

## Performing Analysis in ArcGIS Online

This document contains step-by-step instructions on how to use the 'Trace Downstream' analysis tool.

The **Perform Analysis** function on ArcGIS Online allows users to access a range of virtual tools that make analysis and measurement of geographic relationships possible. This is useful as maps are used to identify patterns and relationships, assess trends, and make decisions. This is called spatial analysis.

In this instructional document, you will learn how to use some analysis tools in order to create simple, yet useful, manipulations to your data in order to identify patterns and relationships, assess trends, and make decisions.

### NOTE:

Performing analyses will use your organisational credits. Administrators can manage credits in a number of ways including allocating specific quantities of credits to each member. Administrators can also monitor their members' credit usage through dashboards, charts and reports.

If your organisation is part of the GIS for schools program, it will begin 30,000 credits. If credits are managed well, this will be a substantial amount.

## Identify flow path with the 'Trace Downstream' analysis tool

The **Trace Downstream** tool determines the downstream flow paths from specified input locations. Note that this analysis tool does not consume credits.

This analysis tool could be of use to teachers and students who are performing case studies or field surveys on local river, stream or creek systems. This analysis tool could provide insights into the effects of littering plastic waste and how litter may find its way into waterways or storm drains, before reaching rivers and oceans.

In this training exercise, you will use this analysis tool to provide insights into the potential effects of chemicals used in farming, such as phosphorus and nitrogen, on the Murray-Darling Basin's waterways.

1. Log in to your ArcGIS Online account and open a new map.
2. Locate Mildura, Victoria by using the search bar.
3. **Add a Map Note** north of the river. Note that your Map note does not need to border the river. This map note will represent farmland.

4. Create a name for your Map Note. Then drop a **Stickpin (point)** somewhere on the map near Mildura.

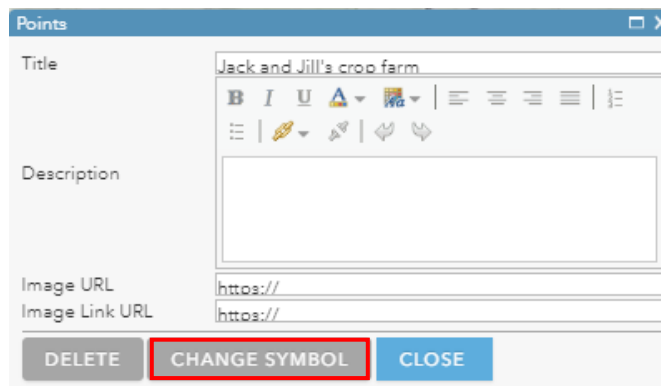
#### Add Map Notes

Name:

Template:  ▼

Use Map Notes to create basic shapes in a wide variety of applications.

5. A pop-up window will appear. Give the stickpin the same title you named the Map Note. Select **Change Symbol**. From the drop-down menu, select **People Places** and choose a symbol that reflects a farm.



Points

Title: Jack and Jill's crop farm

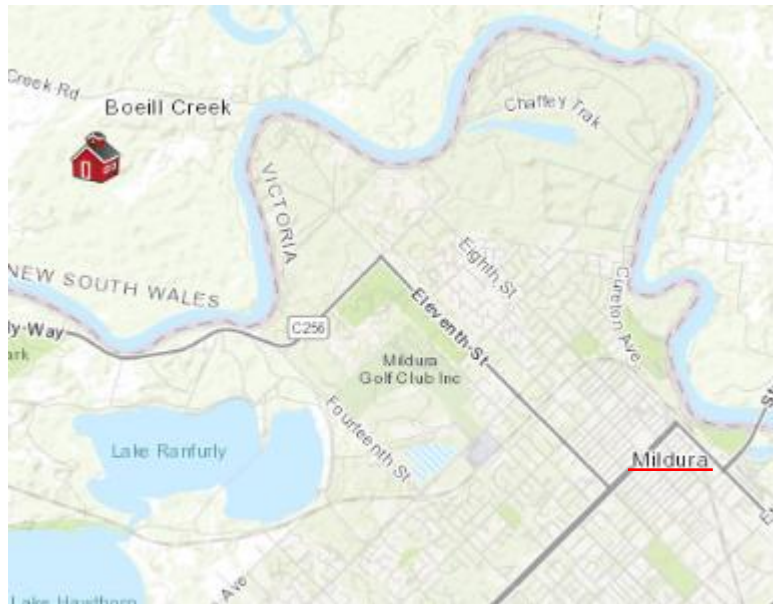
Description:

Image URL: https://

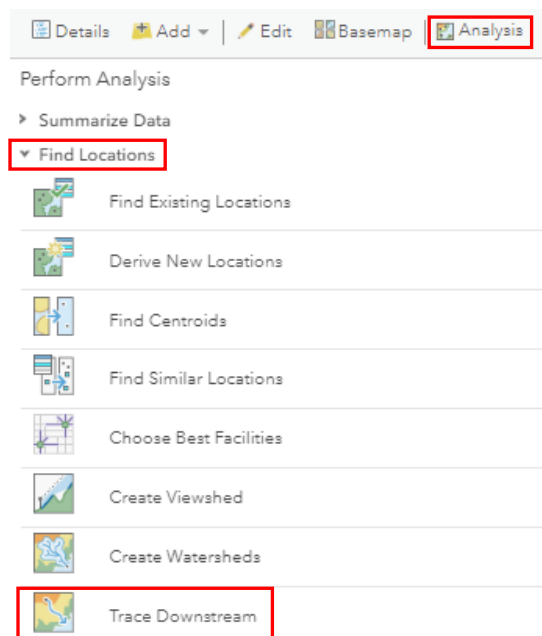
Image Link URL: https://

6. Press **CLOSE**.

Your map should look like this. However, the placement of your farm will be different. Now that you have point data, you are ready to perform a **Trace Downstream** analysis.



7. Select **Analysis**. Choose **Find Locations** and then select **Trace Downstream**.



8. Choose your point feature. In this case, it is your farm.

**1** Point features used as the starting locations for each downstream trace

Jack and Jill's crop farm (Points)

Optional: You can split your trace into line segments. For example, if you knew what distance water in the Murray River flowed per day, you may wish to break your line into segments that reflected this distance.

**2** Trace downstream settings (optional)

Split the trace into line segments

Kilometers

Maximum distance of the trace

Kilometers

Clip output to

Choose study area

9. Rename your result layer to reflect what the layer will show.

**3** Result layer name

Jack and Jill's crop farm run off

Save result in jlovejoy\_GIS\_For\_Schools

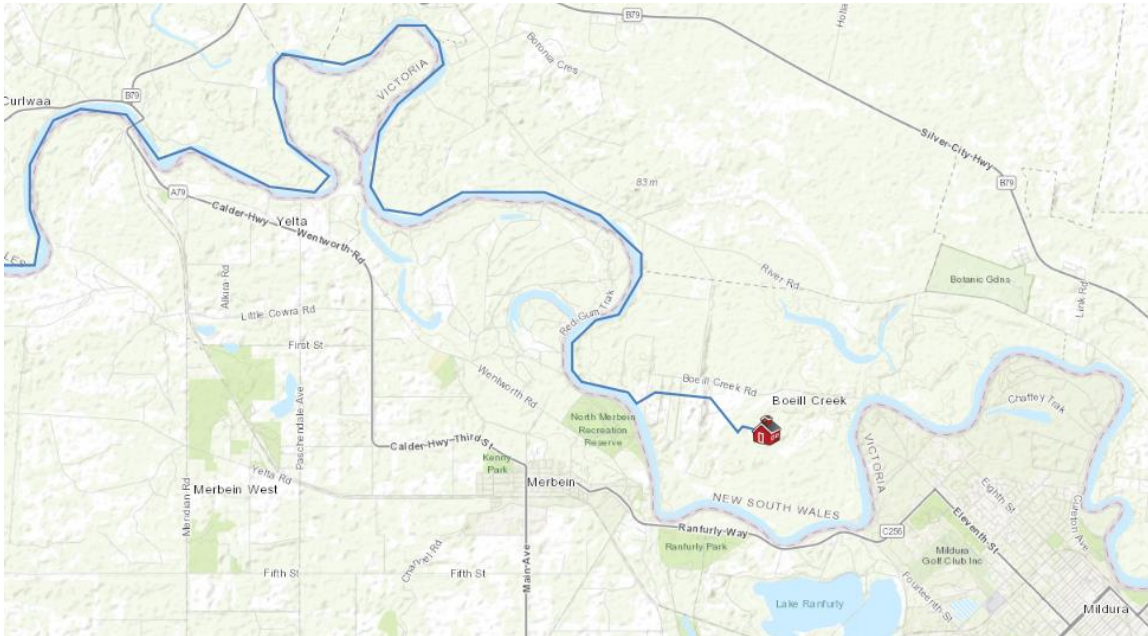
10. Uncheck use current map extent.

