



3D Geological Model Viewer User Manual



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1. Introduction

Geological Survey Ireland (GSI) has added a new viewer to our website.

The 3D geological model viewer displays the 3D models currently available from GSI. This viewer will continue to be updated with different models from different programmes within GSI as they are completed.

The viewer currently contains eleven models.

This manual gives a description of the different components of the viewer and how to navigate and or/ query the models.



2. 3D Viewer components

2.1 List of components

- 2.1.1 Tool bar (1)
- 2.1.2 Location map (2)
- 2.1.3 Table of contents (3)
- 2.1.4 Coordinate system and orientation (4)
- 2.1.5 3D viewer window (5)

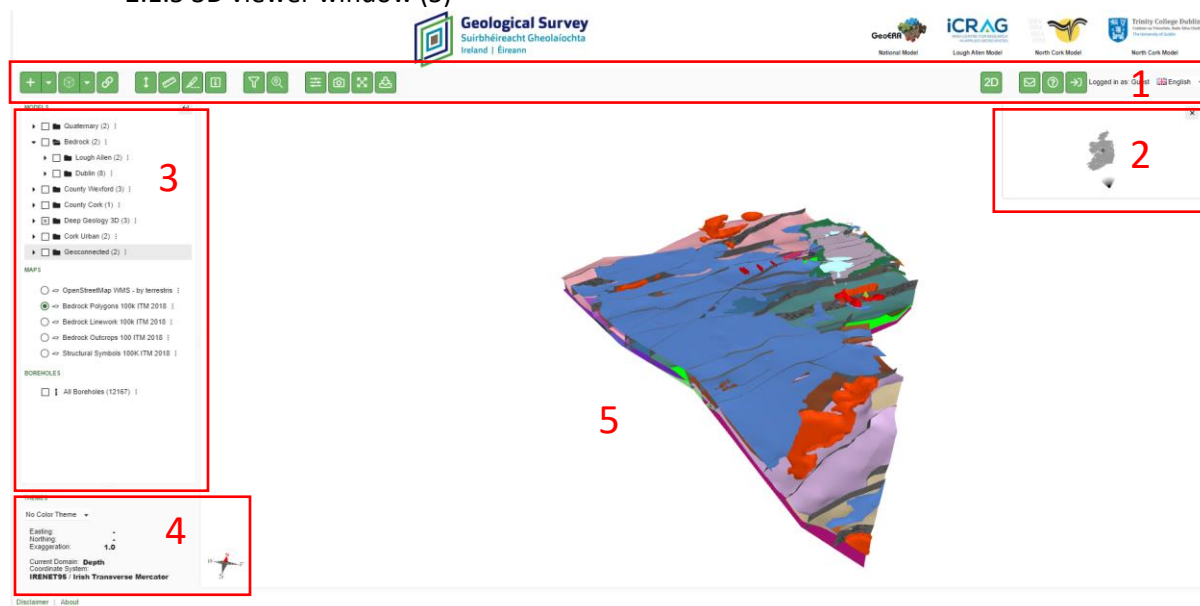
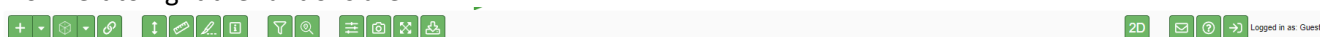


Fig.1 different elements of the 3D viewer window

2.1.1 Tool bar

From left to right the functions are:



- **Add custom view.** This button will save the current view of the 3D viewer window. Using the arrow you can return to a previously saved view.
- **View options.** This provides a variety of pre-set view options, such as; top, bottom, east, west etc.
- **Copy link.** This will produce a link that will open the model with the current view, ideal for sharing.
- **Vertical scale.** This allows you to add vertical exaggeration to the model, or return it to the same scale as the X and Y axes.
- **Measurement tool.** This measures total distance in 3D space as well as providing the distance along each axis.
- **Slicer.** This tool allows you to cut through the model along any of the three axes to display internal features of the model.
- **Object information.** It provides the object information when clicking on it on the 3D viewer window.
- **Query tool.** This will provide the attributes and properties of any selected feature.
- **Location search.** To find locations in the model. Search can be done using coordinates or addresses.



