

 Survey XL

SURVEYXL

SURVEY AND MODELLING

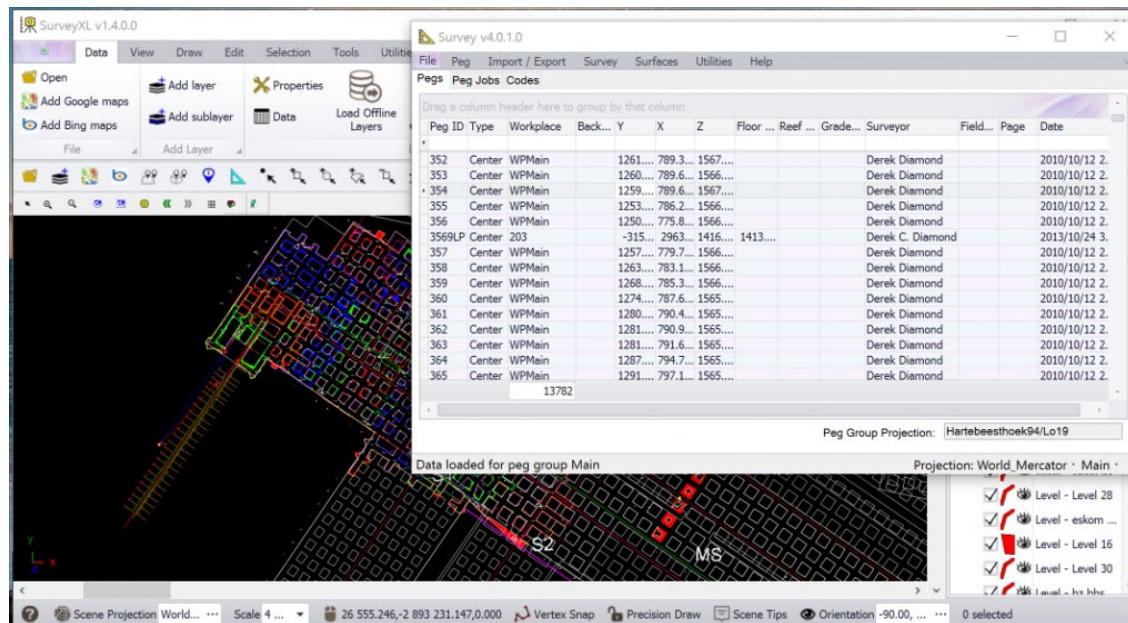
SurveyXL

SurveyXL is a complete underground and surface survey package.

SurveyXL is hosted in our proprietary spatial engine which allows for integration with any other spatial source, including spatial databases and GIS files.

Features:

- ❖ Different surveying methods catered for
- ❖ Pegs storage done securely in database.
- ❖ Imports data from different formats
- ❖ Synchronization of spatial data with databases
- ❖ Surface operations
- ❖ Import data directly from total station



Methods of Surveying

SurveyXL caters for the following methods of surveying:

- ❖ Double Button
- ❖ Double setup
- ❖ Traverse calculations with Bowditch correction
- ❖ Offsetting
- ❖ Contouring
- ❖ Measuring reports
- ❖ Automatic over and under mining calculations
- ❖ Gyro calibration and calculations

SurveyXL also caters for:

- ❖ Automatic pillar creation
- ❖ Peg plotting

SurveyXL allows importing data from:

- ❖ Modelmaker
- ❖ GemCom Surpac
- ❖ DataMine
- ❖ All text formats

When importing you can transform your data using general coordinate conversions (LO <-> Lat/Long) etc

Data Storage

- ❑ Pegs registry is stored securely in a central database – in either SQL Server, Oracle or SQLite for standalone installations.

- ❑ Standard relational model with no proprietary data storage.

- ❑ Complex fields like survey job properties stored in published XML format, keeping data open in case of migration to other systems or integration to other systems.

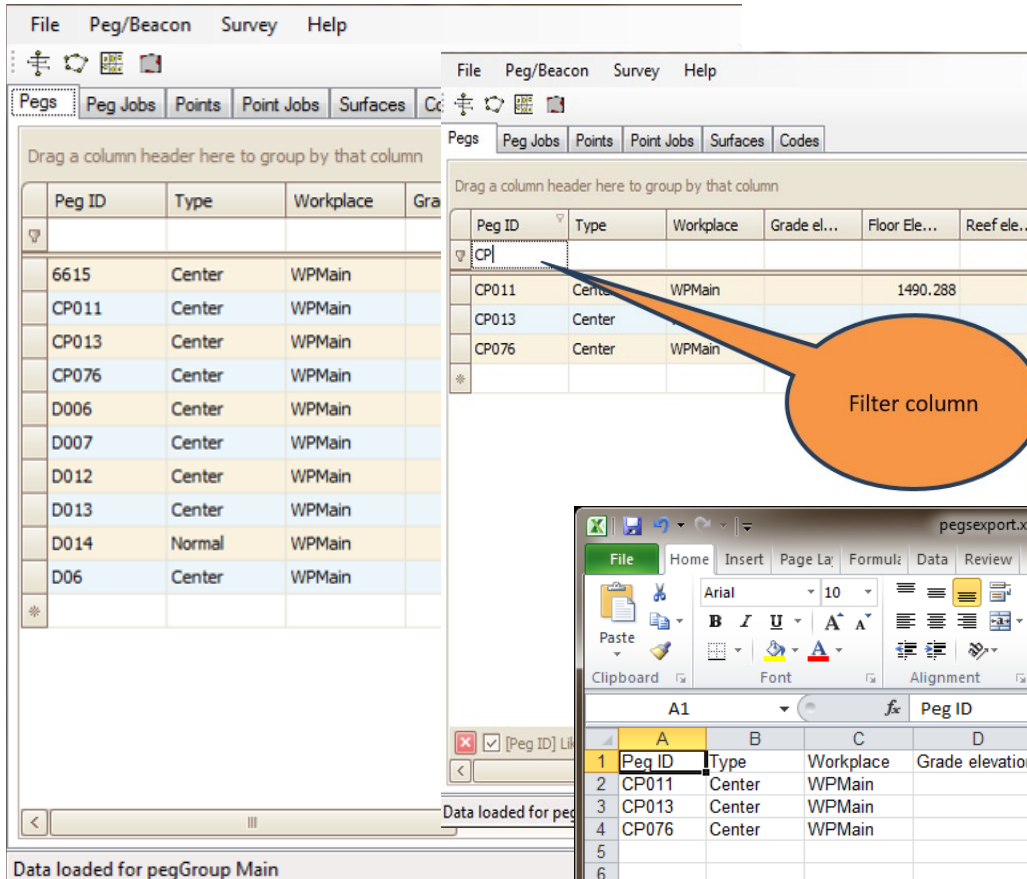
- ❑ All data is stored in the Well Known Binary format of the Open Geospatial Consortium so that data is open to access by third party programs as needed, not locked in.

www.opengeospatial.org

- ❑ Usual backup and restore procedures available since data is stored in central database server. Usual access control also because of this.

