South African Mine Closure Risk and Opportunity Atlas: User Guide

This document provides guidance on how to use the South African Mine Closure Risk and Opportunity Atlas ("the Atlas"). Note that this guide is for use of the Atlas on a laptop, personal computer and/or desktop only.

1. Start-up and disclaimer

Figure 1:   Start-up and disclaimer splash page

When opening the Atlas, a summary of its purpose, what it contains, who is intended to use it and a disclaimer will appear on the screen. Read and understand the disclaimer before clicking "OK" to continue to the Atlas.

2. Atlas overview

There are a number of components embedded into the Atlas to assist users. Table 1 below lists the main widgets and summarises their functionality. Instructions on how to use each widget is explained in the sections below. Figure 2 illustrates the default view of the Atlas which shows all operating mines colour-coded by their likelihood of closure. These widgets/panels are expanded on below.

Table 1:   Widgets contained in the Atlas and their function(s)

Widget	Function
Web Map	The web map containing all the relevant data. Users can select features on the map to display more information about them by clicking (laptop/desktop) or tapping (tablet or smartphone) on them. The web map contains an orientation button, default view button (zooms to a default view of South Africa), zoom in/out buttons, basemap button (allows users to choose between various types of basemaps), search button, measure button (allows users to measure distances and areas on the web map), and a full screen button.
Legend Panel	Defines features displayed on the web map

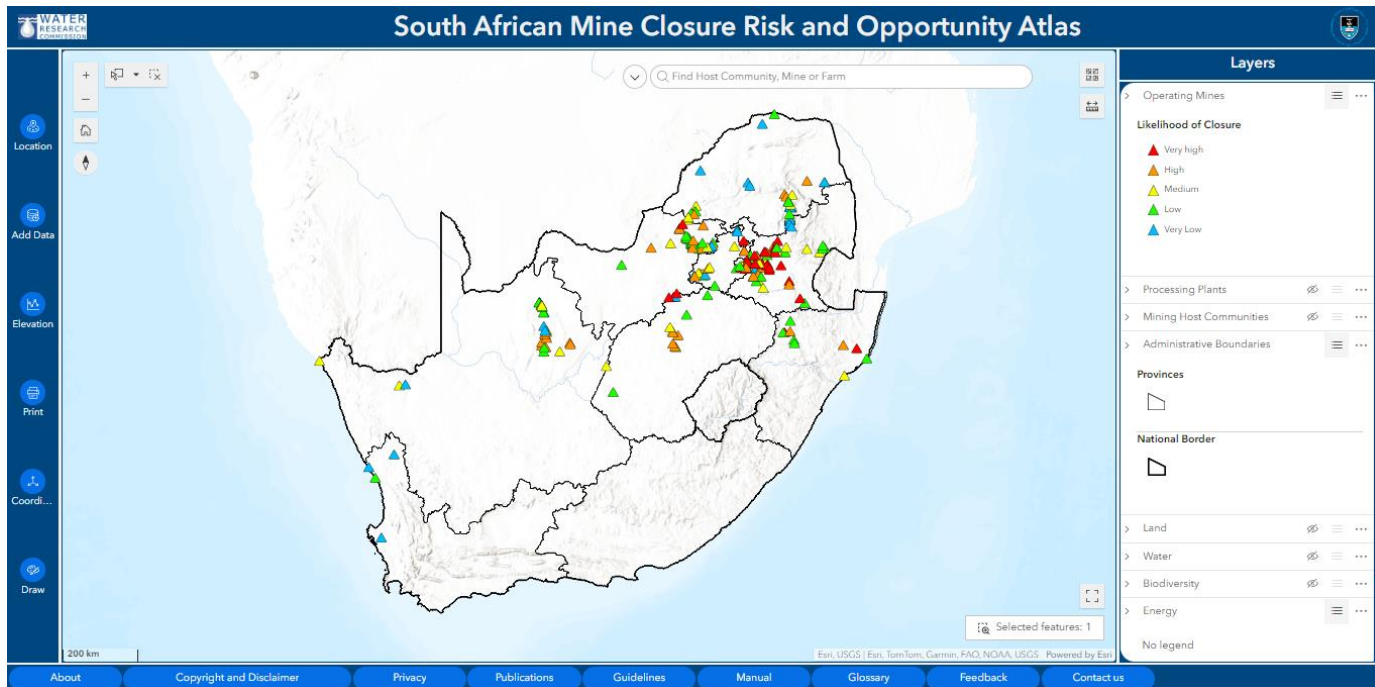| Widget	Function
Layers Panel	A list of all the data contained within the web map. Data is grouped according to themes associated with mine closure risks and post-closure development. Groups can be expanded using the 'expand' arrow on the left of each group. Layers can be hidden or unhidden using the 'eye' icon next to the 'expand' icon. Three horizontal dots on the right of each layer allows users to increase or decrease the transparency of the particular layer. It also provides users with a link to a 'Details' page where more information about the selected layer is given, in addition to a link to the source of the data.
Draw	Allows users to create simple graphics for points, lines, and polygons on the web map.
Elevation Profile	Generates and displays an elevation profile based on a path created by drawing lines on the web map. Slope and elevation statistics can also be viewed.
Print	Allows users to create static maps of the map extent displayed in the web map when the capture widget is selected. A legend, north arrow, and scale bar can optionally be added to the map by configuring the 'advanced' options.
Add Data	Add data sources to the Atlas at run time. Data can be added via ArcGIS content, URL, or local storage (shapefile, csv., or GeoJSON formats).
Location	Allows users to find and analyse features within a specified distance of a selected location.
Coordinates	Displays coordinate values on the map.