- **Scene preferences.** This contains a variety of settings for customising the viewer window to best suit you.
- **Screenshot tool.** This tool will export a screenshot of the 3D viewer
- **Full screen mode.**
- **Download model.** Click here to download the model you want. Model can be downloaded in different file formats.
- **Toggle viewpoint.** To switch from 3D to 2D and viceversa.
- **Feedback to Giga infosystems.** This feedback will go to the creators of the viewer. If you wish to provide feedback on the models themselves we are always happy to receive it at GeologicalMappingInfo@gsi.ie instructions for mouse and keyboard navigation in the 3D viewer window.
- **Help.** Help with the general navigation, 3D scene shortcuts, 3D scene mouse controls and tree elements.
- **Log in.** It is possible to login with an account, although the 3D viewer does not require one for Geological Survey Ireland models.

2.1.2 Location map

The location map is in the top right corner and it shows the position of the model within Ireland. This map shows also the base maps selected on the table of contents.

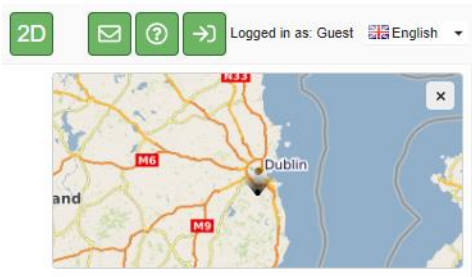


Fig.2 Location map

2.1.3 Table of contents

It contains the 3D models available, the base maps and the boreholes.

Tick the appropriate element that you want to be displayed. Base maps are shown in the location map on the right top corner of the viewer, (see section 1.3). Next of each element there are 3 dots. Click on it for a small window to display. It contains various options like zoom to feature, info etc...

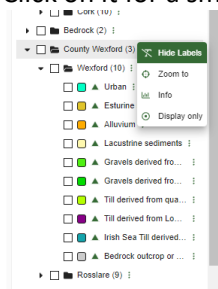


Fig.3 information of each element



2.1.4 Coordinate system and orientation

It displays the coordinate system and the orientation of the 3D model displayed.

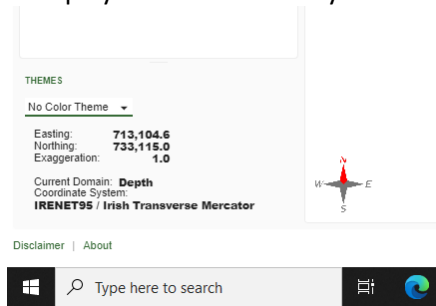


Fig.4 Coordinate system and orientation.

2.1.5 3D window

It displays the 3D model selected on the table of contents.

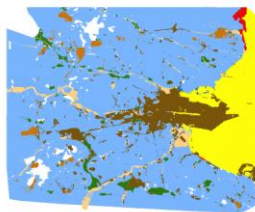
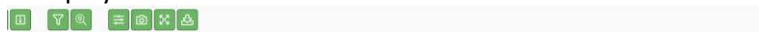


Fig.5 3D window



3. 3D viewer functions

3.1 How to display a model

- Open the viewer and accept the disclaimer.
- Go to the table of contents and select the 3D model you want to visualize in the 3D window and the layer you you want to be displayed in the location map.

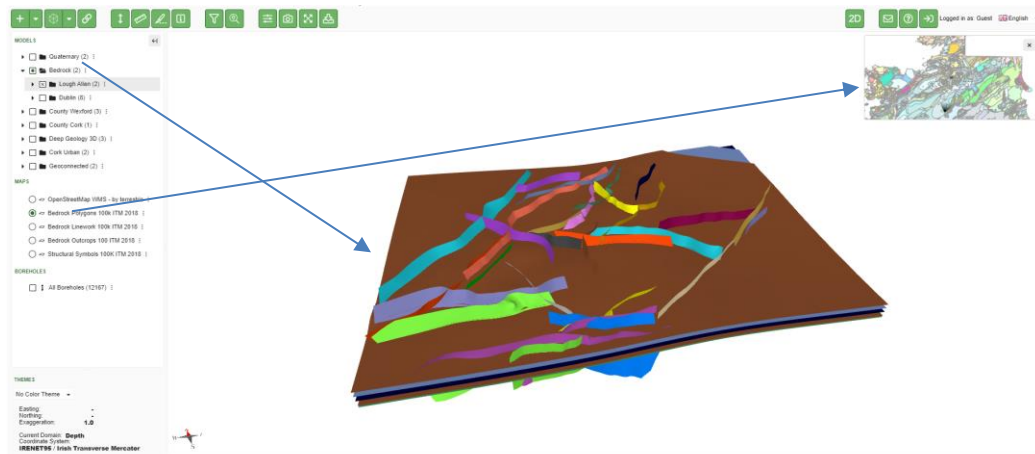


Fig.6 How to display a 3D model in the viewer

- Use the tool bar for exploring the model (saving views, slicing, changing vertical scale etc...)