Working with pegs

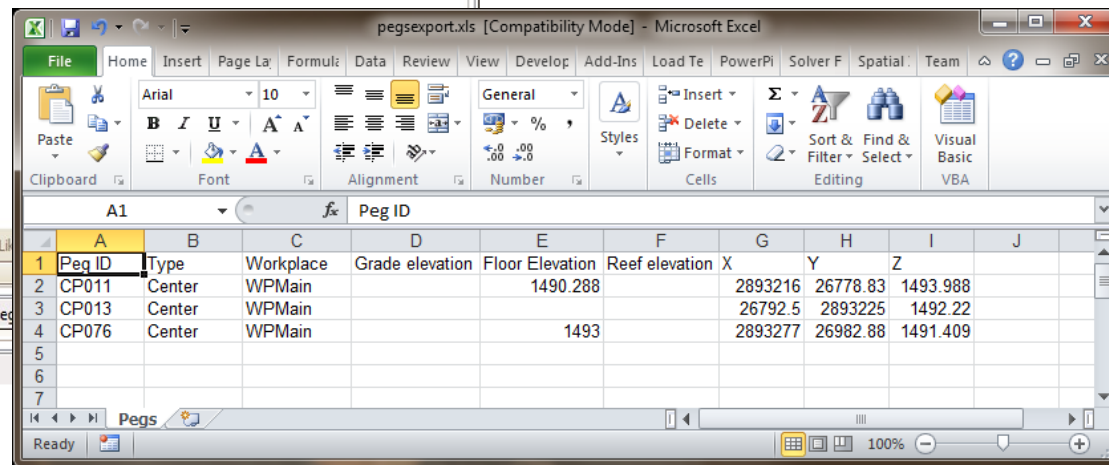
When you are working with pegs you can use a grid to look at or filter data by pegs, peg jobs etc. You can apply multiple filters or even complex filters and then look at these pegs by zooming to them.



The screenshot shows a software interface with a menu bar (File, Peg/Beacon, Survey, Help) and a toolbar. Below the toolbar is a tabbed interface with tabs for Pegs, Peg Jobs, Points, Point Jobs, Surfaces, and Codes. The 'Pegs' tab is active, displaying a grid with columns: Peg ID, Type, Workplace, Grade el..., Floor Ele..., and Reef ele... The grid contains several rows of data. An orange callout bubble points to the 'Peg ID' column header, which has a filter icon and the text 'Filter column' inside the bubble. The status bar at the bottom of the window reads 'Data loaded for pegGroup Main'.

Peg ID	Type	Workplace	Grade el...	Floor Ele...	Reef ele...
6615	Center	WPMain			
CP011	Center	WPMain		1490.288	
CP013	Center	WPMain			
CP076	Center	WPMain			
D006	Center	WPMain			
D007	Center	WPMain			
D012	Center	WPMain			
D013	Center	WPMain			
D014	Normal	WPMain			
D06	Center	WPMain			

You can also export pegs to Excel or a CSV file.



The screenshot shows a Microsoft Excel window titled 'pegsexport.xls [Compatibility Mode]'. The ribbon includes File, Home, Insert, Page Layout, Formulas, Data, Review, View, Develop, Add-Ins, Load and Save, PowerPivot, Solver, Spatial, and Team. The 'Home' ribbon is active, showing Font, Paragraph, Styles, and Editing groups. The spreadsheet shows the following data:

	A	B	C	D	E	F	G	H	I	J
1	Peg ID	Type	Workplace	Grade elevation	Floor Elevation	Reef elevation	X	Y	Z	
2	CP011	Center	WPMain		1490.288		2893216	26778.83	1493.988	
3	CP013	Center	WPMain				26792.5	2893225	1492.22	
4	CP076	Center	WPMain		1493		2893277	26982.88	1491.409	
5										
6										
7										

Peg Jobs

Importing pegs, manually entering pegs and surveying pegs operations are recorded as peg jobs and you can get information on these jobs.

The screenshot shows the 'Peg Jobs' tab in the software. A table lists the following jobs:

Description	Job Date	Surveyor	Approve...	Group
Peg Export	2010/04/20	Derek Diam...		Test
Manual peg creation	2010/06/24	Derek Diam...		Test

At the bottom, there is a filter bar with a checked checkbox and the text "[JobID] In ('28', '30')".

The screenshot shows the 'Peg Jobs' tab with the 'Manual peg creation' job selected. A sub-table titled 'Pegs In Job' is displayed, showing the following data:

Peg ID	Peg Gro...	Peg Typ...	X	Y
CP013	Test	Center	2893225.035	-26792.50
CP076	Test	Center	26982.877...	-2893276.6...
D007	Test	Center	26883.42	-2893369.34
D012	Test	Center	26895.456...	-2893296.1...
D013	Test	Center	26932.596...	-2893241.7...
D014	Test	Normal	27021.685	-2893303.06
D06	Test	Center	26921.72	-2893313.1...

The main job table at the bottom shows the selected job: 'Manual peg creation' on '2010/06/24' by 'Derek Diam...' in the 'Test' group. A filter bar at the bottom shows the same filter as the first screenshot.

Peg Variance Report

Variance reports will display a report for all selected pegs showing if they have been re-surveyed and if so, the variance measurement. This shows the greyed pegs which have not been re-surveyed and the actual variance of the others.

Peg ID	Type	Workplace	Date	X	Y	Z	DX	DY	DZ	Delta
D006	Center	WPMain	2010/06/24	2893313.178	26791.720	1491.144	0	0	0	0.000
CP013	Center	WPMain	2010/04/20	26792.504	2893225.053	1492.220				0.000
D06	Center	WPMain	2010/04/20	2893313.178	26921.720					
D014	Normal	WPMain	2010/04/20	2893303.083	27021.685	0.000				
D013	Center	WPMain	2010/04/20	2893241.745	26932.596	1491.096				
D012	Center	WPMain	2010/04/20	2893296.133	26895.456	1490.910				
D007	Center	WPMain	2010/04/20	2893369.344	26883.420	1492.686				
CP076	Center	WPMain	2010/04/20	2893276.618	26982.878	1491.409				
CP011	Center	WPMain	2010/04/20	2893215.549	26778.829	1493.988				

Peg Groups

Peg ID	Type	Workplace	Grade el...	Floor Ele...	Reef ele...
CP011	Center	WPMain		1490.288	
CP013	Center	WPMain		1493	
		WPMain	10	1488.274	
		WPMain		1489.736	
		WPMain		1488.274	

Pegs can be stored in independent Peg Groups and can be exported between groups.

Peg surveying methods

SurveyXL reads from total station files. When the data is read in from the device files lines of separate jobs have separate colours and readings can be edited before the job is loaded. You can also convert the displayed angles to decimal degrees or degrees minutes seconds.

Readings - C:\Users\derek diamond\Documents\Development\BentleySurvey\Test\Surpac\CP0...