Figure 2:   **Atlas default view**

3.   Navigating the Atlas

- Left-click and hold anywhere on the map to pan. Right click and hold anywhere on the map to change the map orientation.
- Left-click on the "+" and "-" in the top left corner of the map to zoom in or out of the map. Alternatively, use the scroll wheel on a mouse to zoom in (scroll up) or out (scroll down).
- The House icon beneath the zooming tool defaults the map view to the whole of South Africa (see Figure 2).
- The Compass located beneath the House icon automatically reorientates the map.

4.   Basemaps

The Terrain with Labels basemap is selected as the default basemap. Change the basemap by left-clicking on the Basemap icon in the top right corner of the map and selecting the desired basemap.
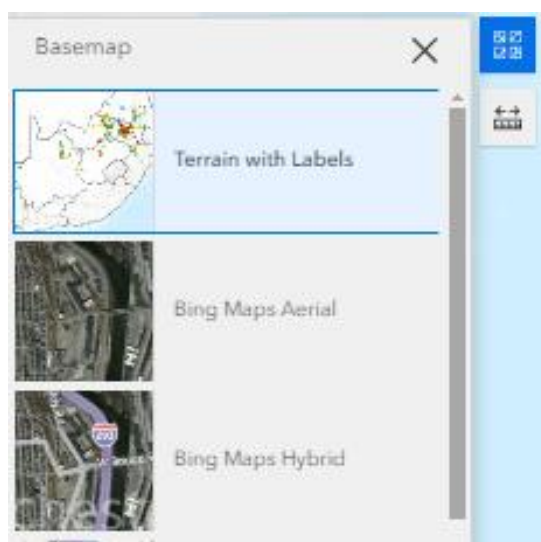

Figure 3:   Basemap widget

5.   Measure

Left-click on the Measure tool (ruler) button below the Basemap tool button to select the Measure tool.

- To measure a straight line:
  - ○ Left-click on the ruler icon in the Measure tool.
  - ○ Left-click on the desired start point of the line to be measured.
  - ○ Double left-click on the end point of the line to be measured.
  - ○ Select the appropriate metric in the Measure tool.
- To measure area, click on the area icon in the Measure tool.
  - ○ Draw the perimeter of the area to be measured by left-clicking on the desired apexes of the area.
  - ○ Double left-click on the final apex to complete the shape of the perimeter.

