Digital Research Hub

Creating Walkable Catchment Buffers using ArcGIS Pro

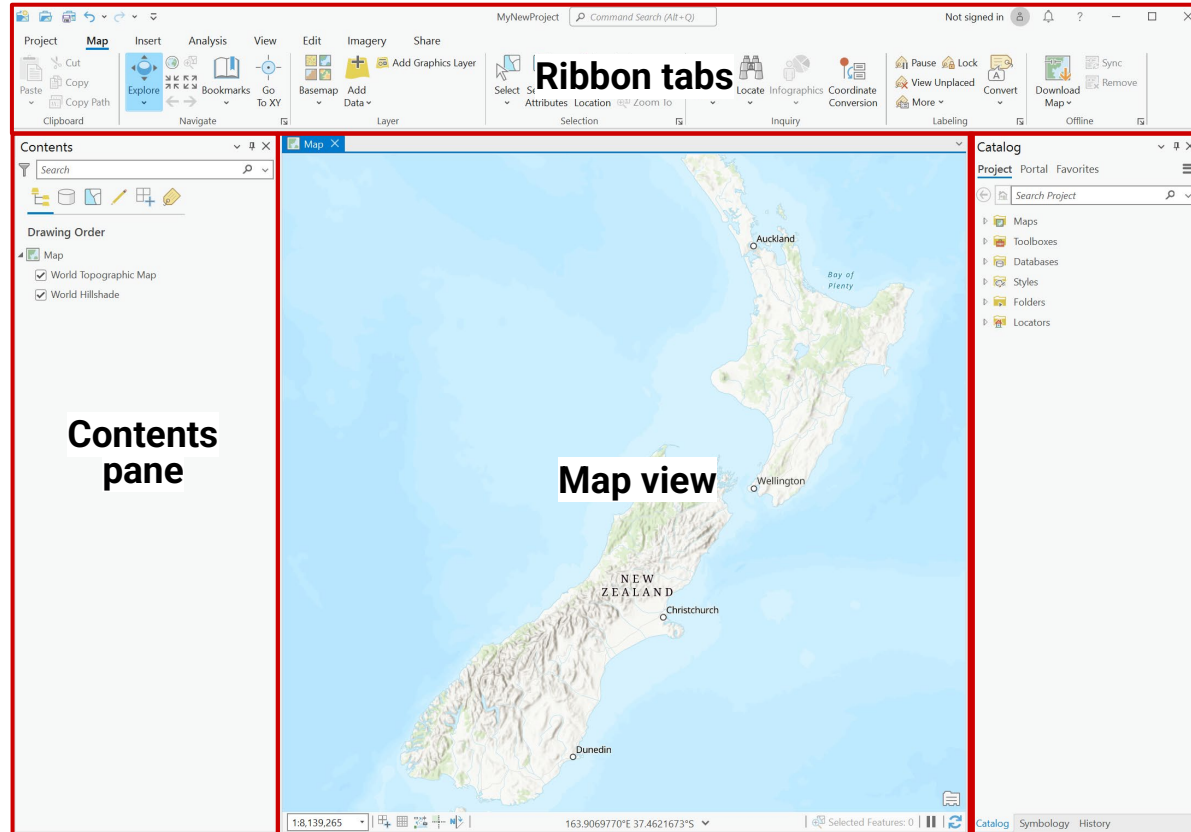By **D**igital **R**esearch **H**ub - A. Zheng (2023)

Contents of this tutorial:

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

- Layers Used:

  - 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
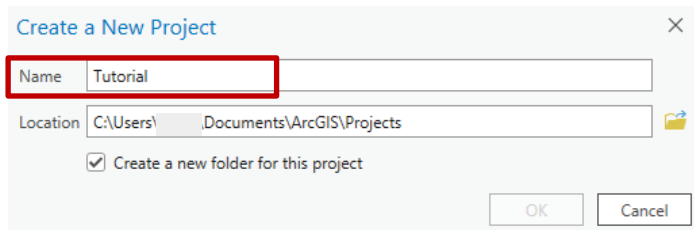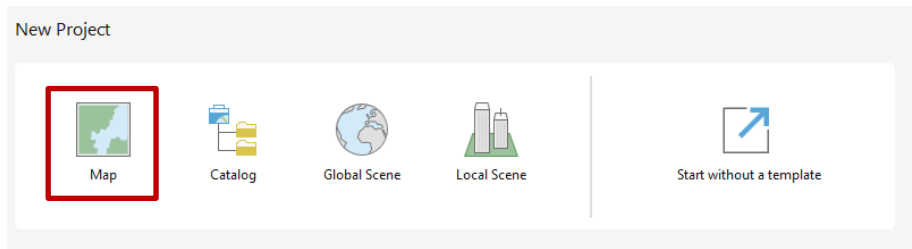
DRH

ArcGIS Pro User Interface

ArcGIS Pro: Create a Project

- Create a new project and give it an appropriate name.