Decimal degrees

Col0	Col1	Code	Point Name	HA	SD	VA	Target Hei...
-----	2	CP011					-1.894
-----	2	CP014					2.036
-----	4	CP011		124.43944...	53.375		0
-----	5	CP013			36		0
-----	5	CP011		124.43944...			0
-----	2	CP013					22
-----	4	CP013			3		0
-----		CP011			16.2		0
-----	5					1 89...	0

Readings for first peg survey

Readings for second survey

Load Job

2	CP011		
2	CP014		
4	CP011	124.2622	
5	CP013	124.1756	
5	CP011	124.2622	
	CP013	304.1800	
	CP019	34.1756	
	CP014	304.1754	

Editing readings

Readings - C:\Users\derek diamond\Documents

View 1, Default

Decimal degrees

Decimal degrees

Degrees/Minutes/Seconds

Col0	Col1	Code	Point
-----	2	CP01	
-----	2	CP014	
-----	4	CP01	

Reading from devices

- Topcon and Leica instruments can be read with the Instrument I/F button on the double set up or double button screens.

PrimeThought InstrumentIQ v1.1

Home Calculation

Download Open Save Stop Data

Settings File: LeicaComm1.device

Device: Leica

About Help

About

Survey Setups

Station	Code	Inst. Height	Surveyor	Date	X	Y	Z
CP076	2	-1.572		0001/01/01			
D014	2	0		0001/01/01			

Measurements

Point	Code	Ref. Height	SD	VA	HA	X	Y	Z
CP076	4	0.15	46.987	89.5505555...	124.3			
CP076	4	0.15	46.987	89.5472222...	124.3			
CP076	5	0.15	46.987	89.5472222...	124.3			
CP090	5	0	16.976	89.8763888...	214.299722...			
CP091	5	0	34.004	92.6708333...	214.299722...			
CP092	5	0	50.97	92.0580555...	214.3			
D015	5	0	68.035	91.7125	214.3			
CP093	5	0	85.041	92.3169444...	214.299722...			
CP094	5	0	102.045	91.525	214.299722...			
D015	5	0.14	68.004	90.4497222...	214.299722...			

2 Point(s) Loaded

Reading from devices

Pegs can be manually captured, imported from a file or surveyed using the double button or double set up methods. The field book is included and gives an electronic recording of the field book page. With the roof height the floor elevation can be calculated and the data saved.

The screenshot displays the SurveyXL v1.4.0.0 software interface. The main window shows a 'Peg' dialog box with the following fields:

- New Peg: D208
- Date: Saturday, 27 Aug
- Backsight: (empty)
- Peg Type: (empty)
- Buttons: Load Selected, Reverse Base, Readings

The 'Survey Setup' table is visible in the background:

Station	Code	Inst. Height	Surveyor	Date	X	Y	Z
D171	2	1.604		0001/01/...			
D171	2	1.604		0001/01/...			
D208	2	1.344		0001/01/...			
D198	2	1.152		0001/01/...			

The 'Measurements' table is also visible:

Point	Code	Ref. Hgt...	SD	VA dms	HA dms	X	Y	Z
D170	4	1.22	36.124	192.0249	96.1457			
D208	5	1.042	71.617	102.4144	89.0939			
D208	5	1.042	71.618	282.4151	270.5038			
D209	5	1.042	36.124	12.0245	263.4529			
D170	5	1.22	36.126	192.0247	96.1443			
D208	5	1.44	71.612	102.4154	89.2856			
D208	5	1.44	71.612	282.4154	270.3136			
D170	5	1.22	36.118	12.0244	263.4520			

The 'Peg' dialog box also shows a 'Fieldbook' section with the following data:

Inst. Ht	Bob Ht	Slope Dist.	Hor. Dist.	Elevation
1.604	1.220	36.124	36.124	

Buttons for 'Print', 'Close', and 'Approve' are visible at the bottom of the dialog box.

Printing & historical reports

With customisable templates, you can set up how you want your prints to look and also can save a particular print. You can also look at historical surveys, as you can see the data cannot be edited for an old survey.

The screenshot displays the SurveyXL v1.4.0.0 software interface. The main window shows a 3D perspective view of a survey site with a grid of buildings and various colored lines representing survey points and lines. The interface includes a menu bar (Data, View, Draw, Edit, Selection, Tools, Utilities, Surfaces, Surface Operations, Surface Editing) and a toolbar with icons for Open, Add Google maps, Add Bing maps, Add layer, Add sublayer, Properties, Data, Load Offline Layers, Synchronize Offline Layers, Relations, and Survey.

Overlaid on the main window is a 'New Peg Double Button' dialog box. This dialog box contains a 'File' menu with options: Print..., Print Preview..., Page Setup..., Save as text only..., Save as..., and Close. The 'Save as...' option is highlighted. Below the menu, there is a table of data for a new peg:

	Ht
	06
	.988
	.944
	4

Below the table, there are fields for 'Peg name: CP011', 'Location: WPMain', 'F/B Page: My FB', and 'Volume:'. There is also a 'CHECKED BY' field.

Another 'New Peg Double Button' dialog box is visible in the background, showing a 'File' menu with options: Print..., Print Preview..., Page Setup..., Save as text only..., Save as..., and Close. Below the menu, there is a table of data for a new peg:

	Ht
	06
	.988
	.944
	4

Below the table, there are fields for 'Peg name: CP011', 'Location: WPMain', 'F/B Page: My FB', and 'Volume:'. There is also a 'CHECKED BY' field.

The main window also displays a 'Survey v4.0.1.0' dialog box with a 'File' menu and options: Manual Input, Single Setup/Button, Double Setup, Polar, Double Button, Line Setup. Below the menu, there is a 'New Peg' section with fields for 'New Peg: D012', 'Surveyor: Derek Diamond', 'Date: Saturday, 30 Janua', 'Setup Peg: D006', 'Backsight: D007', 'Workplace: WPMain', and 'Peg Type: Center'. There is also a 'Double Button' section with fields for 'Surveyor: Derek Diamond', 'Date: Saturday, 30 Janua', 'Setup Peg: D006', 'Backsight: D007', 'Workplace: WPMain', and 'Peg Type: Center'. Below the 'Double Button' section, there is a 'Back Check' section with tabs for 'Vertical Angles', 'Horizontal Angles', 'Distances', 'Results', 'Grade', 'Fieldbook', and 'Surveyor Comments'. The 'Vertical Angles' tab is selected, showing a table of data:

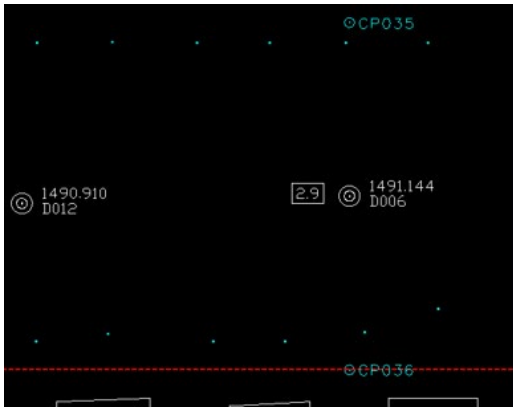
Setup to B Sight	Inst. Ht	Bob Ht	Slope Dist.	Hor. Dist.	Elevation
Left: 087:44:05	-1.297	0.150	68.056	67.987	1492.689
Right: 272:16:10				From Database: 67.982	1492.686
Mean: 002:16:02.5				Difference: -0.005	-0.003

At the bottom of the 'Survey v4.0.1.0' dialog box, there is a 'Data loaded for peg group Main' section and a 'Projection: World_Mercator' dropdown menu. The main window also displays a status bar with 'Scene Projection World_Mercator', 'Scale 4385.2', and coordinates '27 377.867, -2 893 157.471, 0.000'. There are also icons for 'Vertex Snap', 'Precision Draw', and 'Scene Tips'.

