



# ArcGIS PRO

# DRH Intermediate Tutorial

Data Extraction | Basic Functions | Analytical Tools

July 2023

# Content

1. Extracting data from open sources
2. Using ArcGIS Pro's analytical tools to create walkable catchment buffers
3. Creating final layout
4. Exporting

# Data Acquisition

The dataset used in this tutorial:

- *NZ Facilities: Koordinates* <https://koordinates.com/from/data.linz.govt.nz/layer/105588-nz-facilities/>
- *Bus Stops: Auckland Transport Open GIS Data* <https://data-atgis.opendata.arcgis.com/datasets/ATgis::bus-stop/explore>

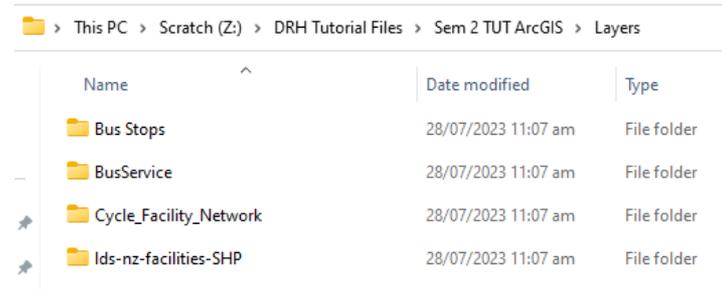
Dataset folder is available in **Scratch** on lab computers



Note: Copy the whole data folder (named: Layers) from Scratch into your ArcGIS project folder.

DRH Tutorial - Data Acquisition Finding Spatial (Map) Info:

<https://www.drh.nz/2022/12/09/data-acquisition-finding-spatial-map-info/>

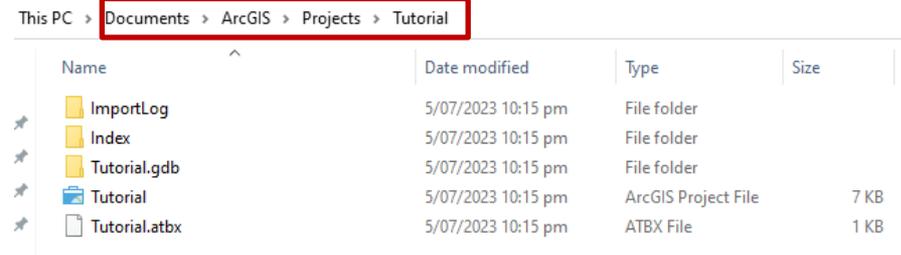
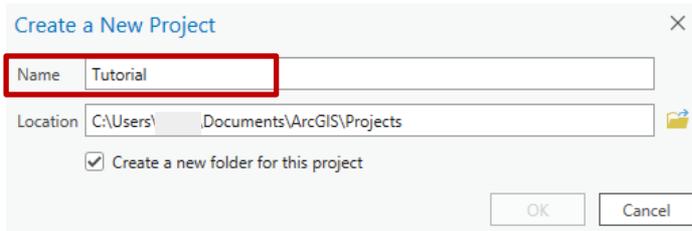
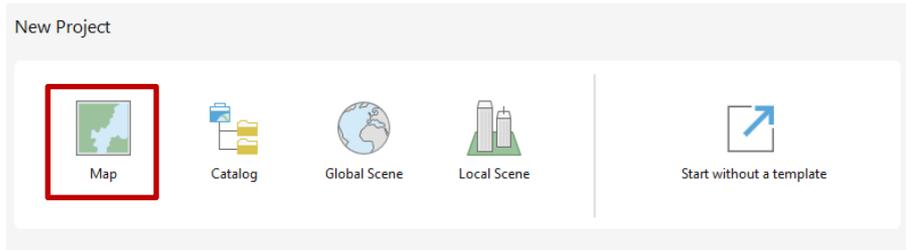


The screenshot shows a Windows File Explorer window with the following path: This PC > Scratch (Z:) > DRH Tutorial Files > Sem 2 TUT ArcGIS > Layers. The main area displays a list of folders:

Name	Date modified	Type
Bus Stops	28/07/2023 11:07 am	File folder
BusService	28/07/2023 11:07 am	File folder
Cycle_Facility_Network	28/07/2023 11:07 am	File folder
Ids-nz-facilities-SHP	28/07/2023 11:07 am	File folder

# Launch ArcGIS Pro & Create a New Project

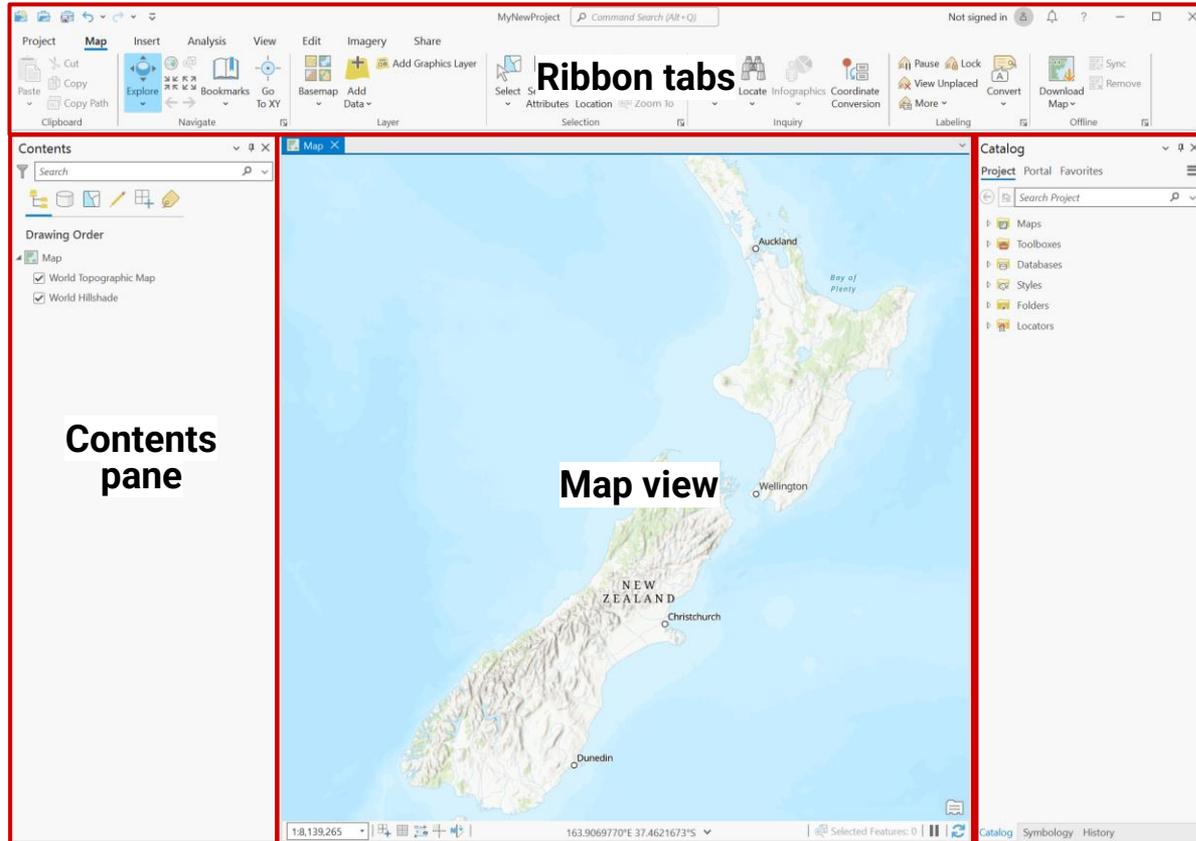
- Create a new project and give it an appropriate name.
- It should automatically save into Documents > ArcGIS > Projects > (project name)



