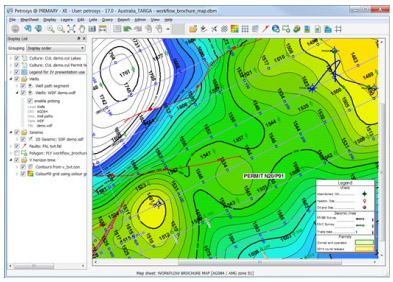
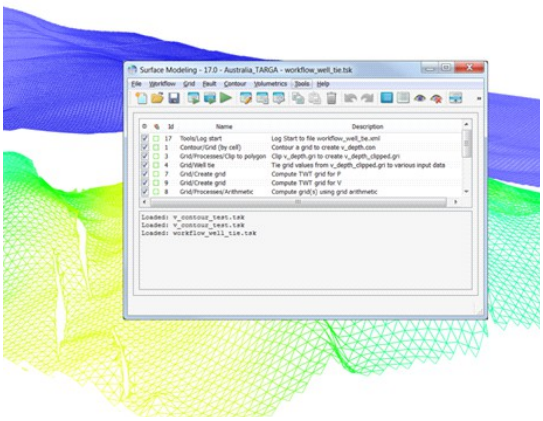
Petrosys Getting Started Guide

Version 17.4

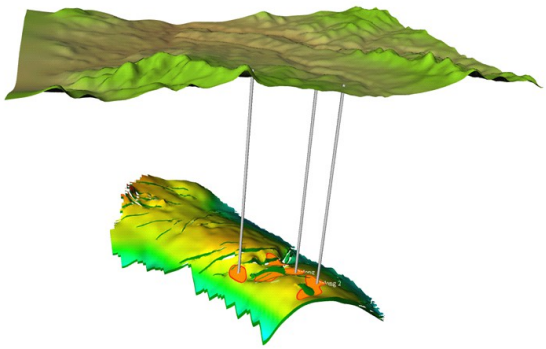


Petrosys mapping and data management helps you integrate geotechnical, engineering and GIS data to develop a better understanding of the subsurface for more effective management and exploitation of petroleum resources. With a strong focus on petroleum exploration and production, Petrosys ties into specialised data acquisition workflows and software applications based on wells, seismic, and remote sensing surveys.

The presentation quality map canvas is the natural space in which to collate spatial information. It provides rich rendering facilities tailored to the specific data types encountered in petroleum exploration and production with effortless and reliable correlation of international coordinate reference systems.



Petrosys surface modelling allows the consolidation of time, velocity and depth information to produce stable grids with excellent control over the balance between matching interpreted data and geological credibility. Workflows can be automated and rapidly re-run to allow a broad range of interpretations and volumetric estimates to be tested



To visually explore the subsurface model the 3D viewer will render much of the information in a 3D context, including the draping of maps on surfaces.

For Petrosys support call your local Petrosys office or send an email to support@petrosys.com.au. Our support email is monitored world wide around the clock.

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Welcome to Petrosys. This guide is intended to provide a quick introduction to the most commonly used features of Petrosys. It uses the demonstration data set supplied with the default installation of Petrosys.

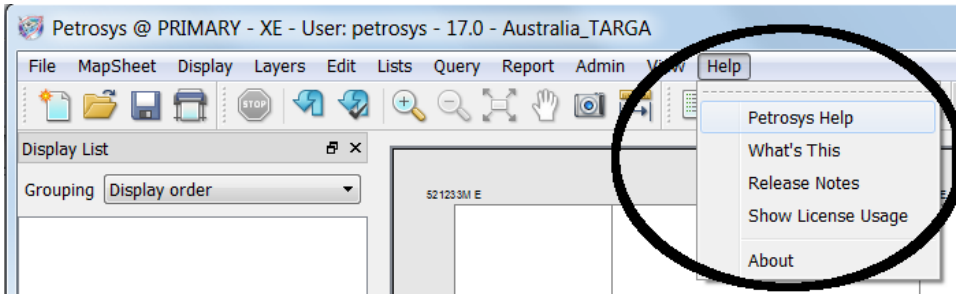
There are four main steps in getting started:

- The Petrosys launcher is the front menu from which you can select, create and add projects, and launch the mapping and other applications;
- The Mapping application is the map canvas in which you draw wells, seismic, grids, contours, GIS and other data
- The optional 3D visualization application displays wells, grids and maps in 3D
- The optional surface modeling is used to compute gridded surfaces, contours, volumes and to automate workflows.

Read the Online Help

This guide includes some direct links to topics in the online help. If you are reading a printed or PDF version of the getting started guide, then it is highly recommended that you switch to the online help version once you are up and running in Petrosys.

The online help is accessed from the Help options that are at the right of the various top level applications menus:



Petrosys Help — Opens the online help at the beginning

What's This — Changes the cursor to a question mark and lets you point at a Petrosys menu option or data panel field for which specific (context sensitive) help will be shown if available

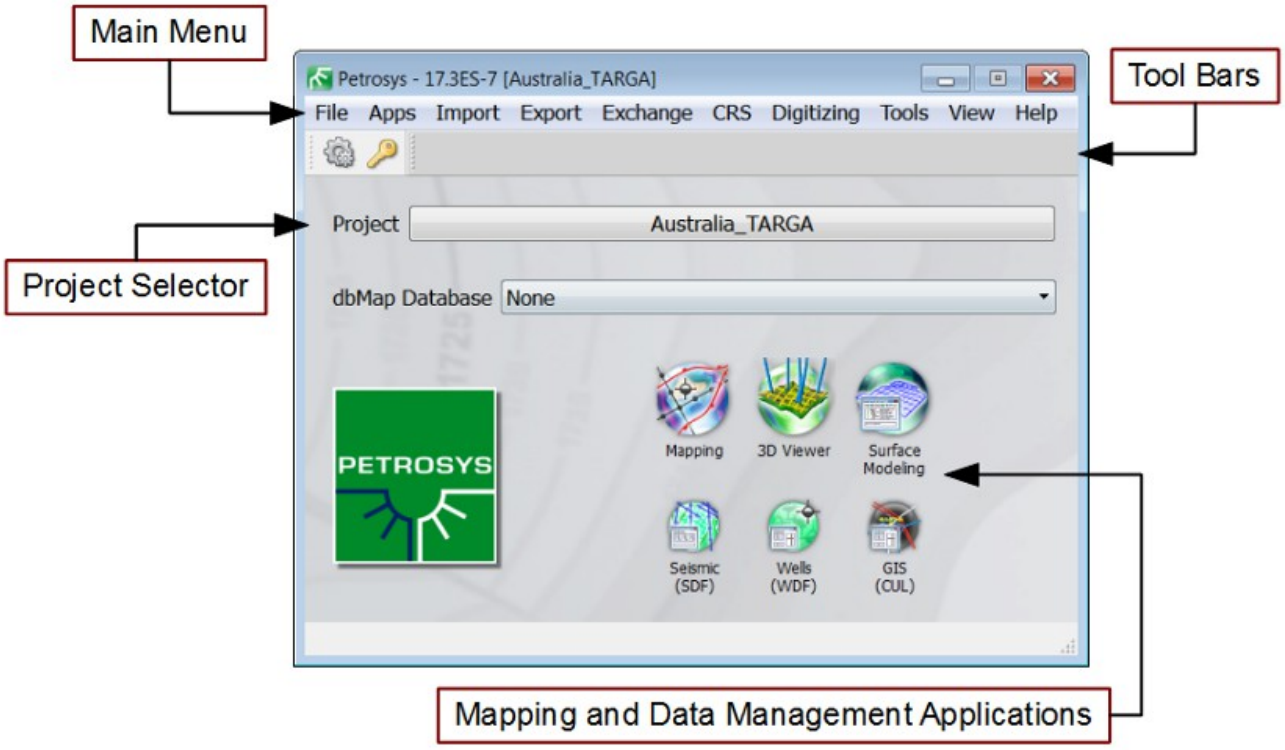
About — Provides information on the current version of Petrosys that you are using. You may be asked to provide this information when you make a support call.

GETTING STARTED IN THE PETROSYS LAUNCHER

Launch Petrosys using the Petrosys icon on your desktop, or choose Petrosys/Petrosys Mapping from the start menu.

The Petrosys Launcher is divided into four main sections -

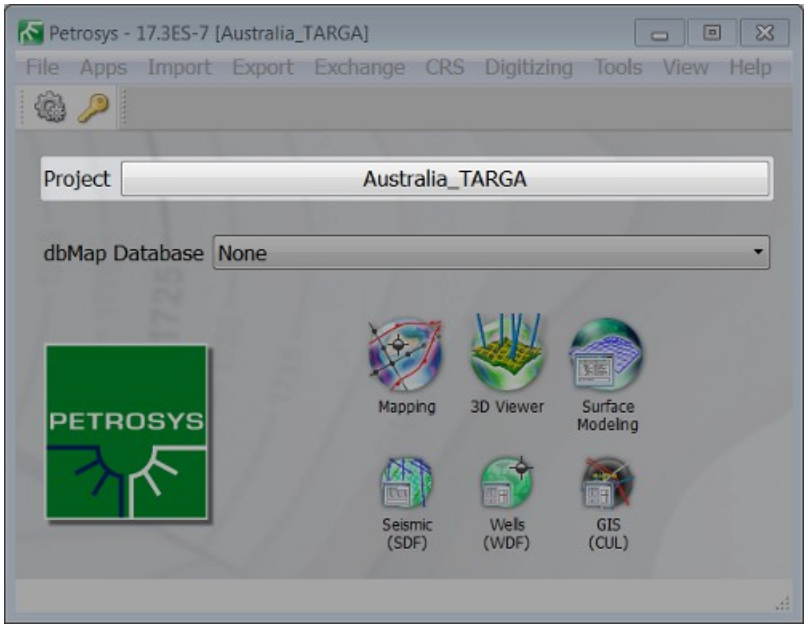
Main Menu	Configuration, import and export options and detailed software functionality
Tool Bars	A customizable collection of shortcuts buttons to frequently used parts of the software
Project Selector	Launches the project selector, where projects can be created and manipulated
Mapping and Data Management Applications	The six main applications used for the management and display of data within the Petrosys application, the first three of which – Mapping, 3D Viewer and Surface Modeling – will be covered in this guide.



Everything you do in Petrosys is done within a “Project”: a local directory on your computer where all of the maps, surfaces and other pieces of interpretation data are stored. Projects also store configuration data, so any changes you make as a general user of the software within a particular project will be limited to that project.

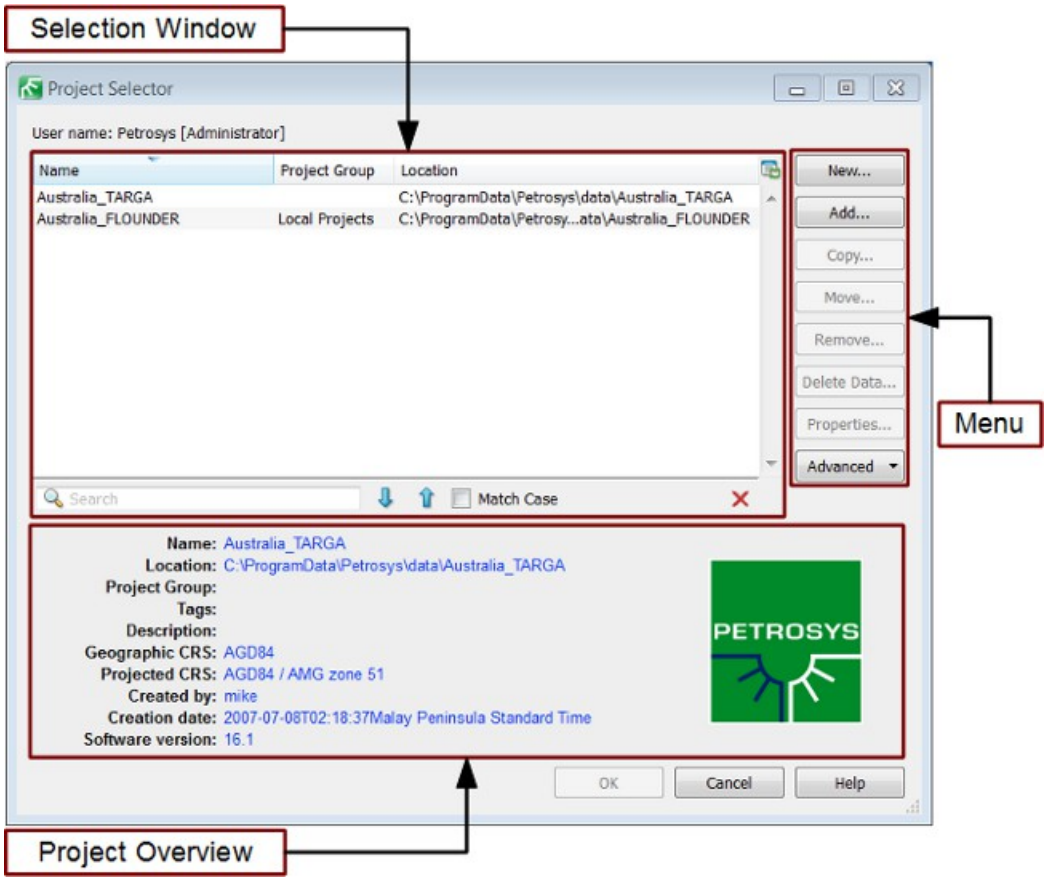
Projects are created, edited, and selected, and existing projects added and removed, using the “Project selector”.

Launch the Project Selector by clicking the field next to “Project” in the Petrosys Launcher:



The Project Selector is divided into three main sections:

Project List	Displays all the active projects that you have access to
Menu	Contains options for managing the active projects
Project Overview	An overview of the project highlighted in the selection window



Highlight “Australia_TARGA” and select OK. This will close the project selector and make Australia_TARGA the active project.

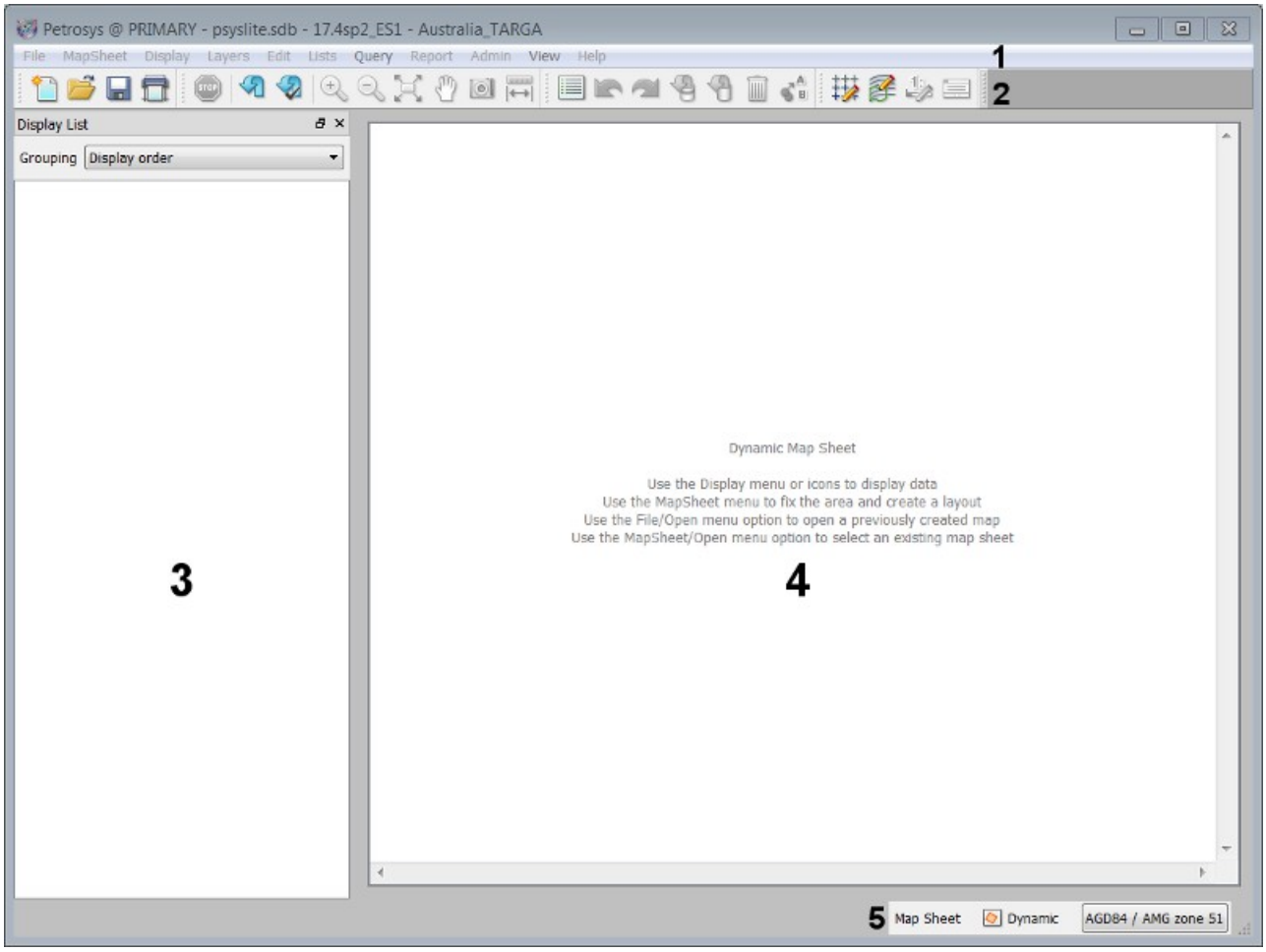
There are three main applications that will be covered by this guide -

Mapping	Display seismic, well, GIS and other data in a pre-defined geographical region.
3D Viewer	View wells, grids and 3D seismic surveys in three dimensions.
Surface Modeling	Compute three dimensional surfaces from a range of input data sources. Surfaces computed in Surface modeling can be displayed in both Mapping and 3D Viewer.

The vast majority of content creation is accomplished using these three applications. Other parts of the software are concerned primarily with data management, which will not be covered by this guide.

Applications are launched by selecting the required icon from the Petrosys Launcher. The first section of this guide will deal with the Mapping application, which can be launched by clicking the “Mapping” icon.

The map editor is divided into five main sections.



1. The Main Menu	Used to access nearly all features relating to the creation and editing of maps in Petrosys.
2. The Toolbar	A fully customisable collection of shortcuts to frequently used options from the main menu and other parts of the application.
3. The Display List	A hierarchical list of all the data displayed on the map. As there is no data currently displayed, it is empty.
4. The Map Canvas	A visual display of the current map. As this is the first time Mapping has been started, there is no map currently occupying the canvas. The text in the centre of the canvas denotes that Mapping is currently in "Dynamic Map Sheet" mode. This will be discussed in the next topic. If the appearance of the map canvas differs from that shown above, don't worry, this will also be addressed in the next topic.
5. The Status Bar	Allows the current mapsheet and CRS (Coordinate Reference System) to be modified. These concepts will be dealt with briefly by this guide, but are not crucial in understanding how to display and publish data.

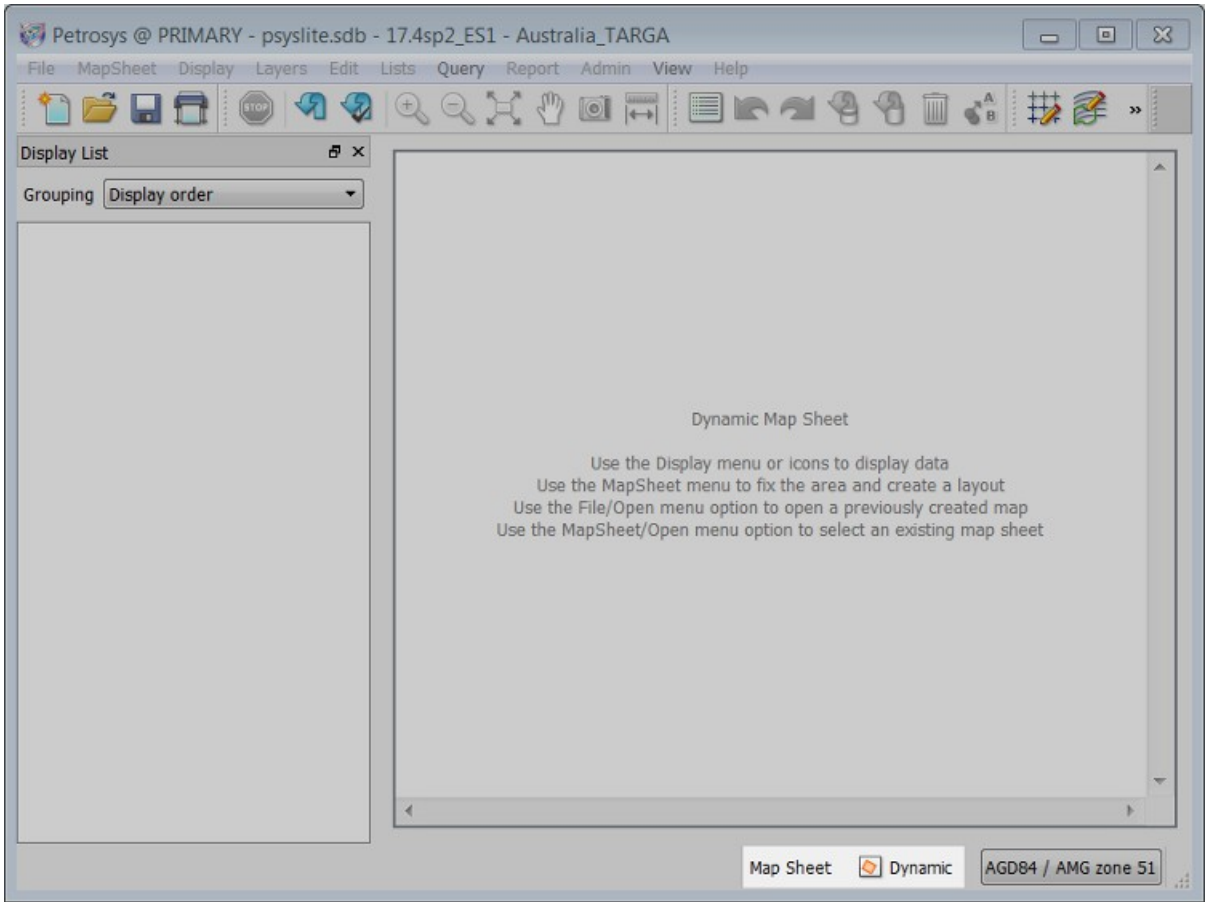
This section of the guide will walk through the creation of a simple map using the Mapping application, as well as discussing some of the concepts employed by the application.