Offsetting

You can choose offsetting pegs in a dropdown or by using a pick checkbox. Then you can zoom to the area in graphics, draw the tape (drawn automatically when the tape position and length is

entered) and then enter the offsets in the grid. Vertical offsetting is also supported.



Offsetting

Surveyor: _____ Date: 24 June 2010

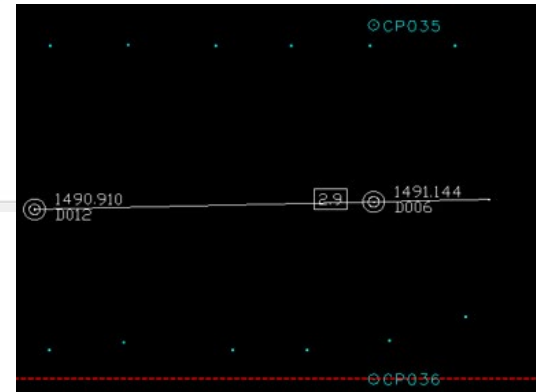
PegPoint Pick Tape Position X Y Z

Start: D012 0.000 26895.456 -2893296.1 1490.910

End: D006 0.000 26921.720 -2893313.1 1491.144

Close Save Zoom Measure from center Vertical Offsets Show Coordinates

No.	DY	DX	DY



Offsetting

Surveyor: _____ Date: 24 June 2010

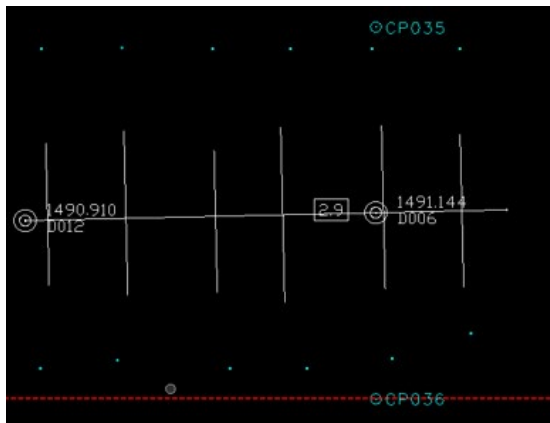
PegPoint Pick Tape Position X Y Z

Start: D012 0.000 26895.456 -2893296.1 1490.910

End: D006 43.000 26921.720 -2893313.1 1491.144

Close Save Zoom Measure from center Vertical Offsets Show Coordinates

No.	DY	DX	DY



Offsetting

Surveyor: _____ Date: 24 June 2010

PegPoint Pick Tape Position X Y Z

Start: D012 0.000 26895.456 -2893296.1 1490.910

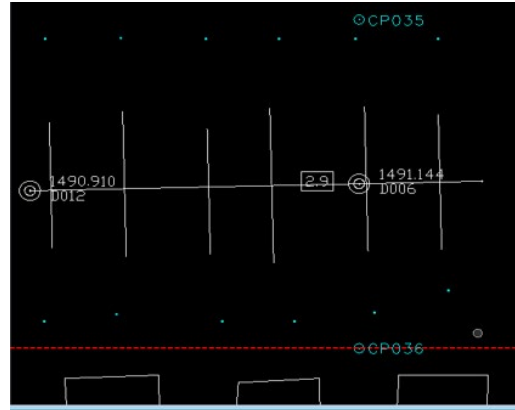
End: D006 43.000 26921.720 -2893313.1 1491.144

Close Save Zoom Measure from center Vertical Offsets Show Coordinates

No.	DY	DX	DY	
1		7.000	2.000	6.000
2		8.000	9.000	7.000
3		6.000	17.000	7.000
4		8.000	23.000	8.000
5		8.000	32.000	7.000
6		7.000	39.000	7.000

More about offsetting

Measurements can be entered from the left, from the right or from the center. Once you are happy with the data, saving creates the offset points and removes the construction.



Offsetting

Surveyor: _____ Date: 24 June 2010

Peg/Point: _____ Pick: _____ Tape Position: _____ X: _____ Y: _____ Z: _____

Start: D012 0.000 26895.456 -2893296.1 1490.910

End: D006 43.000 26921.720 -2893313.1 1491.144

Close Save Zoom Measure from right Vertical Offsets Show Coordinates

No.	DY	Dx	DY
1	13.000	2.000	6.000
2	15.000	9.000	7.000
3	13.000	17.000	7.000
4	6.000	23.000	8.000
5	0.000	32.000	7.000
6	0.000	39.000	7.000

Measuring from right so these values are total length of tape




Pega Peg Jobs Points Point Jobs Surfaces Codes

Drag a column header here to group by that column


Peg ID	Type	Workplace	Grade el...	Floor Ele...	Reef ele...	X
6615	Center	WPMain		1526.566		2902251.914
CP011	Center	WPMain		1490.288		2893215.549
CP013	Center	WPMain				26792.504
CP076	Center	WPMain		1493		2893276.618
D006	Center	WPMain		1488.274		2893313.178
D007	Center	WPMain		1489.736		2893369.344
D012	Center	WPMain				2893296.133
D013	Center	WPMain				2893241.745
D014	Normal	WPMain				2893303.083
D06	Center	WPMain		1488.274		2893313.178

Pillar Creation: One by One Method

Once offsetting has been done you can create pillars by using the pillar tool. You can create pillars one by one as the following shows:



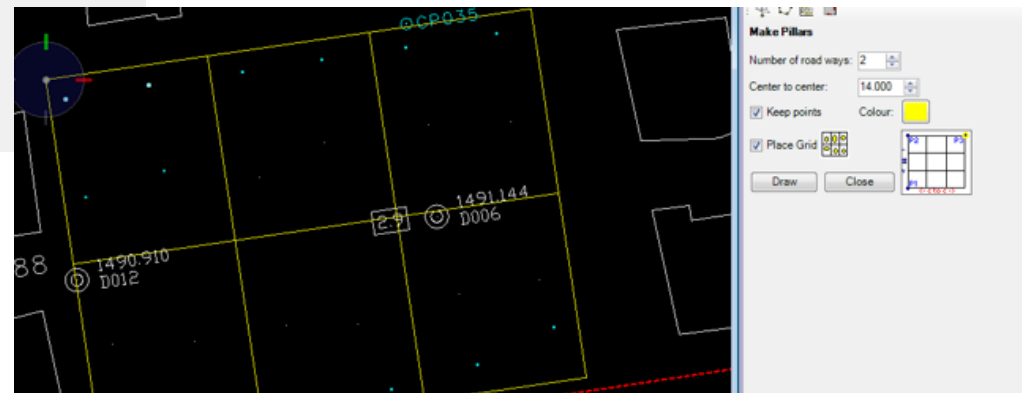
Peg ID	Type	Workplace	Grade el...	Floor Ele...	Reef ele...	X
6615	Center	WPMain		1526.566		2902251.914
CP011	Center	WPMain		1490.288		2893215.549
CP013	Center	WPMain				26792.504
CP076	Center	WPMain		1493		2893276.618
D006	Center	WPMain		1488.274		2893313.178
D007	Center	WPMain		1489.736		2893369.344
D012	Center	WPMain				2893296.133
D013	Center	WPMain				2893241.745
D014	Normal	WPMain				2893303.083
D06	Center	WPMain		1488.274		2893313.178



Peg ID	Type	Workplace	Grade el...	Floor Ele...	Reef ele...	X
6615	Center	WPMain		1526.566		2902251.914
CP011	Center	WPMain		1490.288		2893215.549
CP013	Center	WPMain				26792.504
CP076	Center	WPMain		1493		2893276.618
D006	Center	WPMain		1488.274		2893313.178
D007	Center	WPMain		1489.736		2893369.344
D012	Center	WPMain				2893296.133
D013	Center	WPMain				2893241.745
D014	Normal	WPMain				2893303.083
D06	Center	WPMain		1488.274		2893313.178

Pillar Creation: Grid method

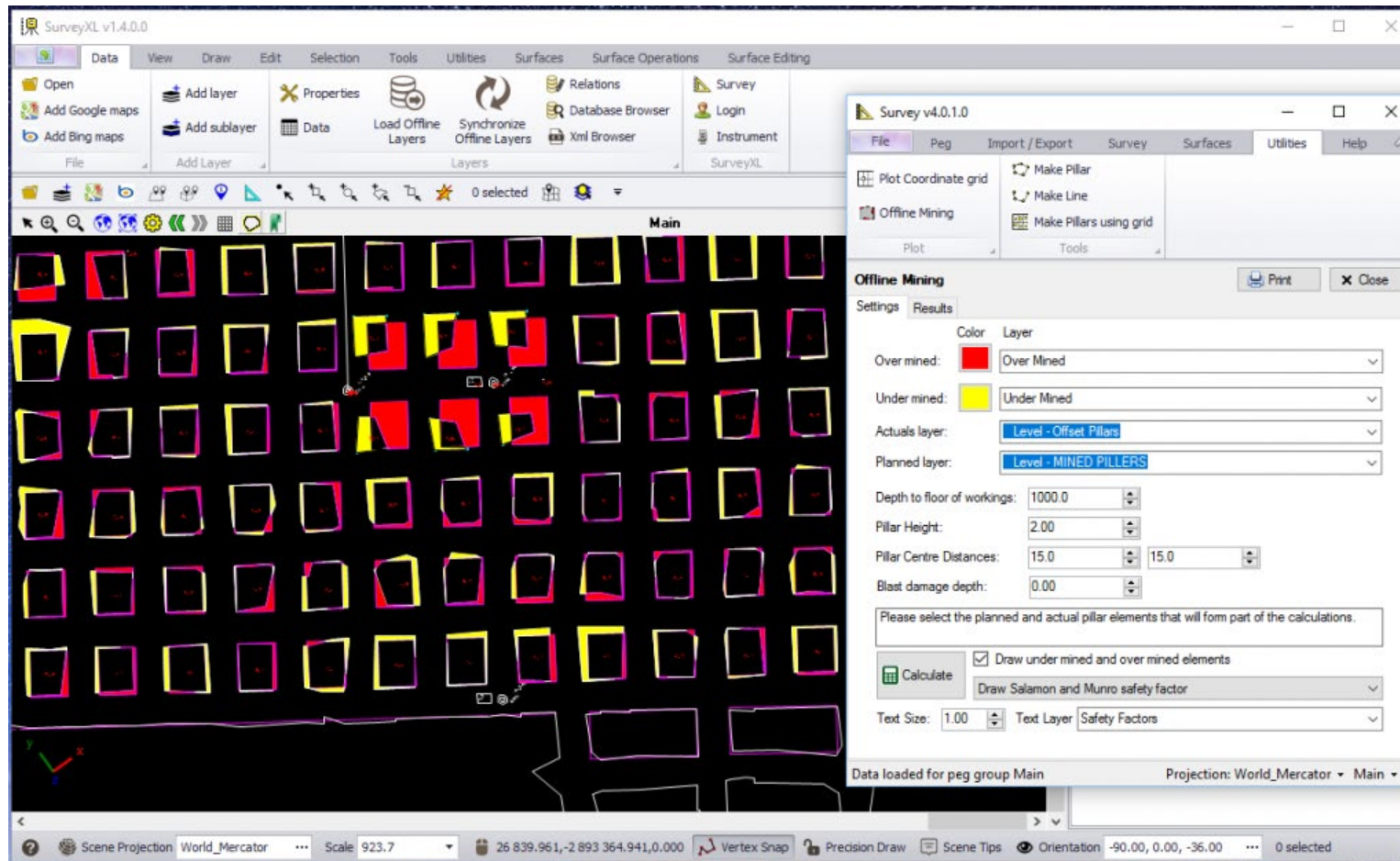
You can also use a grid to create multiple pillars simultaneously if the pillars are in semi rectangular layout.



Offline Mining Calculation

Offline mining can be a tedious operation in Microstation. For each pillar we need to calculate the over mined and under mined area. This is usually done by tracing the over mined bits into shapes, pillar by pillar.