This folder will be your main folder to move downloaded content into.

If you wish to save the project, make sure to copy the entire folder onto your OneDrive/USB when you are finished.

# ArcGIS ProUser Interface

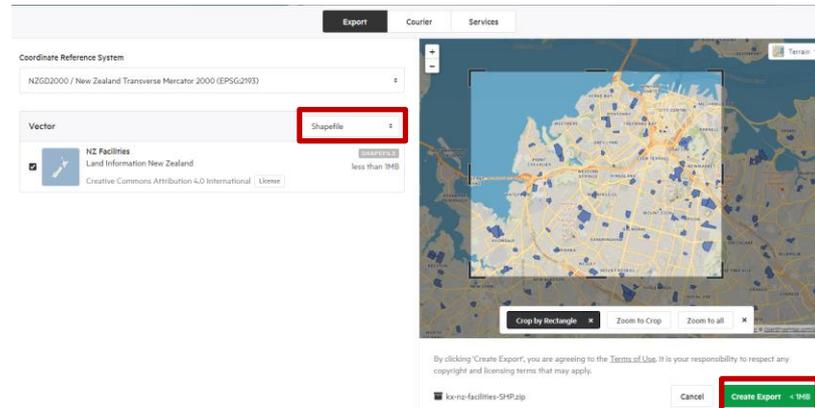
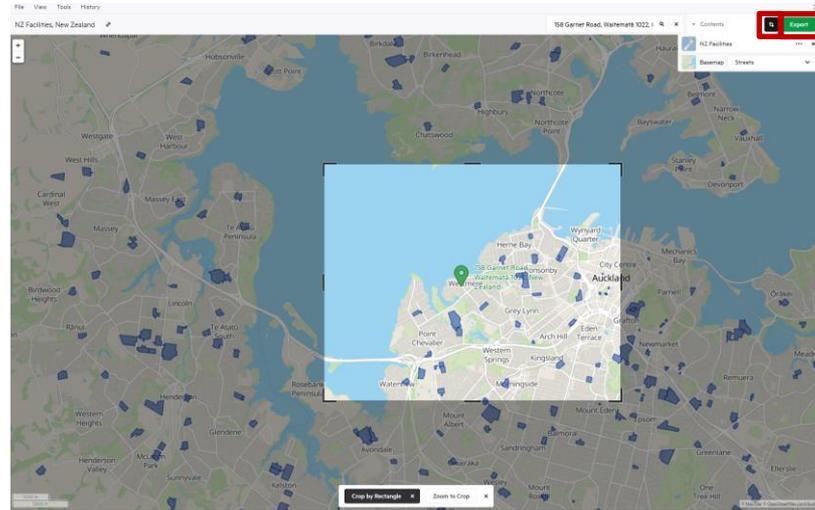


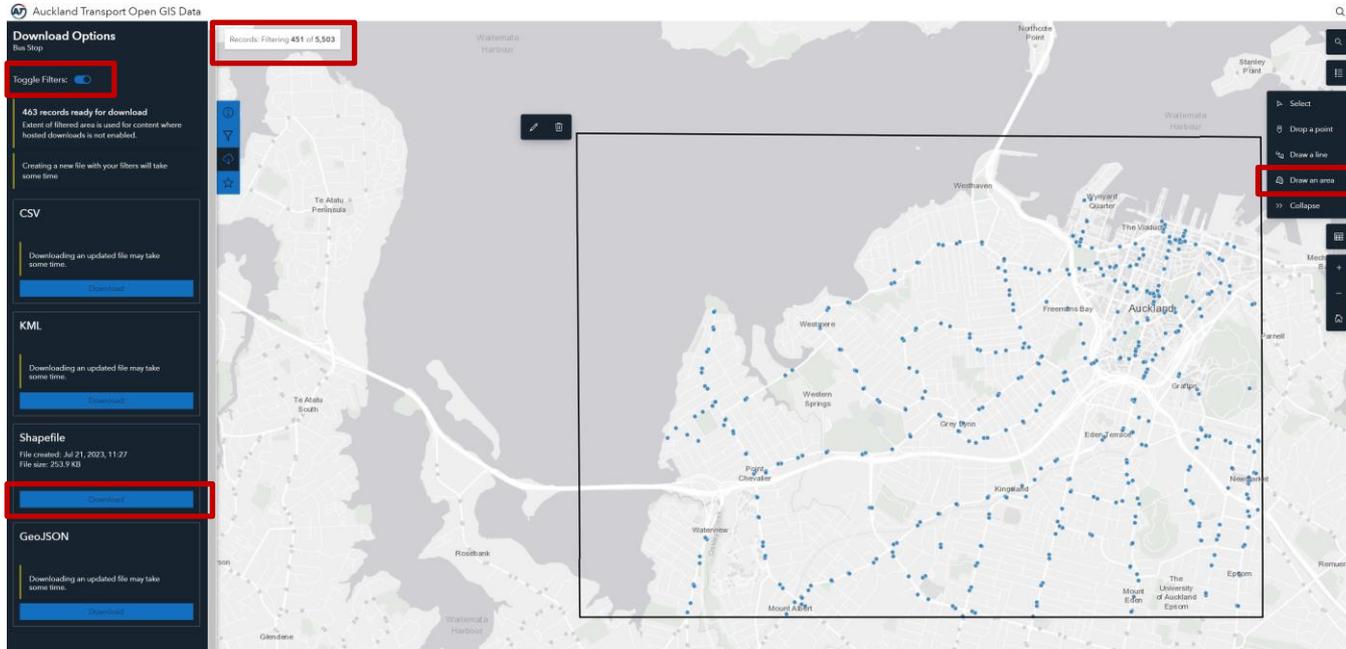
# Extracting Data from Open Sources

- Begin by going to Koordinates or using the link provided earlier, find NZ Facilities layer
- Use the zoom tool or search to find the location of your site
- Select **Crop** on the top right. And crop to an extent you are happy with showing on your map.