SETTING UP THE MAP CANVAS

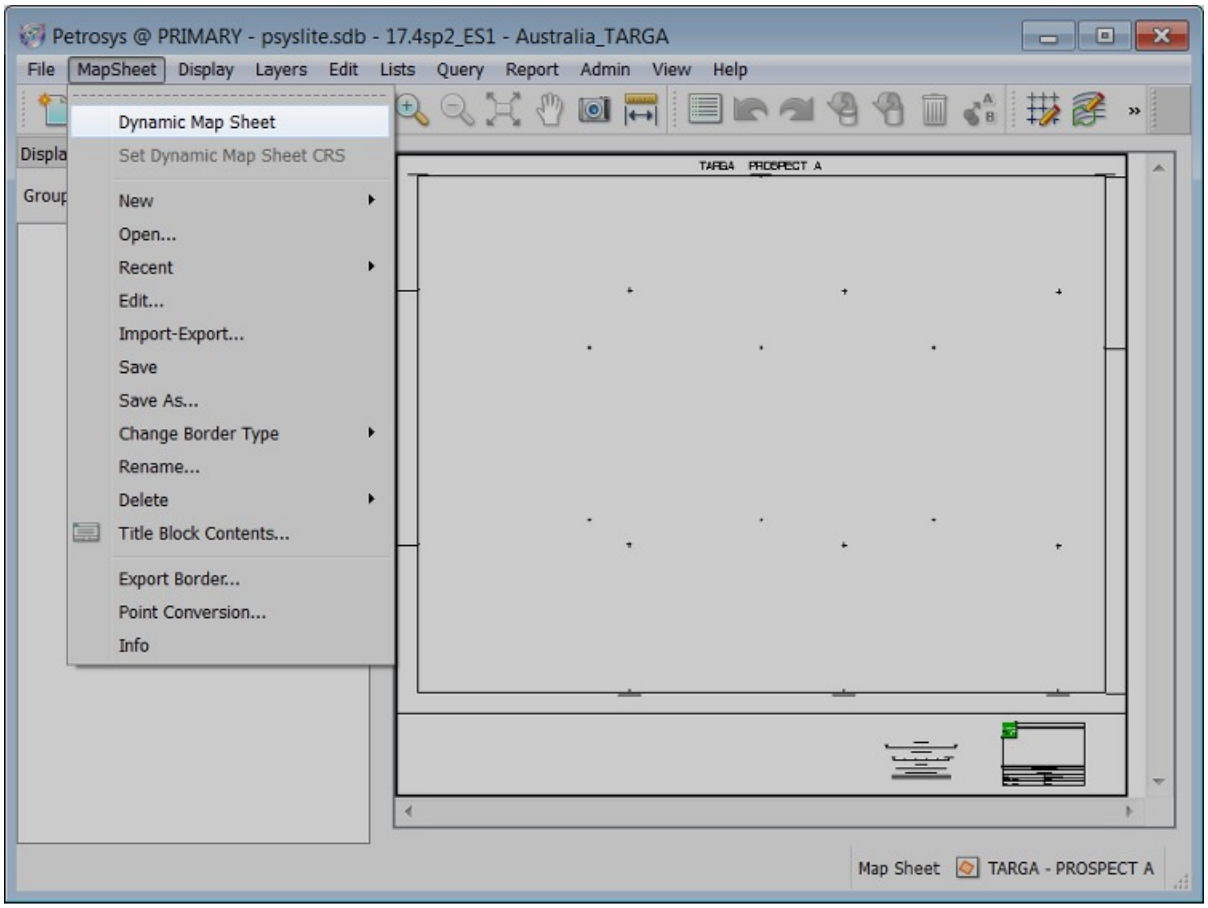
Before proceeding with this guide, the Mapping application must be set up to use a dynamic map sheet. Mapping uses map sheets to define the current geographical area of interest. This usually corresponds to the extent and scale of the data displayed by the map, and is manually specified based on the coordinate range of this data. Map sheets may also contain graphical elements, including a title, border, scale and title block.

In contrast to regular map sheets, a dynamic map sheet automatically adjusts to the extent and scale of data as it is displayed. This makes it ideal for quickly viewing data and constructing simple maps. The first portion of this guide will use a dynamic map sheet to view a pre-established data set.

The map sheet used by the Mapping application can be verified by referring to the status bar. If the button to the right of "Map Sheet" is labelled "Dynamic", a dynamic map sheet is currently in use.



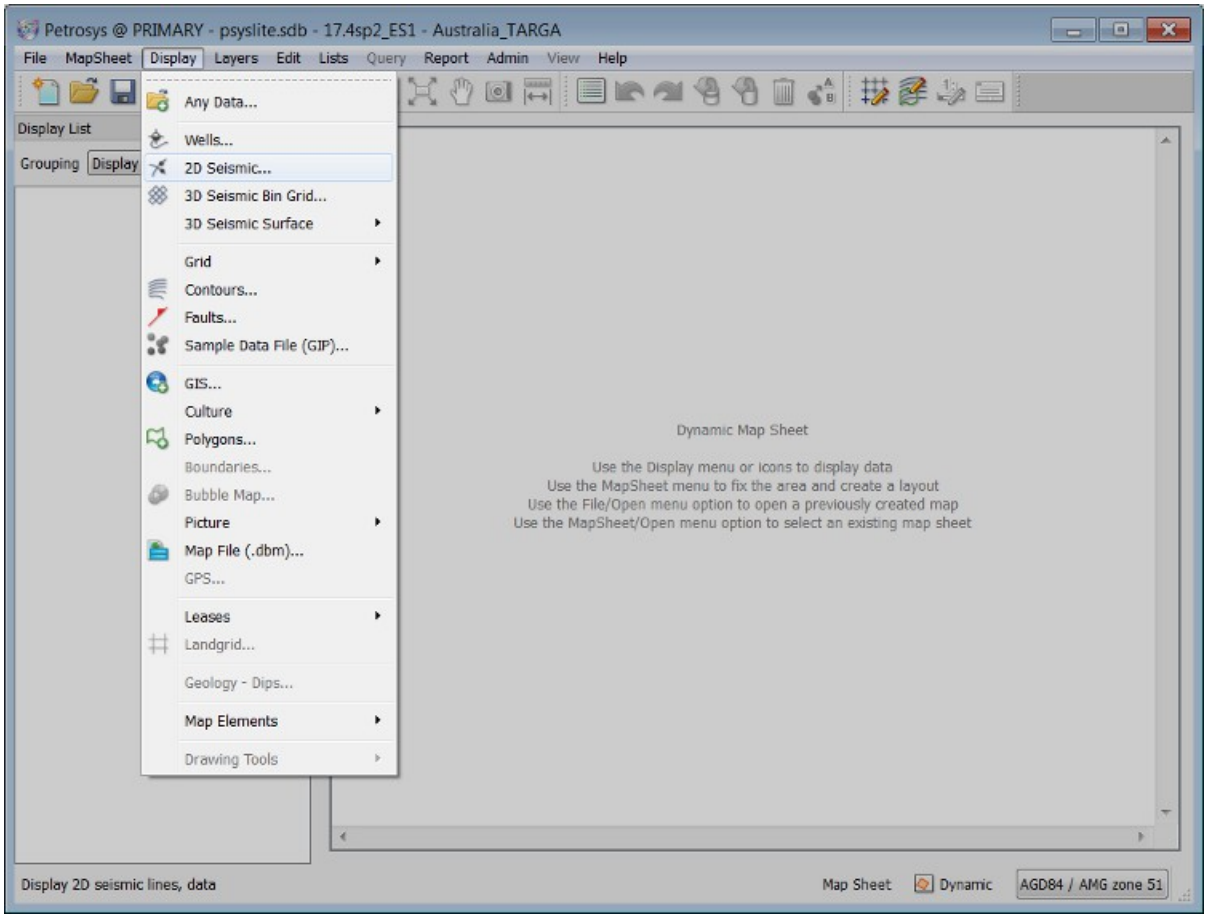
If another name is present, select /MapSheet/Dynamic Map Sheet from the main menu.



This will cause the application to use a dynamic map sheet. Refer back to the status bar, to ensure a dynamic map sheet is now in use before proceeding.

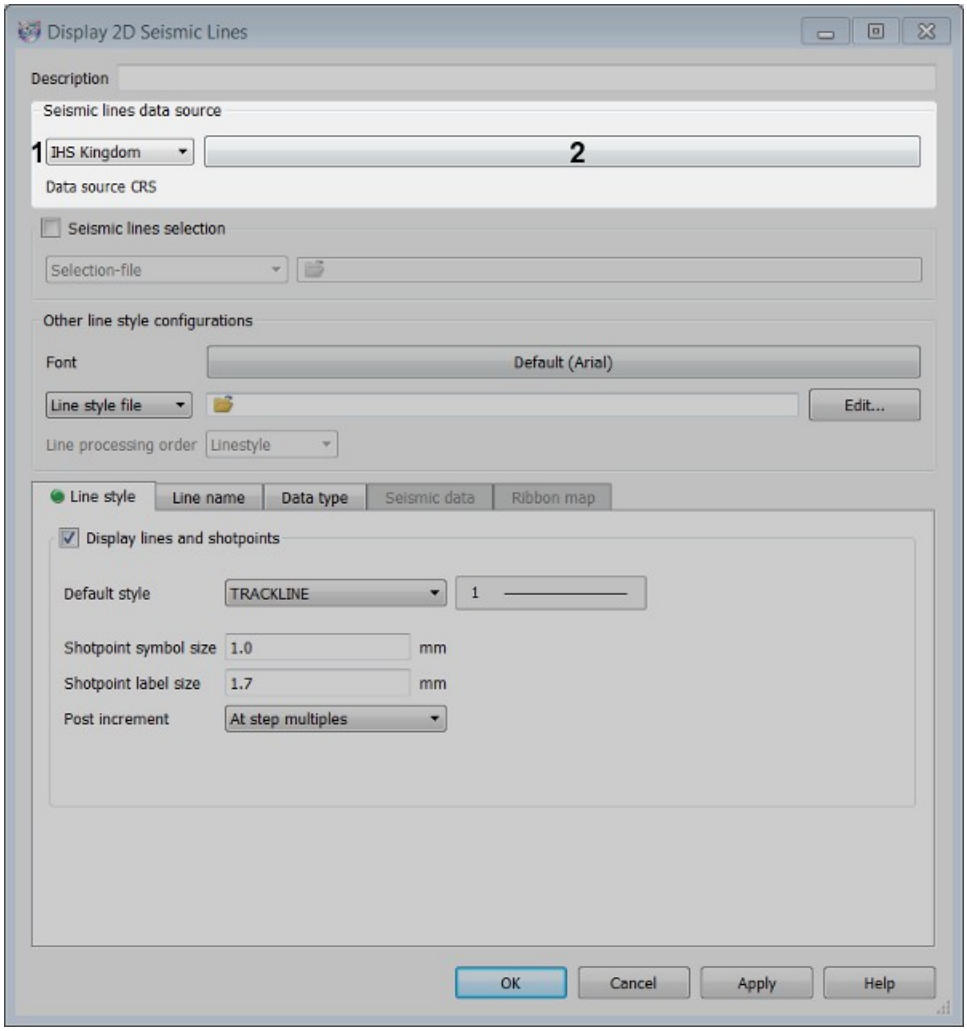
Data is displayed in Mapping using the Display menu, which can be accessed from the main menu. In this topic we'll be creating a simple map from 2D seismic lines stored in an IHS Kingdom data source.

To get started, select /Display/2D Seismic... from the main menu.



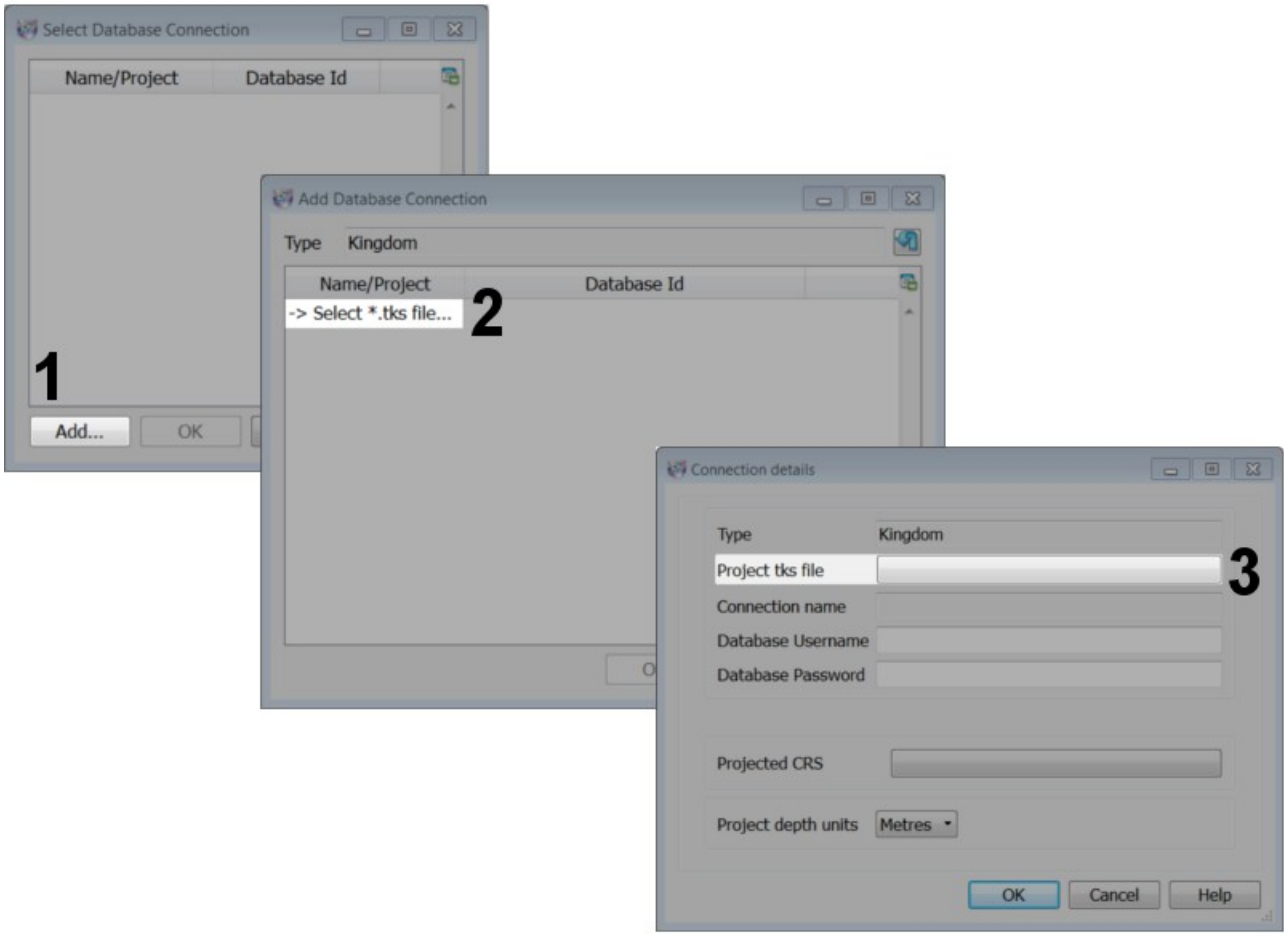
A new window will be opened, which is used to select the source, appearance and selection of data which will be displayed. For now, the only thing we're concerned about is the data source, which is controlled using the two options under the “Seismic lines data source” heading. The drop-down menu on the left controls the file format or database type the seismic data is being retrieved from. The button on the right, which changes in appearance depending on the chosen data source, is the actual project or file containing the seismic data.

We want to display 2D seismic data from an IHS Kingdom data source, so change the format to “IHS Kingdom”, then click the empty field on the right to set up the data source.



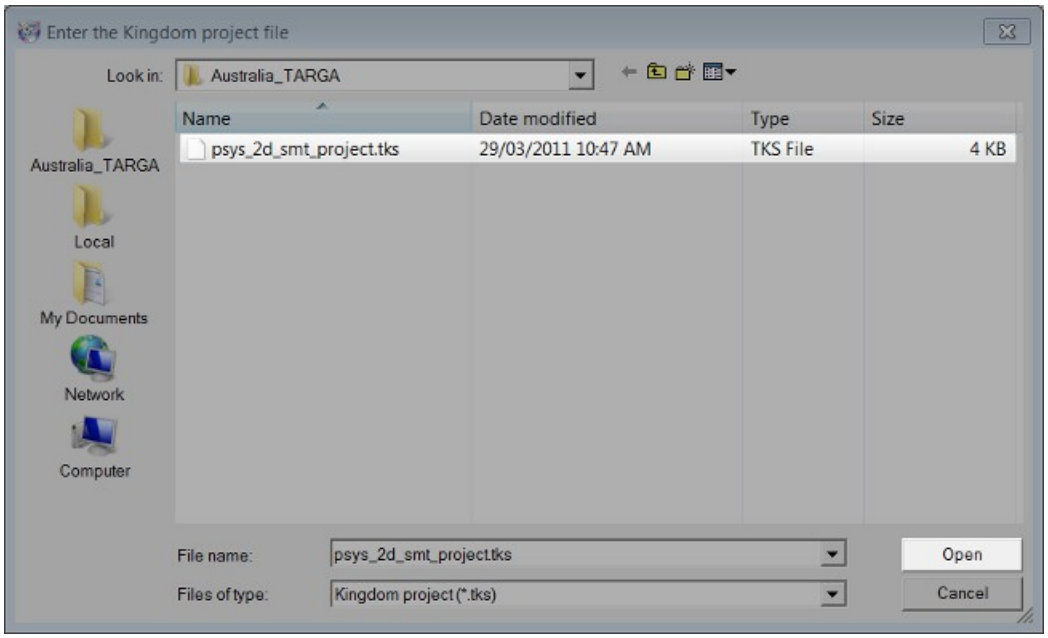
1.	**Select IHS Kingdom from the drop-down menu under Seismic lines data source.**
2.	**Click the button to the right of the drop-down menu.**

The new window will display the active database connections. This is empty, so we'll set up a new one. First, click the “Add” button. From the Add Database Connection window, double click “-> Select *.tks file”. Finally, in the Connection Details window, click the empty field next to “Project tks file”.

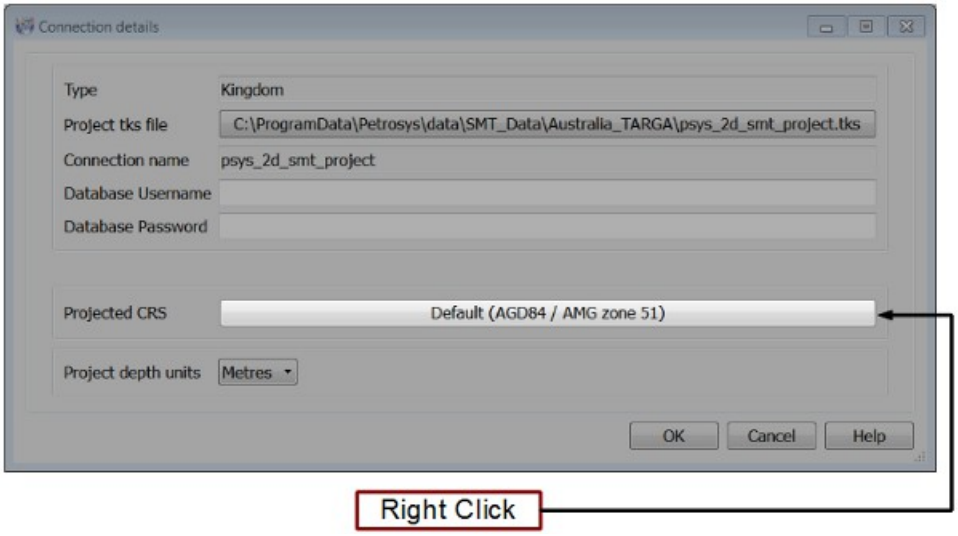


1.	**Click the "Add..." button.**
2.	**Double click "-> Select *.tks file...".**
3.	**Click the button to the right of "Project tks file".**

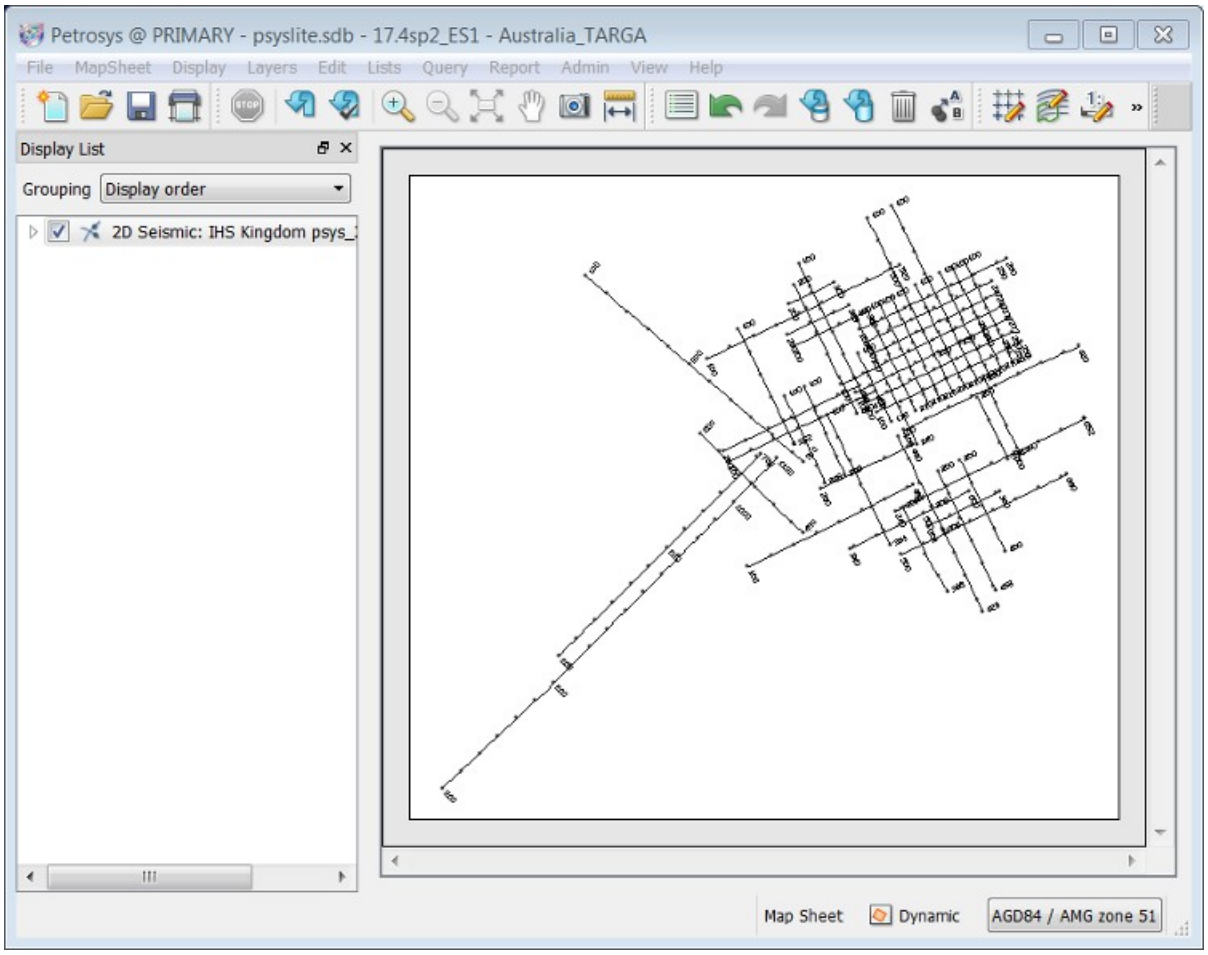
Using the file selector which is opened after clicking the button, browse to the file “psys_2d_smt_project.tks” and press OK.



Right click the field next to “Projected CRS”. This will change the CRS used for the connection to the project default.

