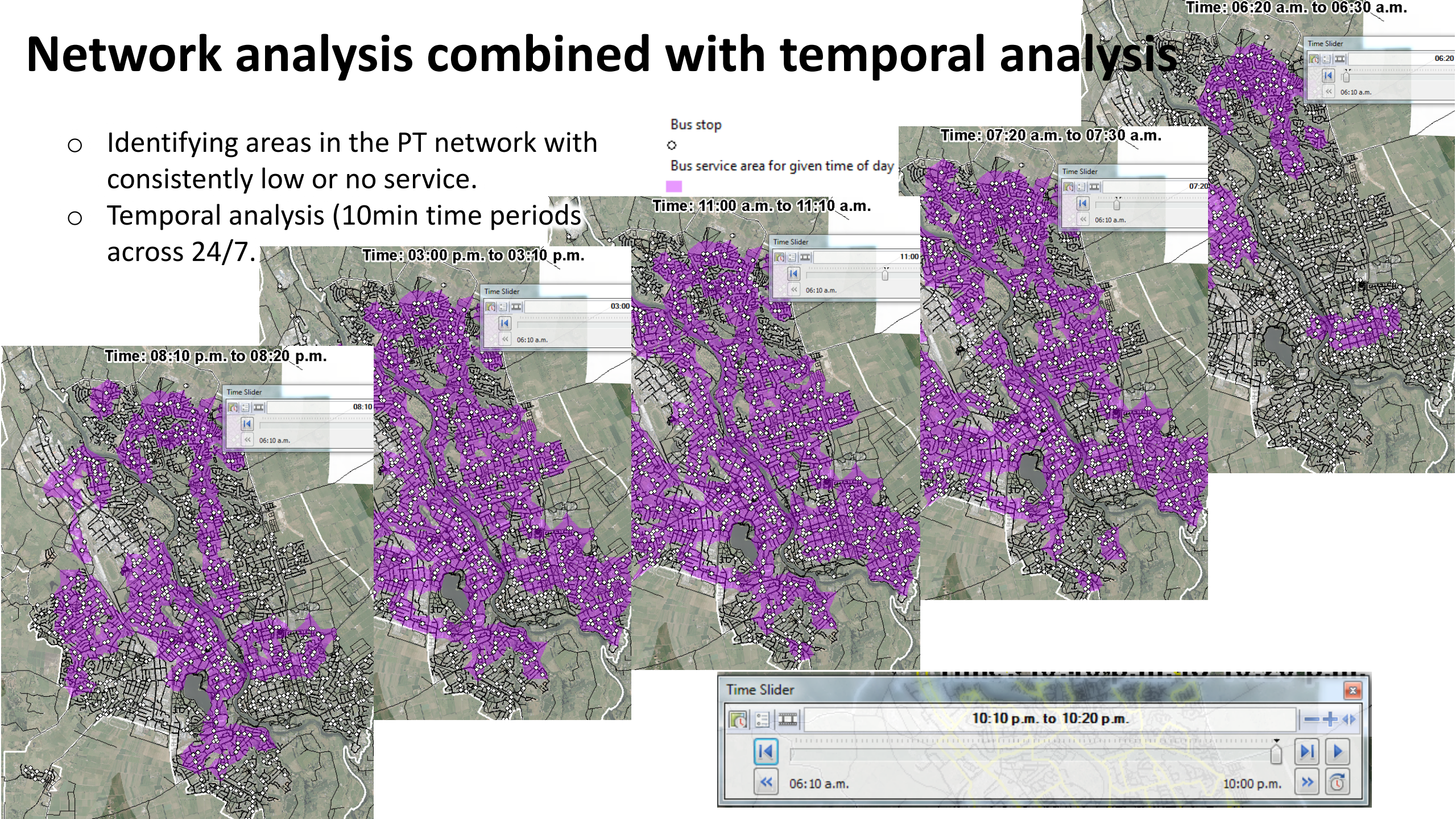


Identifying properties that qualify for the targeted PT rate.