Select **Shapefile** and click create export (make sure you are logged into your Koordinates account otherwise you won't be able to export)

Once the zip file is downloaded, extract the files and put it into your ArcGIS Pro Project file





Auckland Transport Open GIS Data

Download Options  
 Bus Stop

Records Filtering 431 of 5,503

Toggle Filters:

463 records ready for download  
 Extent of filtered area is used for content where hosted downloads is not enabled.

Creating a new file with your filters will take some time.

CSV  
 Downloading an updated file may take some time.  
 Download

KML  
 Downloading an updated file may take some time.  
 Download

Shapefile  
 File created: Jul 21, 2023, 11:27  
 File size: 253.9 KB  
 Download

GeoJSON  
 Downloading an updated file may take some time.  
 Download

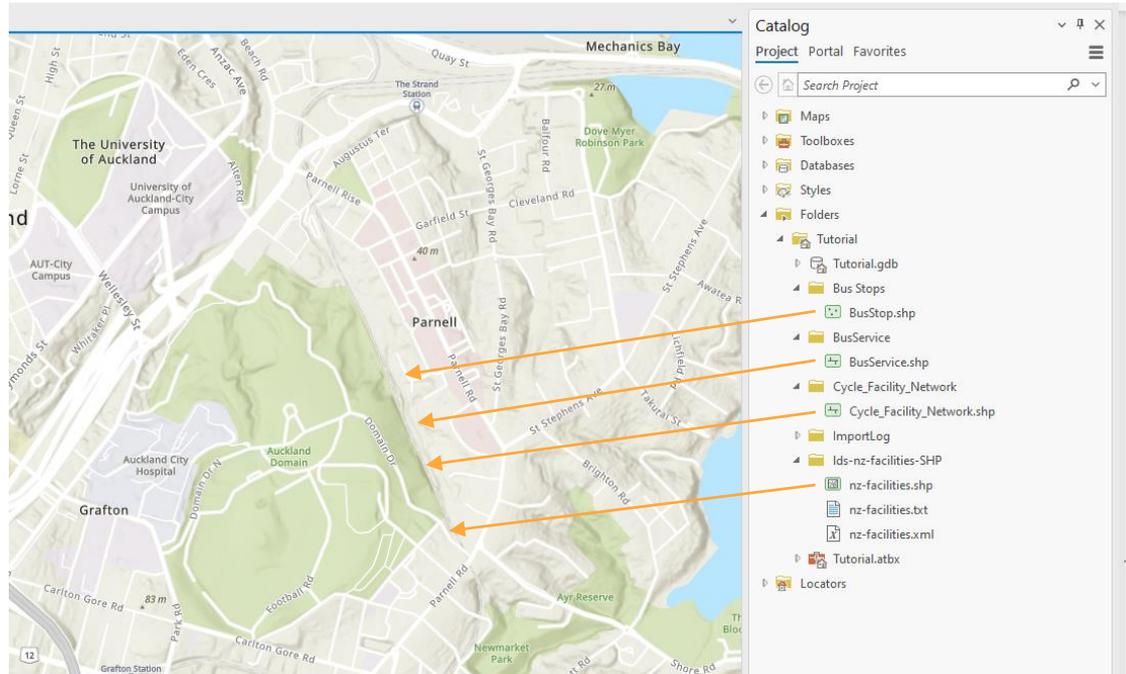
Draw an area

- Similarly for the Auckland Transport data or using the link provided earlier, find bus stops layer.
- Select **Draw an area** on the right side. And crop to an extent you are happy with showing on your map.
- Make sure **toggle filters** is on, then find Download on the left side panel, and choose the **Shapefile option**
- Once the zip file is downloaded, extract the files and put it into your ArcGIS Pro Project file

# ArcGIS Manipulation

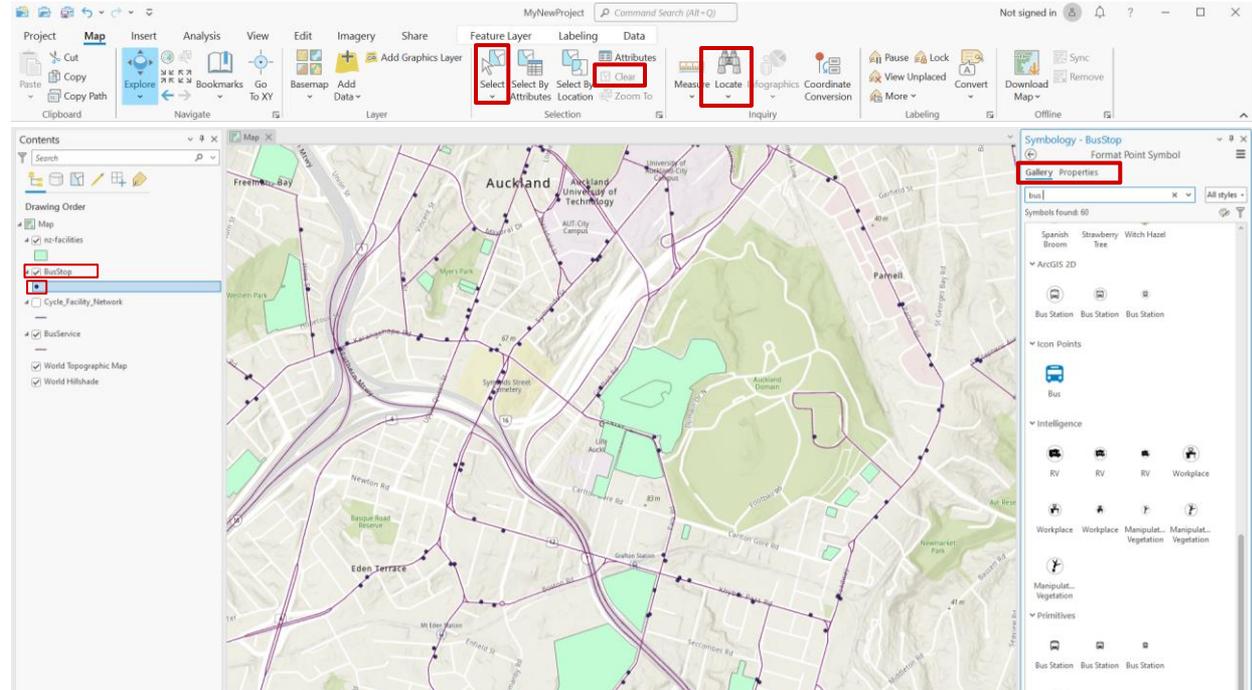
# Adding Datasets

- Open **catalog** pane from *View > Catalog Pane*
- Drag your datasets from your folders, make sure to expand folders until you see (.shp)
- Drop them into the map and it should show up in your **contents** on your left under *Drawing Order*