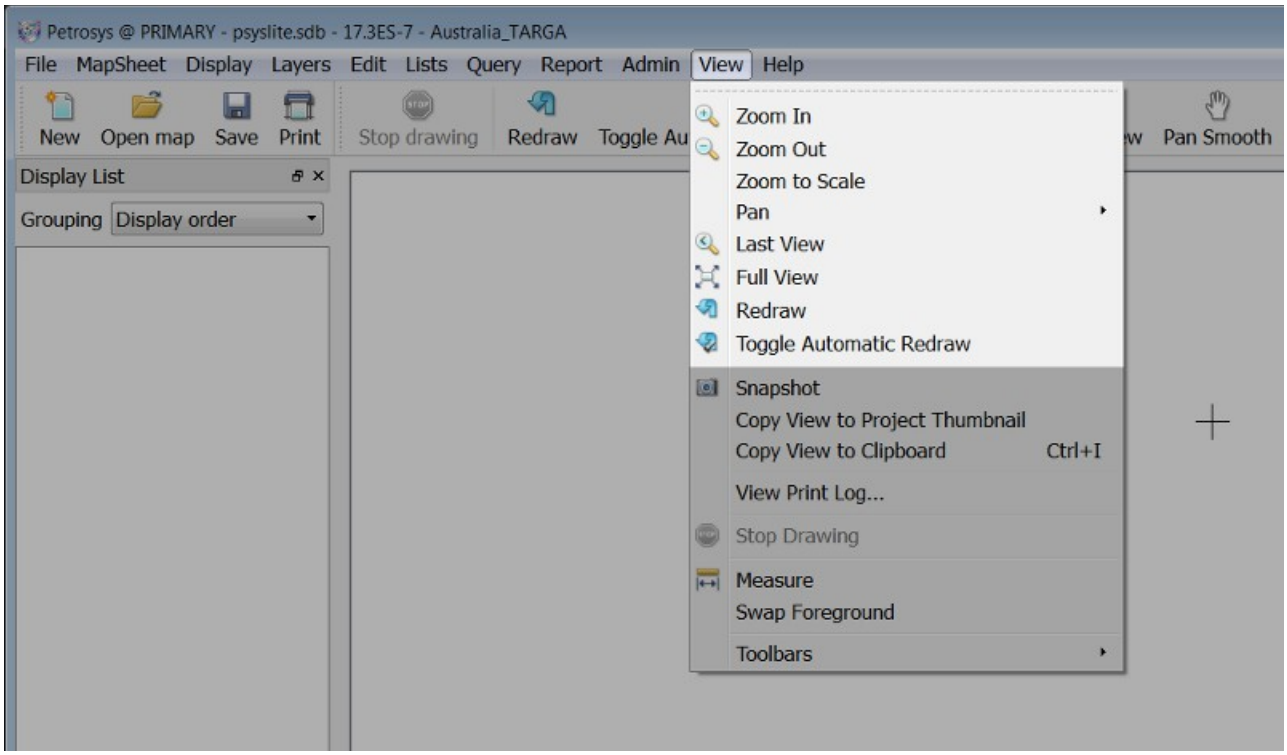


Press OK to confirm the changes and close the window, then again in the “Add Database Connection Window”. The “Select Database Connection” field should now be populated with the project you just set up. Ensure that this is selected, then press OK. Finally, select OK on the “Display 2D Seismic Lines” panel. The Lines from the IHS Kingdom project should now be displayed on the mapping canvas.


Petrosys @ PRIMARY - psyslite.sdb - 17.4sp2_ES1 - Australia_TARGA
File MapSheet Display Layers Edit Lists Query Report Admin View Help
Display List
Grouping Display order
2D Seismic: IHS Kingdom psys_
Map Sheet
Dynamic
AGD84 / AMG zone 51

The simplest way of manipulating your view of the map canvas is by using the mouse wheel. Scrolling up zooms in, scrolling down zooms out, and holding the wheel down while moving the mouse pans the view in the desired direction.

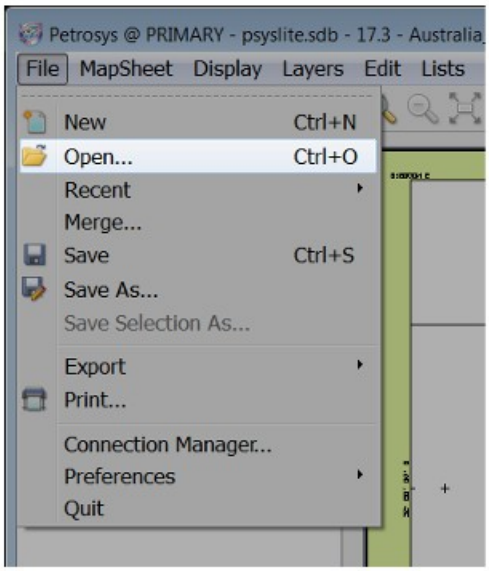
The view can be controlled with a little more accuracy using the “View” tools available from main menu.

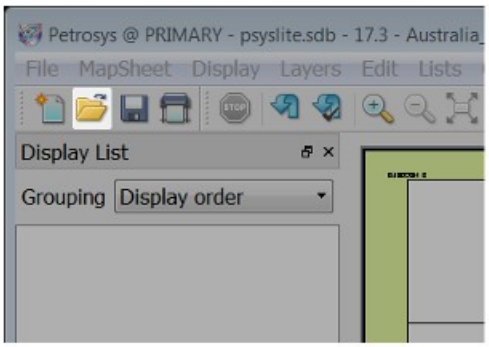


These options are also available from the toolbar in Mapping.

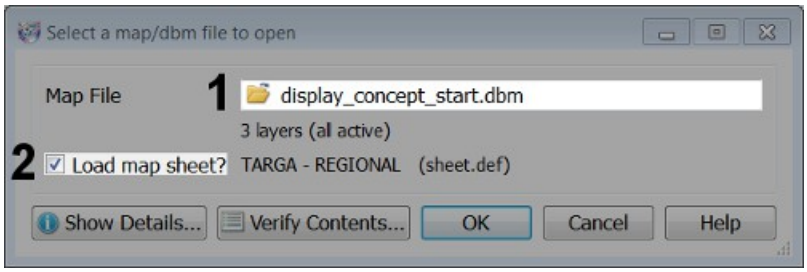
Once zoomed you can return to the original view by using either the mouse wheel, the zoom out icon, or by selecting the “Full View” button from either the View menu highlighted above, or the toolbar.

Select “File/Open” in the main menu or “Open Map” from the quick menu.



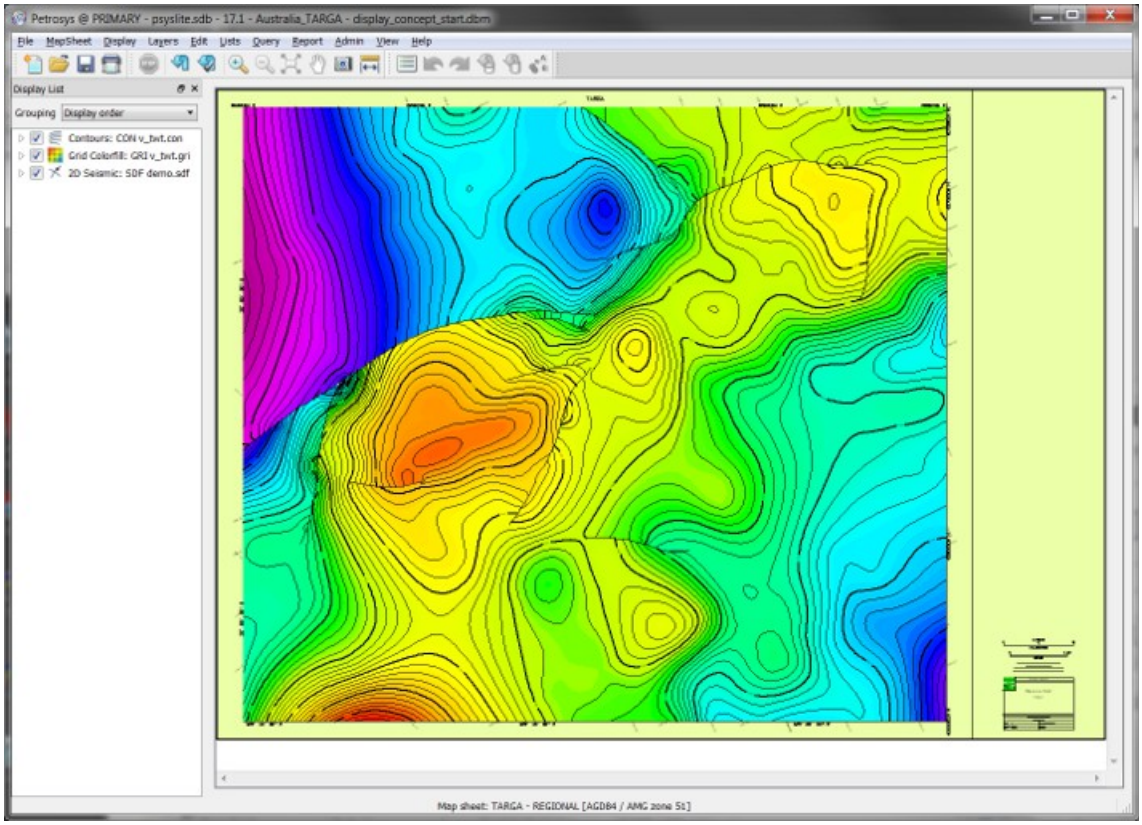


Click the file selection field next to “Map File” and browse to the file “display_concept_start.dbm”. Ensure that “Load map sheet” is turned on, and select OK.



1.	**Select "display_concept_start.dbm" from the Australia_TARGA project directory.**
2.	**Enable "Load map sheet?"**

The Display List and the map canvas are now populated by various “layers” of data.

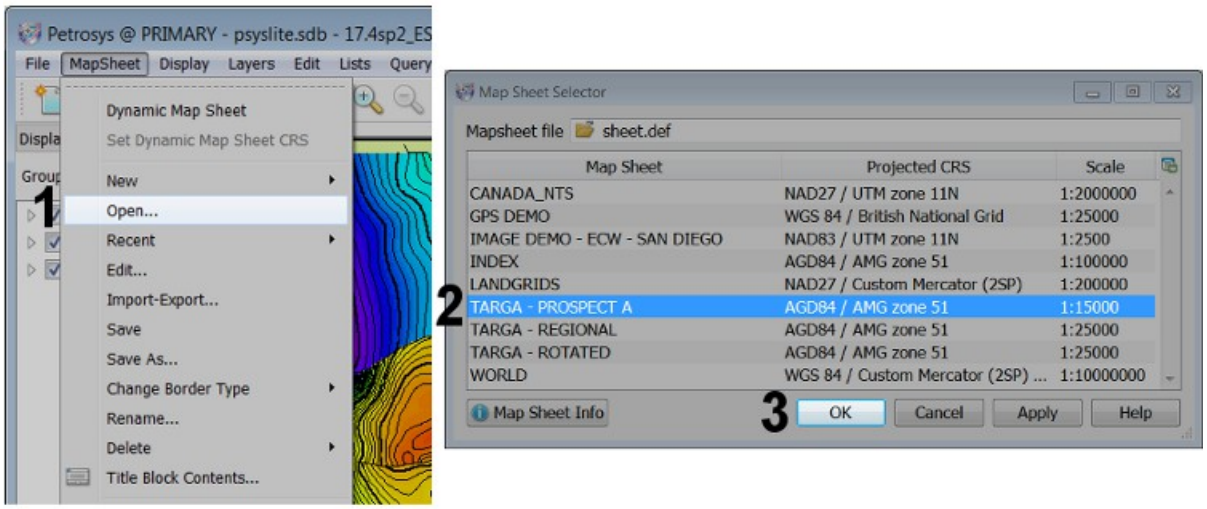


Maps such as this one are comprised of a Display list and a map sheet. As data is displayed in Mapping, it is added to the display list, which is visible on the left side of the main application window.

Unlike the map which was created previously in this guide, this map does not use a dynamic map sheet. Instead it makes use of a pre-defined map sheet, that spans a fixed geographical region, and which is then associated with the display list.

Map sheets can be set up to cover any geographical region. Although this map sheet encompasses a wide portion of the data from the display list, it is also possible to set up map sheets which cover only a sub-set of this region.

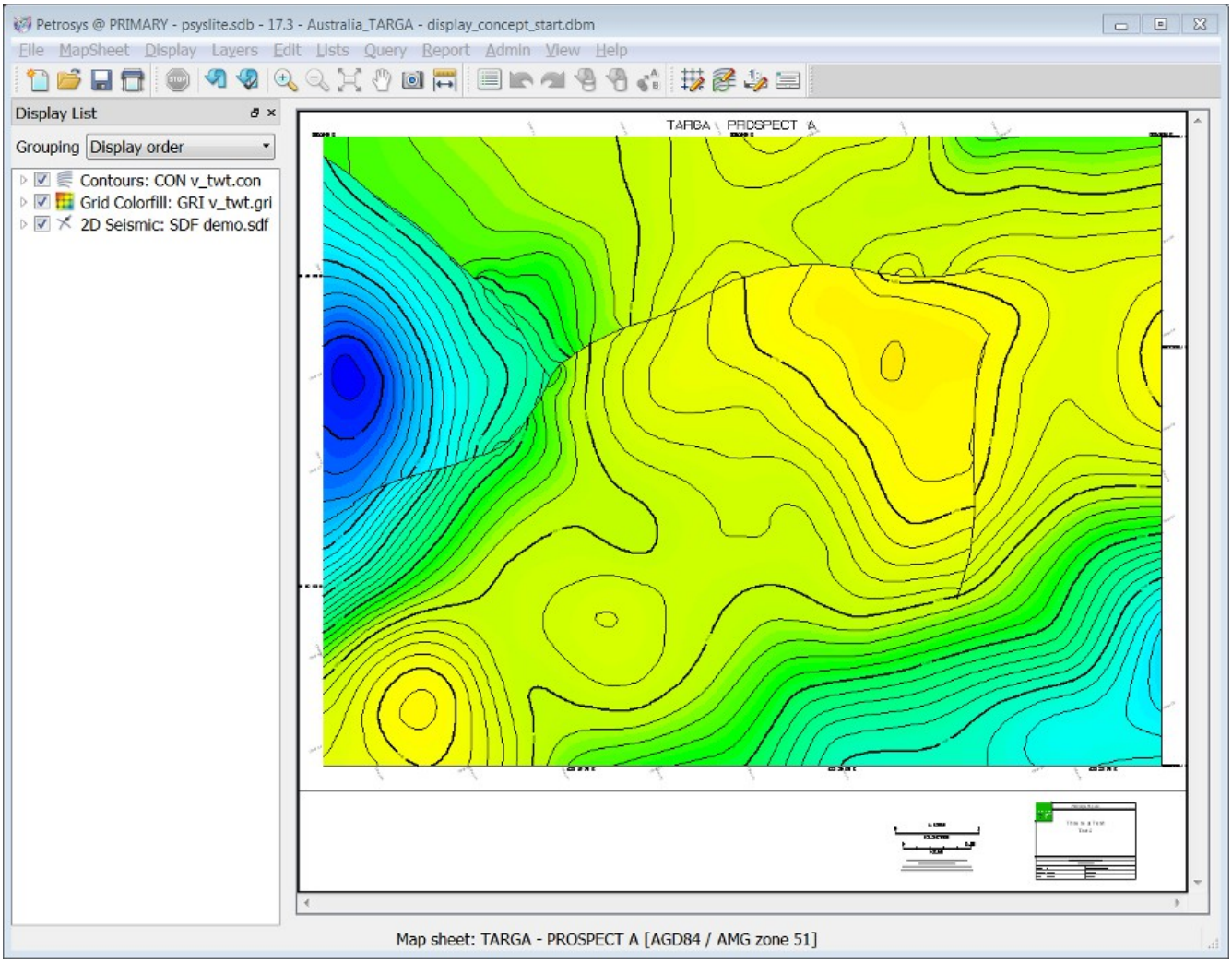
Select MapSheet/Open and change the active map sheet to “TARGA – Prospect A” by selecting it from the list and clicking OK.



1.	**Select MapSheet/Open... from the main menu.**
2.	**Select "TARGA - PROSPECT A" from the map sheet list.**

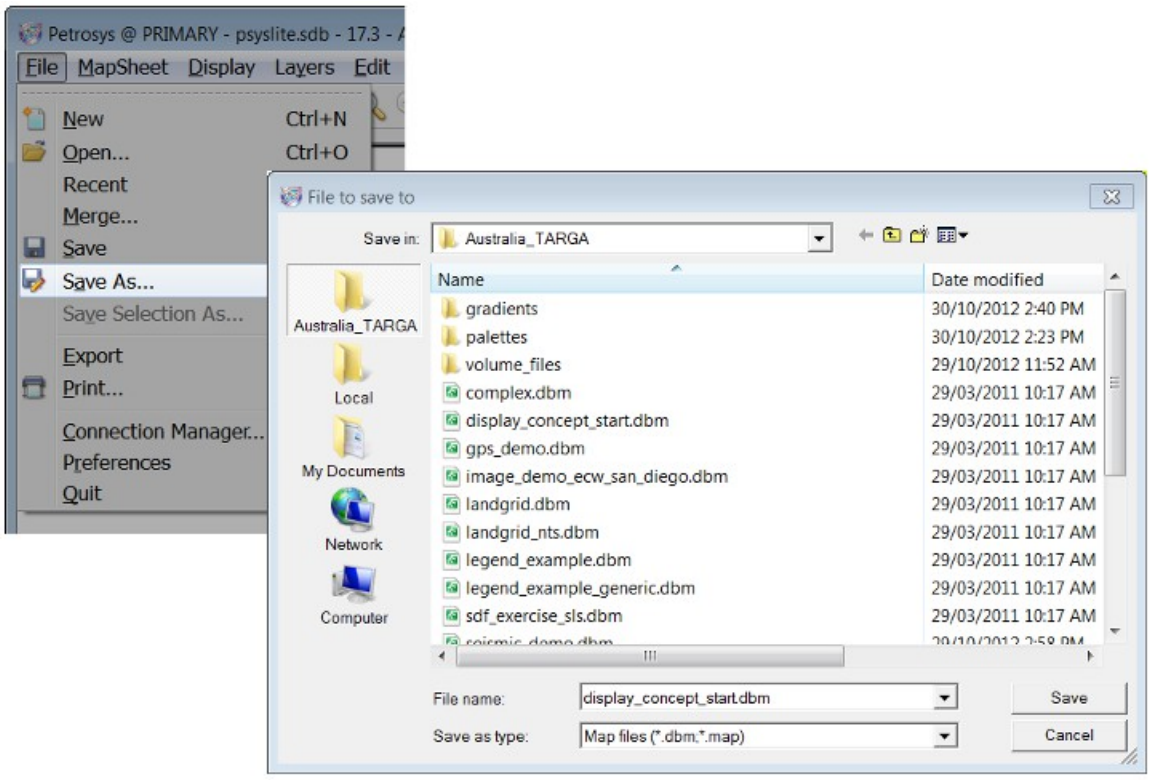
3.	**Click OK.**

The map canvas will change to show the area in the top right of the data set, and with a different title block layout. The Display List will remain unchanged.

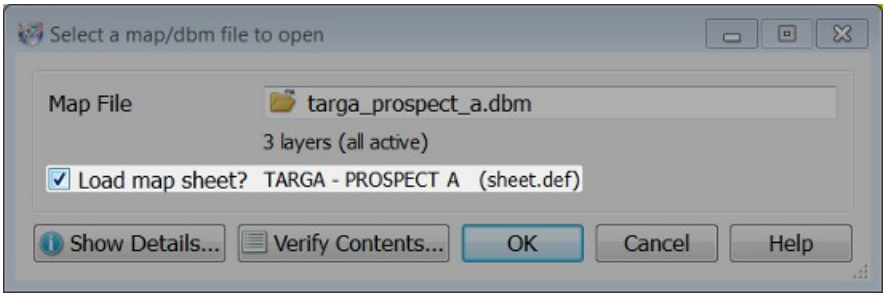


Display lists are saved using the DBM file format. When a display list is saved, it is associated with a particular map sheet. The map sheet associated with a display list can be “loaded” using the “Load map sheet” menu option.

Select File/Save As from the main menu. Choose a name – something like “TargaProspectA.dbm” - and click “Save”.



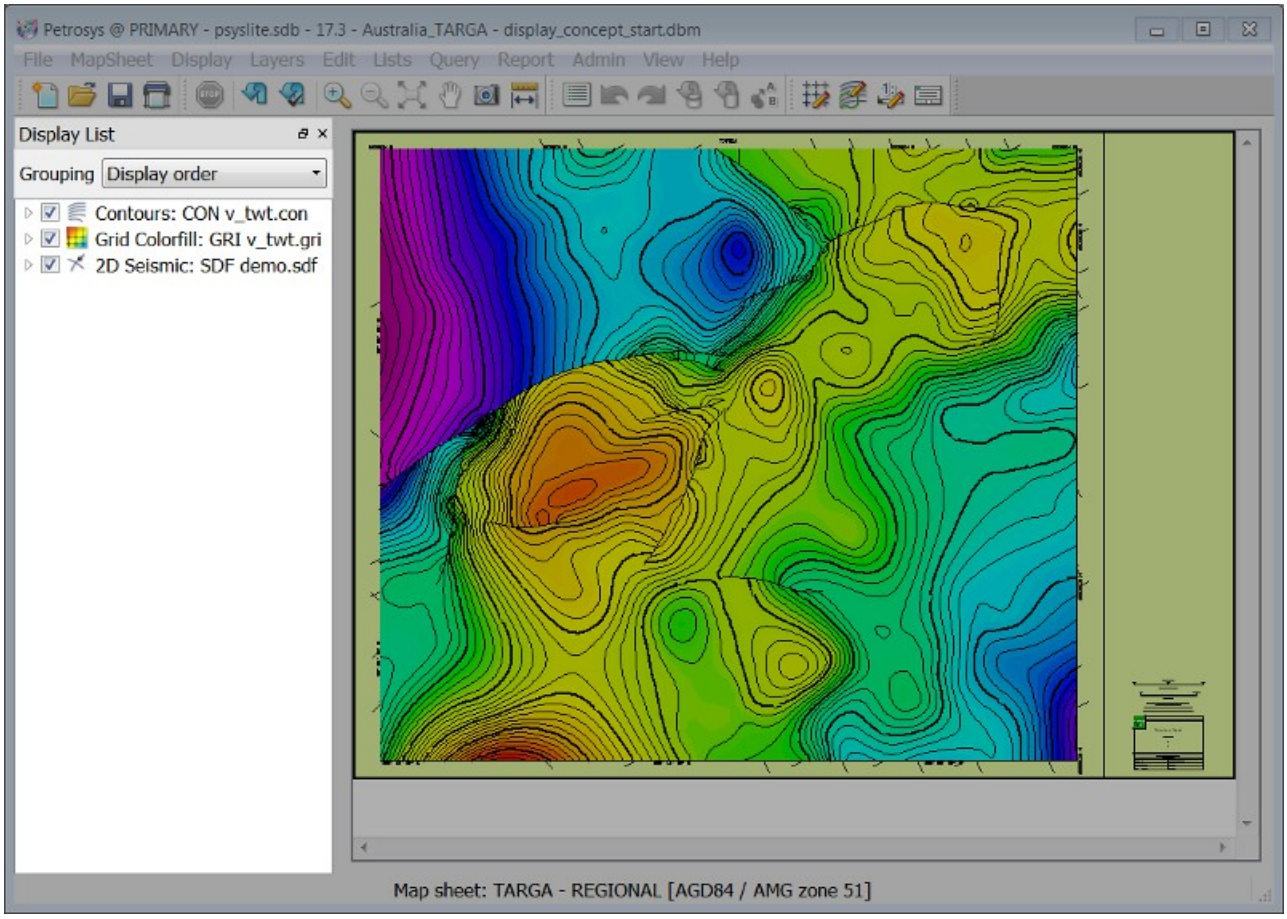
The map sheet associated with a display list will always be the map sheet which was active when the display list was saved. If you were to open this display list in a subsequent session then the map sheet loaded by default will be the one active when it was saved:



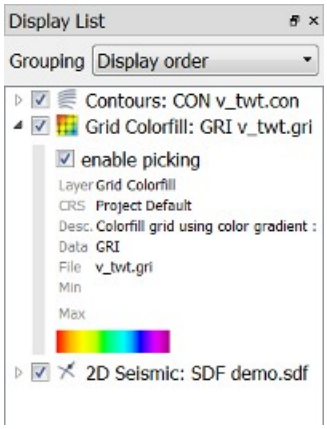
MANAGING COMBINATIONS OF DATA USING THE DISPLAY LIST

If it is not already open, load display_concept_start.dbm by selecting “File/Open” from the main menu, or by dragging and dropping the file from Windows explorer onto the map canvas.