- It should automatically save into Documents > ArcGIS > Projects > (project name)

New Project

| Map | Catalog | Global Scene | Local Scene | Start without a template |

Create a New Project

| Name | Tutorial |
| Location | C:\Users____,Documents\ArcGIS\Projects |

☑ Create a new folder for this project

OK   Cancel

This PC > **Documents > ArcGIS > Projects > Tutorial**

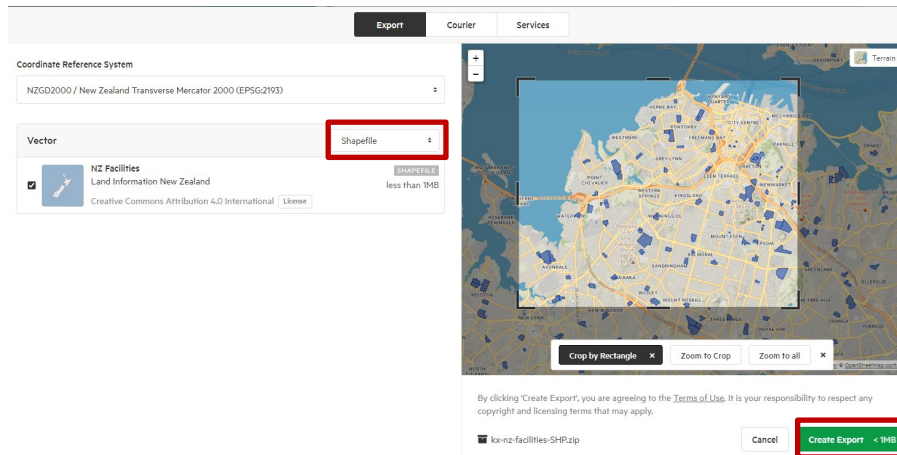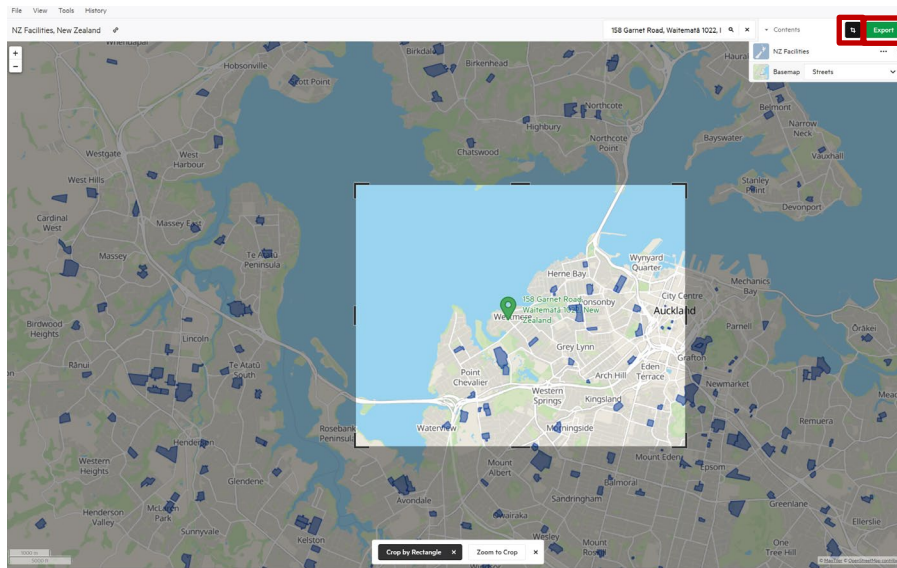| Name	Date modified	Type	Size
ImportLog	5/07/2023 10:15 pm	File folder	
Index	5/07/2023 10:15 pm	File folder	
Tutorial.gdb	5/07/2023 10:15 pm	File folder	
Tutorial	5/07/2023 10:15 pm	ArcGIS Project File	7 KB
Tutorial.atbx	5/07/2023 10:15 pm	ATBX File	1 KB

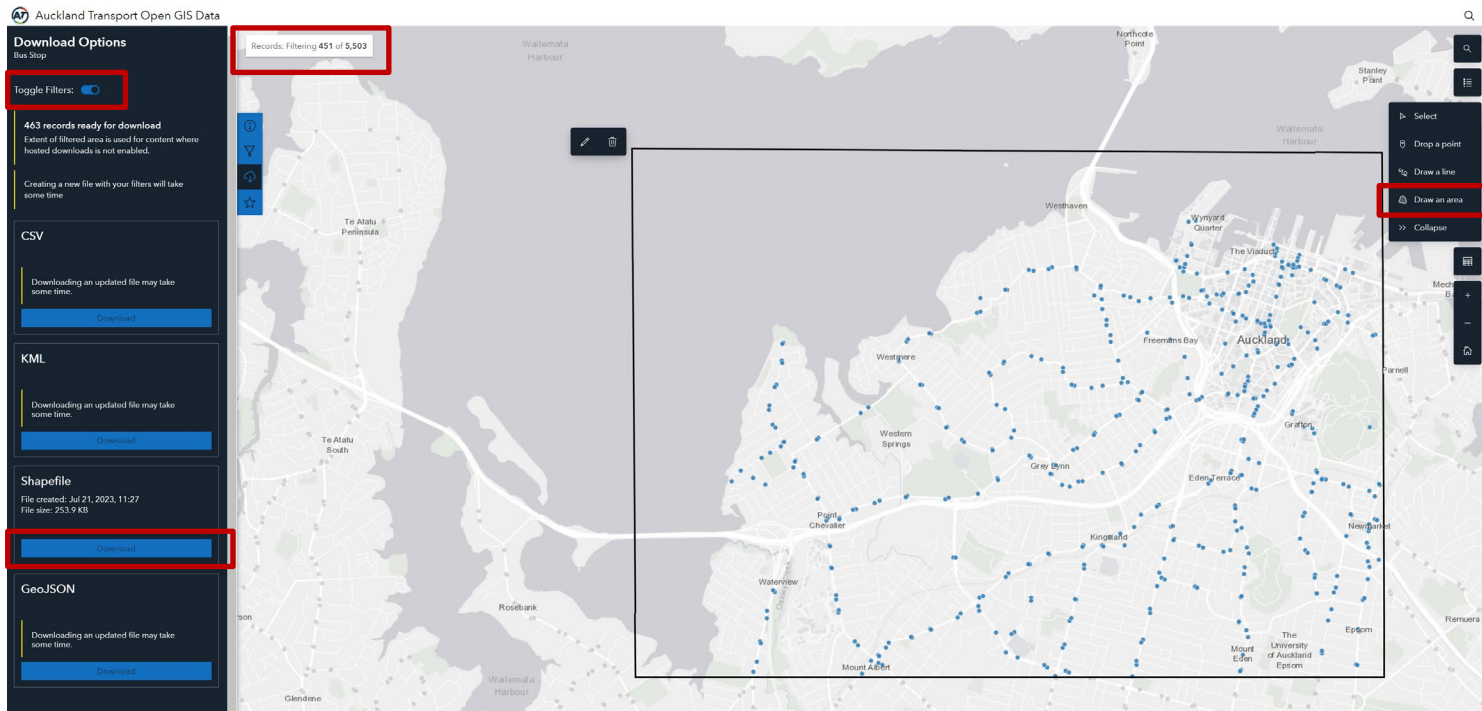This folder will be your main folder to move downloaded content into.