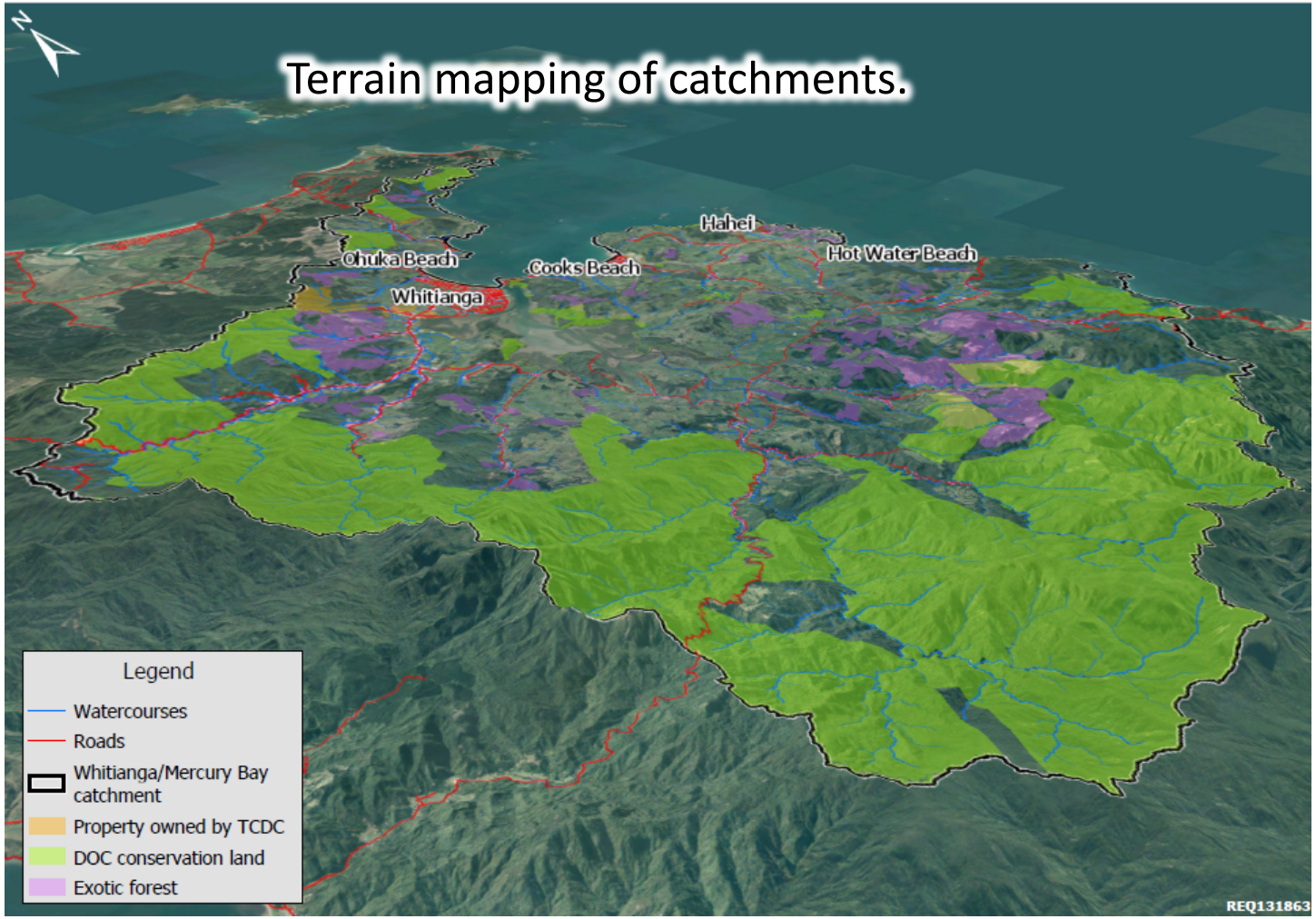


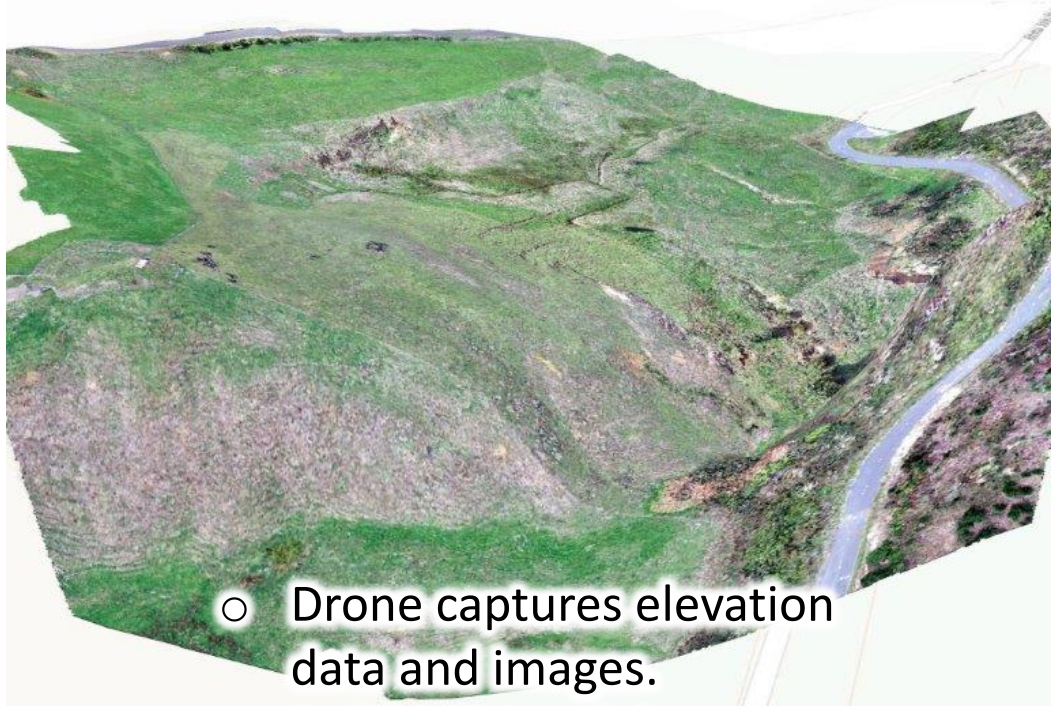
Network analysis combined with temporal analysis

- Identifying areas in the PT network with consistently low or no service.
- Temporal analysis (10min time periods across 24/7.