There are three items displayed as “layers” on this map: contours, a Petrosys grid and seismic line data. Each of these items is listed in the display list, on the left side of the Mapping canvas.



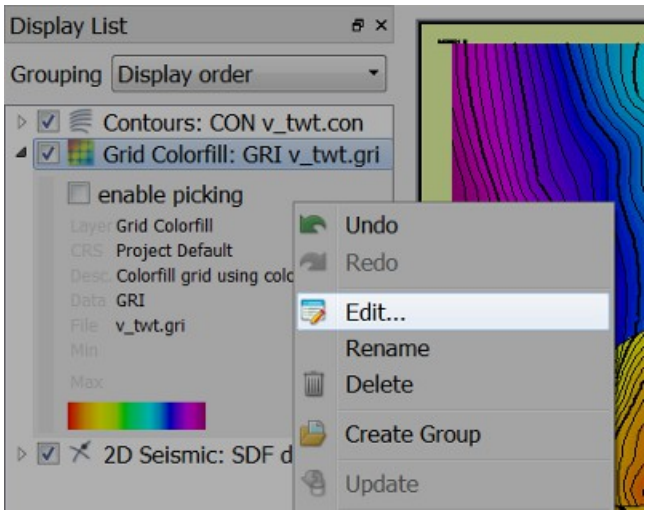
More information about display layers can be viewed by clicking the arrow icon to the left of each list item.



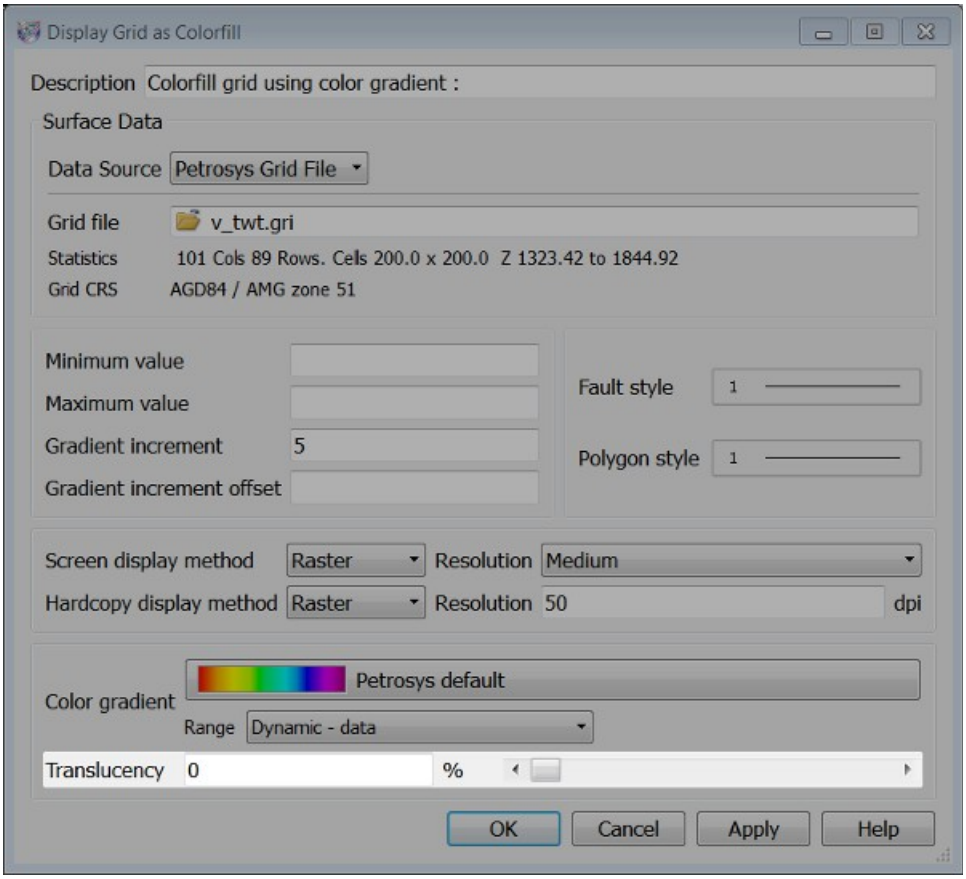
Layers are displayed on a map as they are ordered in the list. Therefore items at the bottom of the list will be displayed below items at the top of the

list. The grid - which is the second item in the list - is displayed above the seismic line data. This means the seismic line data - which is displayed underneath the grid - will not be visible. This can be fixed by either changing the display properties of the grid, or by moving the grid beneath the seismic line data in the display list.

The display properties for the grid can be opened by right clicking the grid layer in the display list and selecting “Edit...”.

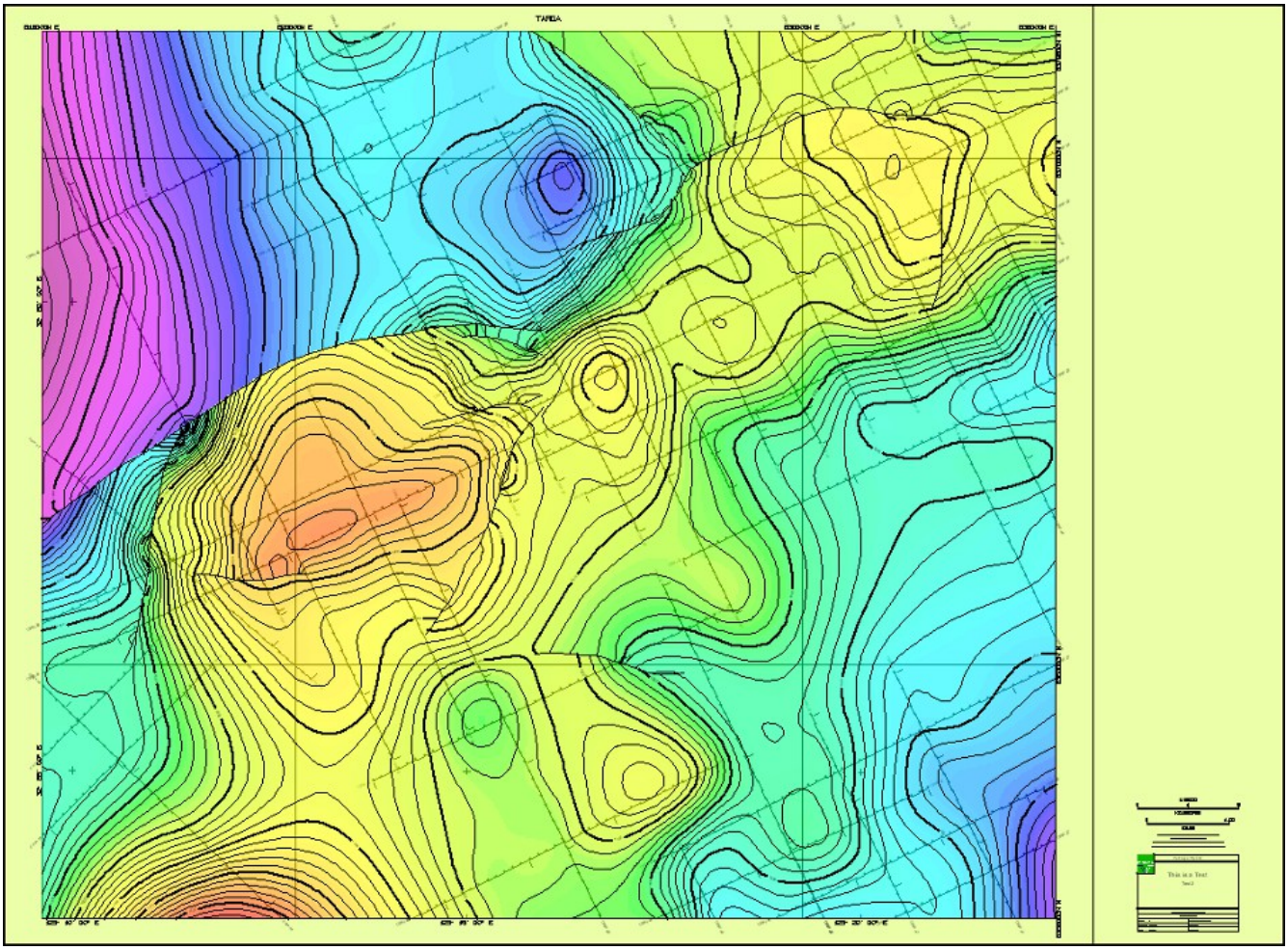


The properties for this layer will now be displayed. This window can be used to modify the appearance, data source and description associated with the display layer. A variation of this window is available for every piece of data which can be displayed as a layer in Mapping, and will vary according to the data type.



Change the “translucency” slider, at the bottom of the window, to 40% then click OK.

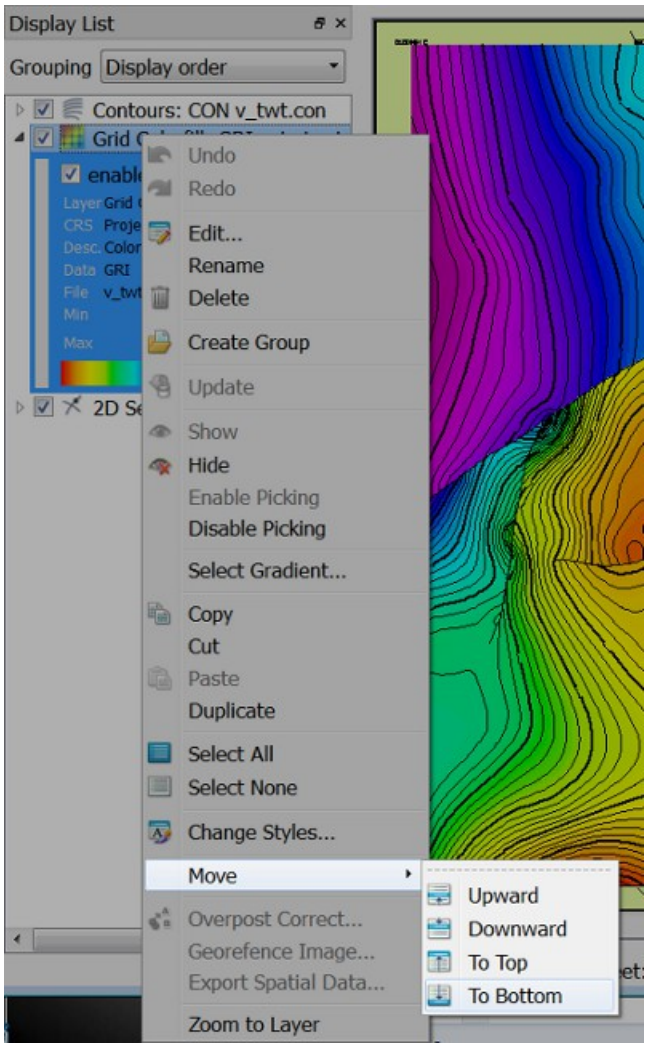
By increasing the translucency of the grid the lowest item in the display list - the seismic line data - has become visible.



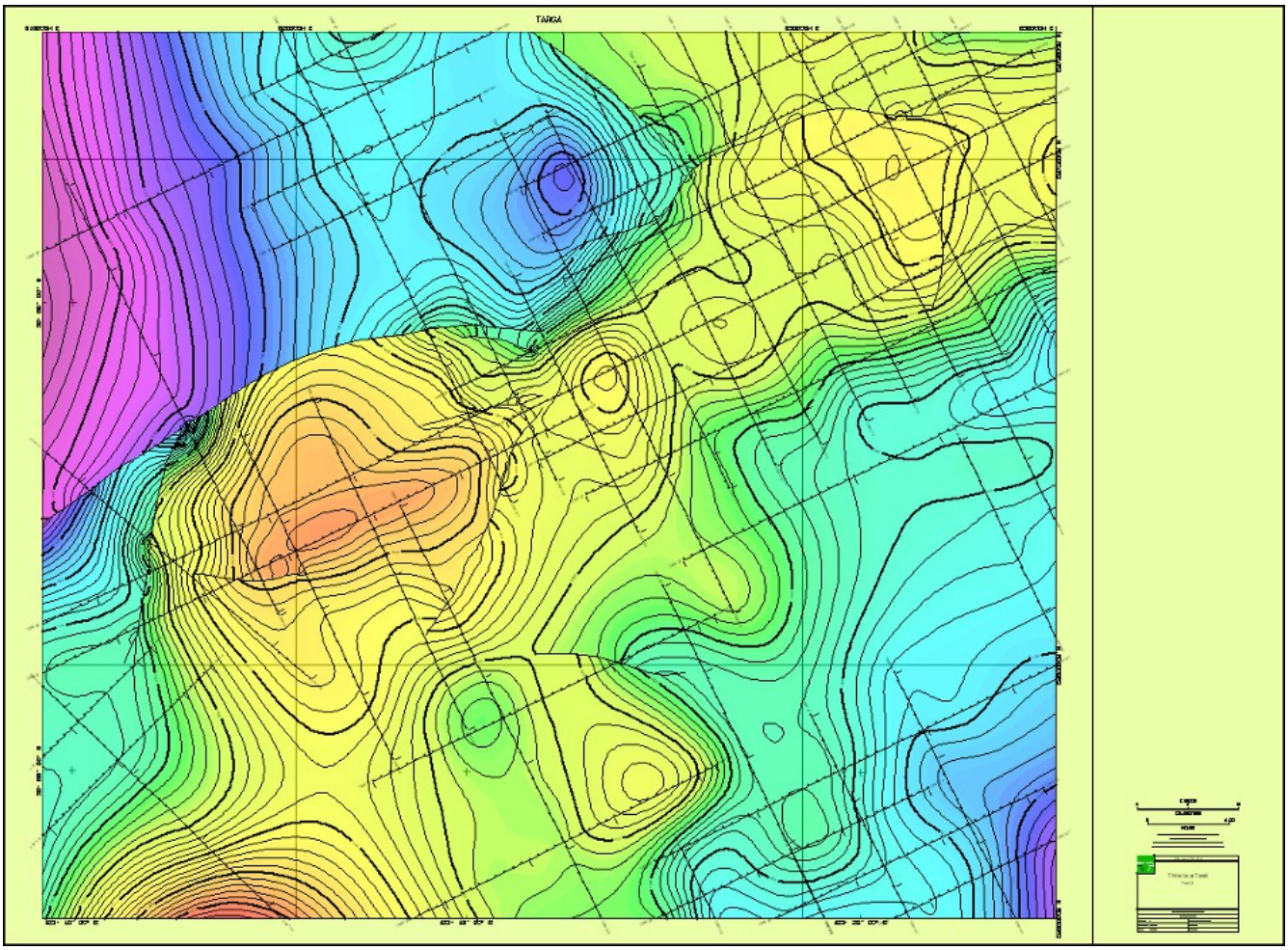
Translucent grids are an easy way of demonstrating how layers are sequenced in the display list. Before embarking on a serious presentation project using a translucency you should ensure that the output is supported in your preferred publishing format.

The appearance of the seismic line data can be also be enhanced by modifying the order of the layers in the display list.

Right click the grid in the display list, and select /Move/To Bottom. This will move the grid layer to the bottom of the display list.



Moving the grid to the lowest position in the list will mean it is displayed beneath everything else. Layers above the grid - the contour and seismic data - will now be clearly visible.



There are many additional things you can do in the display list, including -

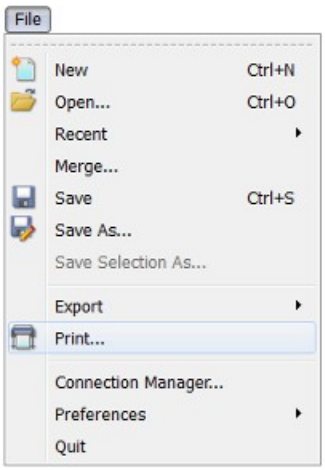
- Enabling/disabling the visibility of individual layers
- Enabling/disabling the ability to pick data on individual layers
- Creating groups of layers that can be manipulated together
- Displaying metadata about a particular layer
- Making bulk changes to the display style of selected layers
- Merging other display lists and displaying other .dbm files

Consult the Help option for more detailed information about any Petrosys function.

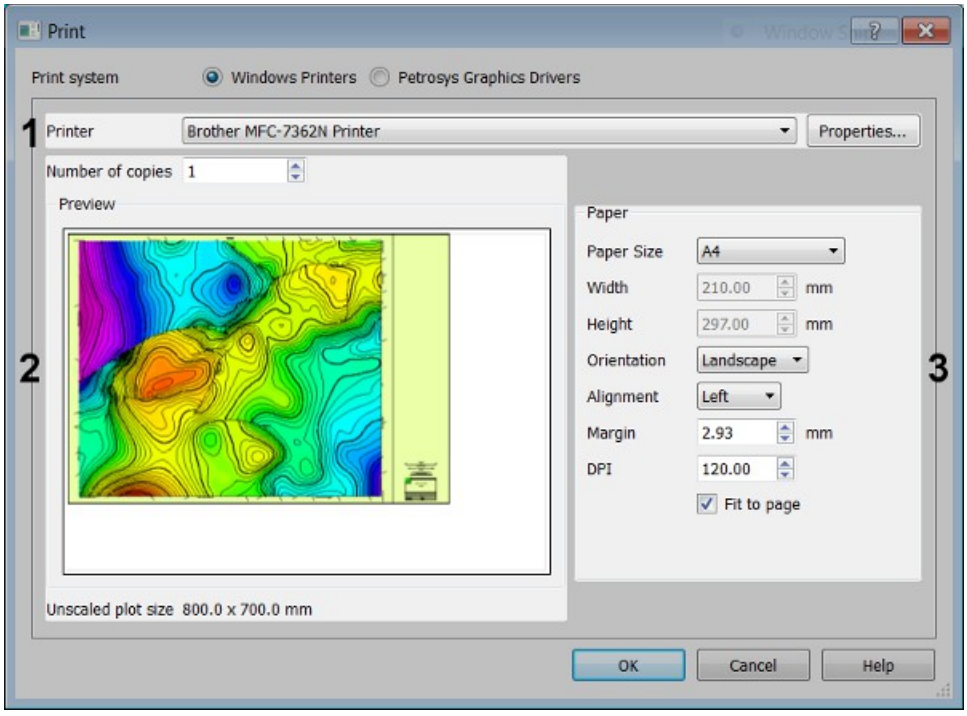
MAP CREATION - PRODUCING A HARDCOPY

A hard copy of content from Mapping can be produced in two ways: using a supported printer or plotter, or by exporting to a PDF or raster image file.

To print a map, open the “Print” window using either the quick menu or by selecting “File/Print”.



The simplest way of creating a hard copy is to select one of your existing windows printer drivers using the “Printer” button and printing the map directly.

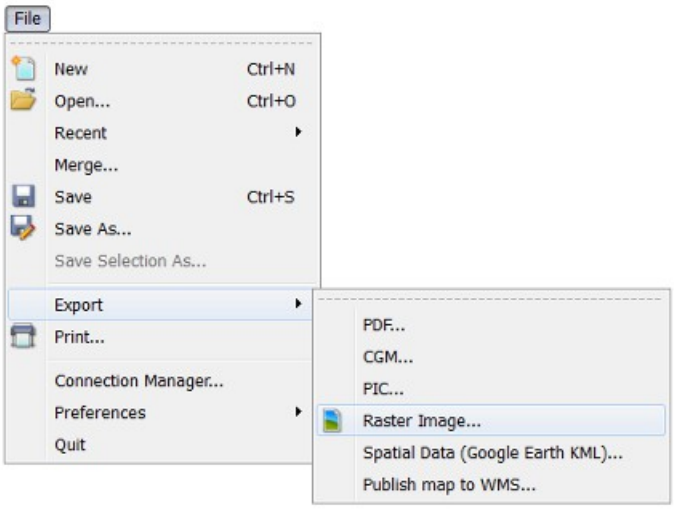


1.	**Printer selection.**
2.	**Output details.**

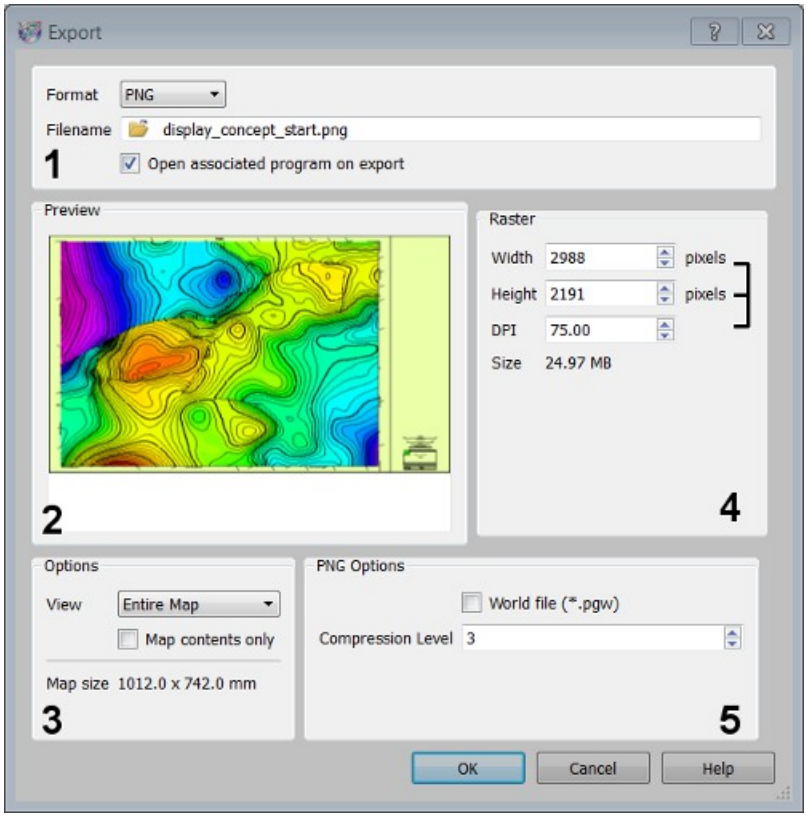
3.	**Orientation and paper setup options.**

Choose a printer by clicking the printer selection button, to the right of “Printer” at the top of the window, then click OK to print a copy of the map. If required, the orientation of the map can be controlled using the orientation options, in the middle of the window.