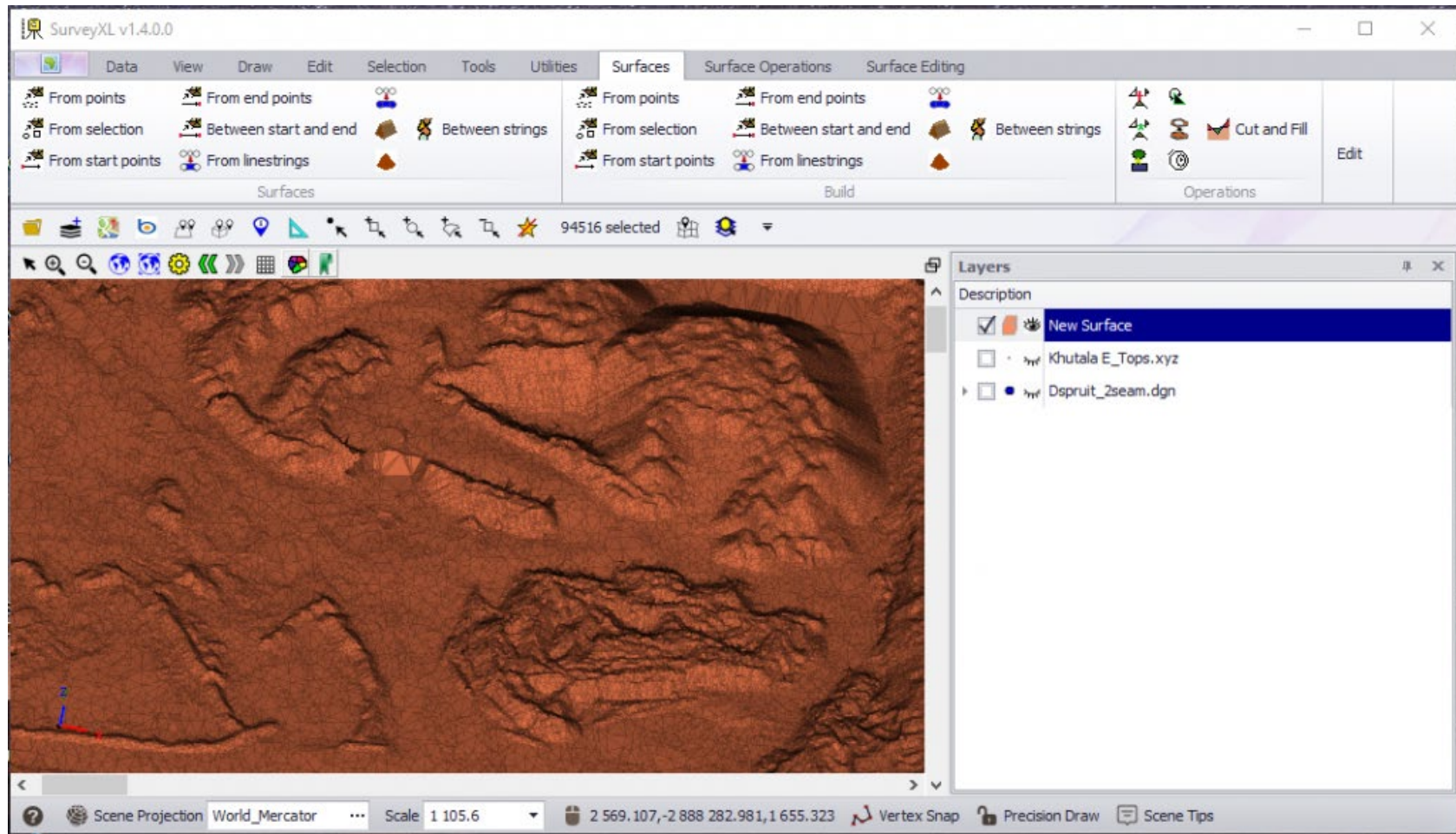
With the offline mining tool this can be done automatically.



Surface Building

Surfaces can be built from survey points and other elements with break lines as needed.

You can import points from CSV files for creating surfaces.



Contour / Section Selected

Contours or sections can be generated with SurveyXL. SurveyXL can generate colour filled contours too.

The screenshot displays the SurveyXL v1.4.0.0 software interface. The main window shows a topographic map with contour lines overlaid. The interface includes a menu bar (Data, View, Draw, Edit, Selection, Tools, Utilities, Surfaces, Surface Operations, Surface Editing) and a toolbar with various icons. The 'Surfaces' menu is open, showing options for generating surfaces from points, selection, start points, end points, between start and end, and between strings. A 'Layers' panel on the right shows a list of contours with color-coded ranges: 1 580 to 1 583 (green), 1 583 to 1 587 (light green), 1 587 to 1 591 (orange), 1 591 to 1 595 (red), and > 1 595 (dark red). A 'Contouring / Section properties' dialog box is open in the foreground, allowing users to set parameters for contouring. The dialog includes fields for Direction X, Y, and Z; Start Level, Interval, Count, and End Level; and checkboxes for 'Pick', 'Flip', and 'Make closed polygons'. A 'Compute From Selected' button and a 'Contour' button are also present.

SurveyXL v1.4.0.0

Menu: Data View Draw Edit Selection Tools Utilities Surfaces Surface Operations Surface Editing

Surfaces: From points, From end points, From selection, From start points, From linestrings, Between start and end, Between strings

Build: From points, From end points, From selection, From start points, From linestrings, Between start and end, Between strings

Operations: Cut and Fill, Edit

Layers:

- Description
- Contours/Sections
 - 1 580 to 1 583
 - 1 583 to 1 587
 - 1 587 to 1 591
 - 1 591 to 1 595
 - > 1 595
 - New Surface