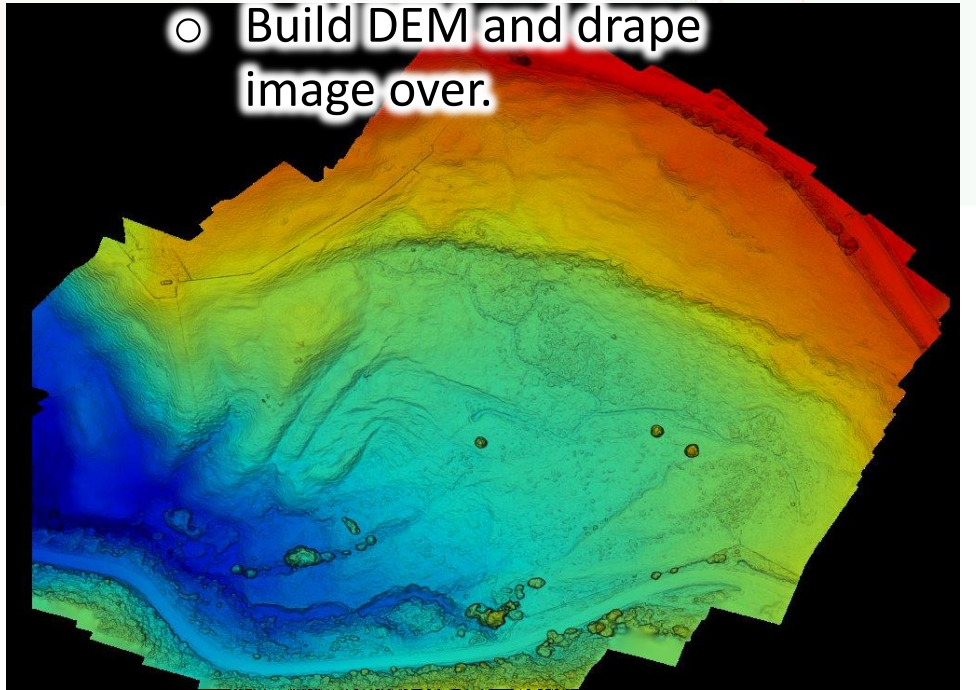


3D mapping using ArcPro



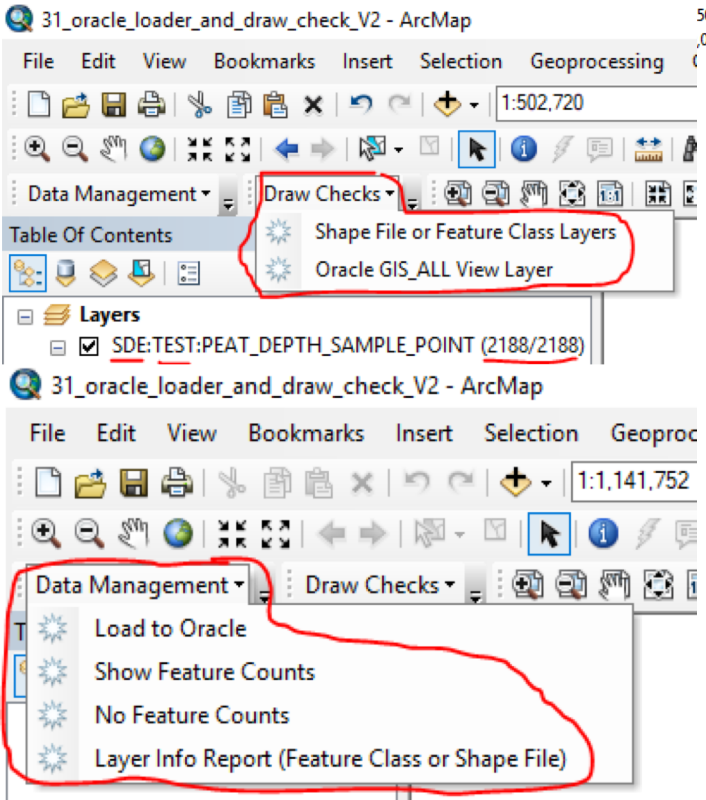


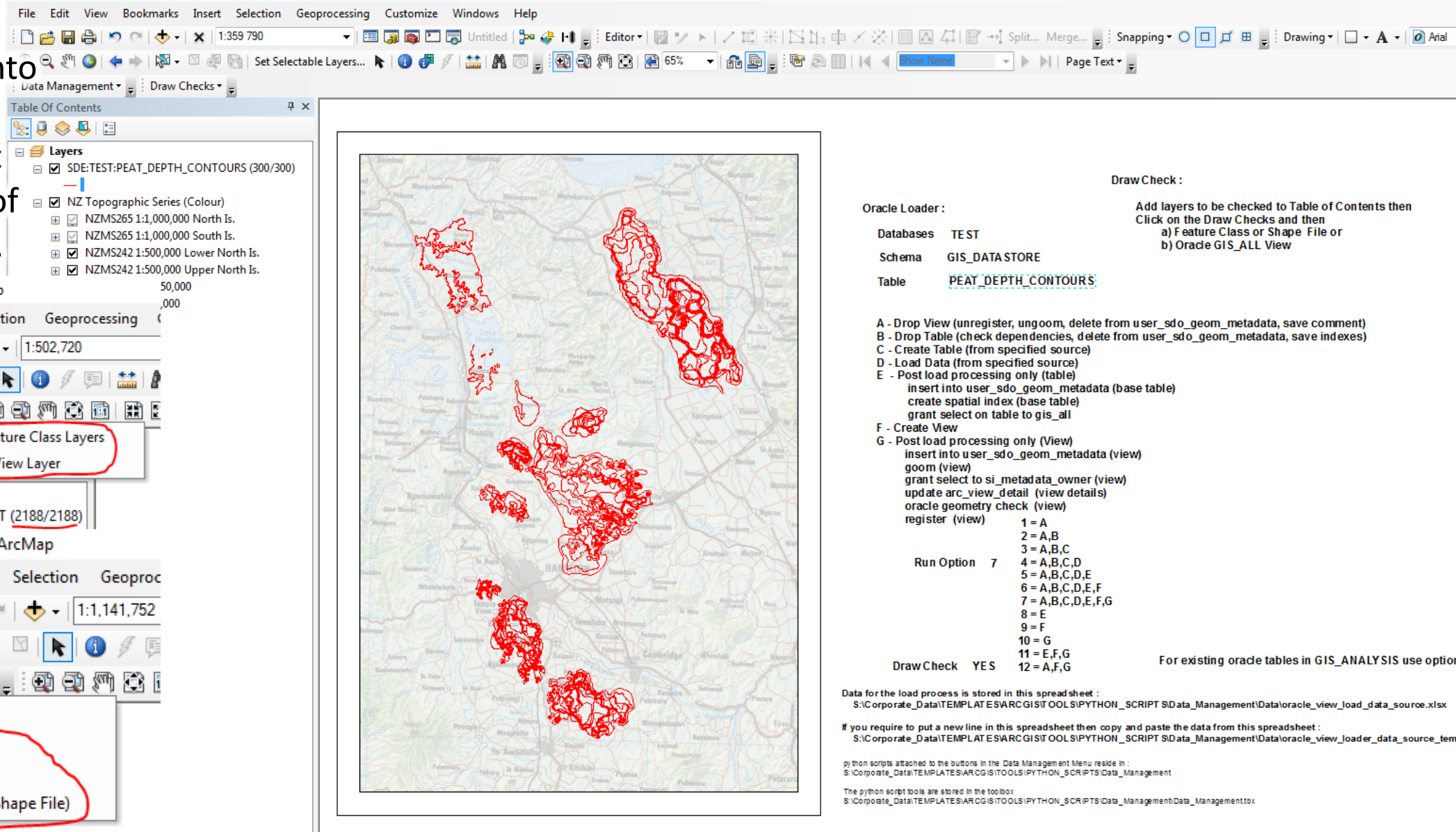
- Drone captures elevation data and images.
- Build DEM and drape image over.