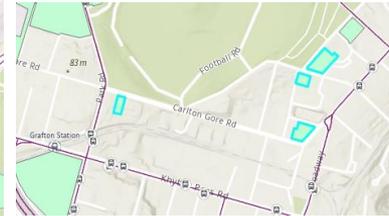
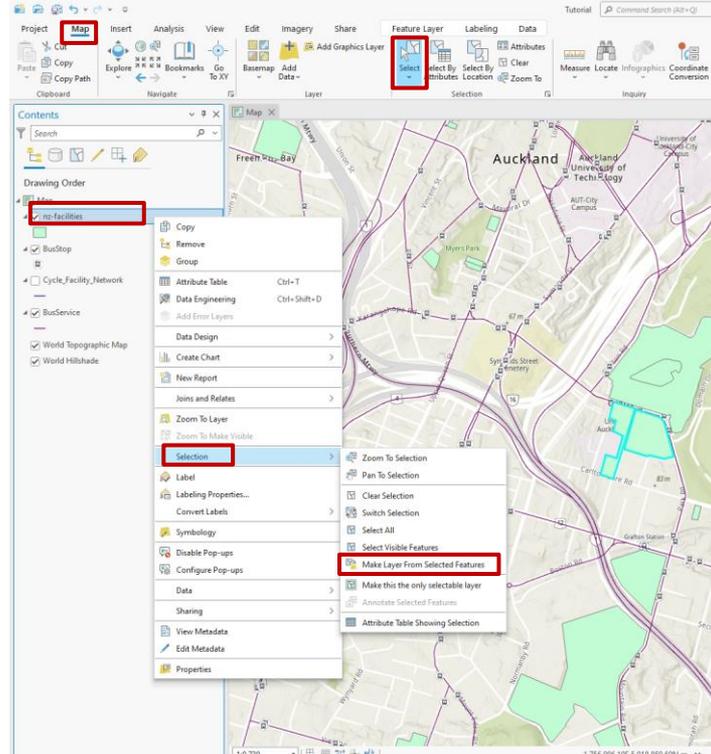
# Key types of tools in ArcGIS Pro under Map Ribbon

- **Locate:** searching addresses and auto zooms into site on the map
- **Select:** you can choose features on the map (select multiple by click + shift)
- **Clear:** clears your selection
- Double clicking the layer name under content: to **rename layers**
- Double clicking the icon in the layer opens: **Symbology** tab
- **Gallery** – Search a Symbol
- **Properties** - to edit the colours, line weights, and styles etc.
- Make sure to click '**Apply**' to see the changes.



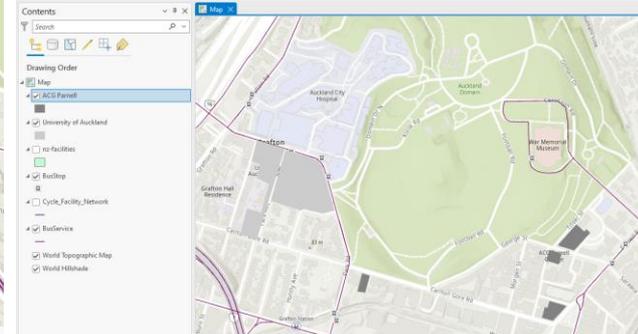
# Making layers for schools in Grafton

- Using *Map > Select*, choose the two UoA buildings and **right click** the *nz-facilities* layer find *selection > make layer from selected features*.
- This will create a layer individually for UoA and you can **rename the layer** to University of Auckland
- Double click** the icon to open *symbology* and customise to your likings.
- Do the same for ACG Parnell
- Hide** the *nz-facilities* layer in the end



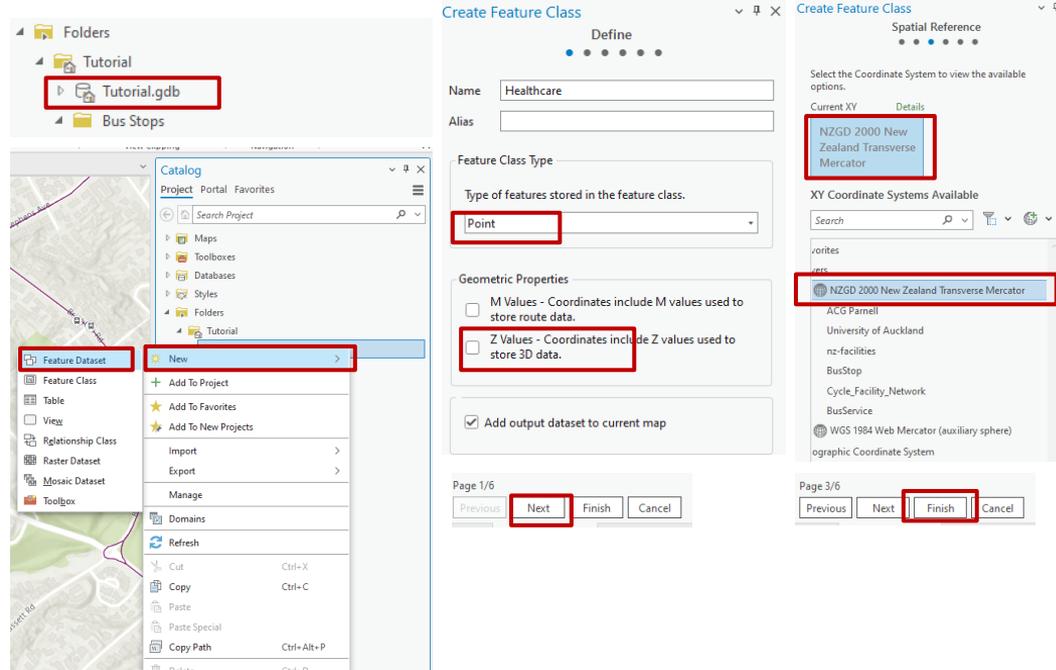
These four buildings are ACG Parnell

Your map should now look something like below:



# Creating new features

- Under *Catalog > Folders > [project name]* and **right click the .gdb > New > Feature class**
- Name: Healthcare (it won't let you do spaces in the name, but you can always change it later under contents)
- *Feature Class: Point*
- *Uncheck Z values*
- Make sure spatial reference is selecting **NZGD 2000**
- Hit **Finish** (if it doesn't let you, just go to page 1 and save the project file then hit finish)