Contouring / Section properties

Direction X: 0.000 Start Level: 0.000 Pick

Y: 0.000 Interval: 10.000

Z: 1.000 Count: 10

Pick End Level: 100.000 Pick

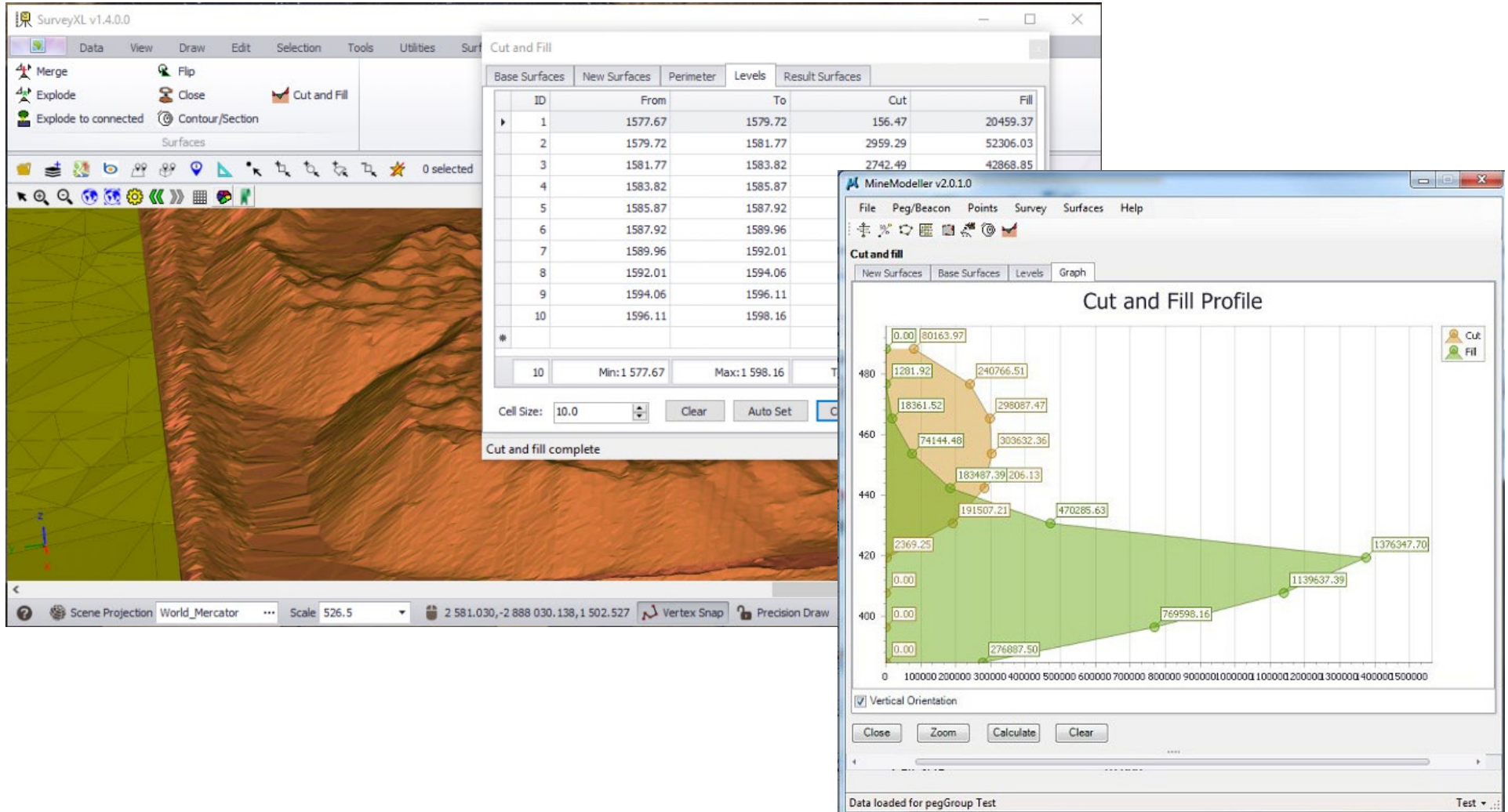
Make closed polygons

Choose direction and if needed start/end levels

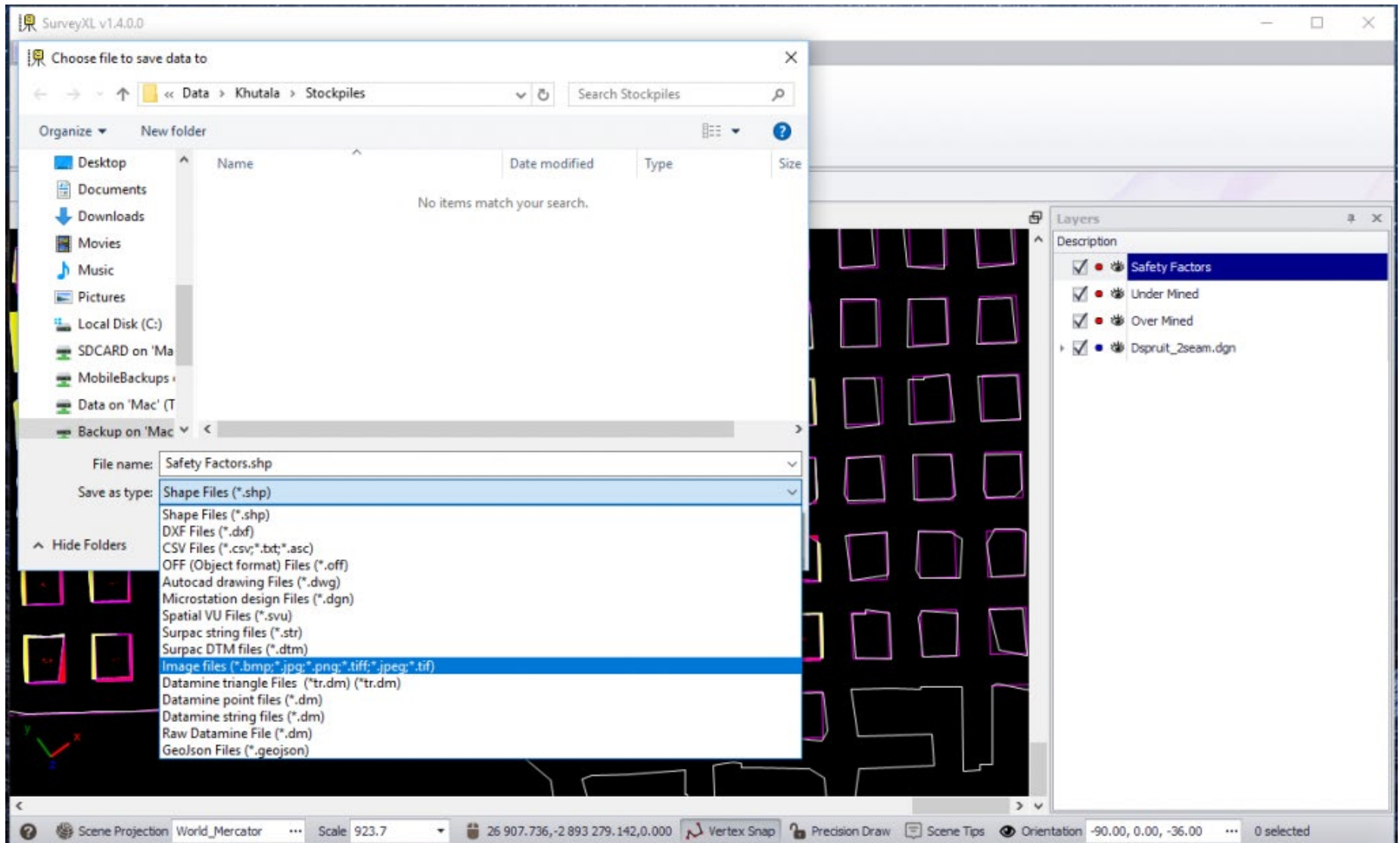
Scene Projection: World_Mercator Scale: 921.4 2 595.465, -2 888 248.317, 1 691