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

JRH

Extracting Data from Open Sources

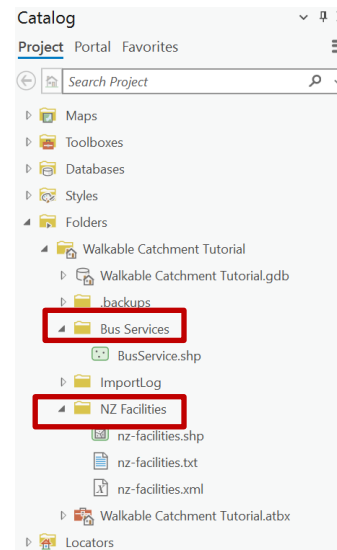- Begin by going to Koordinates or using the link provided earlier, find NZ Facilities layer

- Use the zoom tool or search to find the site in Westmere

- 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

- Use the zoom tool or search to find the site in Westmere

- 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
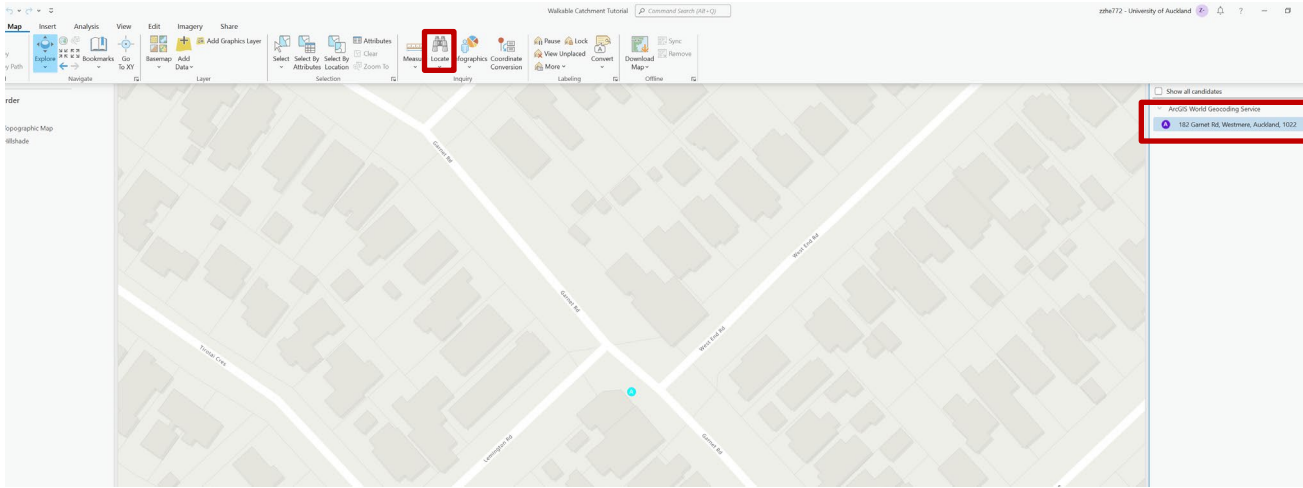
- Your ArcGIS Pro Project file should be located in Documents > ArcGIS > Projects
- Once your files have been moved into your folder, it should look like this and in ArcGIS's catalogue panel you should be able to view them under folders
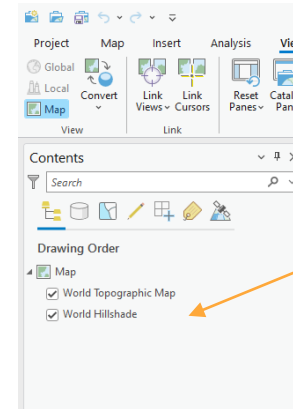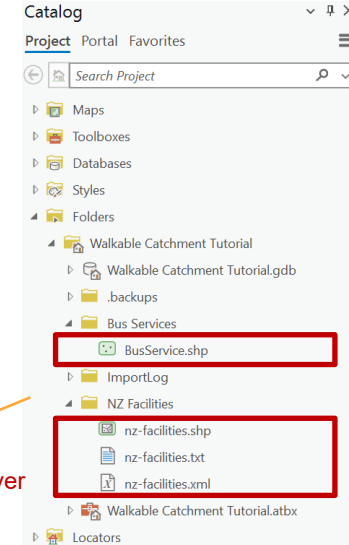
[if you cannot see catalog, **View > Catalog Pane**]