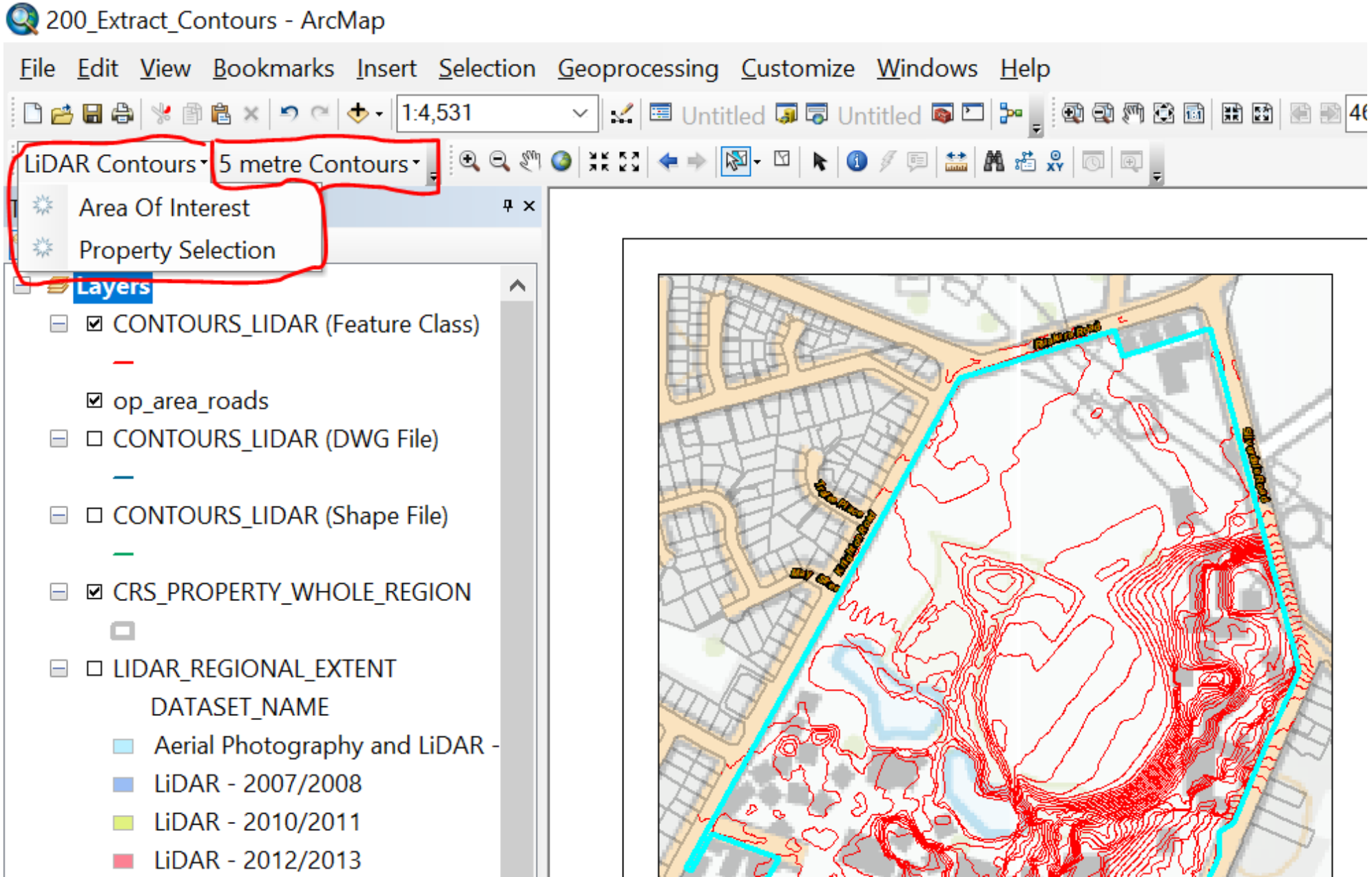
Automation using python scripting

- Automation of loading feature classes in .GDB into Oracle.
- Running the post load processing of views and tables.