Maps can also be exported to either a PDF, or raster image format, using the options from /File/Export...



To export a map as a raster image, select /File/Export/Raster Image...



1.	**Output file image file name and type.**
2.	**Preview window**

3.	**Output image contents**
4.	**Output image size and resolution.**
5.	**File type specific options (Advanced).**

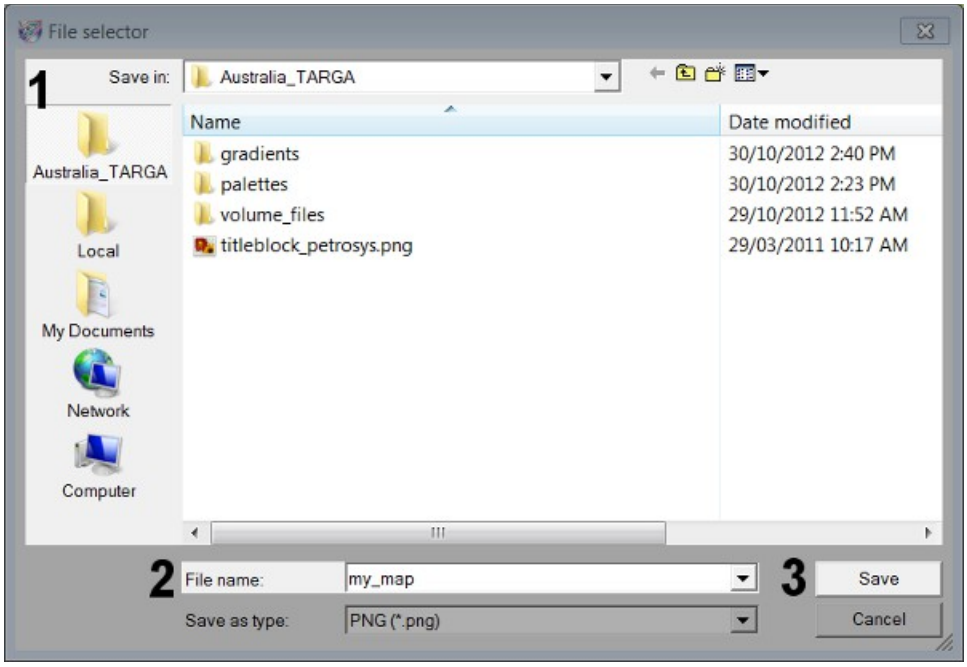
This window will produce a hard copy of your map in the form of an image file.

First, choose the image format you want your map saved to from the “Format” menu at the top of the window.

Maps from Petrosys can be exported to a range of popular image formats: including JPEG, PNG and TIFF. Some formats - JPEG 2000, ECW and GeoTIFF - can be used to export geospatial information associated with the map.

In this example, our map will be exported to a PNG file, a widely supported image format in common use. Select “PNG” from the “Format” menu, then click the folder icon to the right of “Filename”. This will launch a file selector, which can be used to specify the name and location of the output image file.

Enter a name into the “File name” field - In this instance “SMT-2D-Seismic” was used.- and, after browsing to the required location, click the “Save” button.

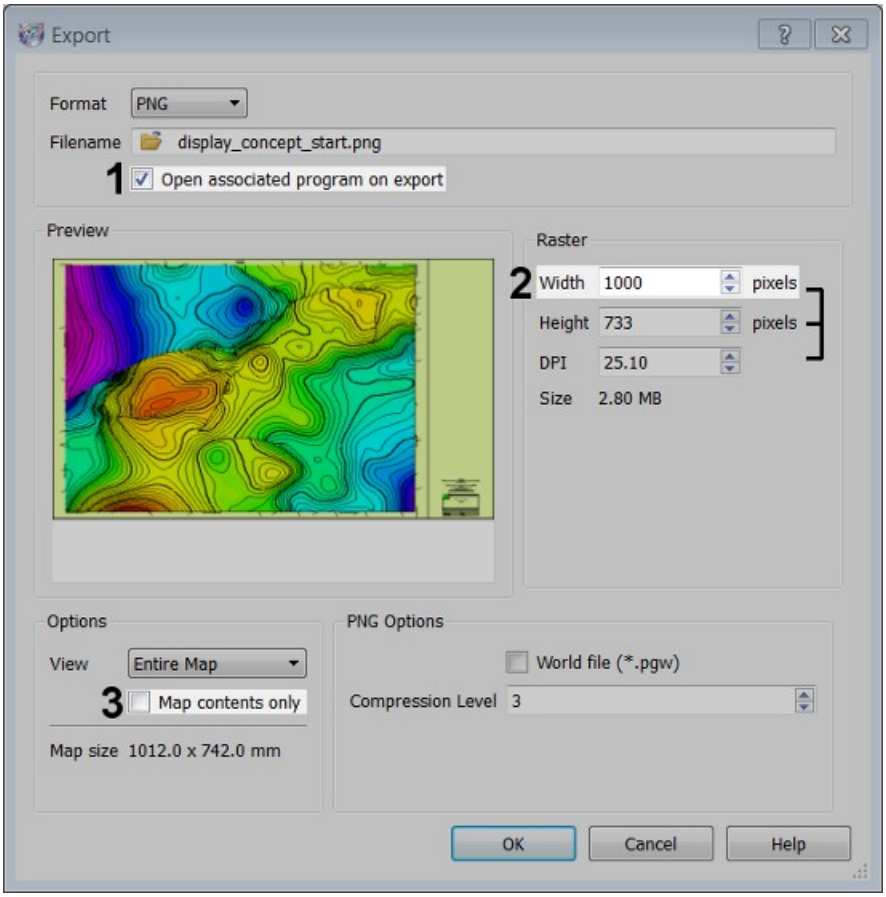


1.	**Browse to the location where the file will be saved.**
2.	**Enter a name for the output file.**
3.	**Click the "Save" button.**

Back in the “Export” window, change the width of the output image to 1000 pixels using the “Width” option under “Raster Setup”. This will create a more reasonably sized output image.

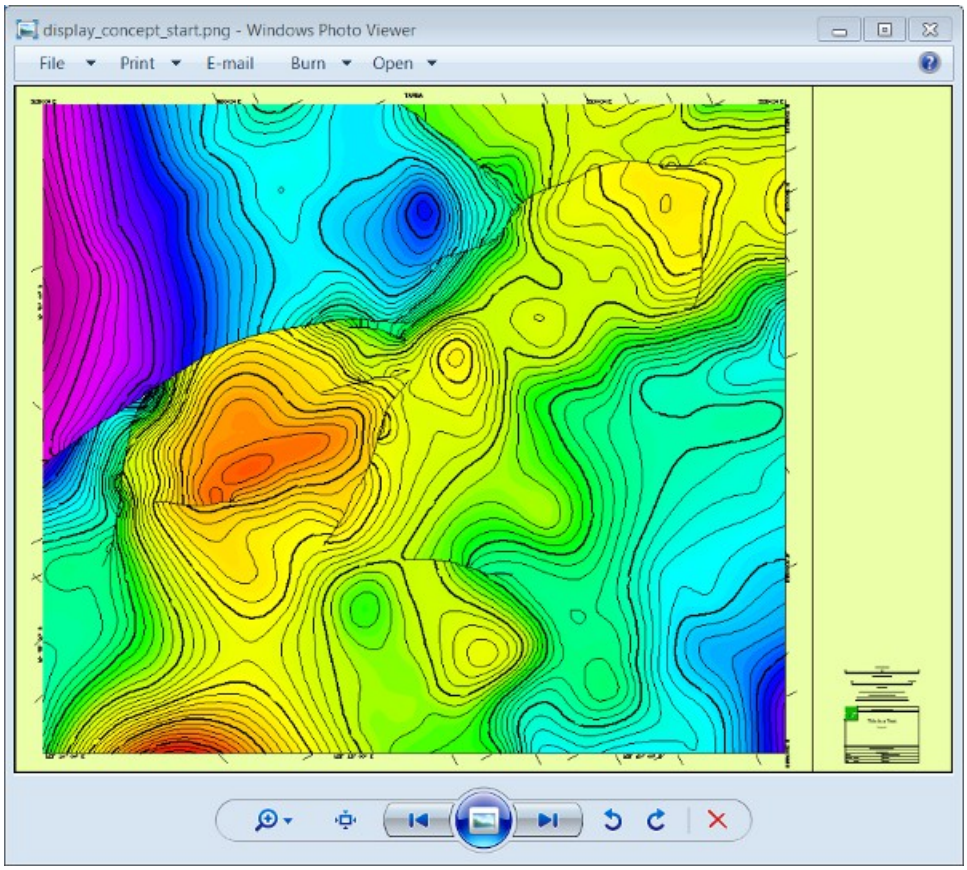
Ensure that “Plot map contents only” under “Options” is turned off. This option is used to plot only the items in the display list, excluding the map sheet. If it is turned on, all of the displayed items – the “map contents” - will be plotted according to the scale of the map sheet.

Finally, enable “Open associated program on export” under the file name at the top of the panel. This will open the the image in the program associated with PNG files after the export has been completed.



1.	**Enable "Open associated program on export".**
2.	**Adjust the width of the output image to 1000px.**
3.	**Disable "Map contents only".**

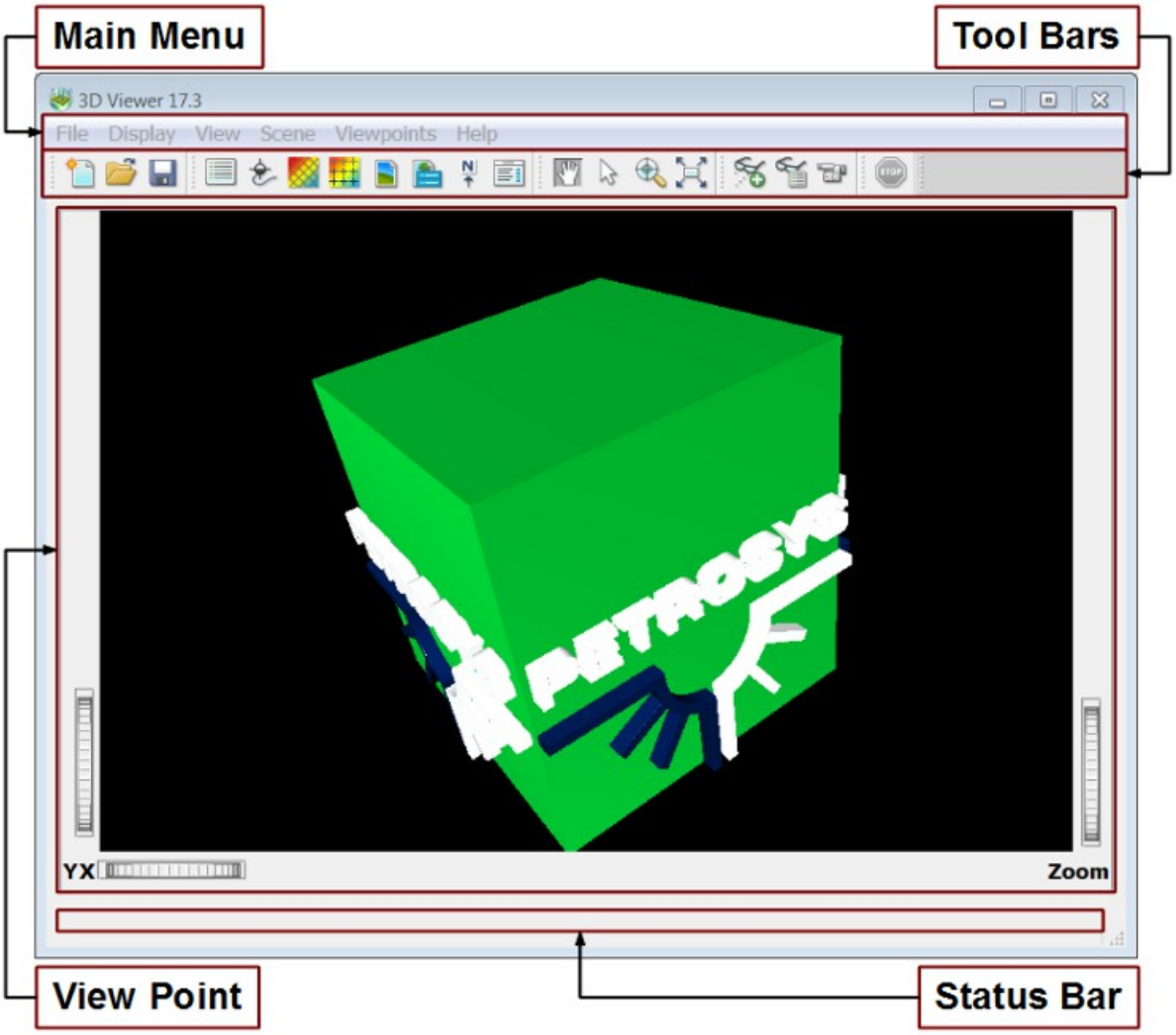
After setting the options described above correctly, click the “OK” button at the bottom of the window to start the export. The output image will be displayed automatically after the export has finished. The image can be used in any application that supports the chosen image format - in this case, PNG.


display_concept_start.png - Windows Photo Viewer
File
Print
E-mail
Burn
Open

The 3D viewer is accessible from the launcher via the “3D viewer” icon.

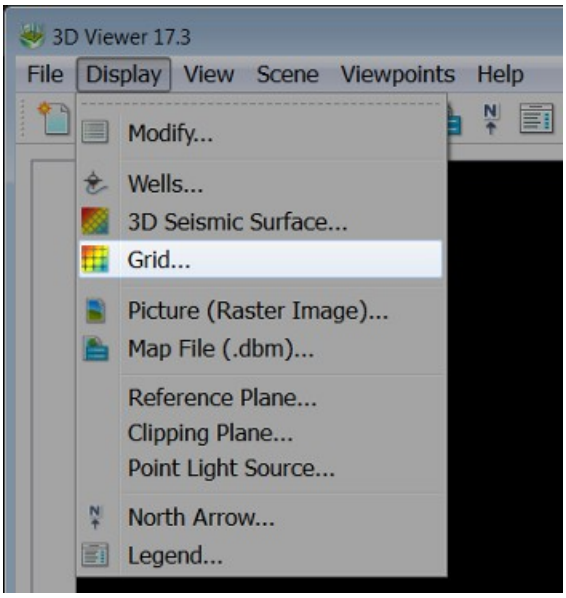
The 3D viewer is divided into four main sections -

Main Menu	Has access to all of the functions available in the viewer
Tool Bars	Shortcuts to the most frequently used functions in the viewer.
View Point	View of the data being displayed. By default, on opening the viewer, the Petrosys logo will be displayed.
Status Bar	Information relating to the piece of data selected in the view point.

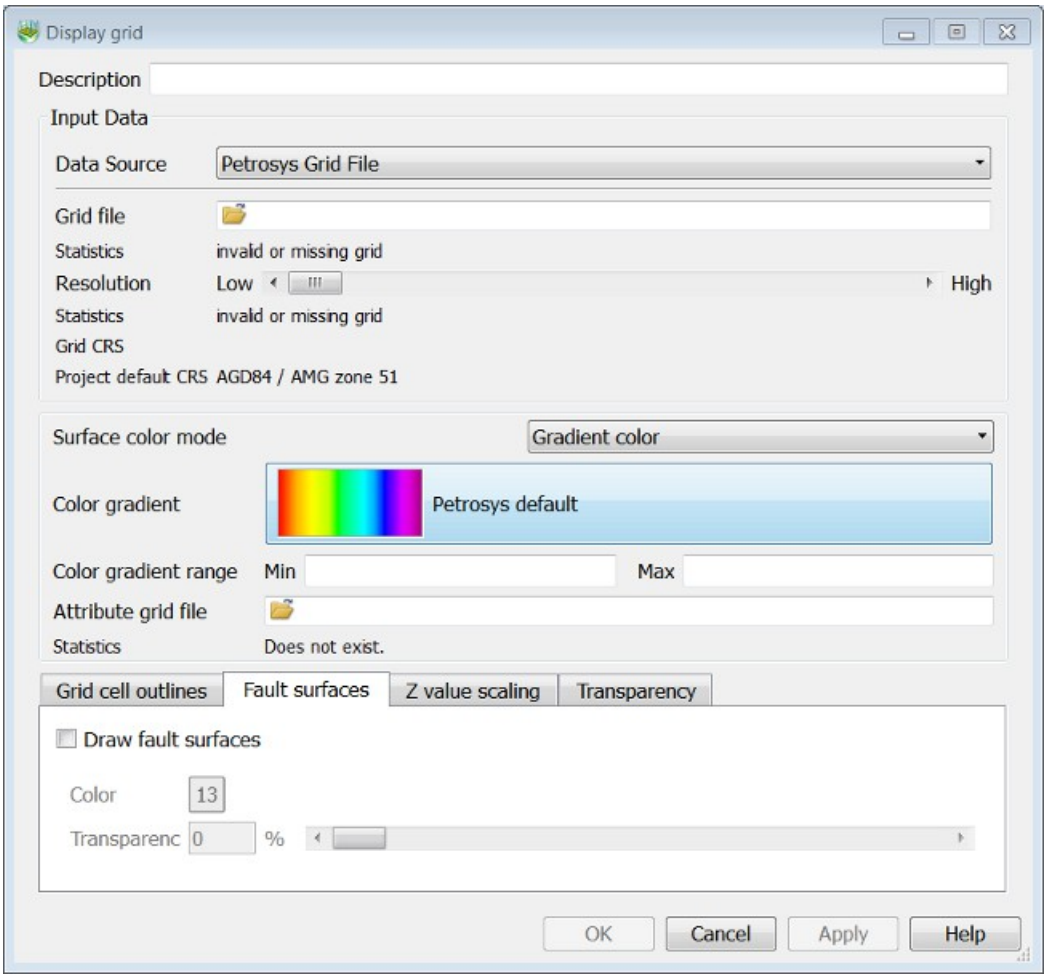


Unlike mapping, the 3d viewer does not make use of map sheets. The viewer is used purely for visualization, not for the production of maps, and hence while a display list is generated, as in mapping, a map sheet is not associated with that display list.

Select Display/Grid from the main menu of the 3D Viewer.

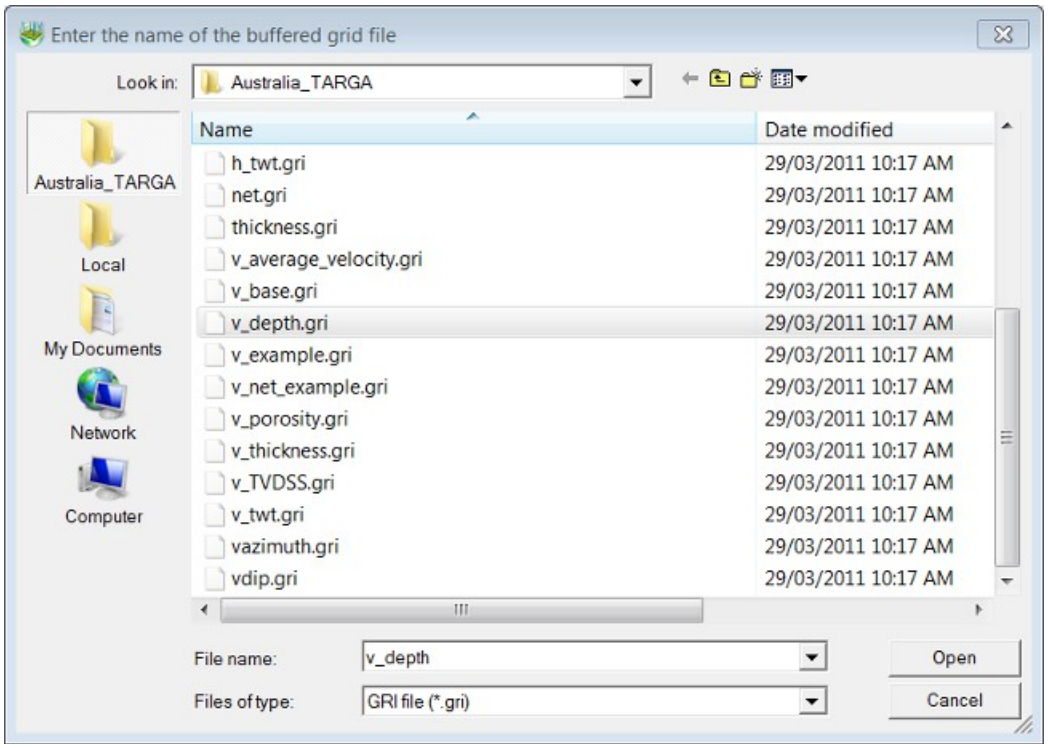


The window which is launched can be used to configure and display a grid, which will be displayed as a 3D surface.



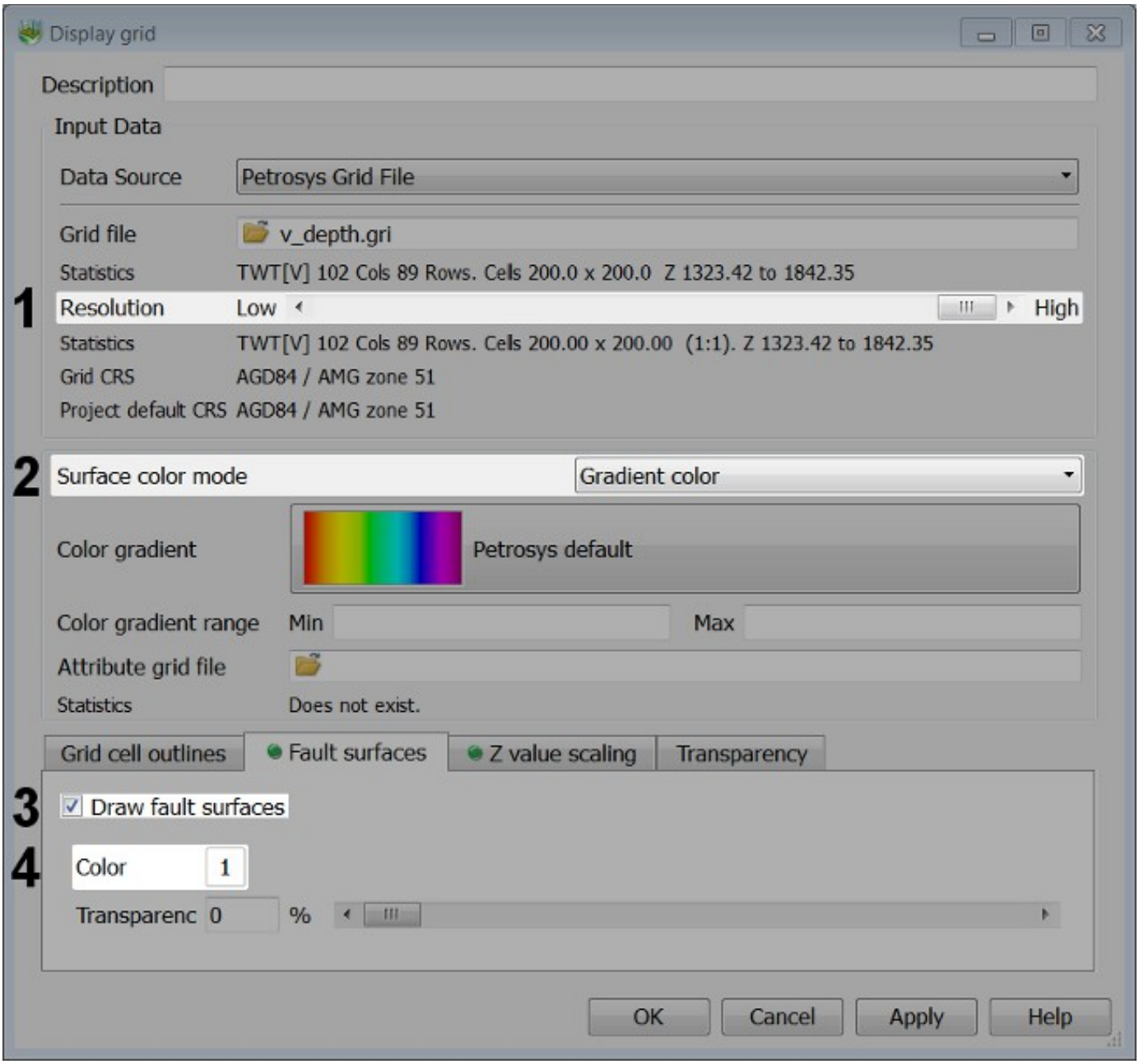
At the top of the window, under “Input Data” ensure that “Data Source” is set to “Petrosys Grid File”, then click the file selection icon to the right of “Grid file”.