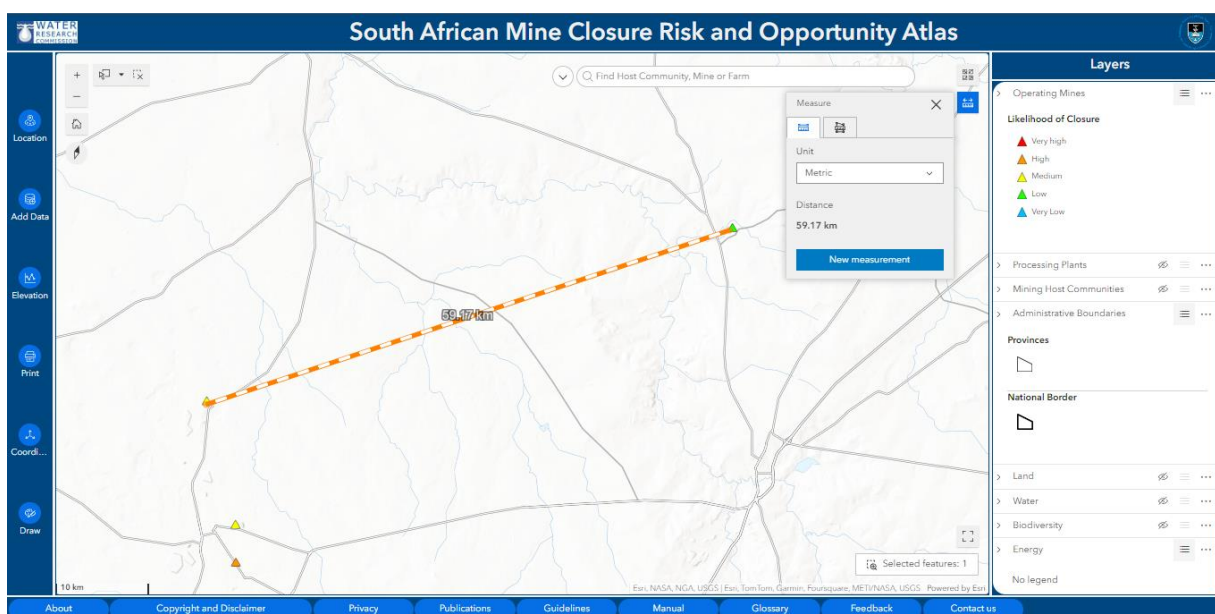o   Select the appropriate metric in the Measure tool.
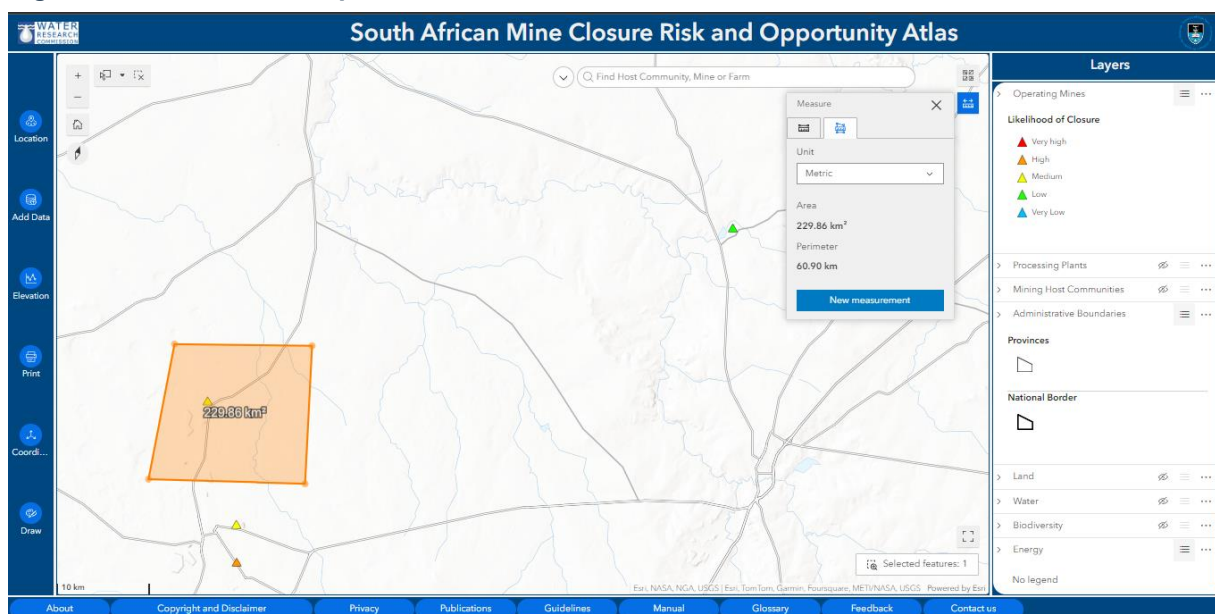