Cut & Fill

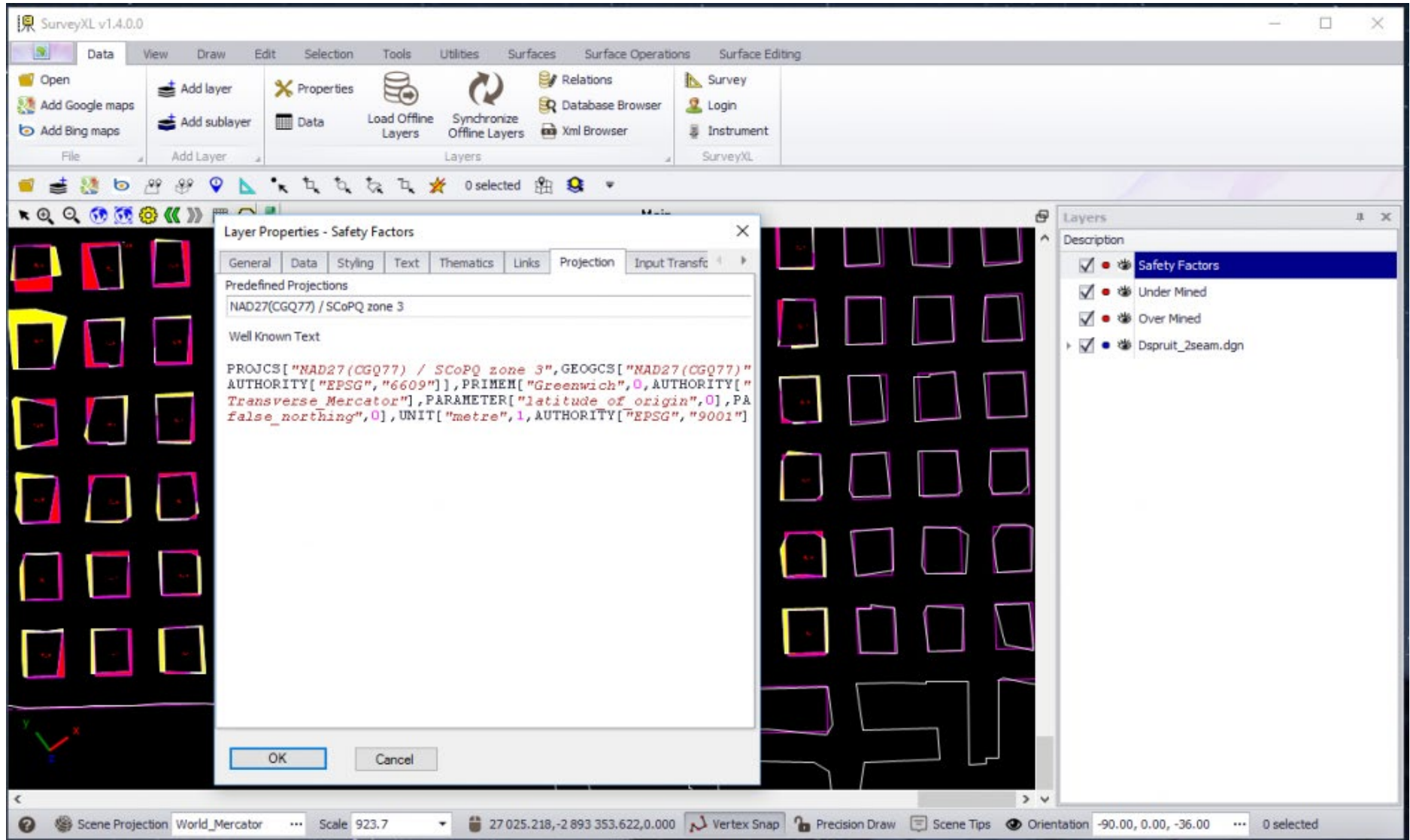
Cut & Fill done gives graphs and reports.



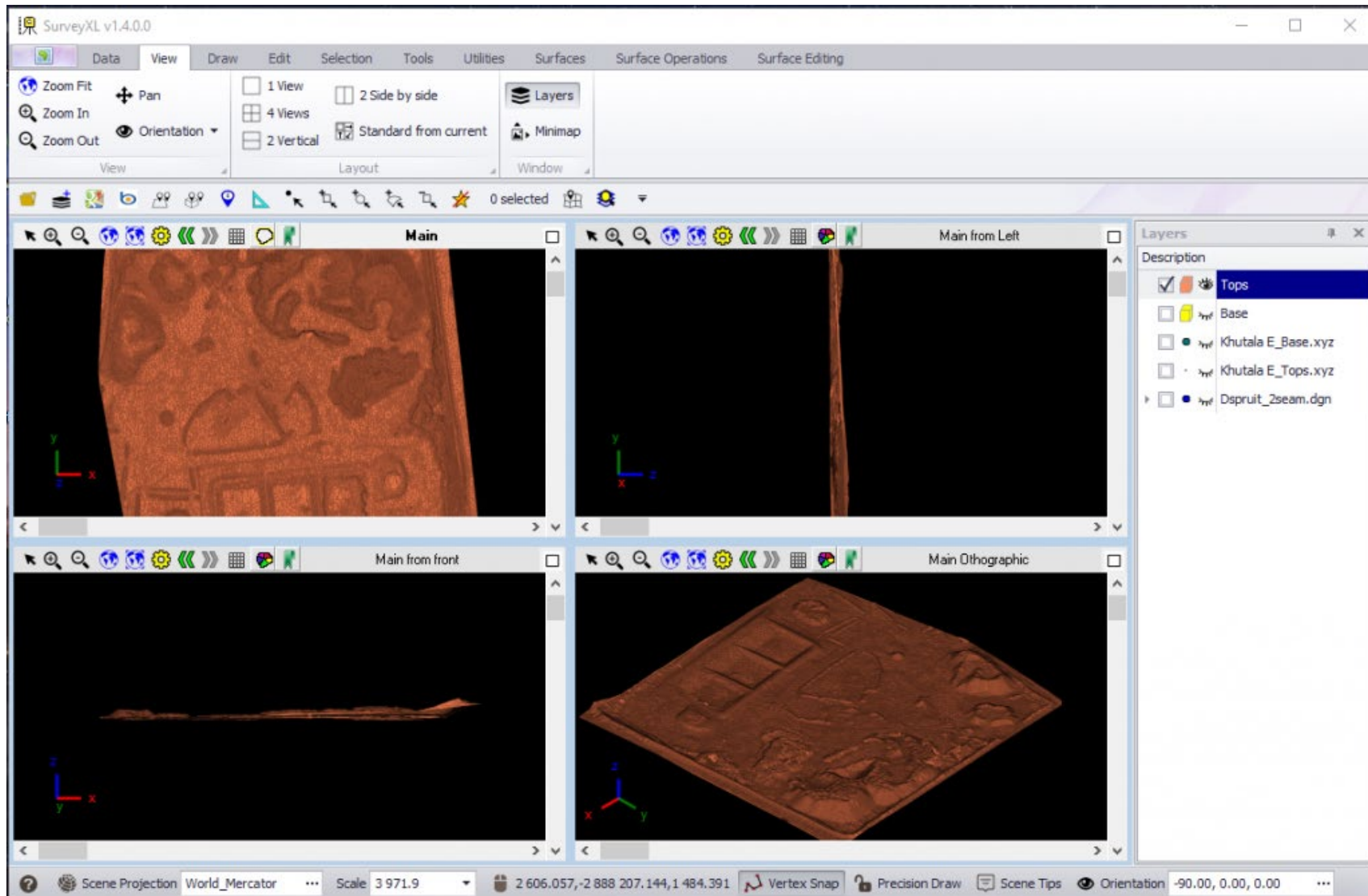
Export to multiple formats and save to databases



Support for all projections



Multiple views



Foundation software needed

Foundation Software needed:

FOR THE DATABASE SERVER IF PEGS NEED TO BE STORED IN A CENTRAL DATABASE

- Windows Server 2003 R2 or above
- Microsoft SQL Server 2005, 2008 or above or Oracle 9.x or above or SQLite

FOR THE CLIENT MACHINES:

- Microsoft Windows XP or above



Thank you

Please contact Sales@PrimeThought.biz for more info

Thank you!

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