3.2 How to display boreholes

- Select a model to display as explained in section 3.1.
- Click on the “**preferences**” icon at the top of the viewer. The **preferences window** will appear. By default, the viewer will only display the boreholes that are in a radius of 2000 meters of the centre of rotation in 3D.

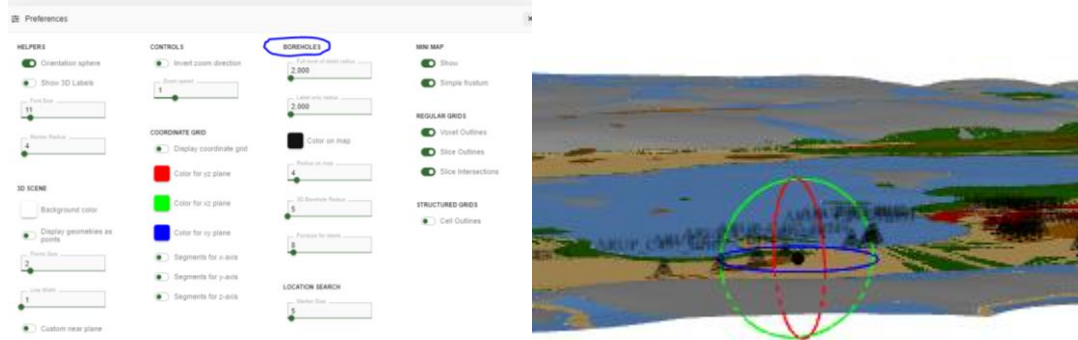


Fig.7 Preferences window (left), Centre of rotation in 3D (right)

- Change those settings if you want to increase the radius. By increasing the radius, more boreholes will appear. Bear in mind that when lots of boreholes are displayed, it can affect the rendering of the model.

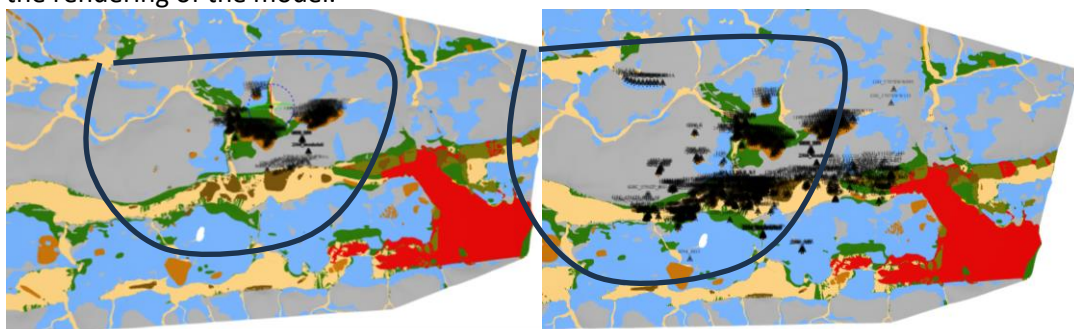


Fig.8 Radius of 2000m (left), radius of 4000m (right)

- You can also change the size of the radius of the borehole, also editing the label of the boreholes, etc...

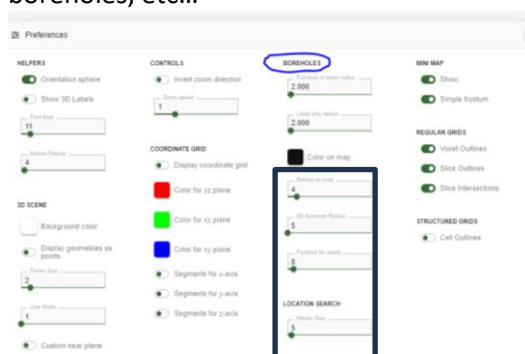


Fig.9 Setting options for boreholes



- Boreholes can also be displayed in the 2D view. You can also change radius and labels in 2D using the same icon. Also the preferences window is available in the 2D view. The number in the blue circles, indicate the number of boreholes in that point.