Figure 4:   **Measure a path**

Figure 5:   **Measure area**

6. Layers

The Layers panel is located on the far right side of the Atlas. Data hosted by the Atlas can be found here. Datasets are grouped by theme, and can be turned on/off within their respective groups.

- Left-click on the arrow located on to the left of a group to expand it.
- Left-click on the Visibility icon (eye) to the right of a layer name to activate/deactivate the layer on the map.
- The Legend for a layer will appear below its name when activated.

- o Left-click on the three horizontal lines to the right of the Visibility icon to hide/unhide the legend.
- Increase/decrease transparency of a layer by left-clicking on the three dots on the far right of each layer in the Layers panel and selecting "increase transparency" or "decrease transparency".
- View descriptions/details of data by clicking on the Details icon in the dropdown menu that appears when left-clicking on the three horizontal dots at the far right of a layer.
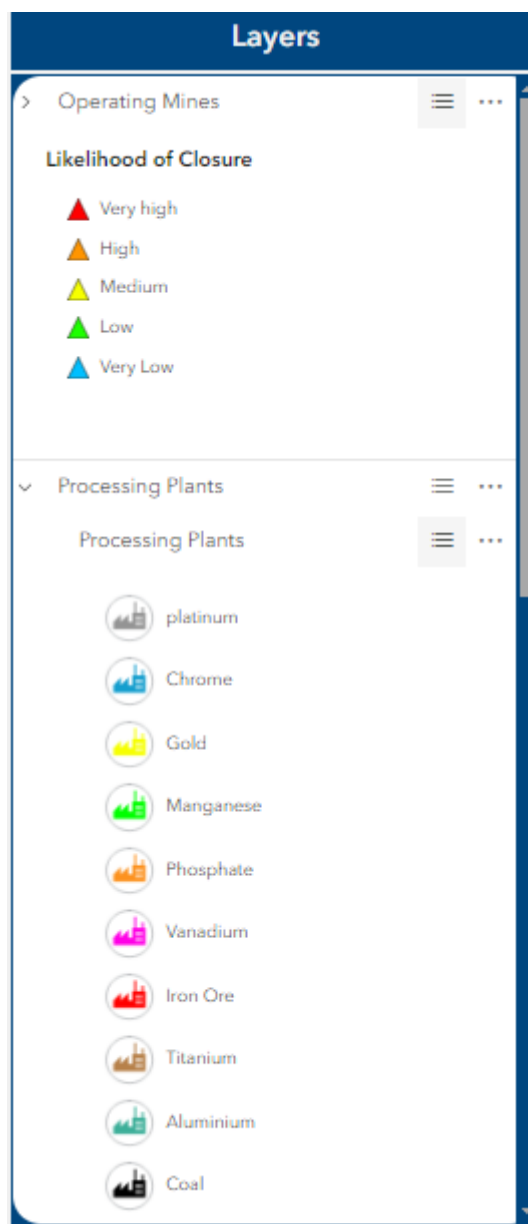   - o The details page will appear in a new tab within your browser.

Figure 6:   Layers panel

7. Location

The Location widget allows you to find and analyse features within a specified distance of a location. The location can be a:

- Selected feature;

- Drawn graphic; or

- Inserted point location.

The widget can perform three types of analysis:

- Find the feature that is closest to a defined location;

- Find all features within a specified distance of a defined location; and

- Summarize numeric values of nearby features.

To use the Location widget:

- Left-click on the Location widget in the far left panel of the Atlas.

- Select the desired method of identifying a target location (point, line or polygon).

- Select an appropriate buffer distance, if any (this will be the area in which features will be identified in addition to the selected target location)

- A list of identified features will appear in the widget box. Left-click on the desired features to view their respective details.