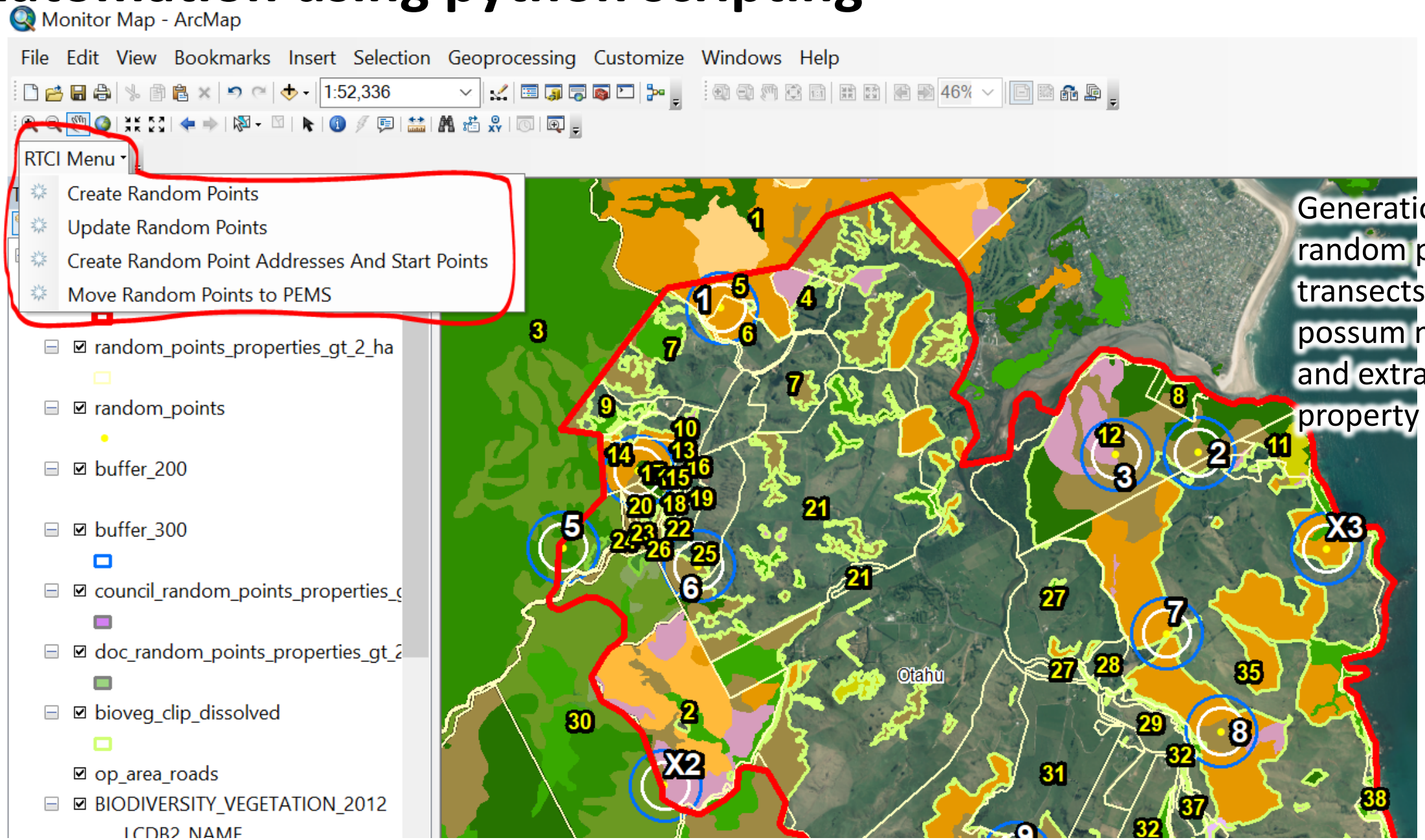


Automation using python scripting



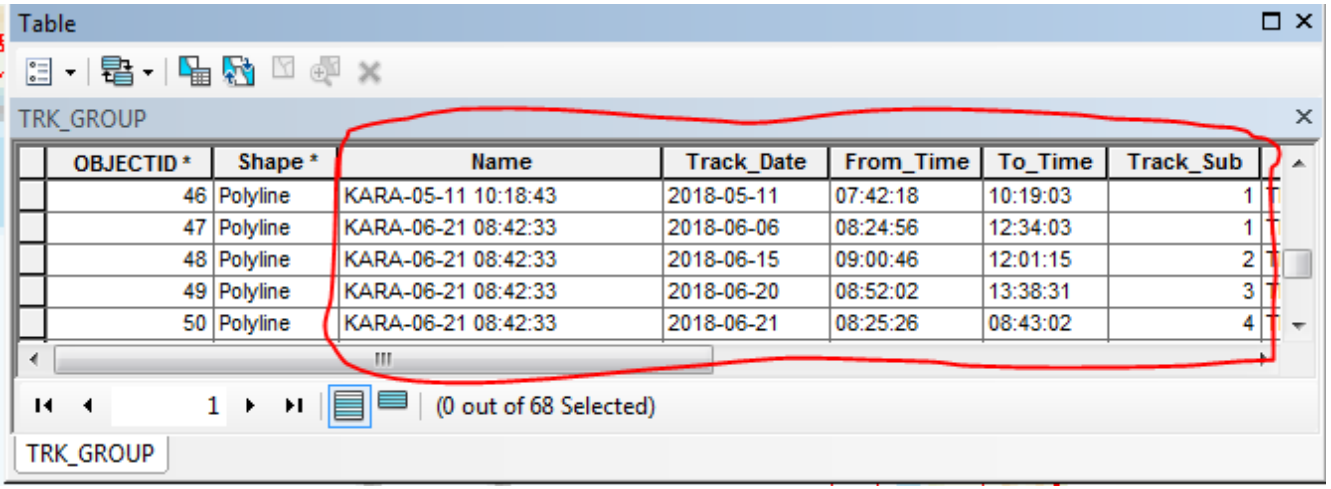
Data supply: extraction of LiDAR derived contours or 5m contours clipped to a property