ArcGIS Manipulation

- Zoom into the site or **Map > Locate > Search**: 182 Garnet Rd, Westmere

- Then under catalog and drag each and all of the layers we have exported online from folders into your contents
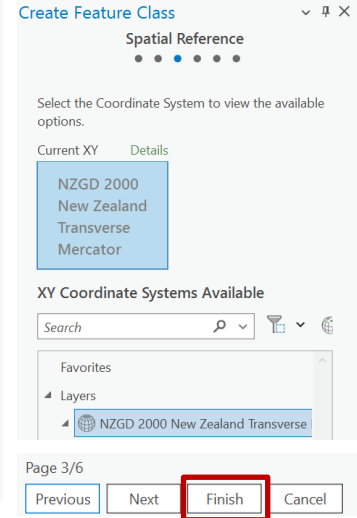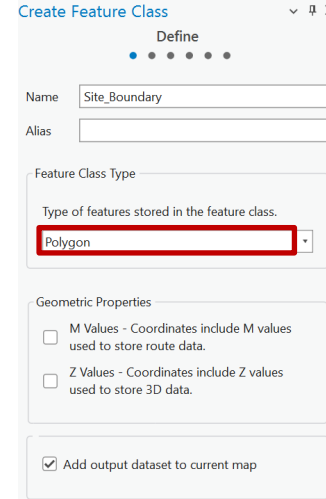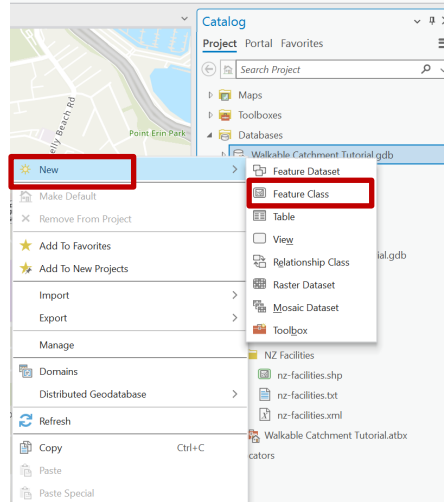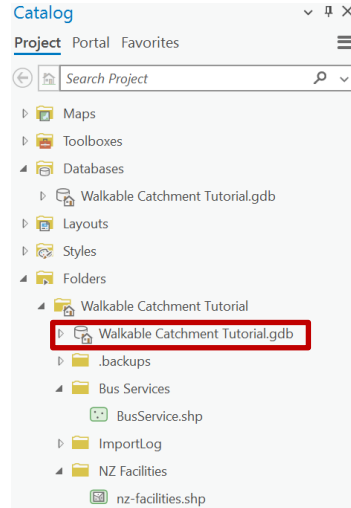[if you cannot see catalog, **View > Catalog Pane**]

Drag over
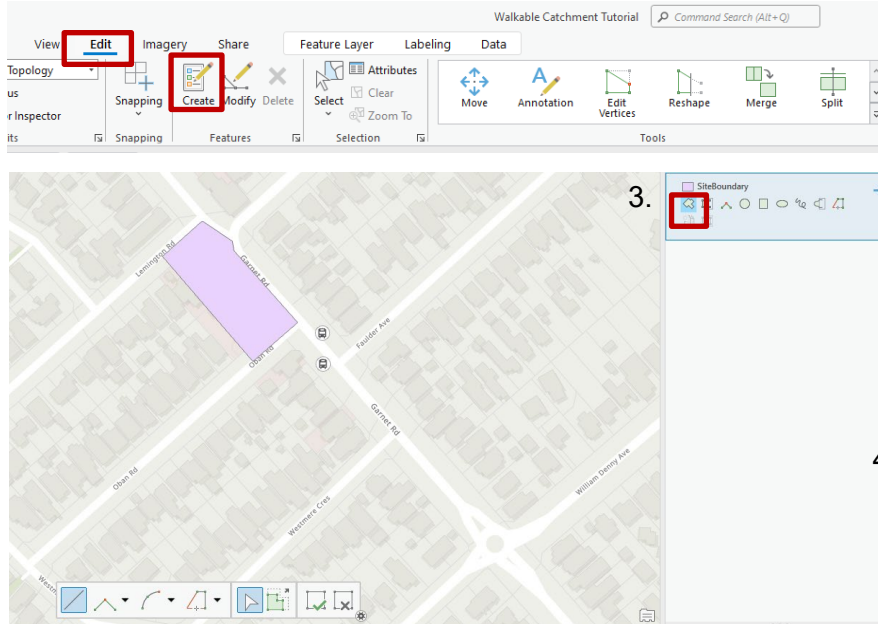
Site Boundary

To create a site boundary…

- Right click on the database file (.gdb)

- Create New > Feature Class

- Then type in a name, make sure the type is <u>Polygon</u> and *uncheck Z Values*. Hit next on the bottom panel

- For Spatial Reference select <u>NZGD 2000 New Zealand Transverse Mercator</u> and hit finish
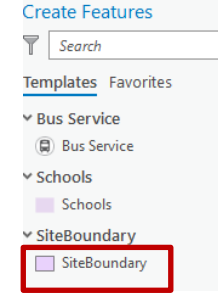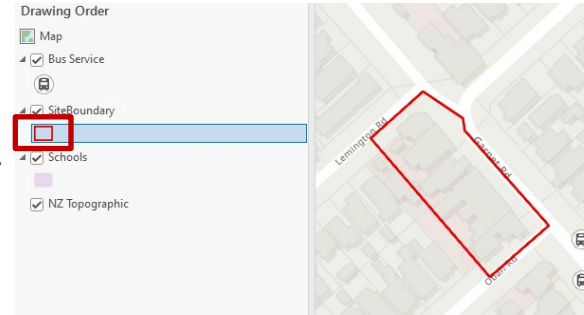
Site Boundary