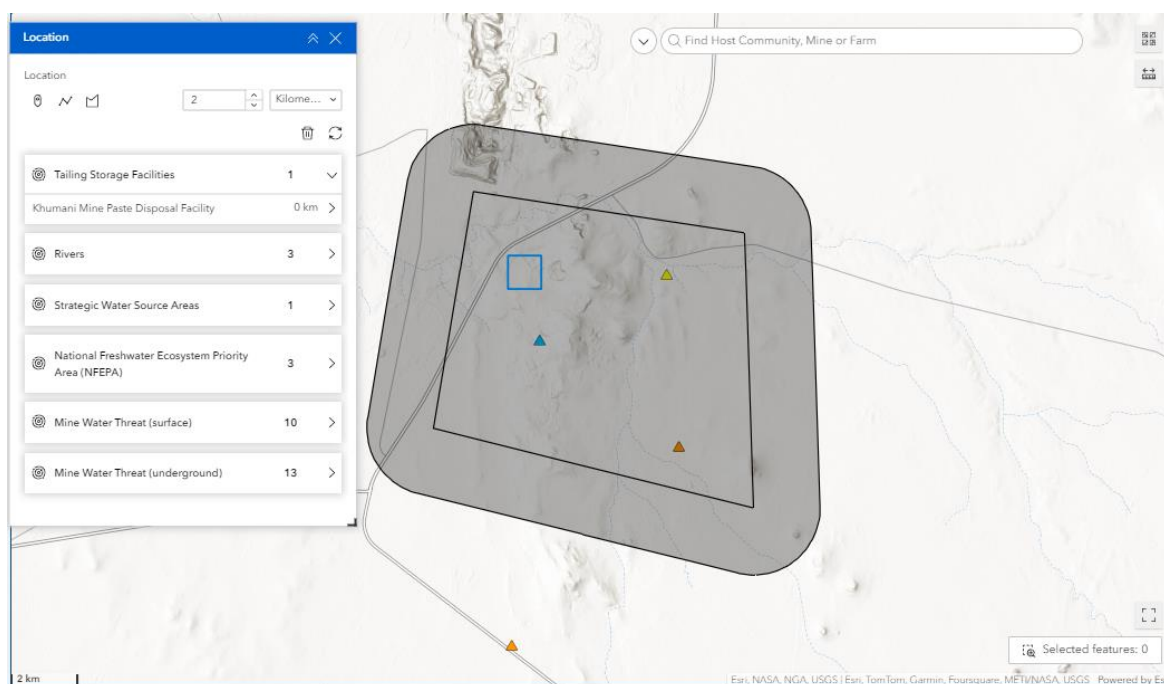- Clear your selection by left-clicking on the bin icon in the top right corner of the Location widget window.

Figure 7:   Location widget

The Location widget identifies features within a specified proximity to a target location without the need to view all the layers contained in the Atlas. It should be noted that due to infrastructural constraints, the Location tool is limited to the following datasets that it identifies:

- Tailing storage facilities;

- Mining host communities;

- Former homelands;

- Rivers;

- Strategic water source areas;

- National freshwater ecosystem priority areas;

- Mine water threat (surface);

- Mine water threat (underground);

- Important bird areas;

- National protected area expansion strategy areas; and

- Endangered and critically endangered ecosystems.

8. Add Data

Users can add custom data to the Atlas in the following manner:

- Left-click on the Add Data widget in the far right panel of the Atlas.
- Select the preferred method of adding data. This includes:
  - Data from the ArcGIS server, should the user have an ArcGIS licence;
  - URLs; and
  - Files stored on a user's device.
- File types supported include:
  - Shapefile;
  - CSV;
  - KML,
  - GeoJSON; and
  - GPX.