boundary or area of interest.

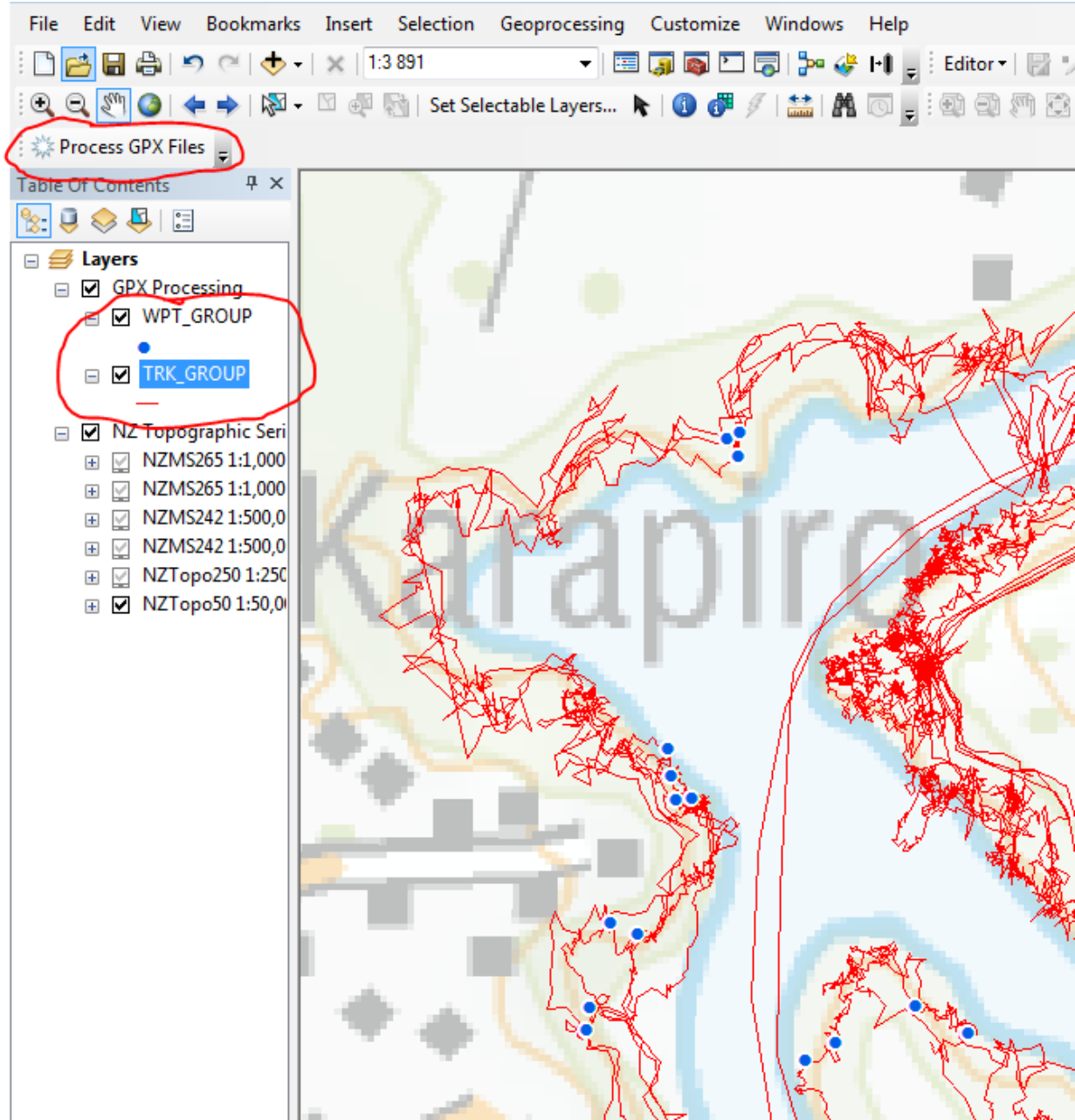
Automation using python scripting



Generation of random point transects for possum monitoring and extracting property details.