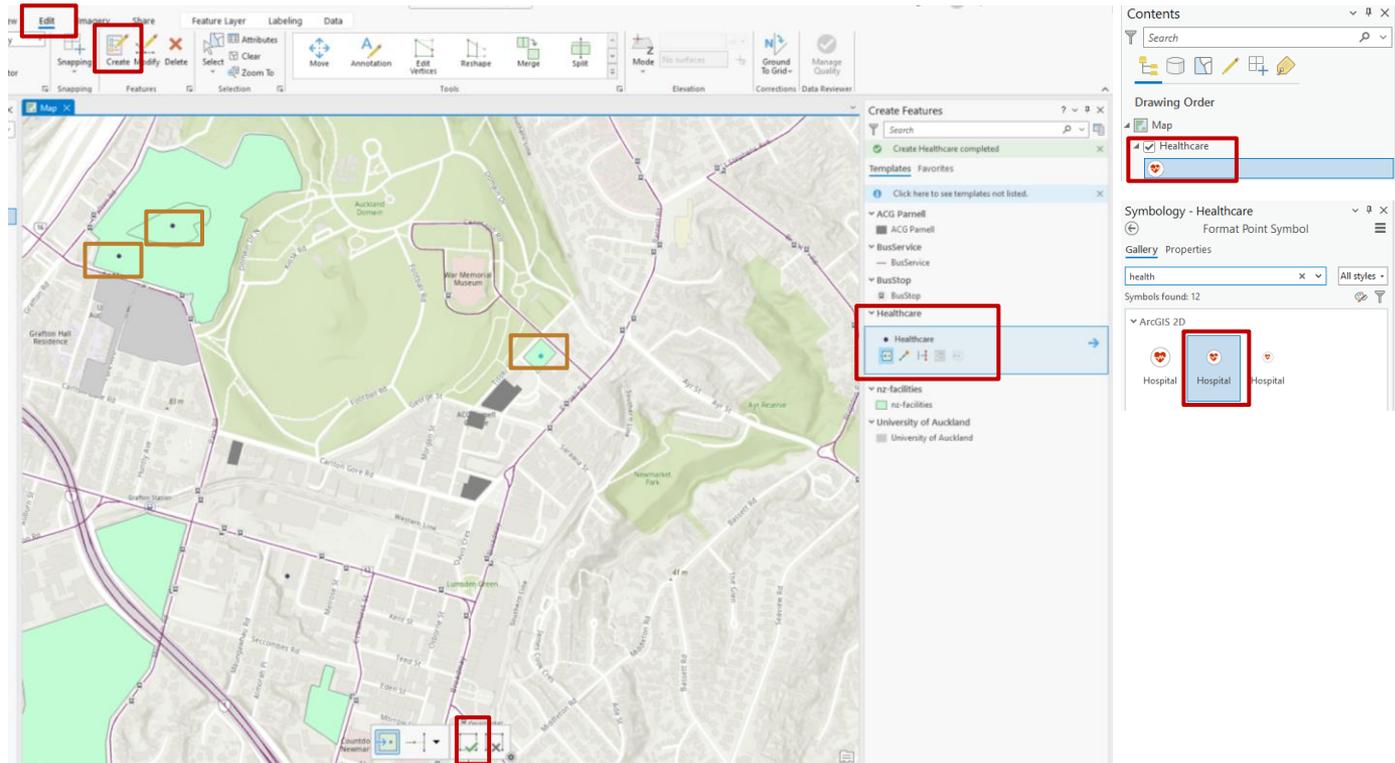


The image displays three screenshots from the ArcGIS Pro interface illustrating the process of creating a new feature class:

- Folder Context Menu:** The 'Tutorial.gdb' folder in the Catalog pane is right-clicked, and the 'New' option is selected.
- Create Feature Class Dialog - Define:** The 'Name' field is set to 'Healthcare', the 'Feature Class Type' is set to 'Point', and the 'Z Values' checkbox is unchecked.
- Create Feature Class Dialog - Spatial Reference:** The 'NZGD 2000 New Zealand Transverse Mercator' coordinate system is selected from the 'XY Coordinate Systems Available' list.

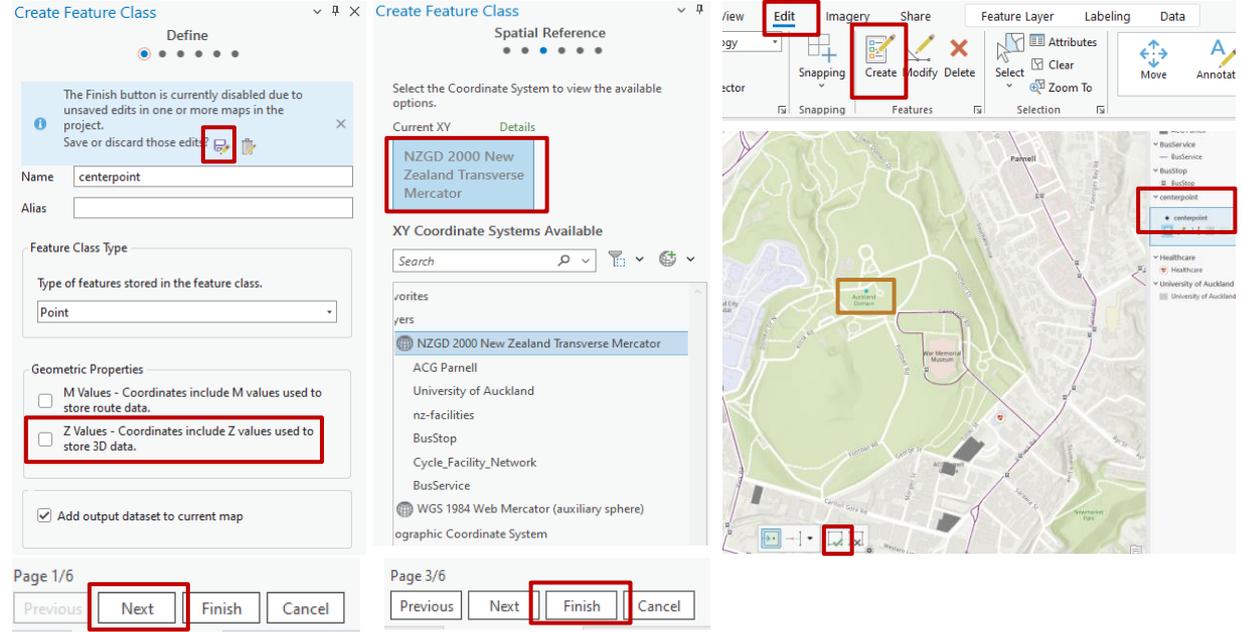
# Creating new features

- Go to *edit* > *create* > *healthcare*
- Select on the map, the three healthcare options then *exit* the edit panel
- *Rename the layer* if you wish
- **Double click** on the icon to customise your symbology
- Use Gallery and *search health*



# Creating a center point on site

- Follow the same steps for creating a new feature class
- Name: centerpoint
- **Feature class: point**
- Uncheck z values
- Spatial reference: **NZGD 2000**
- Finish (remember to save the project file if it doesn't let you click finish)
- *Edit > Create > Centerpoint*
- Select on the map, near middle of Auckland Domain then exit



The image displays three screenshots from the ArcGIS Pro interface illustrating the process of creating a center point feature class.