Note that due to infrastructural constraints, CSV. files are restricted to 1 000 records and all other file types are restricted to 4 000 records. The maximum file size for shapefiles is 2 mb and is 10 mb for all other file types.
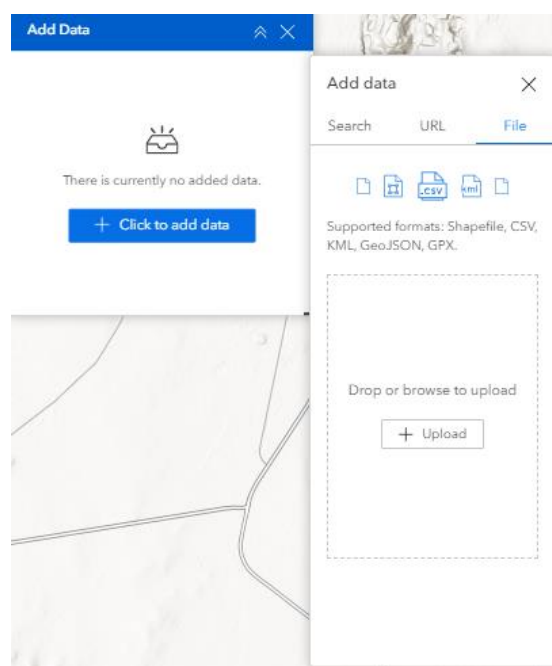

Figure 8:   Add data widget window

Note that the custom data added to the Atlas is temporary and will be immediately be deleted from the Atlas once the Atlas is closed in the user's browser.

9. Elevation

The Elevation widget generates and displays an elevation profile based on a path created by drawing lines on the map. Users can view slope and elevation statistics and export the data for each profile. To create an elevation profile:

- Left-click on the Elevation widget in the far left panel of the Atlas. A widget window will open.
- Left-click on the starting point of the desired path on the map.
- Double left-click on the end point of the desired path on the map.
- An elevation profile will automatically be generated and displayed in the widget window.
- Hover the cursor over the elevation profile to view the elevation of specific points.

To view statistics relevant to the elevation profile, left-click on the Ptofile Statistics button in the top right corner of the widget window. A separate widget window displaying the statistics will appear.

To revers the elevation profile, click on the Reverse Direction button in the top right corner of the Elevation Profile widget window.

To export the elevation profile to CSV format:

- Left-click on the Export button in the top right corner of the Elevation Profile widget window.
- Select a custom interval, if desired.
- Left-click on the export button.
- The CSV file will be downloaded to the user's device.

Figure 9:   Elevation profile widget

10. Print

To create a map (that can be exported and displayed for other purposes such as reports and presentations):

- Pan to the desired area on the map and make sure the selected datasets are visible.
- Left-click on the Print widget in the far left panel of the Atlas.
- Select a template from the dropdown menu under the "Template" subheading in the Print widget window.
- Type the appropriate map tile under the "Title" subheading in the Print widget window.
- Additional information can be added to the map by left-clicking on the "Advanced" drop down menu.
- Left-click on the Print button at the bottom of the Print widget window.
- The map will be generated and can be viewed under the "Results" tab of the Print widget window (select the tab at the top of the Print widget window).
  - o Left-click on the map under the "Results" tab once it is done generating.
  - o The map will open in a new tab in the user's browser and can be downloaded from the user's browser.
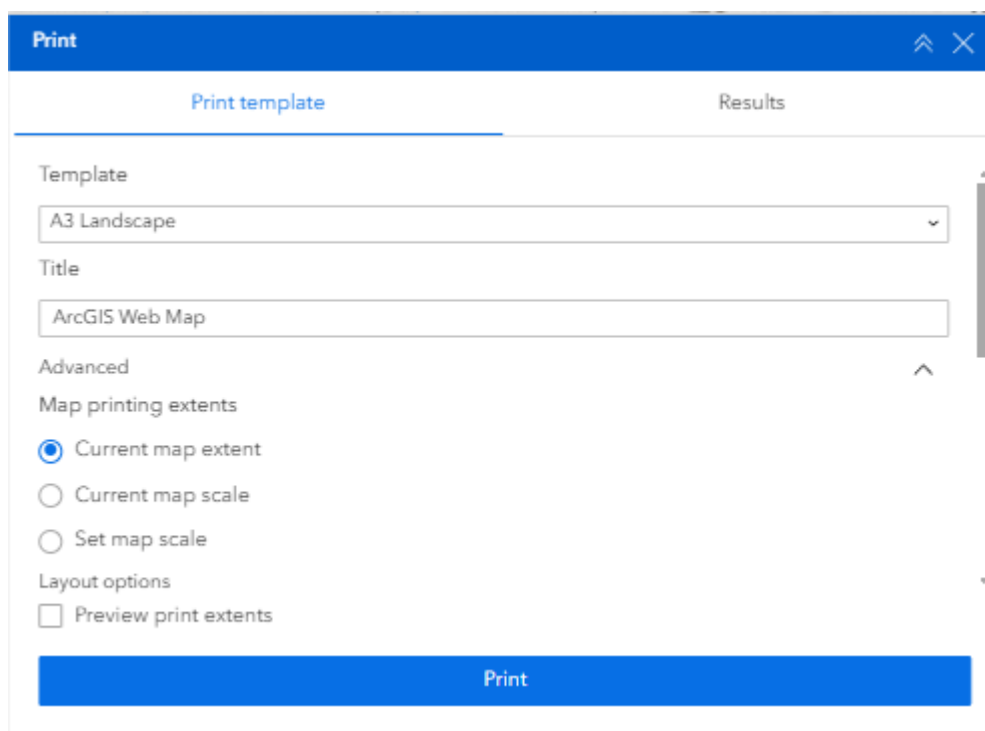
Figure 10:   Print widget window