1. To draw the site boundary, go under edit > create and on your right you should see the panel *Create Features*

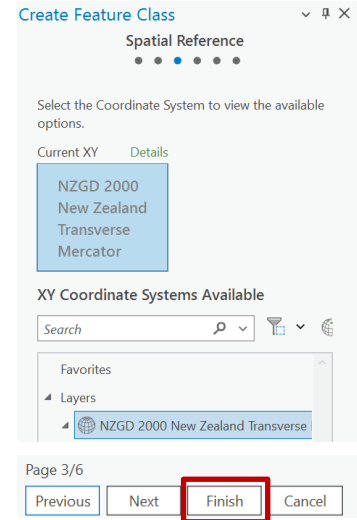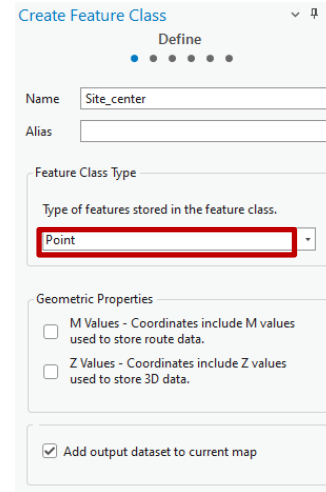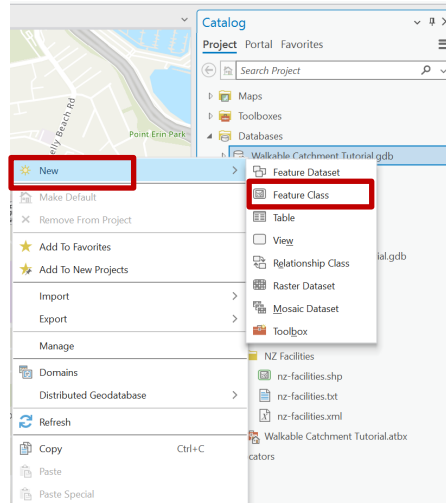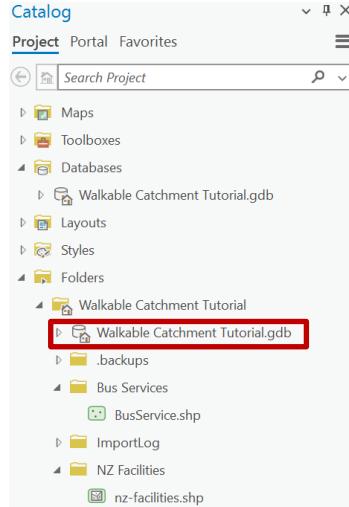Choose Site Boundary then select the first option and begin drawing

2. Once you have your site boundary drawn double click on the icon on the layer (on your left side's contents panel) to bring up symbology and you can adjust appropriately
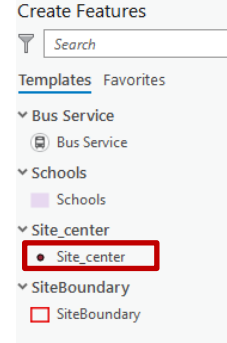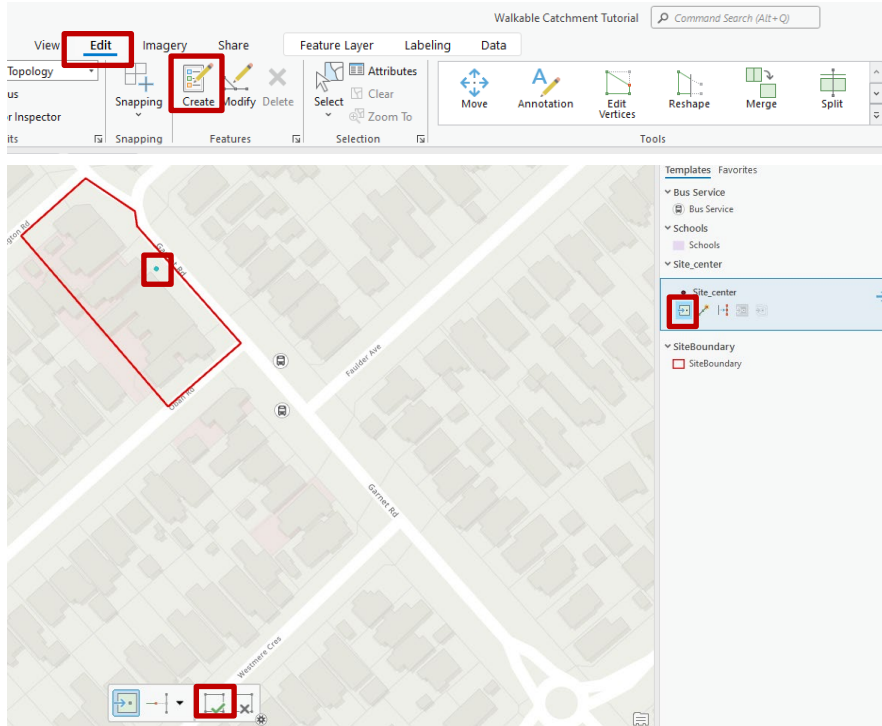
Point on Site

To create a buffer we first need to create a point on site

- Right click on the database file (.gdb)

- Create New > Feature Class

- Then type in a name, make sure the type is Point and *uncheck Z Values*. Hit next on the bottom panel

- For Spatial Reference select NZGD 2000 New Zealand Transverse Mercator and hit finish

Point on Site

- To draw the point on site, go under edit > create and on your right you should see the panel *Create Features*
- Select Site Center and you can select a point to place down