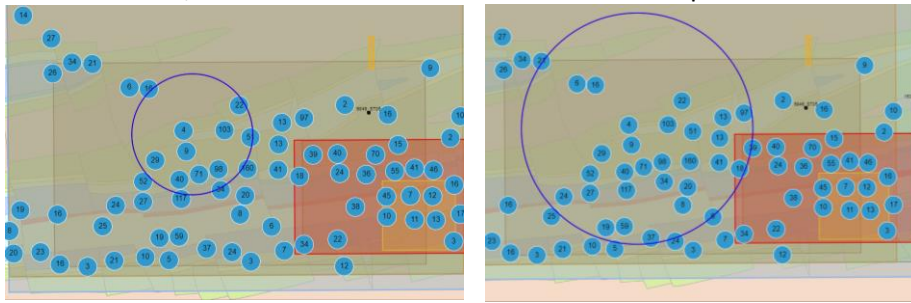


Fig.10 Radius of 2000m (left), radius of 4000m (right)



3.3 How to create virtual boreholes, cross sections and horizontal sections

To further explore the model, you can create virtual boreholes, cross sections, or horizontal sections. To use these features, you will need to switch to the 2D view (see section 1.2). There is a new toolbar available in the 2D view.



From left to right the functions are:

- **Virtual Borehole.** To create a synthetic borehole, click on the “virtual borehole” icon.



The “**Create virtual boreholes**” window will pop up, there are different options in which you can select the scale, name of the section, ect., and how to export the borehole. Experiment with all the options to see how they work.

When you click on the 2D window, the coordinates fields fill up automatically. Select the other settings if needed.

If you are happy with it, click “create”. A borehole is created. If you are not happy with it, click on “reset point” to start from scratch another borehole.

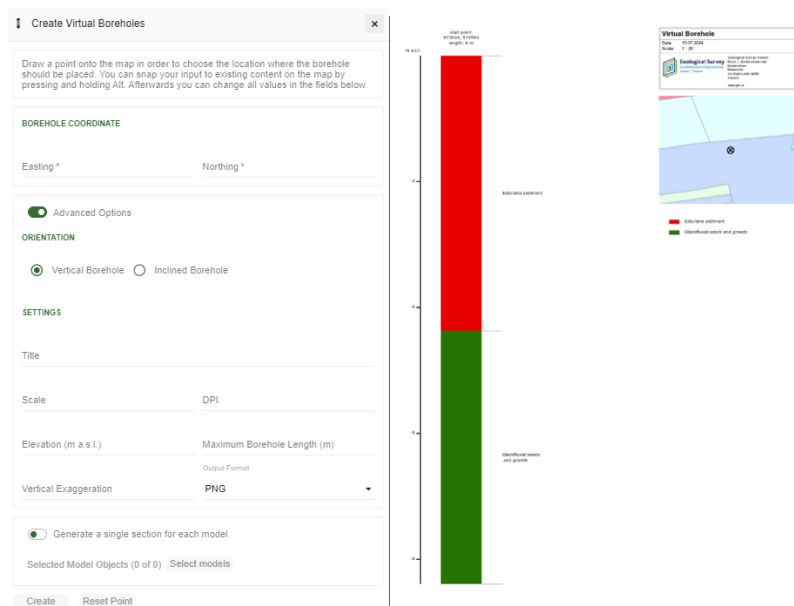


Fig.11 Create virtual borehole window (left), pdf of the virtual borehole (right)



- **Virtual Cross section** When you switch to the 2D view, each of the surfaces of the model is represented by a rectangle. The size of the rectangle indicates the area covered by the surface.

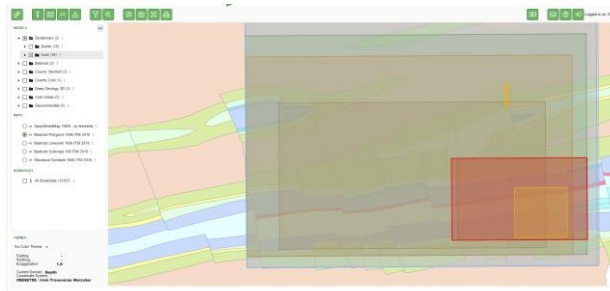


Fig.12 2D view of the different surfaces of a 3D model



To create a virtual cross section, click on the “**Virtual cross section**”

The “**Create virtual Cross sections**” window will pop up, there are different options in which you can select the scale, name of the section, if you want boreholes or not, and how to export the cross section. Experiment with all the options to see how they work.

Click on the 2D window as many times as needed to do the section. To finish it, double click. When doing so, the coordinates will fill in automatically.