11. Coordinates

To identify the coordinates of a specific location on the map:

- Left-click on the Coordinates widget in the far left panel of the Atlas. A widget window will appear.
- Hover the cursor of a desired location on the map. The coordinates of that location will appear in the Coordinates widget window.
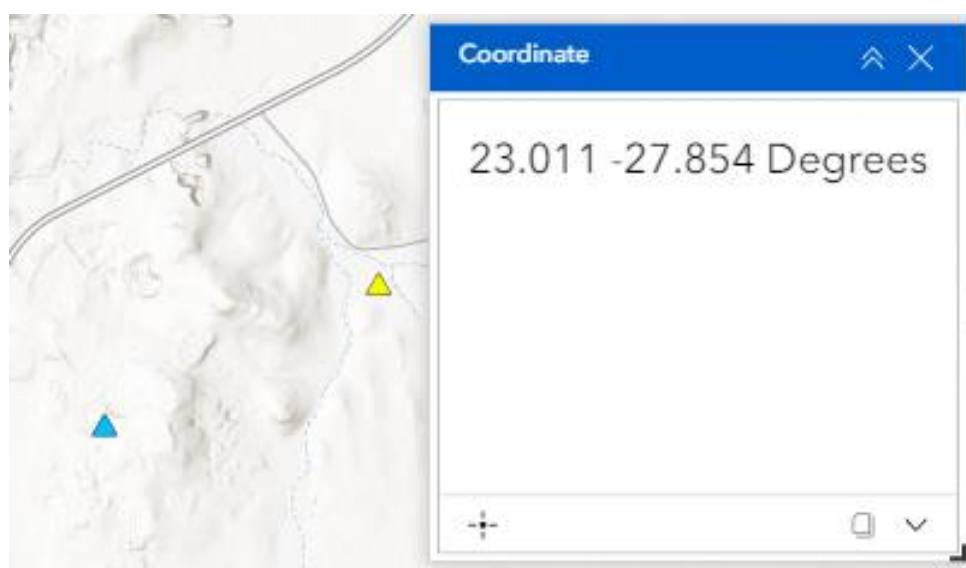

Figure 11:   Coordinates widget window

12. Draw

The Draw widget allows users to create simple graphics for points, lines, and polygons on the map. To create a graphic:

- Left-click on the Draw widget in the far left panel of the Atlas A widget window will appear.
- Select the method in which to draw the graphic (point, line polygon, rectangle or circle) from the top of the widget window.
- Draw the graphic.
- Customise the graphic by left-clicking on the button in the far right corner of the widget window and selecting a colour for the graphic.
  - Measurements (perimeter and area of the drawn graphic) can also be configured to be show from this button.
- Clear the graphic from the map by left-clicking on the Clear button in the top right corner of the widget window.
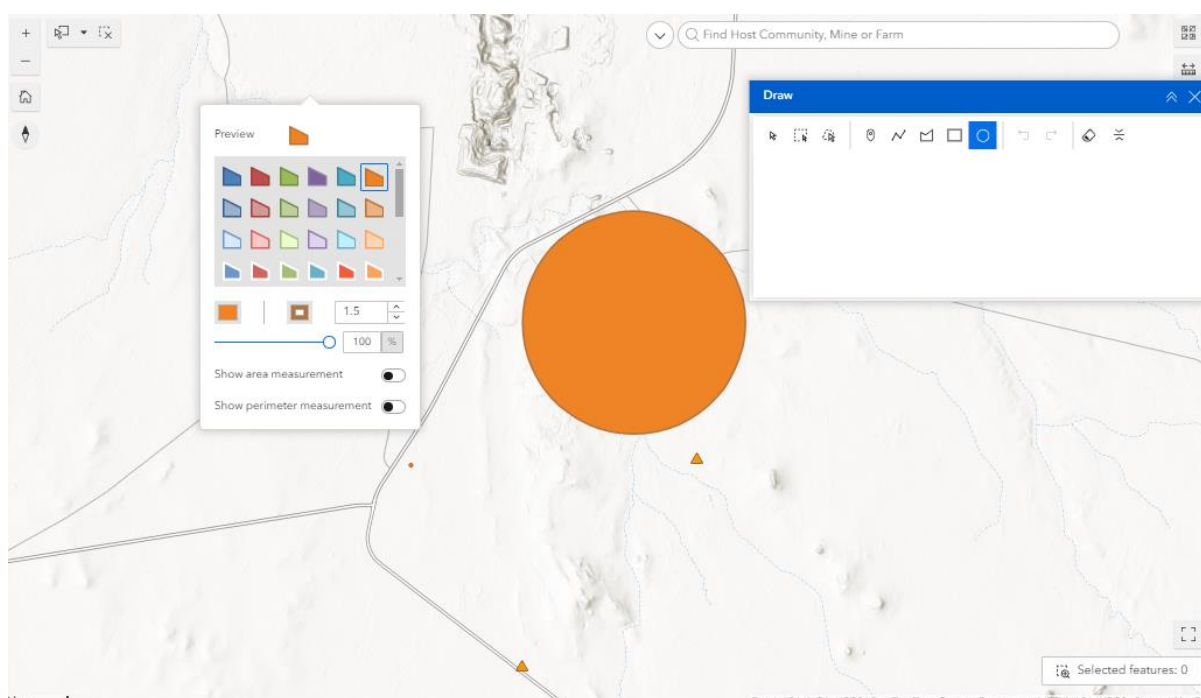

Figure 12:   Draw widget window and example graphic

13. Search

To search for mining host communities, operating mines, and/or cadastral farms:

- Left-click on the search bar at the top right of the map.
- Type the name of the desired mining host community, operating mine or cadastral farm.
- Select the identified mining host community, operating mine or cadastral farm from the dropdown list. It will be highlighted on the map.
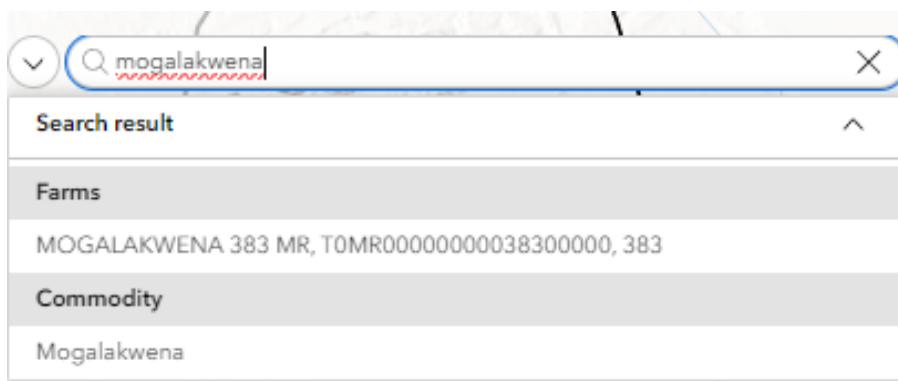
Figure 13:   Search tool

14. Pop ups

Pop-ups display information about map features within the Atlas. They can be viewed by left-clicking on the desired map feature.

Figure 14:   Pop-up displaying information related to a mining host community