Select the file “v_depth.gri” using the file selector, then click OK to confirm the selection.



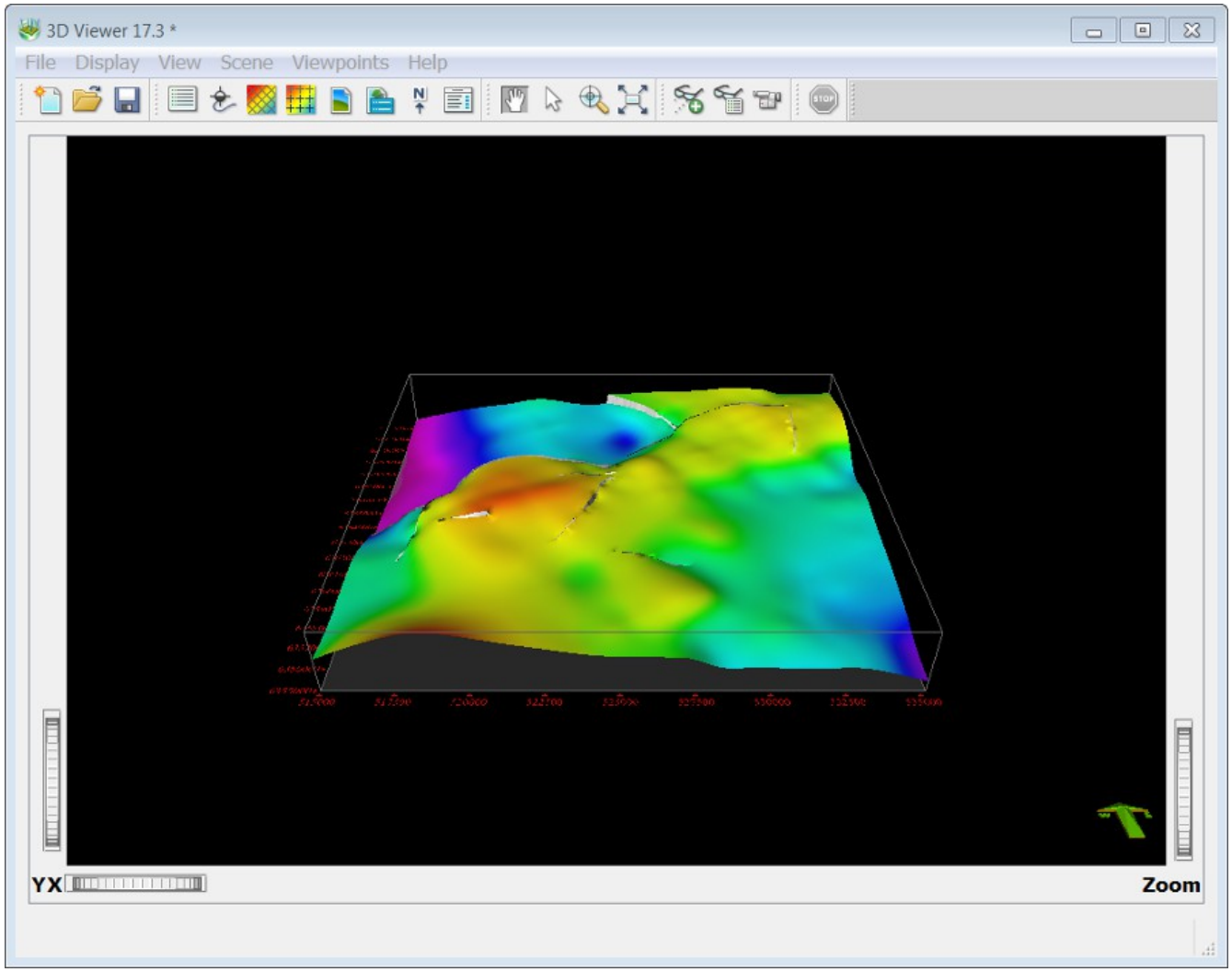
We will now configure the appearance of the grid using the remaining options in the window.

Set the resolution slider to the maximum setting. In the middle of the window, change “Surface Color Mode” to “Gradient color”. Finally, under the “Fault Surfaces” tab, turn the “Draw fault surfaces” option on. Choose a color for the fault surfaces that will stand out against the gradient - like white - using the button to the right of “Color”.

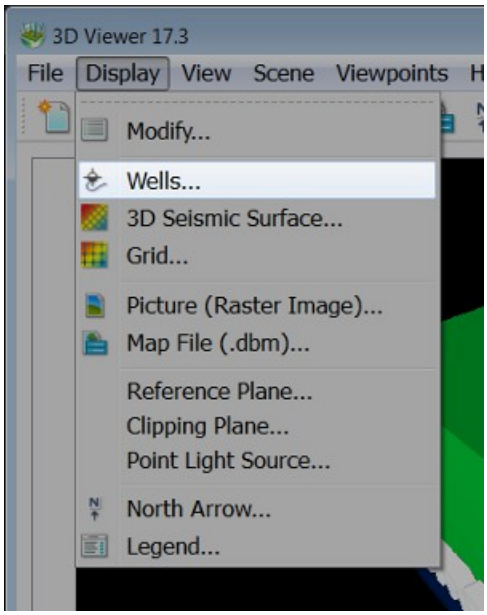


1.	**Change the resolution using the "Resolution" slider.**
2.	**Change the "Surface color mode" to "Gradient color".**
3.	**Enable "Draw fault surfaces" under the "Fault surfaces" tab.**
4.	**Change the color of the faults to something that will stand out against the gradient.**

Click OK to confirm the display options. The grid will be displayed as a 3D surface in the view point.

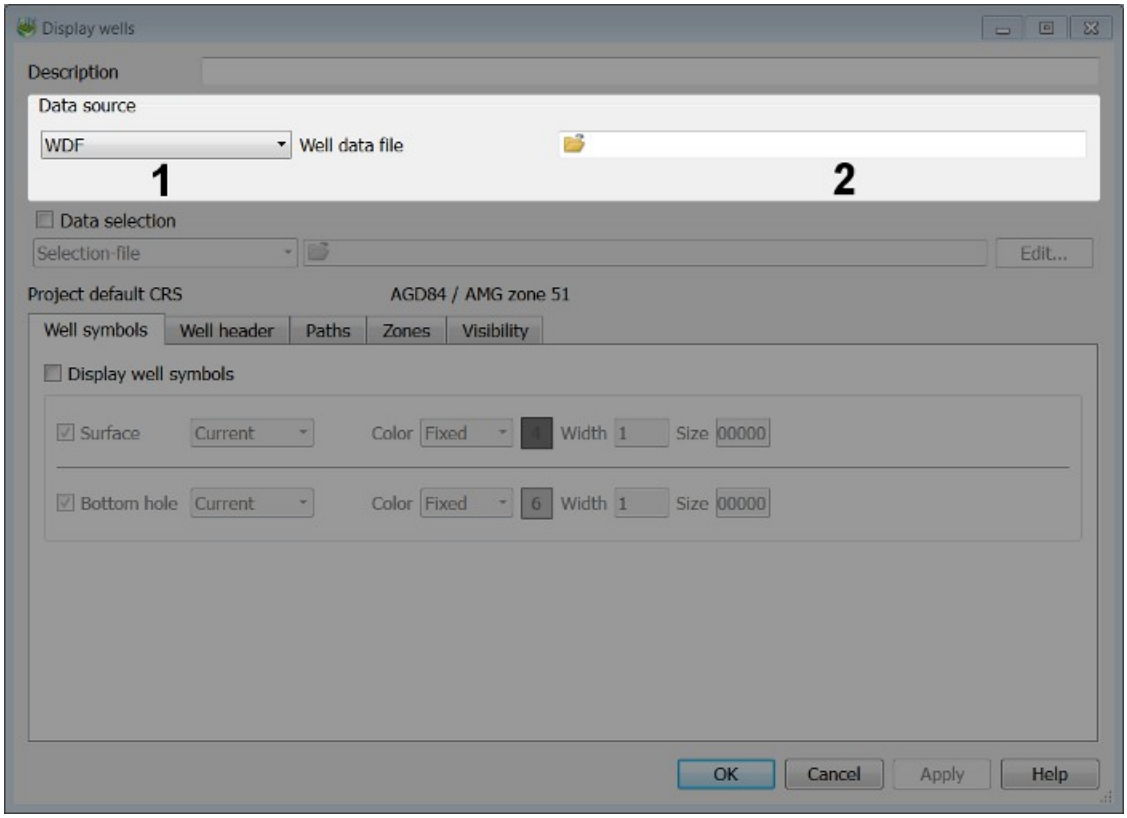


Select Display/Wells from the main menu of the the 3D Viewer.

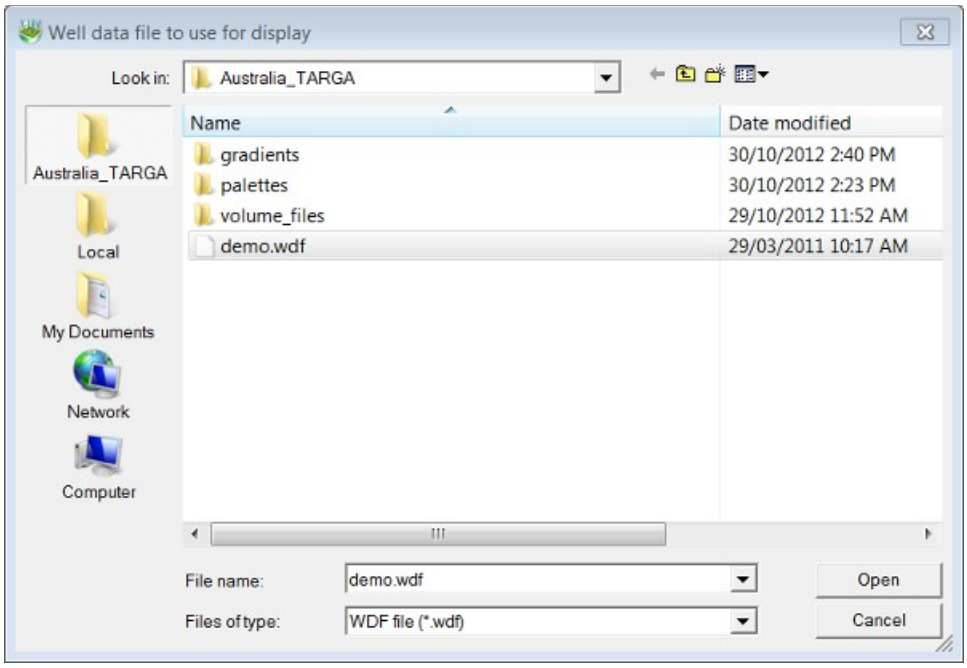


The window which is launched is used to display well data in the 3D Viewer.

Under “Data source”, at the top of the window, select “WDF” from the drop-down menu, then click the file selection icon to the right of “Well data file”.

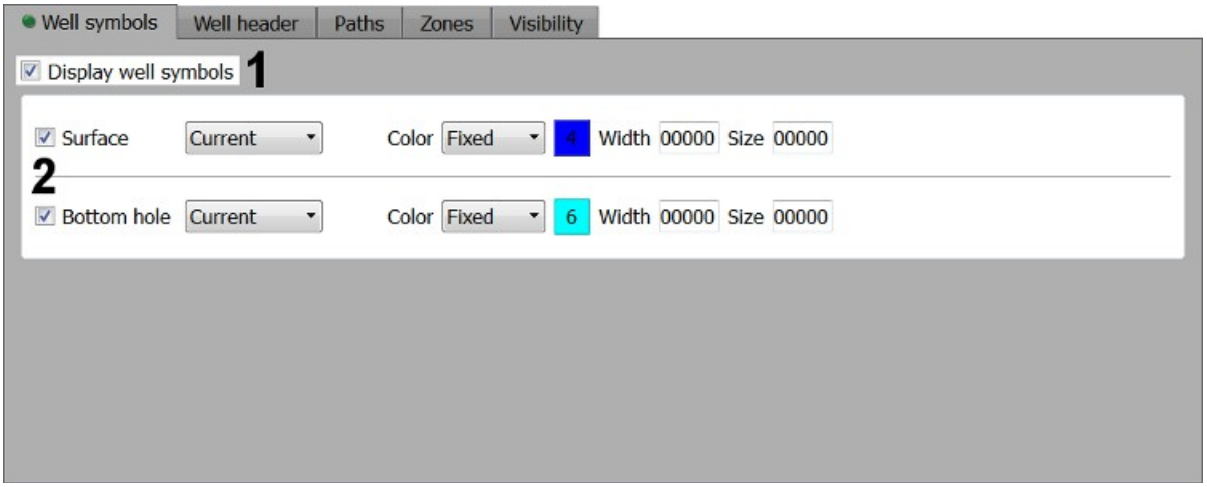


Using the file selector, located the file “demo.wdf”, in the Australia_TARGA project directory, then click “Open”.

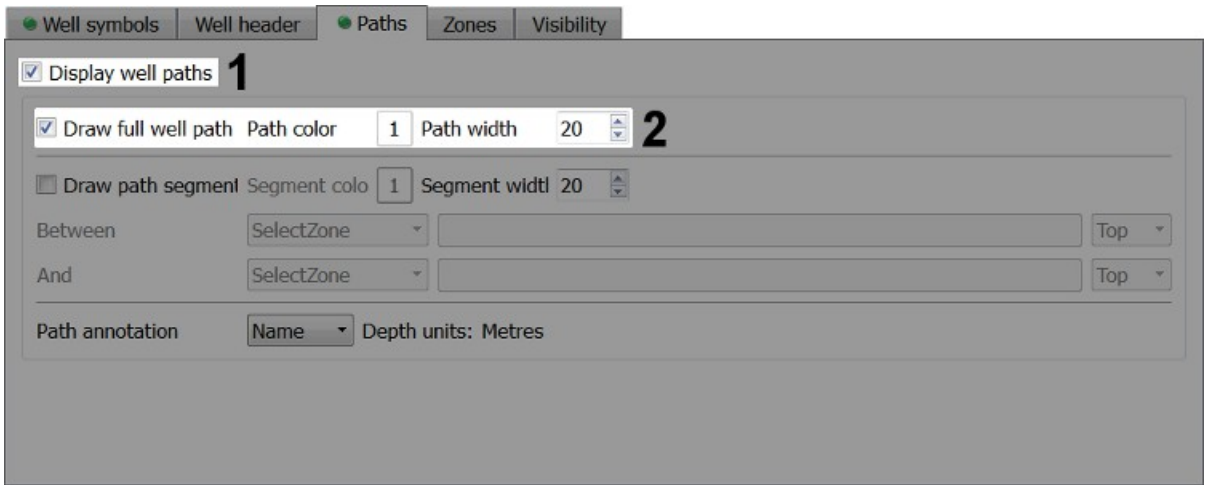


The data source has now been specified. Next, configure the appearance of the well data using the options under the tabs at the bottom of the window. We will be displaying top and bottom hole symbols associated with our well data, as well as the well paths.

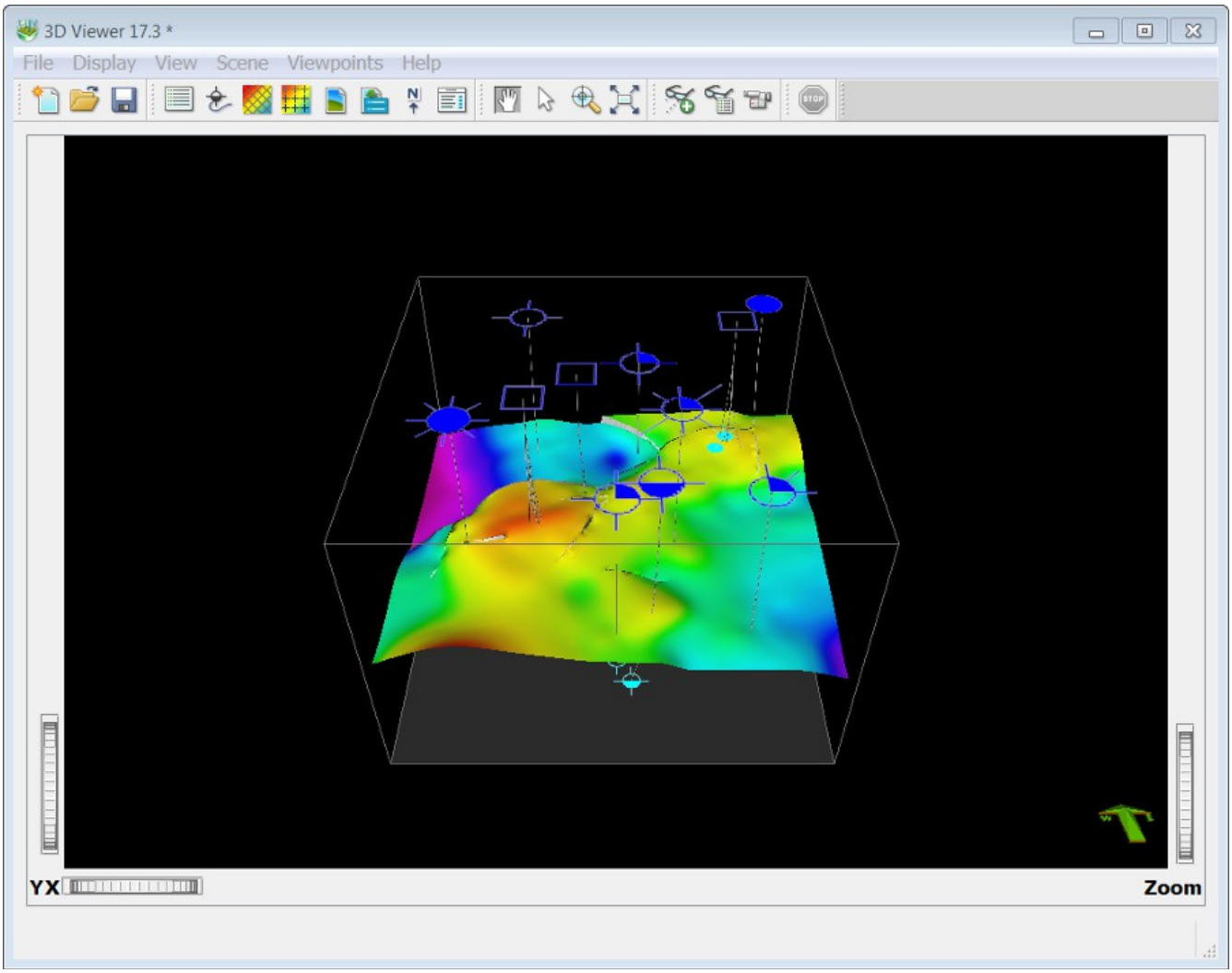
Under the “Well symbols” tab, ensure that “Display well symbols” is enabled. Then, enable both “Surface” and “Bottom hole”. The remaining options can be used to set up the graphic, color and size of the well symbols displayed at the surface and bottom hole.



Under the “Paths” tab, enable “Display well paths” and “Draw full well path”. Set the path color to something that will stand out against the black background in 3D Viewer (like white) and set the “Path width” to a value of “20”.



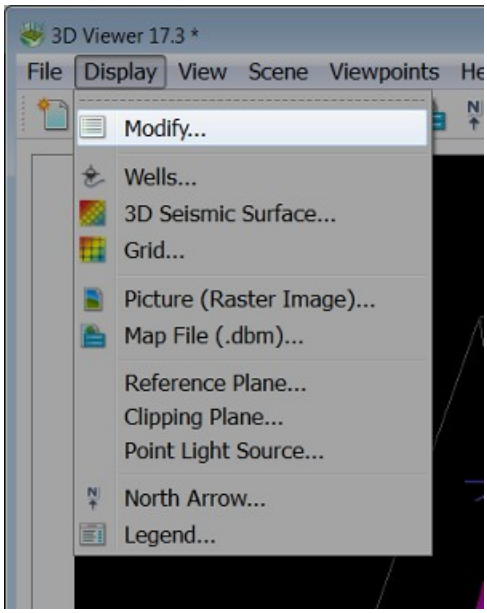
Click “OK” to finalise the dispay options and display the wells in the 3D Viewer. The wells will be displayed as long cylinders, representing the path of the hole associated with each well.