Automation using python scripting

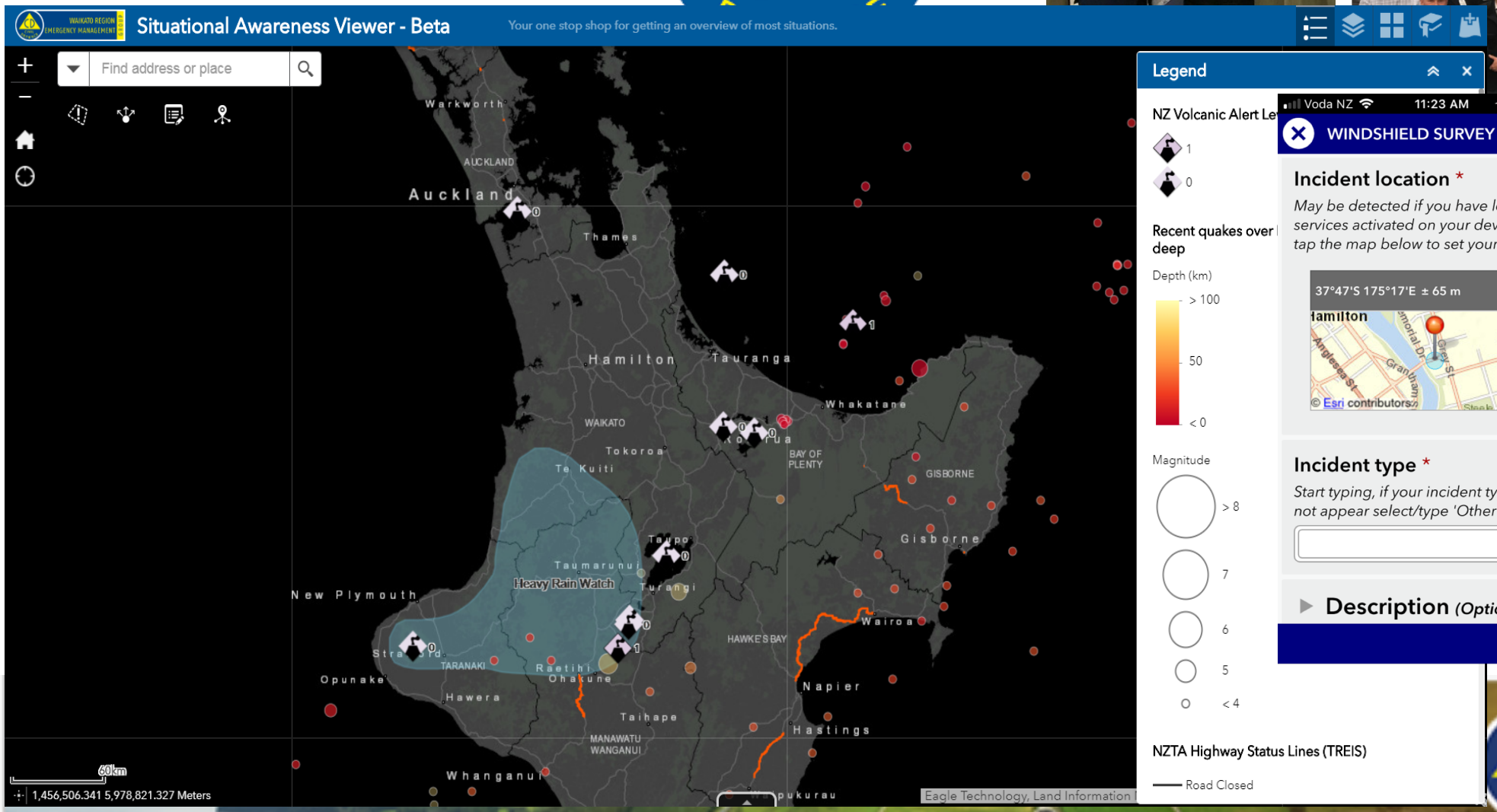


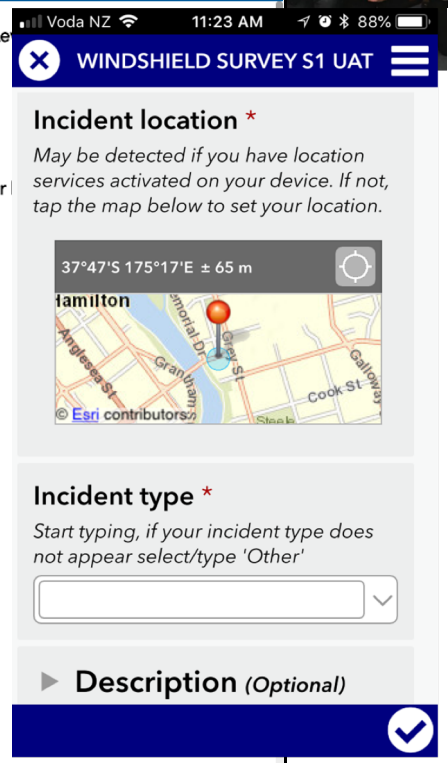


- Processing of multiple .GPX files.
- Convert waypoints and tracklogs and plot data.
- Option to split tracks out a gap parameter (time or distance).