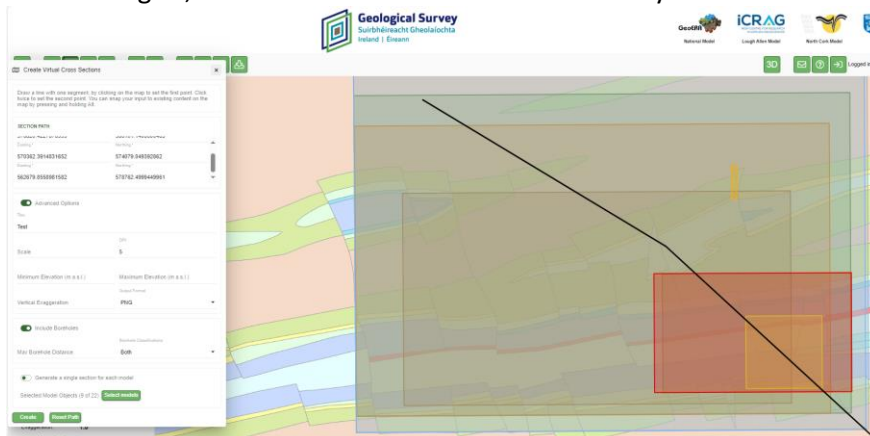


Fig.13 2D view of the different surfaces of a 3D model and virtual cross section digitised

If you are happy with it, click “**create**”, if you are not happy with it, click on “**reset Path**” to start from scratch another section.

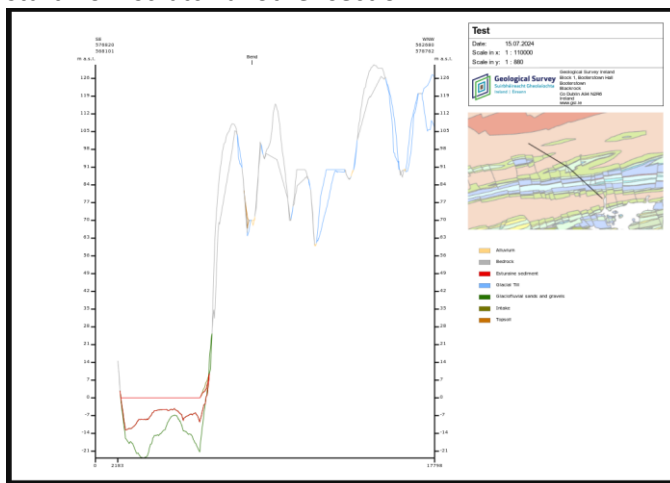


Fig.14 Pdf of the virtual cross section



- **Horizontal section.** To create a virtual horizontal section, click on the “virtual horizontal



section” icon.

The “Create virtual horizontal section” window will pop up, there are different options in which you can select the scale, name of the section, etc., and how to export the section, start and end point, etc... You can also enter the depth you want the profile to be at. Experiment with all the options to see how they work.

When you click on the 2D window, the coordinates fields fill up automatically. Select the other settings if needed.

If you are happy with it, click “create”. A horizontal section is created. If you are not happy with it, click on “reset line” to start from scratch another horizontal section.

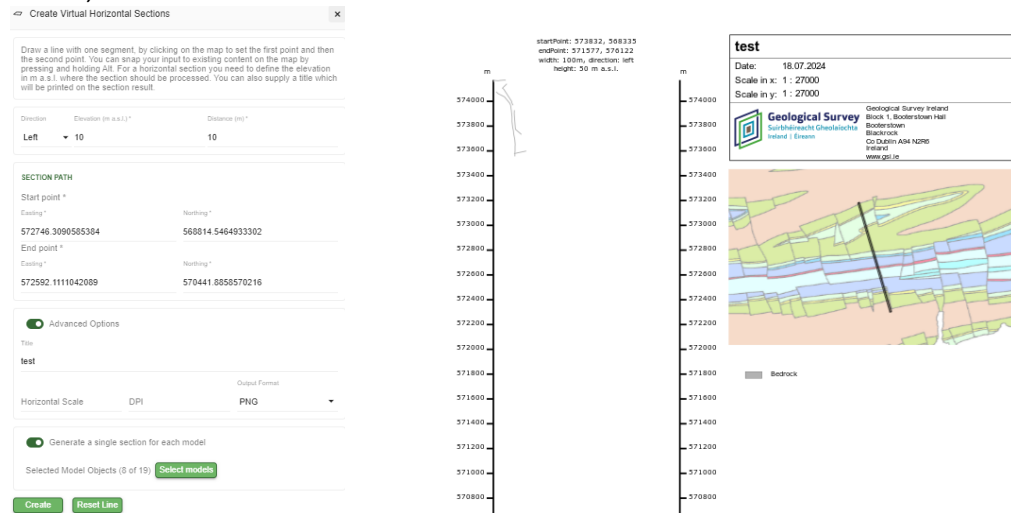


Fig.15 Create virtual horizontal section window (left), pdf of the virtual horizontal section (right)