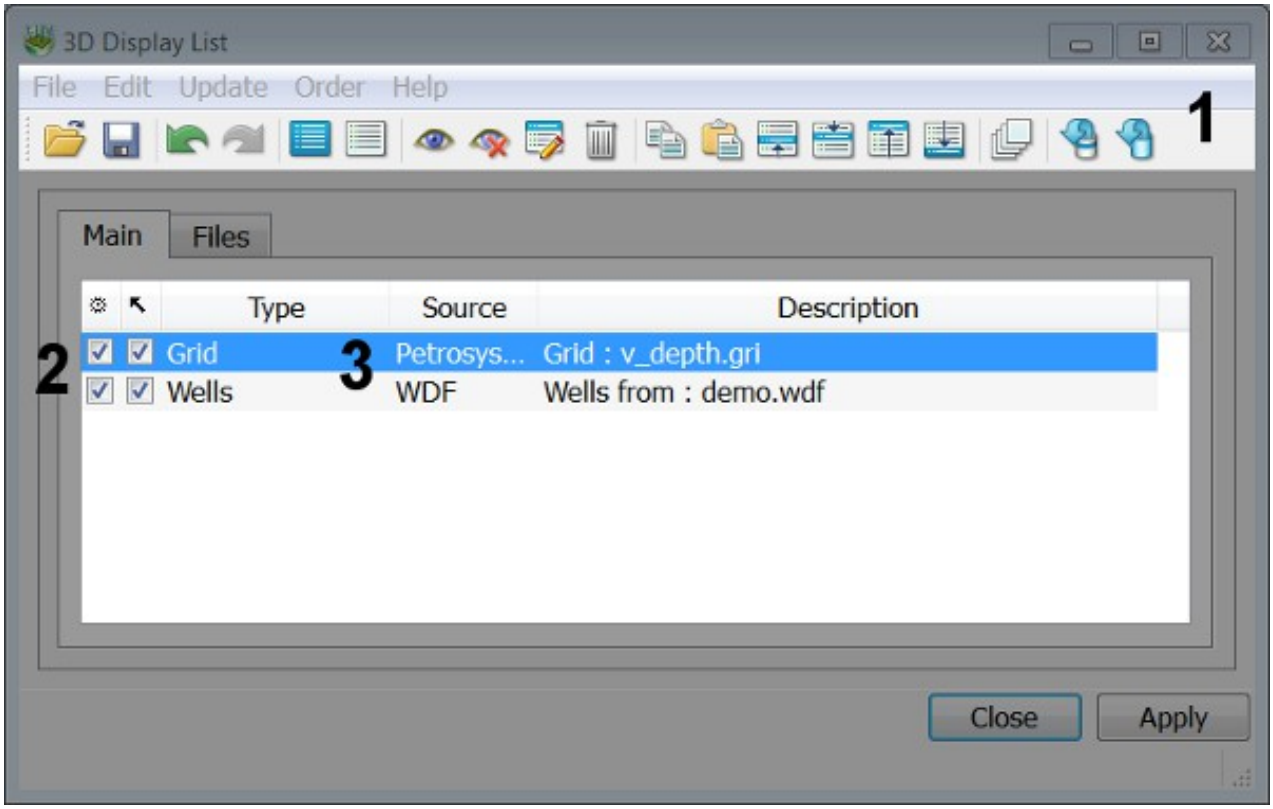
MANAGING 3D DISPLAY LISTS

Data in the 3D Viewer is managed in much the same way as in mapping – using a display list.

Select Display/Modify from the main menu of the 3D Viewer to open the display list.



Each object displayed in the 3D Viewer will be listed under the 3D display list. The display list can be used to modify the display options associated with individual objects and toggle the visibility or pickability of an particular object. The display list can also be saved as a petrosys 3dm file.



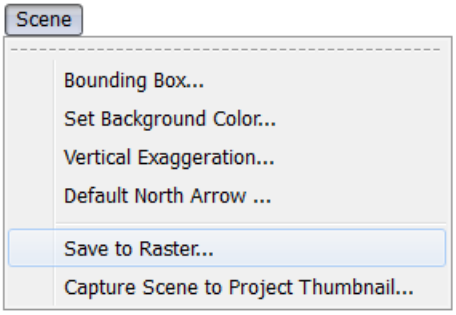
1.	**Main menu and tool bar.**
2.	**Visibility and pickability toggles.**
3.	**Display list, listing all objects currently present in the 3D Viewer.**

To save the display list, select File/Save As from the main menu of the 3D Display List window, or click the “Save” icon in the toolbar.

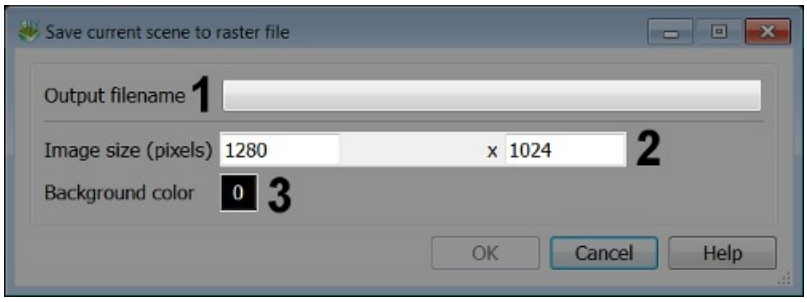
PRODUCING HARD COPIES OF 3D VIEWS

The current viewpoint of the 3D Viewer can be saved in a variety of raster image formats.

Select Scene/Save to Raster from the main menu of the 3D Viewer.



Select an output file name and type by clicking the button to the right of “Output filename”. The resolution of the output image (in pixels) should be entered into the “Image size” fields. The width is entered into the field on the left, the height into the field on the right. Finally, the “Background color” refers to the color of the empty space in the background of the 3D Viewer. This option will be used in preference to whatever color is currently being used as a background color.



1.	**File name specification.**
2.	**Output image resolution.**
3.	**3D Viewer background color.**

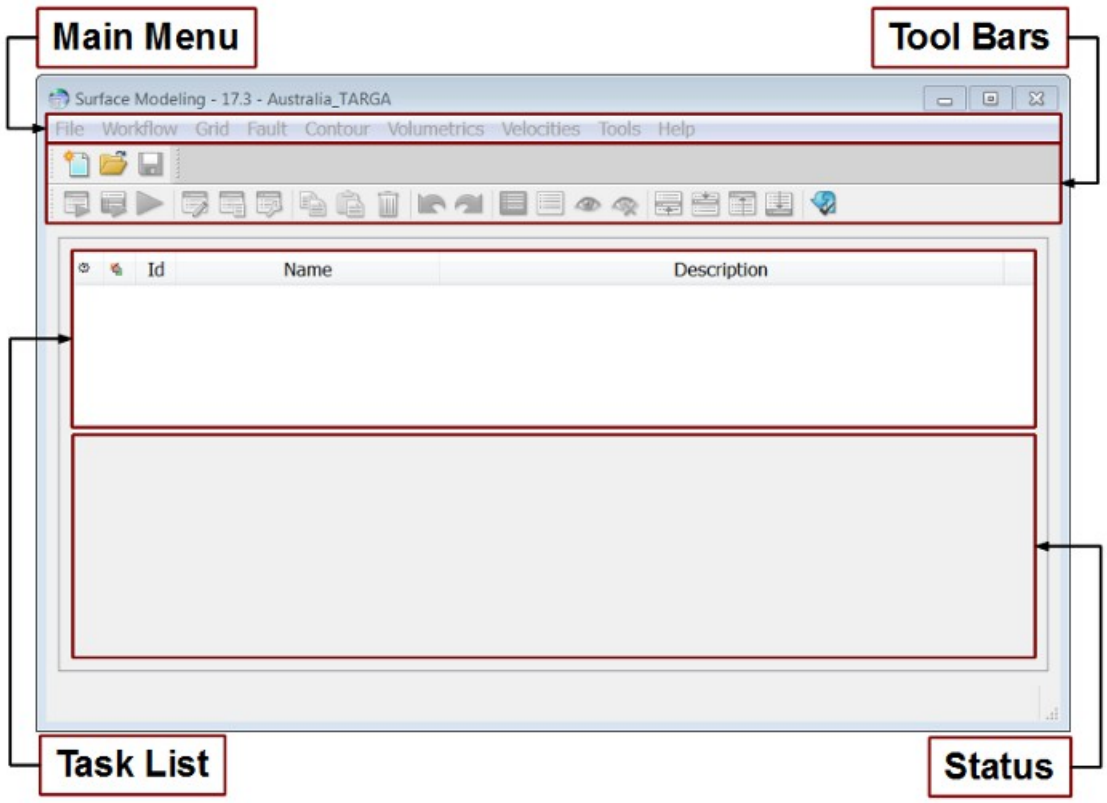
After finalizing the output options, click OK. The image will be saved to the project directory by default, or whatever directory was active when the file name was defined.

GETTING STARTED IN SURFACE MODELING

Surface modeling is used to compute and manipulate grids, surfaces and contours and is launched using the “Surface Modeling” icon in the Petrosys Launcher.

Surface modeling is divided into four main sections -

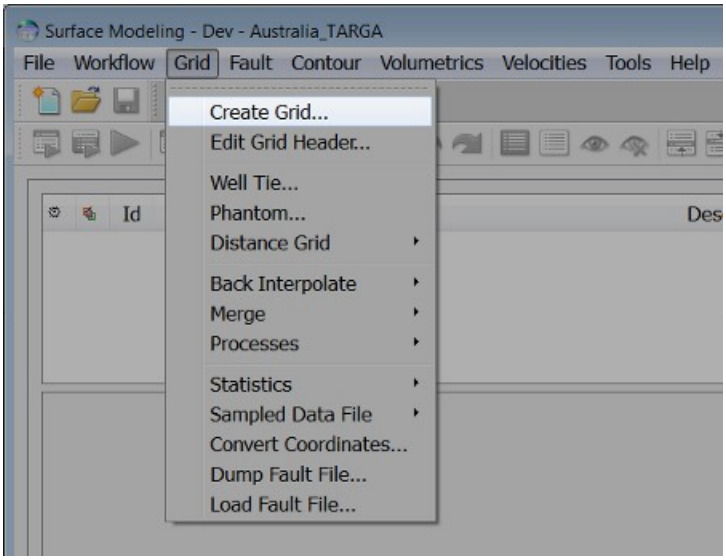
Main Menu	Contains access to all of the main functions within surface modeling.
Tool Bars	Shortcuts to frequently used options in gridding.
Task List	A list of the tasks in your open work flow.
Status	The status of the task being run. If a task is not being run, it will appear empty.



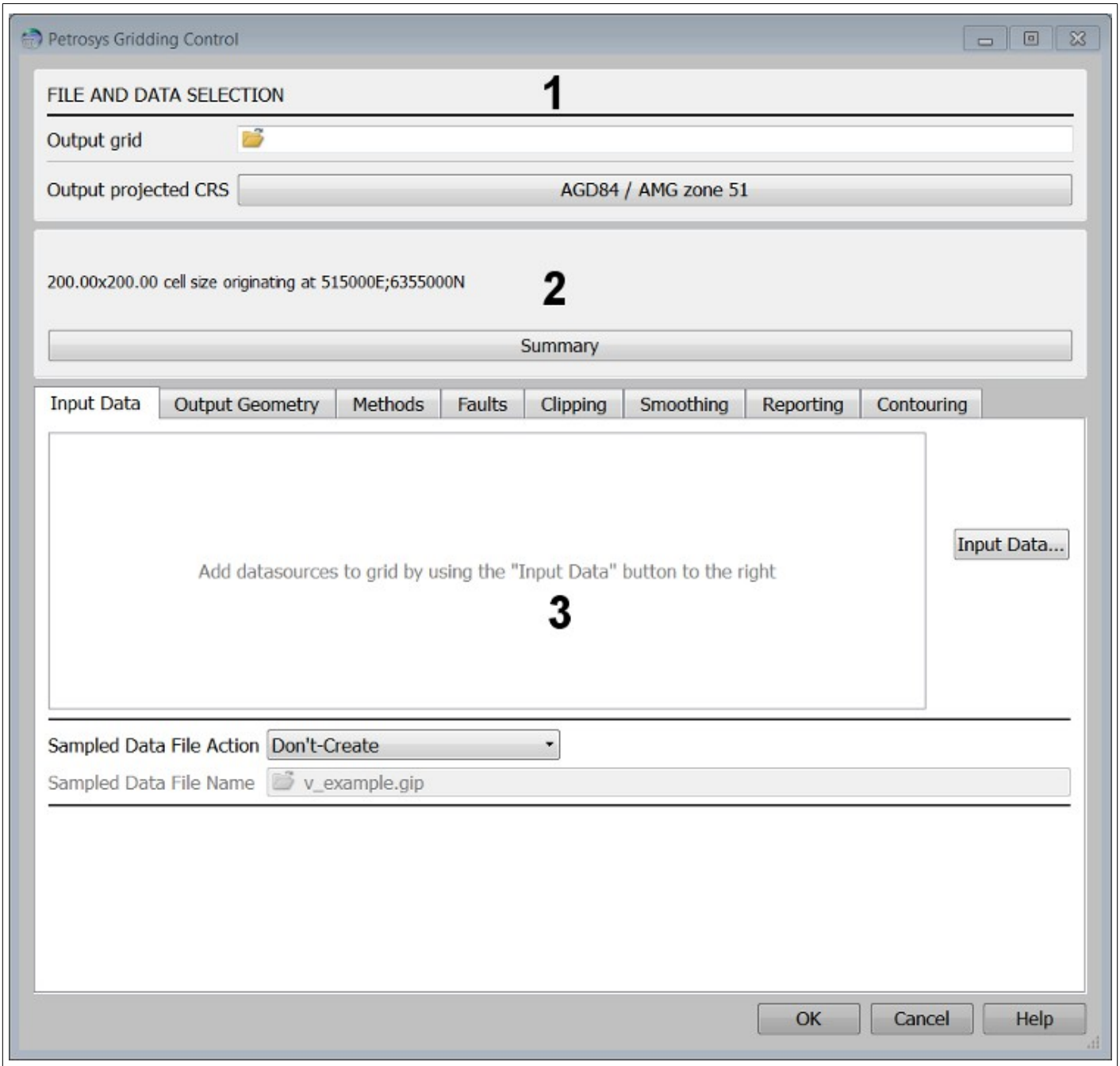
The primary use of Surface Modeling is the production of interpreted surfaces, or “Grids”, from a range of input data sources, most commonly seismic and well data.

This section of the guide will walk you through the process of generating a grid from a seismic data set and an associated set of contours. This grid can be used in either Mapping or the 3D Viewer using the methods which have been demonstrated in previous sections.

Select Grid/Create Grid... from the main menu of Surface Modeling.



This will launch “Petrosy Gridding Control”, which is used to control all parts of the gridding process in Petrosys. This is an advanced feature, which contains a large range of options. In this guide, we will walk through the steps necessary to create a simple grid from 2D seismic line data.

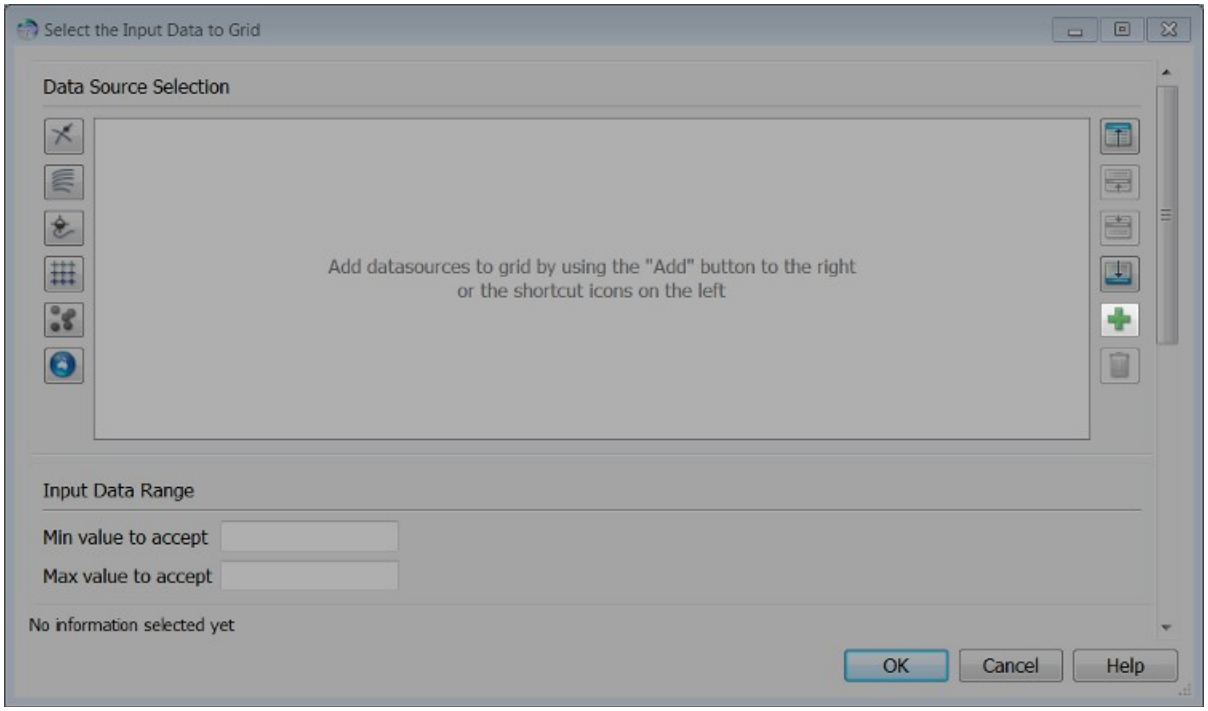


1.	**Output grid details (file name and CRS).**
2.	**Output grid statistics (coordinate and z value range).**
3.	**Output grid options.**

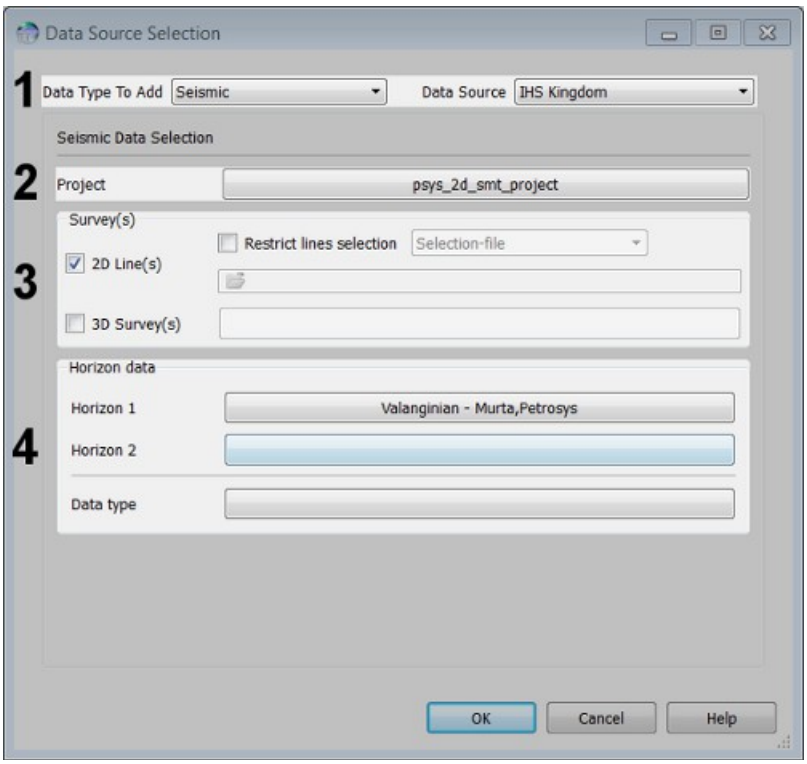
First, specify the name of the output grid using the file selection field under “FILE AND DATA SELECTION”, at the top of the window. The file name should in some way reflect the content of the grid. In this example, we will use the name of the 2D seismic data set - TARGA - followed by an abbreviated version of the interpreted horizon we will be modeling - V - and finally the type of data the interepretation was made from: TWT. Thus, our file name is TARGA_V_TWT.gri.

Set the “Output projected CRS” to “AGD84/AMG zone 51”.

Next, we will configure the input data which will be used to create our grid. Click the Input Data button under the Input Data tab in the lower half of Petrosys Gridding Control. In the new window which is launched, click the "+" icon on the right side of the panel.



This will launch the Data Source Selection window, which is used to select new data sources, and configure which values from the data will be used to model the output grid.



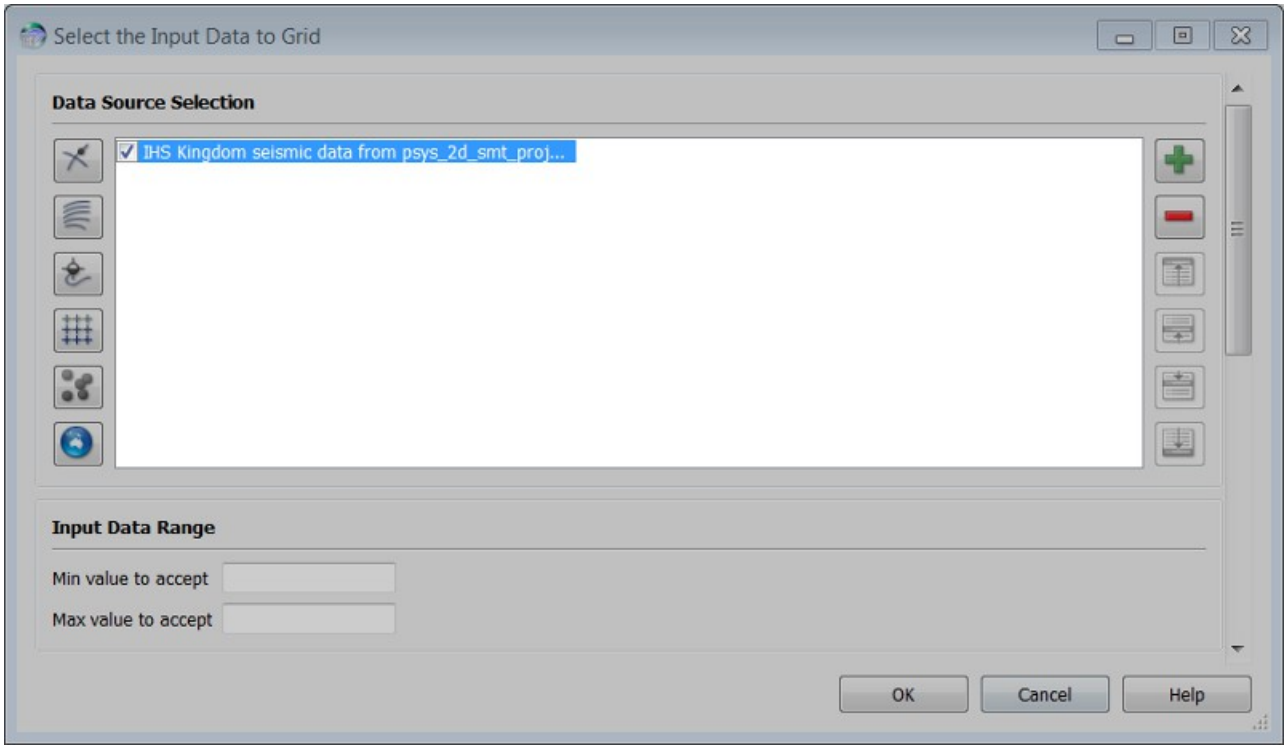
1.	**Data source selection.**
2.	**Project Selection.**

3.	**Survey and line selection.**
4.	**Horizon and data type selection.**

Using the data source selection options, at the top of the window, set the “Data Type To Add to “Seismic” and the “Data Source” to “IHS Kingdom”. Specify the project containing the seismic data by clicking the field next to “Project”. Select “psys_2d_smt_project”. This is the same seismic data displayed earlier in mapping.