Tools for CDEM

* NZGIS4EM *

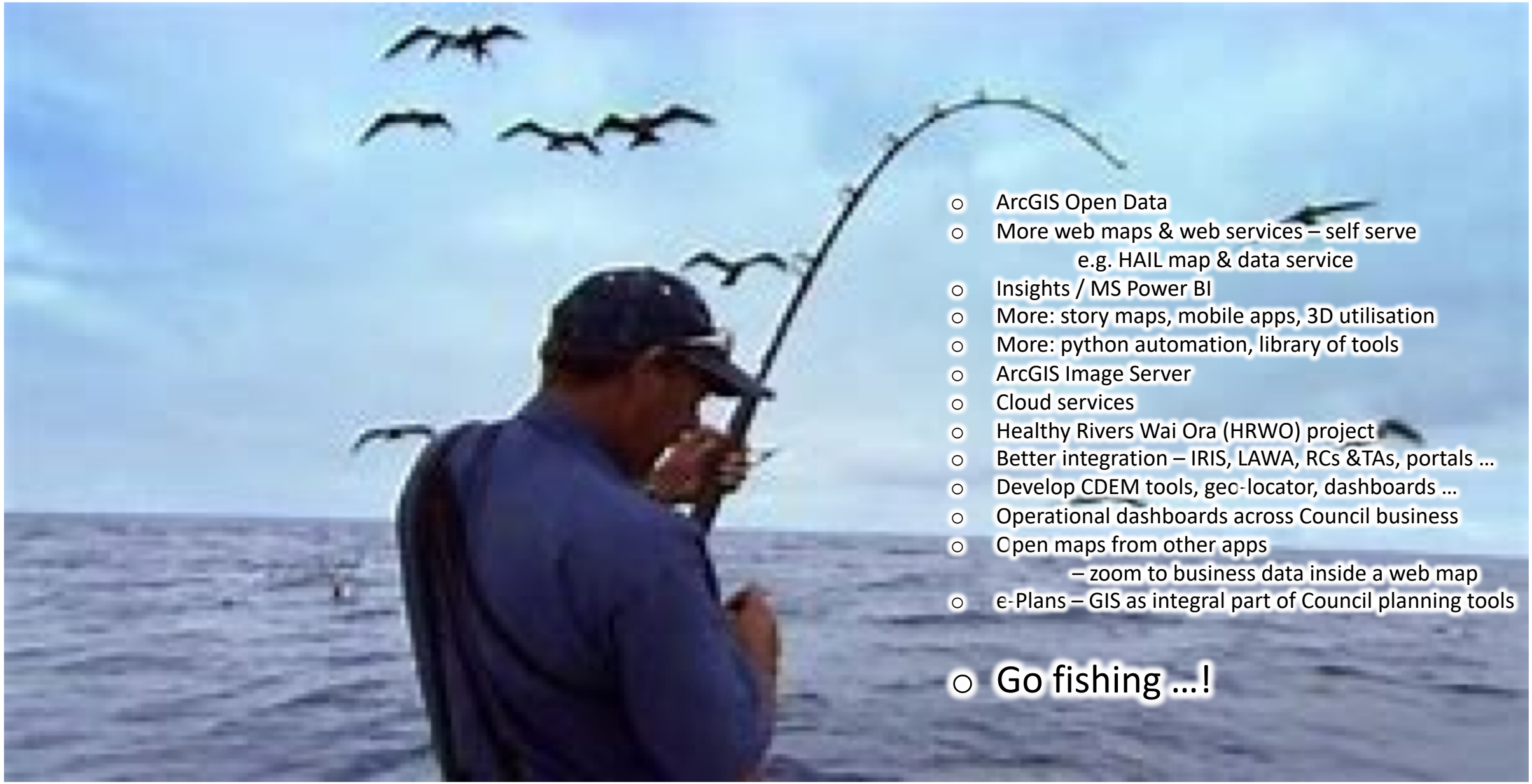




Summary of benefits

- Better support & professional services
- Better GIS workflows for users
- Far greater online resources
- Improved raster analysis
- Easier to recruit – bigger pool of ESRI-trained users
- More tools > greater capacity
- Python > automation > efficiency gains
- Web services & AGOL
- Easier data access > more data sharing, more automated
- Formation of NZGIS4EM + CDEM tools
- Route optimization
- 3D, 4D analysis
- Web apps & mobile integration
- Easier software admin
- Story maps
- Better cartographic tools
- Better web maps > more web map requests
- Increased organizational uptake of GIS
- More timely data through increased use of web services
- Increased productivity
- Reduced costs and lag time to bring new staff up to speed

What next?



- ArcGIS Open Data
- More web maps & web services – self serve
  e.g. HAIL map & data service
- Insights / MS Power BI
- More: story maps, mobile apps, 3D utilisation
- More: python automation, library of tools
- ArcGIS Image Server
- Cloud services
- Healthy Rivers Wai Ora (HRWO) project
- Better integration – IRIS, LAWA, RCs &TAs, portals …
- Develop CDEM tools, geo-locator, dashboards …
- Operational dashboards across Council business
- Open maps from other apps
  – zoom to business data inside a web map
- e-Plans – GIS as integral part of Council planning tools

- Go fishing …!