- Then close to finish and edit symbology from the contents panel (left) by double clicking the icon to pull up symbology
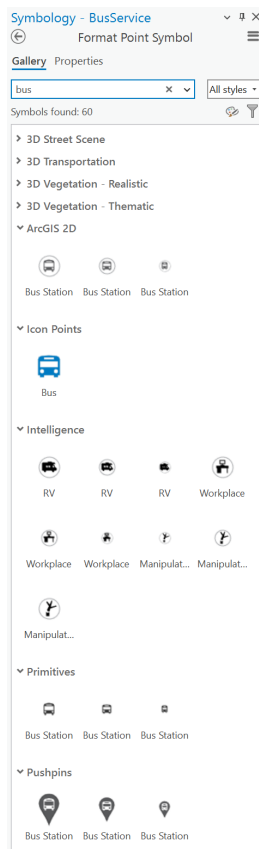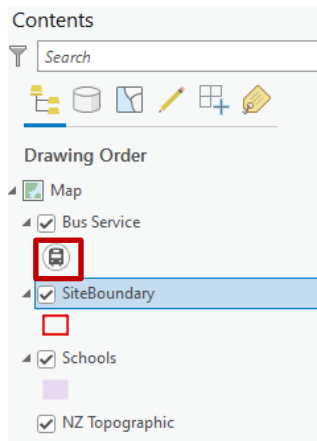
- Layers under contents can be checked or unchecked for visibility.

- Different order of the layers also changes the visibility.

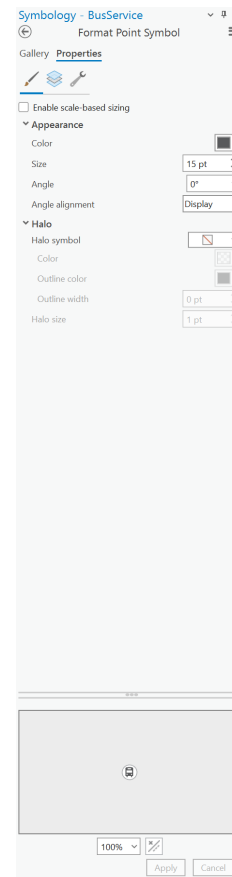- Double click the title of the layer to rename it (NZ-facilties can be renamed to schools)

- Double click on the icon to open symbology panel on the right

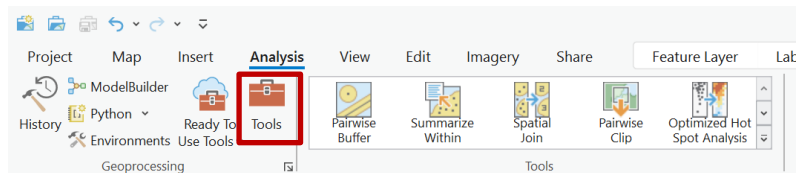- Adjust the symbology to whichever is appropriate.

Under Gallery:
You are able to find preset icons and images.
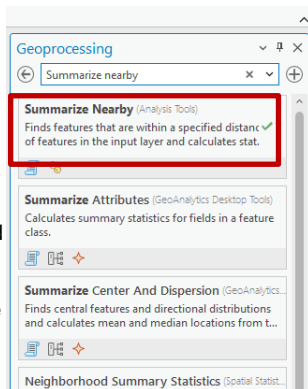
Search up bus to find the bus icon

Under Properties:
You are able to change colors and size

Contents

Search

Drawing Order

Map
Bus Service
SiteBoundary
Schools
NZ Topographic

Symbology - BusService
Format Point Symbol
Gallery   Properties

bus   All styles
Symbols found: 60

3D Street Scene
3D Transportation
3D Vegetation - Realistic
3D Vegetation - Thematic
ArcGIS 2D
Bus Station   Bus Station   Bus Station

Icon Points
Bus

Intelligence
RV   RV   RV   Workplace
Workplace   Workplace   Manipulat...   Manipulat...
Manipulat...

Primitives
Bus Station   Bus Station   Bus Station

Pushpins
Bus Station   Bus Station   Bus Station

Symbology - BusService
Format Point Symbol
Gallery   Properties

Enable scale-based sizing
Appearance
Color
Size   15 pt
Angle   0°
Angle alignment   Display
Halo
Halo symbol
Color
Outline color
Outline width   0 pt
Halo size   1 pt
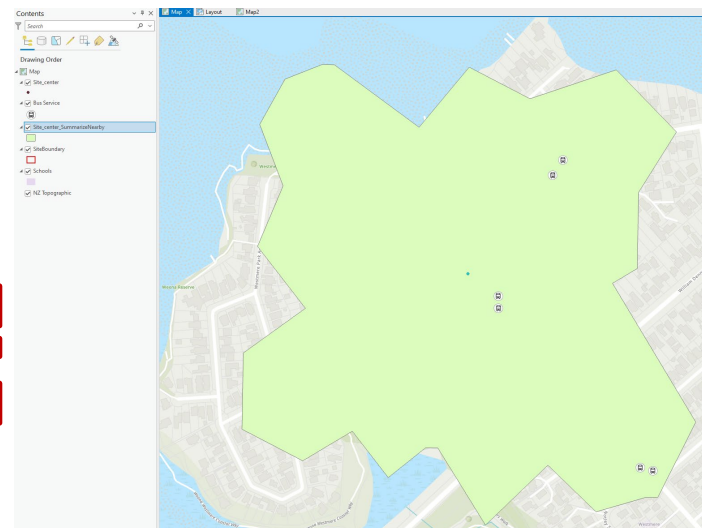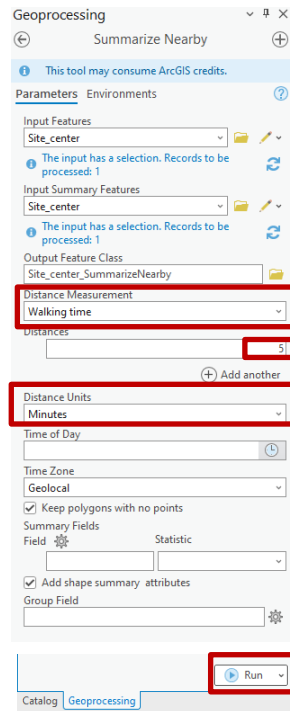
100%

Apply   Cancel

Creating walkable buffers

Under **Analysis > Tools**, search up *Summarize Nearby*.