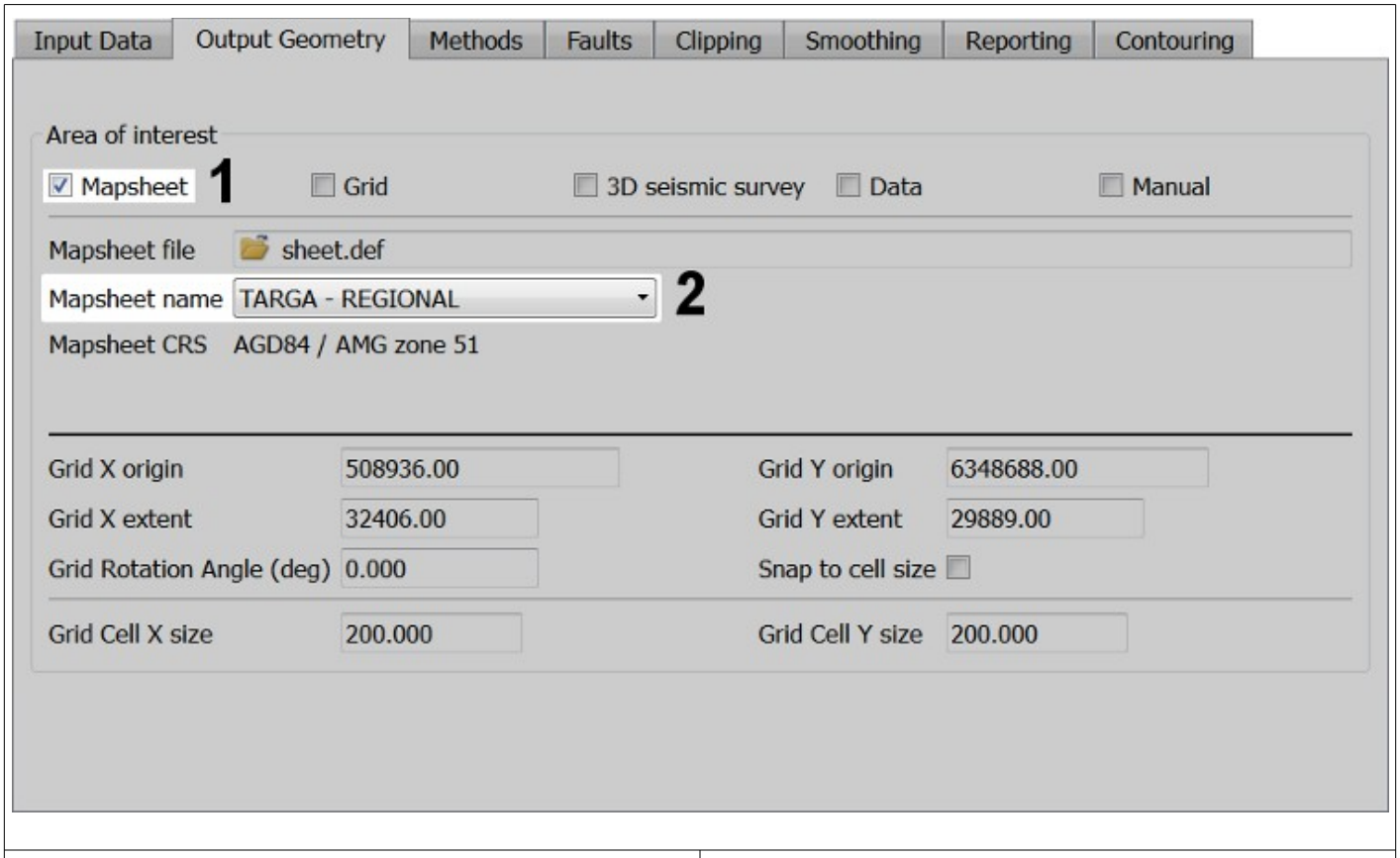
Under “Survey(s)” enable the “2D Line(s)” option and ensure that “Restrict lines selection” is disabled. Under “Horizon data” click the button to the right of “Horizon 1” and select “Valanginian - Murta, Petrosys”. Finally, click the button to the right of “Data type” and select “Time”.

Click the OK button at the bottom of the window to finalize the details of the input data source. The seismic data will now be listed in the central part of the Select Input Data to Grid window.



Click the OK button again in this window to return to Petrosys Gridding Control.

Under the “Output Geometry” tab, ensure that “Area of interest” is set to “Mapsheet” and that “Mapsheet name” is set to “TARGA-REGIONAL”.

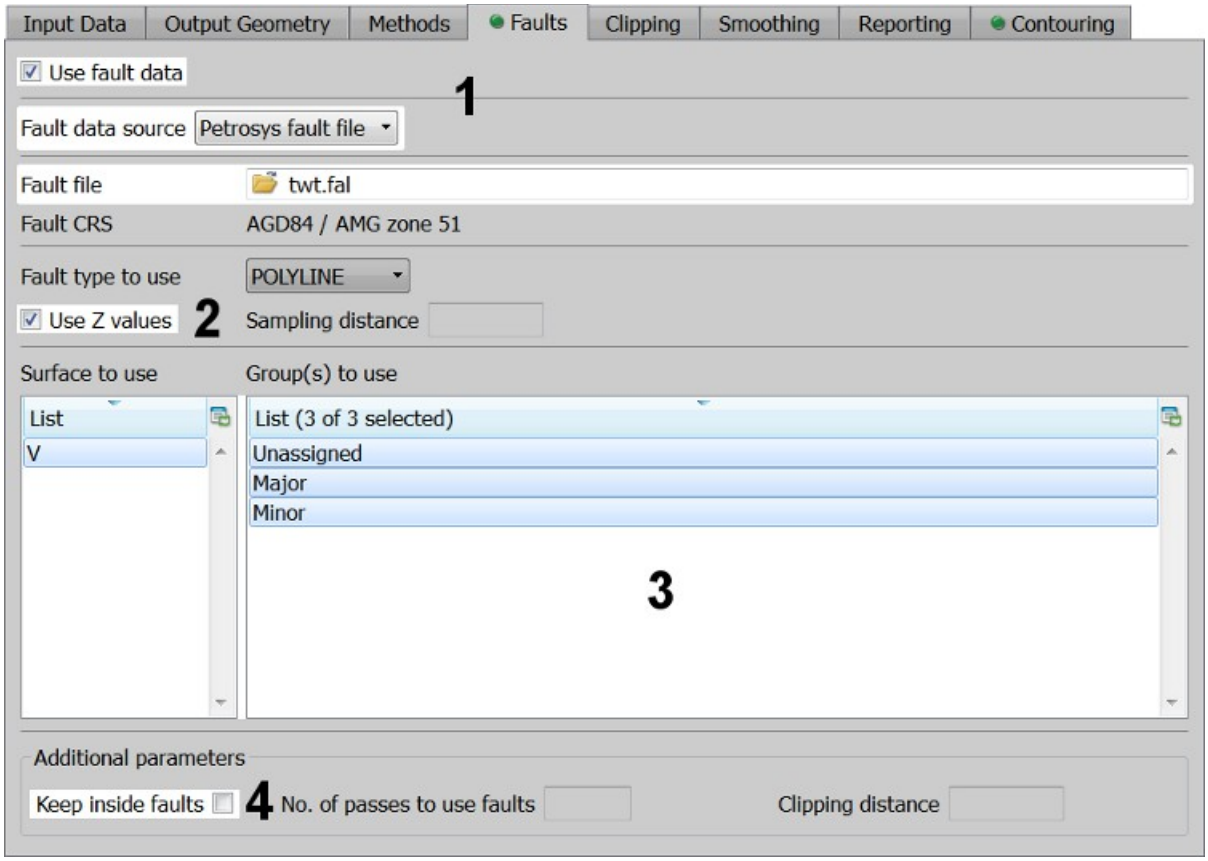


1.	**Set the area of interest to "Mapsheet".**
2.	**Choose the Mapsheet "TARGA - REGIONAL".**

Under the “Faults” tab ensure that “Use fault data” is checked, set the “Fault data source” to “Petrosys fault file” and, using the file selection field to the right of “Fault file”, choose the file “twt.fal”. Ensure the “Use Z values” option is enabled.

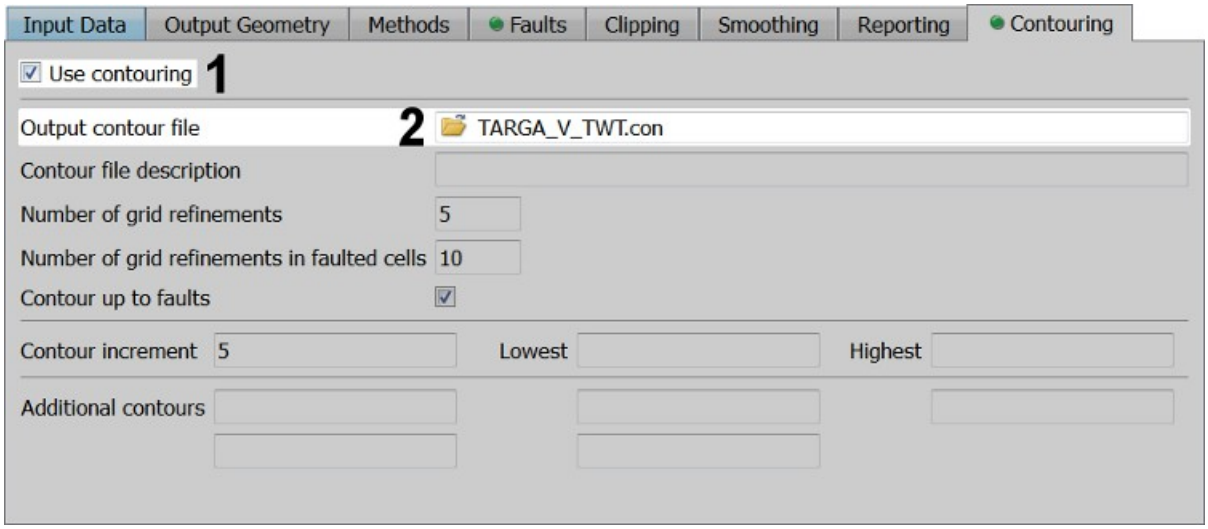
The faults stored in the selected file will be listed under “Surface to use” and “Group(s) to use”. We are modeling the Valanginian horizon, so choose “V” from the surface list. We will be creating a grid using all the fault data for this horizon, so ensure that all the listed groups are also selected. This can be most easily achieved by right clicking the list and choosing “Select All”.

Finally, ensure that “Keep inside faults” is disabled.



1.	**Specify the input fault data source.**
2.	**Enable "Use Z values".**
3.	**Choose all fault groups from the "V" horizon.**
4.	**Disable "Keep inside faults".**

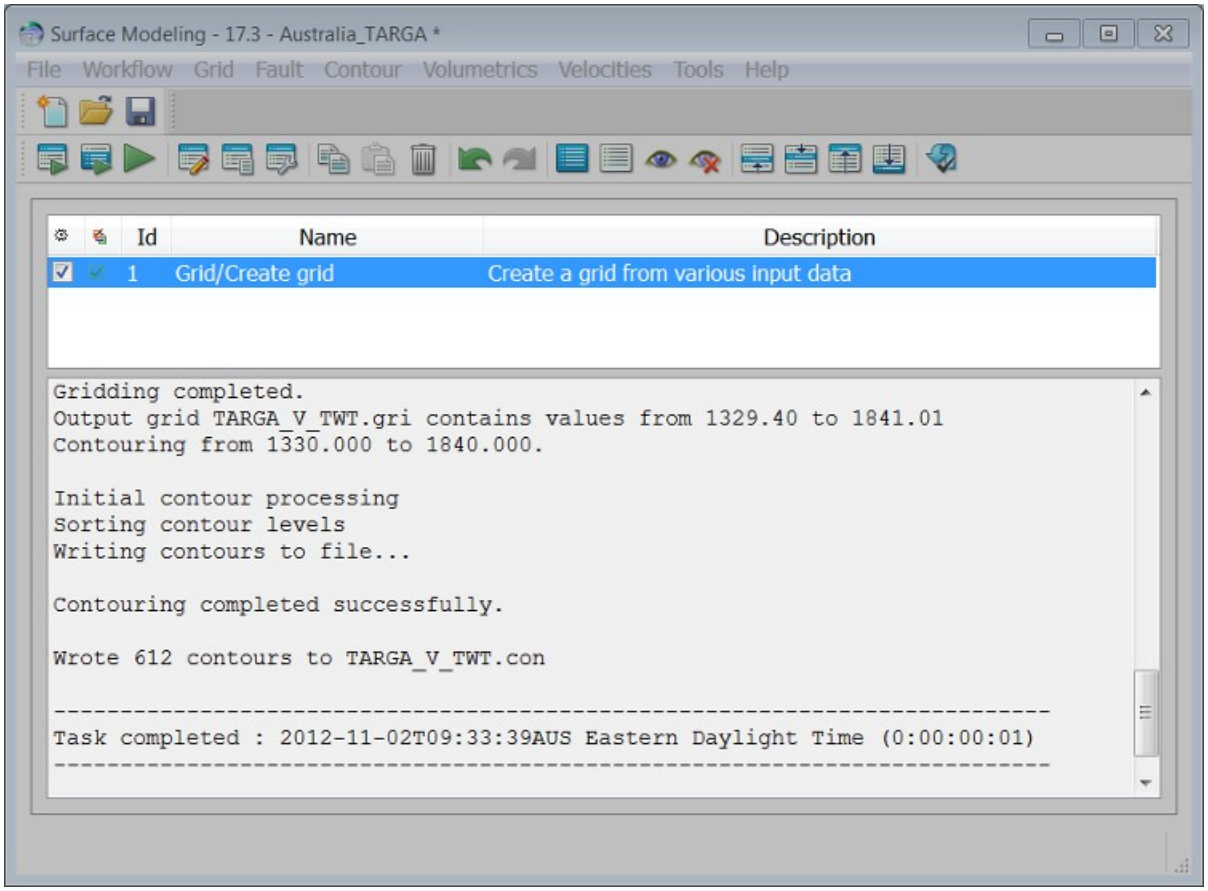
Finally, under the “Contouring” tab, ensure that “Use contouring”. The name of the output contour file should be entered automatically, based on the name of the output grid. If it has not been entered automatically, or if the name is incorrect, it can be re-defined using the field to the right of “Output contour file”.



1.	**Enable "Use contouring".**
2.	**Ensure the correct name has been assigned to the output contour file.**

Click the OK button in Petrosys Gridding Control to initiate the gridding process.

The gridding task will be added to the task list in Surface Modeling. As it runs, the status of the task will be reported in the status window below the task list.



This task will create two files in your project directory: a grid file, and an associated contour file. Either of these files can be displayed in Mapping, provided the correct map sheet is in use. In this case, because the map sheet TARA - REGIONAL was used to determine the extent of the output grid, both the grid and contour files will display perfectly provided this map sheet is in use.

The grid file can also be displayed in the 3D Viewer.

USEFUL SUMMARY TOPICS

The online help contains a number of topics that are particularly useful to the first time user of Petrosys:

Project Files	Lists the main file types that are used by Petrosys along with the file name suffixes commonly used with them.
Using Coordinate Reference Systems in Petrosys	An overview of how coordinate reference systems (CRS) are used in Petrosys.

In addition, the following topics provide a more detailed account of the applications and features discussed in this guide.

Mapping	Full help documentation for the Mapping application.
File Export - Raster	Detailed overview of the Raster Export option discussed in the Mapping section of this guide.
File Export - PDF	Detailed overview of the PDF Export option, which can be used as an alternative output format.
3D Viewer	Full help documentation for the 3D Viewer application
Surface Modeling	Full help documenation for the Surface Modeling application (advanced).

Menu Options

File/File-Manager (Explorer)

Advanced users and systems administrators may wish to manage Petrosys files using operating systems features. All Petrosys project files may be stored within a single directory.

The easiest way of looking at the files in a Petrosys project directory is to use File/File-Manager (Explorer) from the Petrosys launcher.

See DATA MANAGEMENT for an introduction to the tools used to manage the various data stores within a project.

All the Petrosys files are discussed in detail under the separate help topics. This topic deals with data files, ie. the files that store the information that you are working on. See the help topic CONFIGURATION FILES for information on files that store information on how the application runs in your environment.

File Naming Conventions

Petrosys file names consist of a prefix separated from a suffix by a period (.). In Linux environments the suffix and prefix can be any length.

The prefix in a file name identifies the specific instance of the file, what data is actually contained within the file.

The suffix in file names is usually chosen according to a convention such that files of the same type have the same suffix. For example, a seismic data file has a .sdf suffix.

Case Sensitivity

In general Petrosys file names are case insensitive in Windows environments and case sensitive in Linux environments. File names should not rely on case sensitive differences for uniqueness.

Petrosys Standard File Name Suffixes

Data Files:

3d	3 dimensional coordinate file used in Fence Diagram displays.
3dm	Display list for 3D visualisation
cfc	Color flooded contour file
con	Contour file
cul	Culture file
dat	Used for a few specific files, such as wellinfomap.dat for well symbol matching
dbm	Map display list file - originally specific to dbMap
def	Map sheet definition file. Also used for 'scalebar.def' and 'projsys.def' files.
fal	Fault file
gri	Grid file
lgr	USA land grid data files
map	Map display list file
pal	Color gradient (palette) file, usually in a folder 'gradients'
ply	Polygon file
sdb	SQLite database, used for various things such as CRS definitions and default dbMap queries.
sdf	Seismic data file
sls	Line selection file
sty	Seismic line style file.
tsk	Task list for gridding, contouring and volumetrics
tzc	Well curve file (XYList file)
vps	Viewpoint save file for saving view points in 3D visualisation
wdf	Well data file
wsl	Well selection file
zmf	Zone mapping file to translate formation names between Petrosys and other applications

Input / Output Files:

asc	ASCII input or output data file
cgm	Graphics file in CGM format. Also used for user defined title blocks and well symbols.
dgn	Intergraph design file
dxf	Graphics file in Autocad DXF format
eps	Graphics file in encapsulated postscript format
hpg	Plot file in HPGL format
jpg	Graphics image file - JPEG format. (lossy, compressed, format)
ljt	Plot file in HP-PCL (Laserjet) format
pic	Picture (plot) file in Petrosys HMO format
png	Graphics image file - portable network graphics format. (lossless, compressed, format)

prn	Print file
txt	Text file
xml	XML file, used both for data transfer and various data stores.

Control Files:

plf	System list files (eg. current horizons, maps)
pnd	System file (these hold your previous responses)

See DEFAULTS FILES - PLF FILES and DEFAULTS FILES - PND FILES for more details on these two file types.

Software Files:

cfg	Petrosys systems configuration - only petrosys.cfg uses this.
cts	PACE initial job control file
erd	Error message library
lpo	DOS line printer options file
pif	Graphics font or pattern definition file
pnl	PACE dialogue source file
pnx	PACE dialogue binary file
xsl	XSL style file, generic, for reformatting and filtering of XML data
xsv	XSL style file specific to grid based volumetrics reports

Output and control files usually reside in the current working directory for the project. Software files are expected in a directory that is specified somewhere in your current PSPATH setting, and should not exist in your data directories. The system will behave in strange ways if software files exist in both data as well as a PSPATH directory.

Files that may be Deleted

Petrosys software generates a number of temporary file which are usually cleaned up at the end of a task, but which may accidentally be left on disk if the system is stopped abnormally.

Temporary files that can be deleted when there is no Petrosys task running in a directory include the upper and lower case versions of:

File name	Examples	Purpose
delete.*	delete.me	Various temporary files
*.tmp	ukooa.tmp grd9912.tmp	Temorary data file
pace*.bat	PACE34.BAT	Job control file - Windows batch file
pace*.sh	pace15a9.sh	Job control file - Linux shell script
*.pxt	pxdb03.pxt	Graphics buffering file
core	core	Linux or Unix core dump from a crash
stack_trace.txt stack_dump*.dmp	stack_trace.txt stack_dump_20080815_20.dmp	Windows memory dumps from a crash
spatial_properties*.dat	spatial_properties2.dat	Stores SQL queries associated with the annotations of database-related spatial layers, such as from ArcSDE or Oracle Spatial.

In the above a * is used as a wildcard, ie. any short simple text string could occur in place of the * symbol.

Under certain circumstances you may also delete files ending in .pnd . You may need to verify all defaults when using the system in a directory in

which you've done this.

Approximate File Sizes

See PROJECT MANAGEMENT - DISK SPACE for details on file sizes and project size.

File Permissions

Petrosys create all the files with the default permission as set by UNIX or Windows.

The default permission is controlled by the umask variable in the shell (see the UNIX help pages for details on umask). A umask of 0 means files get created with rw permission for everybody.

The normal unix default is to mark read-only for world and have rw for owner and group.

USING COORDINATE REFERENCE SYSTEMS IN PETROSYS

Coordinate reference systems (CRS) are the geometric framework in which points on our planet are described as polar (geographic) or rectangular coordinates. Understanding the coordinate reference systems that apply to data in your project area is extremely important!

This section provides an overview of the main CRS functionality provided within Petrosys. See COORDINATE REFERENCE SYSTEMS for a general overview of coordinate reference systems. The most important things to remember about a CRS are:

1. Geographic or latitude / longitude coordinates are specified in a 'geographic CRS' or GeogCRS. This includes the specification of a reference datum, which in turn is based on a 'spheroid' or 'ellipsoid' that is an approximation to the shape of the earth, and a geodetic datum which is one assumption of how that spheroid is located relative to the physical geoid which is the Earth. Some common geodetic datums are WGS84, NAD27, NAD83, GDA94, SIRGAS2000 and ED50.
2. Rectangular or east / north coordinates are specified in a 'projected CRS' or ProjCRS. A ProjCRS is a combination of a GeogCRS and a projection. A projection is one mathematical method for converting spherical (lat / long) to rectangular coordinates. A common projection type is UTM, a specific variant of this might be UTM17N, and an associated ProjCRS might be WGS84 – UTM17N.
3. Whilst it is relatively obvious when a projection is the wrong one – the data will usually be in a completely wrong location – errors in the reference datum of a GeogCRS are very common and may be hard to pick as they may only involve a shift of a few 100 metres.
4. There are usually several alternate ways of converting between any pair of GeogCRS, or 'datum transformations'. Petrosys supports the EPSG database of CRS data, from which such alternate versions may be selected. Different transformations are used for different purposes and in different areas based on the required accuracy, available computational speed, and acceptable approximation. You should be aware of what transformation is being used in areas where transformations are routinely applied. Different NAD27 to NAD83 transformations, for example, are used for data in the southern USA and Canada.
5. Any definition of data on the Earth's surface in rectangular coordinates will imply some form of approximation, and the impact of that approximation will change as the data are used in alternate CRS. You should be aware of what approximations apply in the CRS that are used in your projects. A common example of a CRS approximation is the variable scaling between real Earth measured distances and projected coordinate distances in UTM projections, depending on the distance from the central meridian of the UTM zone.

Petrosys is a very 'CRS aware' application. When you are in the Petrosys map canvas the current map sheet will define the CRS on the basis of which the current display is projected, All information displayed on the map will be automatically converted from the CRS of the data source to the CRS of the map sheet. This allows the display of data from an interpretation project in one ProjCRS to be overlaid with data or a regional map that is in an alternate ProjCRS.

Spatial output from Petrosys, such as grid and contour files, will include a full CRS specification.

Not all data sources are CRS aware. Files from older versions of applications, in particular, may not have a valid GeogCRS definition. To allow such files to be used with Petrosys, some Petrosys options have a field for specification of the data source CRS, and a 'project default CRS' is also provided for data sources without a CRS specification option.

The two most commonly used Petrosys CRS dialogues are:

Projected CRS selector	Dialogue for selecting a ProjCRS within a selection of GeogCRS, for example when editing a map sheet definition or specifying a ProjCRS for a data source.
Geographic CRS Configuration - Project	Dialogue for selecting the default GeogCRS transformations (datum conversions) to be used in a project.