Use current map extent

11. RUN ANALYSIS.

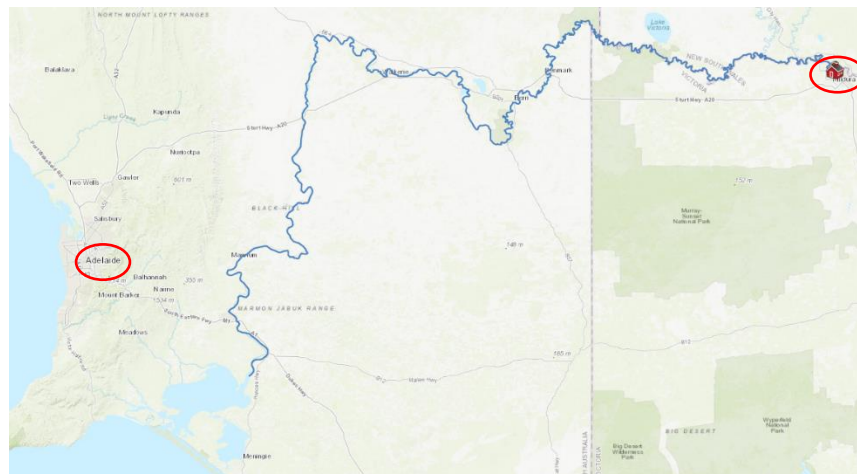
**RUN ANALYSIS**

It may take 1 or 2 minutes for ArcGIS Online to perform the analysis. Once complete, your new layer will show the path run-off would take to nearby water sources.



After completing a **Trace Downstream** analysis, it is clear that in the event of a storm, chemicals, like phosphorus and nitrogen, that are used on farmlands may be carried by run-off into bodies of water that feed into the Murray River. These chemicals can stimulate algal growth and can increase the likelihood of Blue-green algal blooms, which pose a risk to both animal and human health.

When considering Jack and Jill’s farm in this training example, the potential problems posed by this run-off impact a vast number of farms and communities downstream that directly rely on the Murray River, not to mention the indirect impact it has on Australian food security. The **Trace Downstream** analysis tool allows professionals, from diverse industries, to identify and mitigate risks to bodies of water at all levels.



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## Next Steps:

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### *Request a free ArcGIS Online Account for your school:*

Australian schools can request a free ArcGIS Online account as part of Esri Australia's Classroom GIS Initiative. A school subscription provides additional map layers, content, features and privacy. Learn more about ArcGIS Online, and apply for your ArcGIS Online School subscription at <http://esriaustralia.com.au/education>

### *Speak to Esri Australia's Education Program Manager:*

Australian schools can seek additional support or speak to our Education Program Manager by emailing [education@esriaustralia.com.au](mailto:education@esriaustralia.com.au).