**Left Screenshot: Create Feature Class - Define**

- The "Finish" button is disabled due to unsaved edits. A red box highlights the "Save or discard those edits" button.
- Name: centerpoint
- Feature Class Type: Point
- Geometric Properties:
  - M Values - Coordinates include M values used to store route data.
  - Z Values - Coordinates include Z values used to store 3D data. (Red box highlights this checkbox)
- Add output dataset to current map
- Page 1/6: Previous, Next (Red box), Finish, Cancel

**Middle Screenshot: Create Feature Class - Spatial Reference**

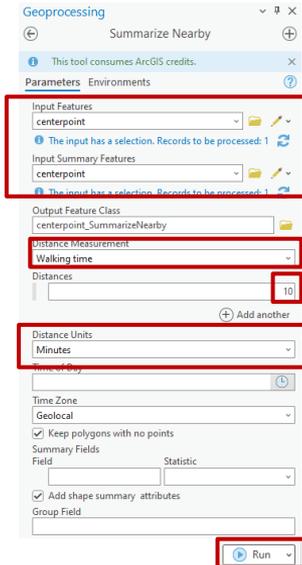
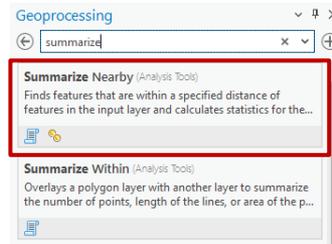
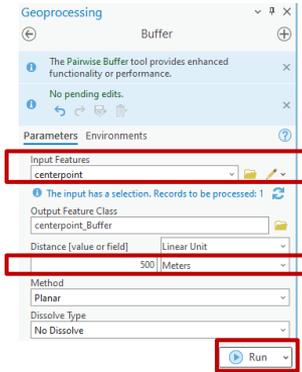
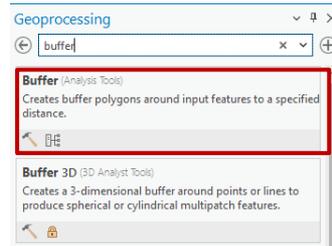
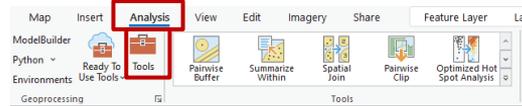
- Current XY: NZGD 2000 New Zealand Transverse Mercator (Red box highlights this selection)
- XY Coordinate Systems Available:
  - NZGD 2000 New Zealand Transverse Mercator (Selected)
  - ACG Parnell
  - University of Auckland
  - mz-facilities
  - BusStop
  - Cycle\_Facility\_Network
  - BusService
  - WGS 1984 Web Mercator (auxiliary sphere)
  - ogographic Coordinate System
- Page 3/6: Previous, Next, Finish (Red box), Cancel

**Right Screenshot: ArcGIS Pro Map View**

- The "Edit" tab is active in the ribbon, with a red box around the "Create" button.
- The "centerpoint" feature class is visible in the Contents pane on the right, with a red box around it.
- A red box highlights the "Centerpoint" tool in the "Create" dropdown menu.
- The map shows a location in Auckland Domain with a red dot indicating the center point.
- Page 3/6: Previous, Next, Finish (Red box), Cancel

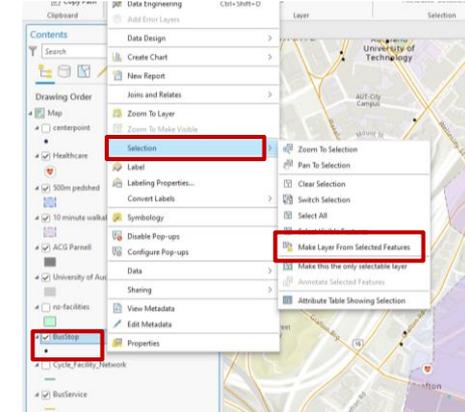
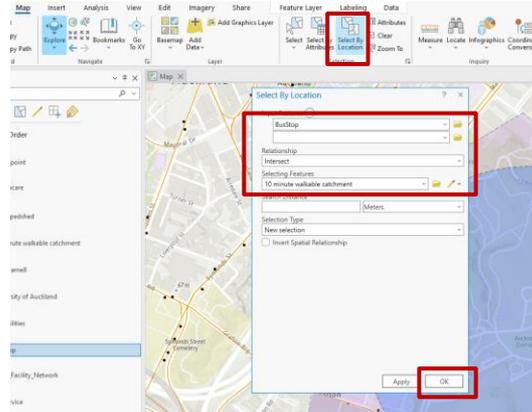
# Analysis Tools:

1. To make a buffer: *Analysis > Tools*
  - a. Search up **buffer**
    - i. Input: **centerpoint**
    - ii. Distance: **500 meters**
    - iii. Run
  - b. Edit symbology
  
2. **Extension - Requires Login:** To make a walkable catchment: *Analysis > Tools*
  - a. Search up **Summarize Nearby**
    - i. Requires log in and uses credits
    - ii. Input feature and input summary features: **centerpoint**
    - iii. Distance measurement: **walking time**
    - iv. **10**
    - v. Distance units: **minutes**
    - vi. Run
  - b. Edit layer name and symbology as needed

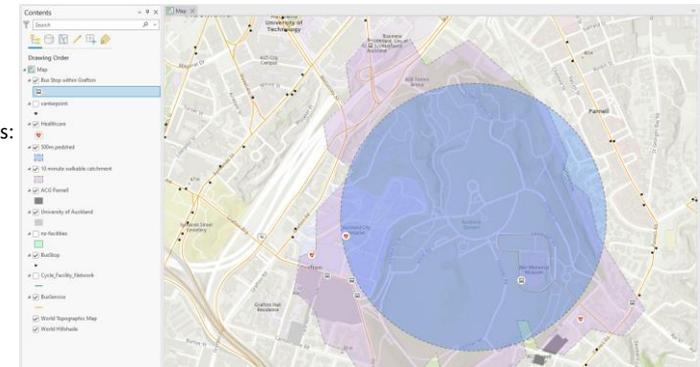


# Displaying data within site

- *Map > Select by location*
- Input features: **Bus stop**
- Relationship: **intersect**
- Selecting features: **10 minute walkable catchment**
- Apply and Ok
- Right click the bus stop layer and *selection > create layer from selection*
- *Rename layer and change symbology as needed*
- *Map > Clear* to clear your selection to finish