To use this tool, you will need to be signed into your ArcGIS Pro Account if you don't have one, please see our website for further instructions.

Then choose your site center as the input and input summary features and choose your parameters as the following.

Then hit "run"

Once the analysis has been completed, your screen should look similar to this.

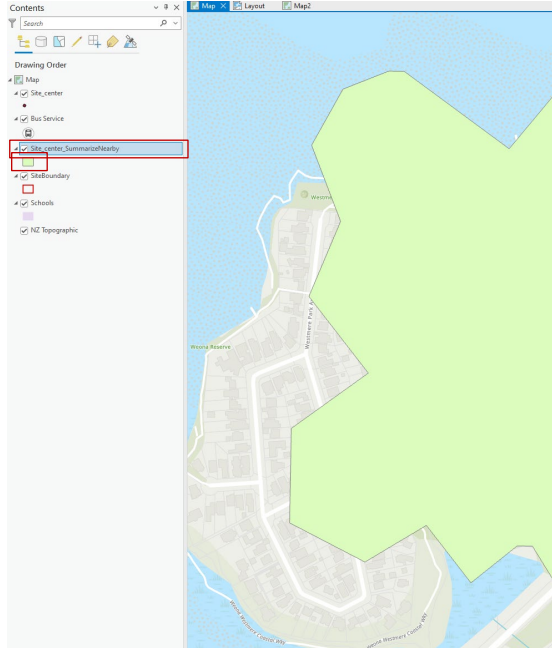Repeat the steps again to get a buffer for 10 minutes, and 15 minutes.
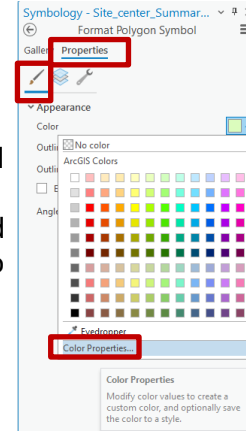
Customising walkable buffers

Double click on the layer text to rename the layer

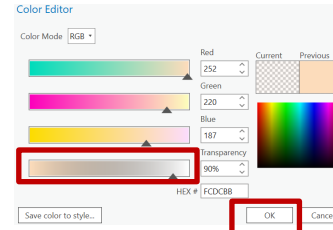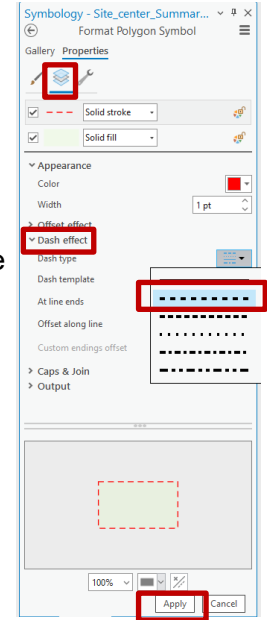Double click the icon to open up symbology to change colors

Under symbology, open color and color properties, and you are able to change the transparency (suggested 75%)

To change the style of the outline follow:
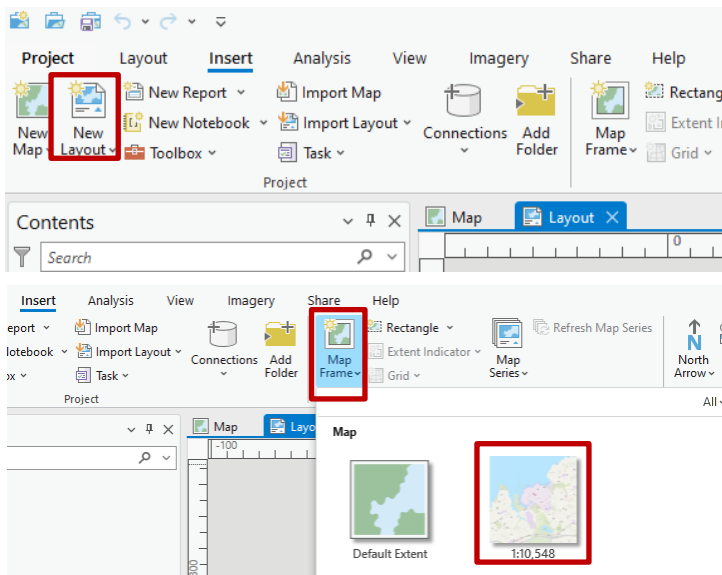
Hit apply to see the effect on your map
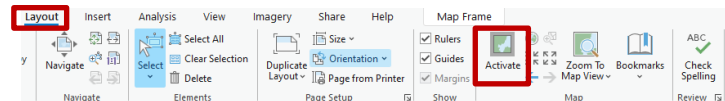
ArcGIS Exporting

- Once you are happy with the map create the final export through **Insert > New Layout > choose your template (usually A3 Landscape)**
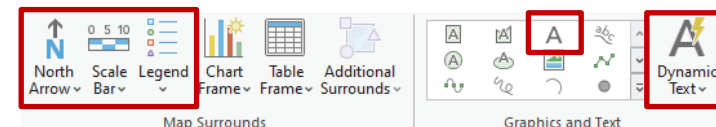
- Add your map **Insert > Map Frame**, you may choose a circle instead of rectangle for a circular map

- **Click and drag** to draw your map. Then change the scale at the bottom left.

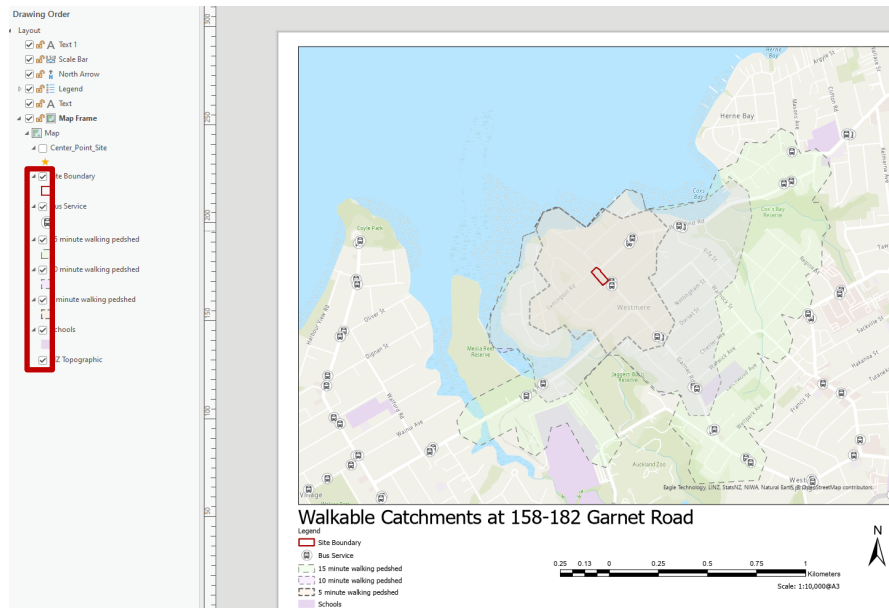- To move your base map around go into **Layout > Activate**

- Don't forget your mapping conventions:
- Title
- Scale
- Legend
- North Arrow
- Date

Possible outcomes for maps

By hiding and unhiding layers in your Contents (Drawing Order). You can create maps with all three buffers showing or maps with just one buffer.

The legend syncs with your contents (hidden layers will not show in your legend)
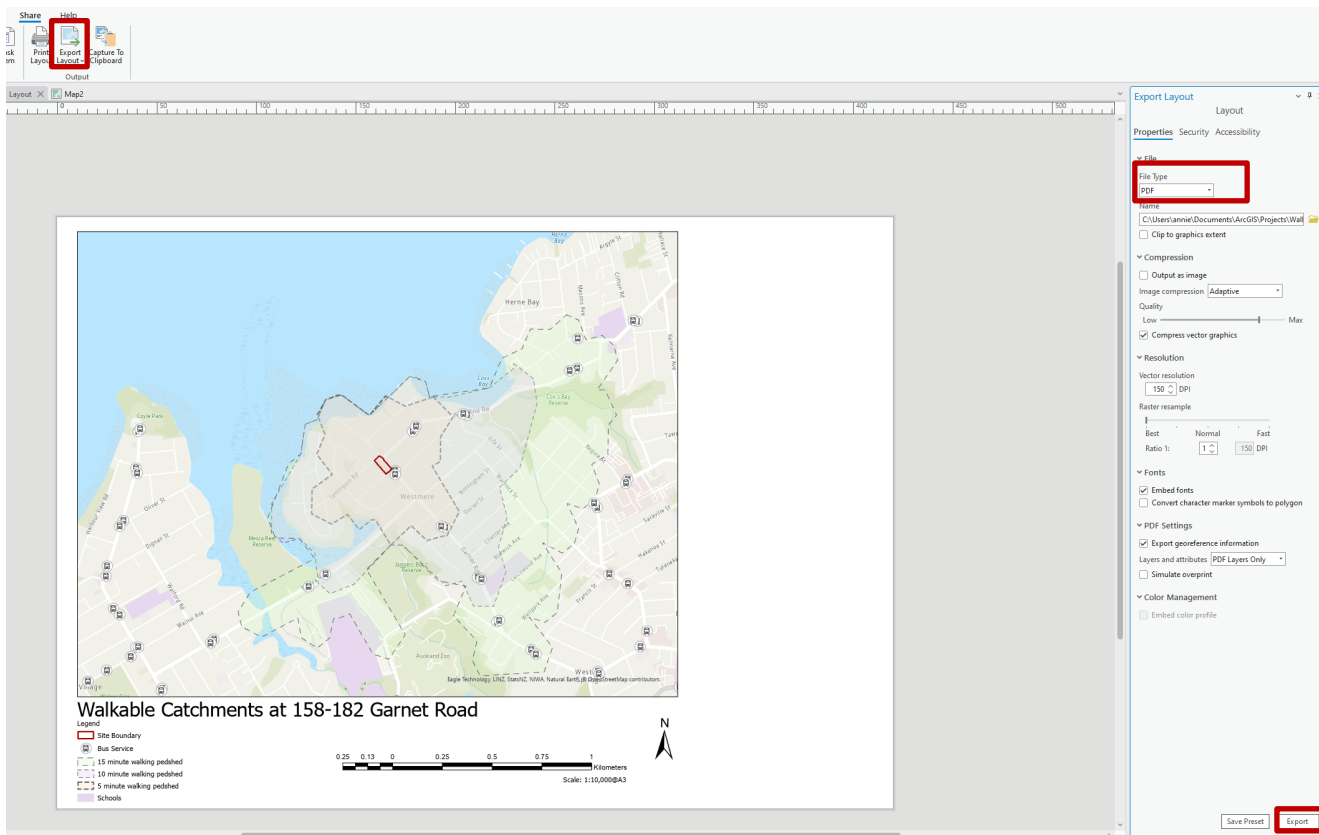
- To export go **Share > Export Layout**

- Select your preferred file type and folder for saving

- Also remember click save on the top left to save your ArcGIS Pro project before exiting.

For more about **⊐尺닉**

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