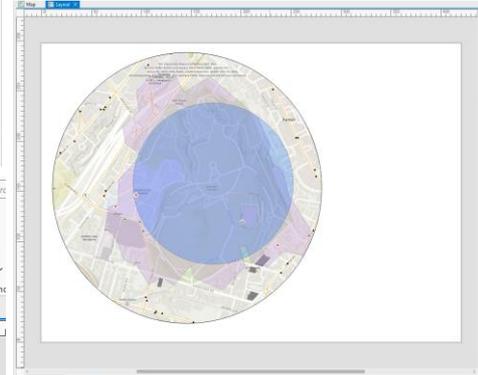
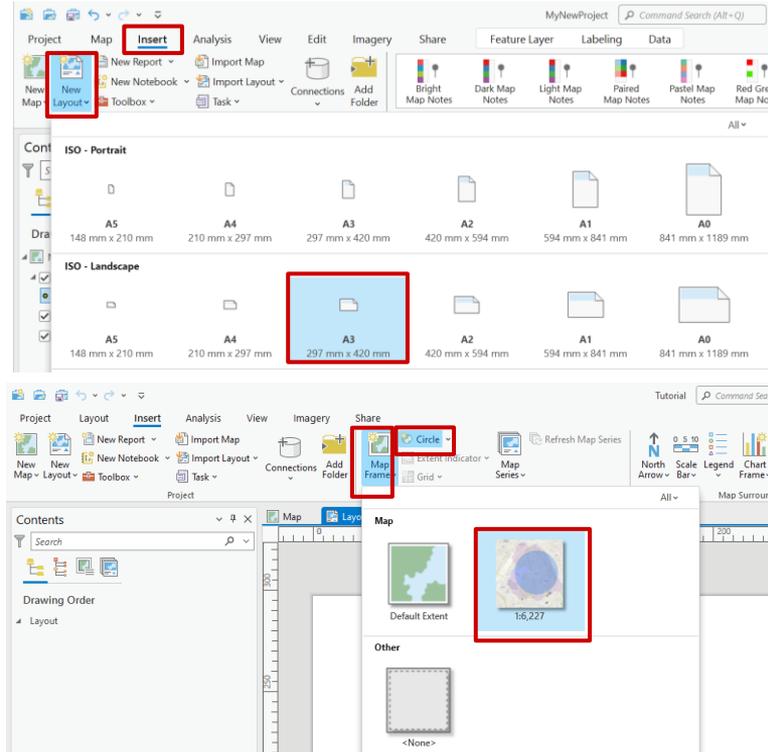


Your map should now look something like this:



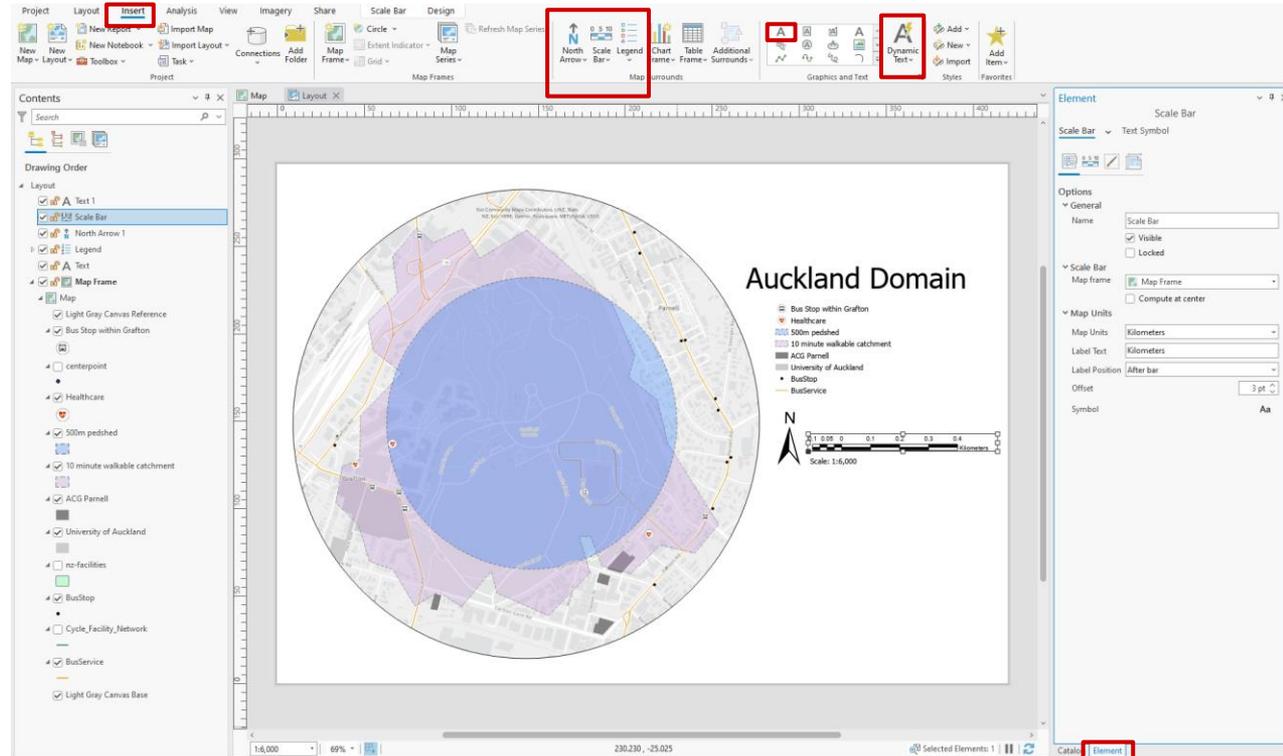
# Adding a new Layout

1. *Insert > New Layout > A3 Iso*
2. *Insert > circle > Map frame*



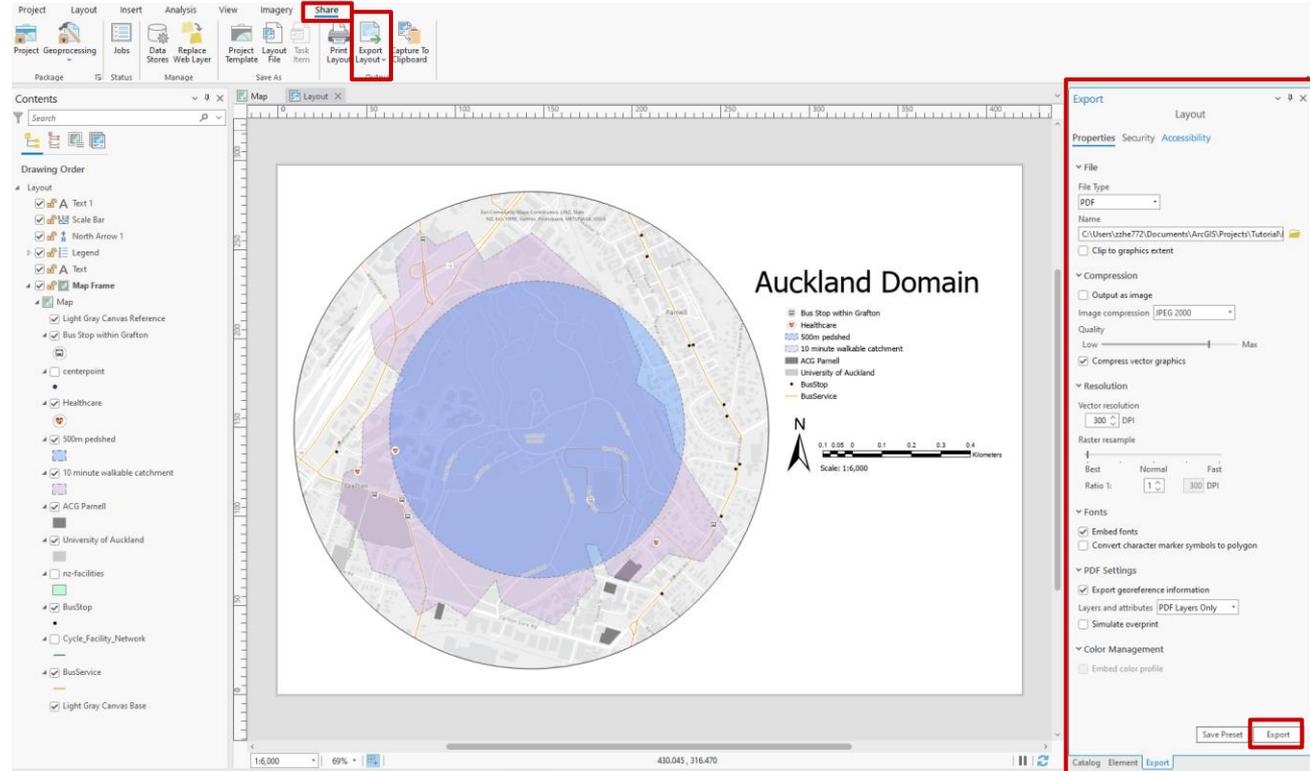
# Adding Map Components

- Under the *Insert* tab, you can add a **North Arrow**, **Scale Bar**, and **Legend**.
- Add a *Map Title* by inserting **straight text**.
- Add a *Scale* by inserting **Dynamic Text**.
- Double click the *elements* (the components you've added) on the map to **edit their properties** in the Element tab.



# Saving and Exporting

- Once your map is ready to export as a different file type (e.g. PDF), go to the **Share** tab.
- Select **Export Layout**.
- Click **Export** at the bottom right.
- All done!



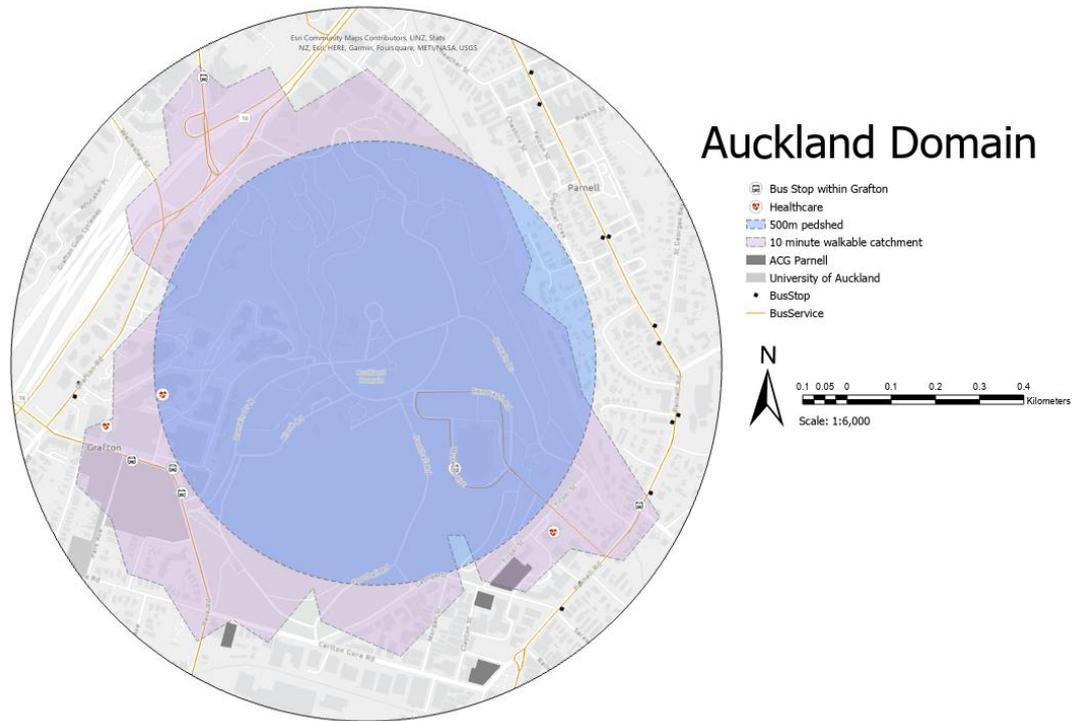
The screenshot shows the ArcGIS Pro interface with the 'Share' tab selected in the ribbon. The 'Export Layout' button is highlighted with a red box. The 'Export' dialog box is open on the right, also with a red border. The dialog shows the following settings:

- File Type:** PDF
- Name:** C:\Users\zoha772\Documents\ArcGIS\Projects\Tutorial\
- Image compression:** JPEG 2000
- Quality:** Low
- Compress vector graphics:**
- Resolution:** Vector resolution: 300 DPI
- Fonts:**  Embed fonts
- PDF Settings:**  Export georeference information
- Color Management:**  Embed color profile

The 'Export' button at the bottom right of the dialog is highlighted with a red box. The main map area displays a circular map titled 'Auckland Domain' with various colored overlays representing different services and catchment areas. A legend on the right side of the map lists the following layers:

- Bus Stop within Grafton
- Healthcare
- 500m pedshed
- 10 minute walkable catchment
- ACG Pannell
- University of Auckland
- nz-facilities
- BusStop
- Cycle\_Facility\_Network
- BusService
- Light Gray Canvas Base

# Final Product



#### Helpdesk

Architecture Building Level 4, Room 423 (421-423).

[drh022@aucklanduni.ac.nz](mailto:drh022@aucklanduni.ac.nz)

#### Opening Hours:

Mon-Fri: 9:30am-4:30pm

*We do not open during public holiday*

*Appointments only during school breaks*

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