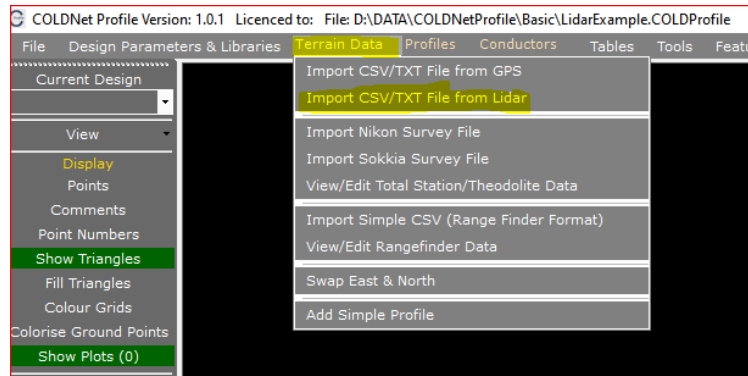


COLDNet Profile – Import Lidar Data

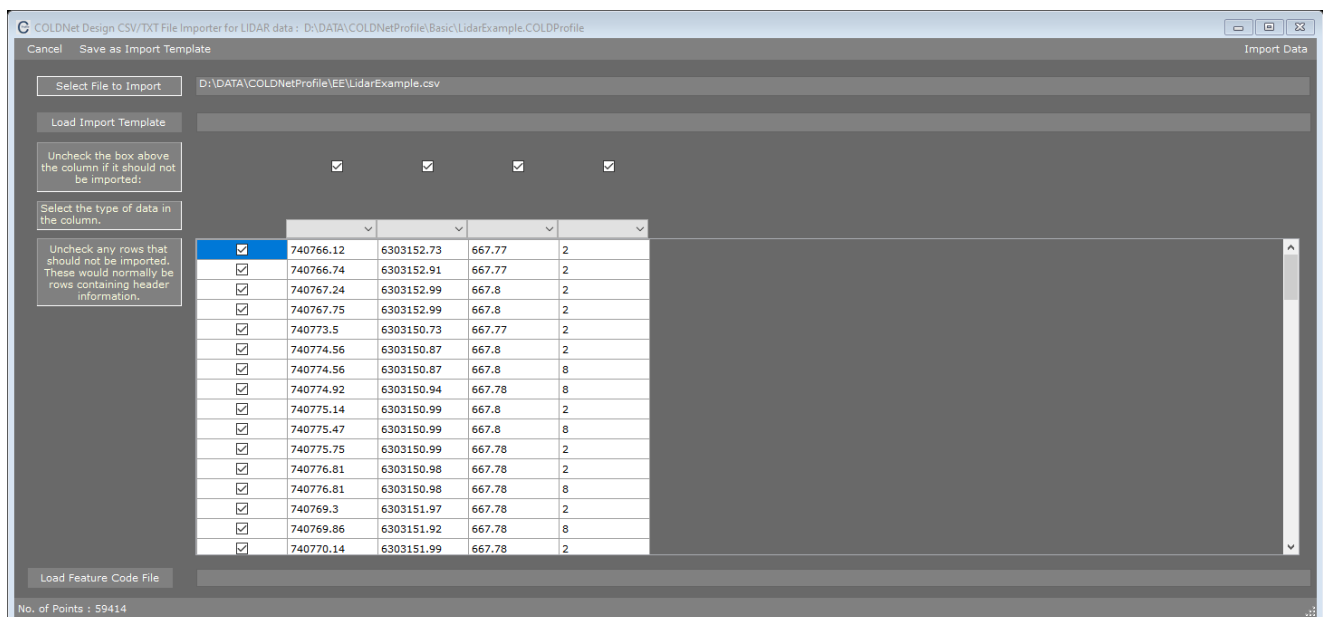
This walkthrough assumes that you know how to Create a new project including selecting a parameter file.

This walkthrough requires a file which you can download from the website. This file is called LidarExample.zip and must be unzipped before you start.

1. Create a new file called LidarExample.
2. Select the options shown below.

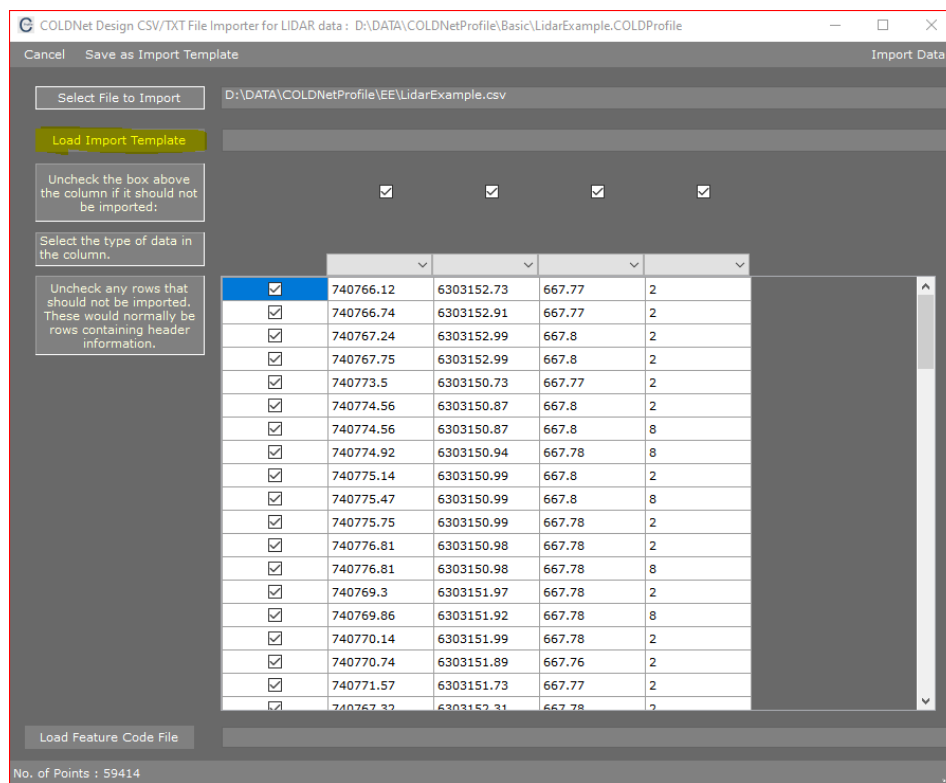


3. In the dialog box that appears, select the previously downloaded file LidarExample.csv. Your screen should now look similar to this.



COLDNet Profile – Import Lidar Data

- Select the Button **Load Import Template** as shown below.



COLDNet Design CSV/TXT File Importer for LIDAR data : D:\DATA\COLDNetProfile\Basic\LidarExample.COLDProfile

Cancel Save as Import Template Import Data

Select File to Import D:\DATA\COLDNetProfile\EE\LidarExample.csv

Load Import Template

Uncheck the box above the column if it should not be imported:

Select the type of data in the column.

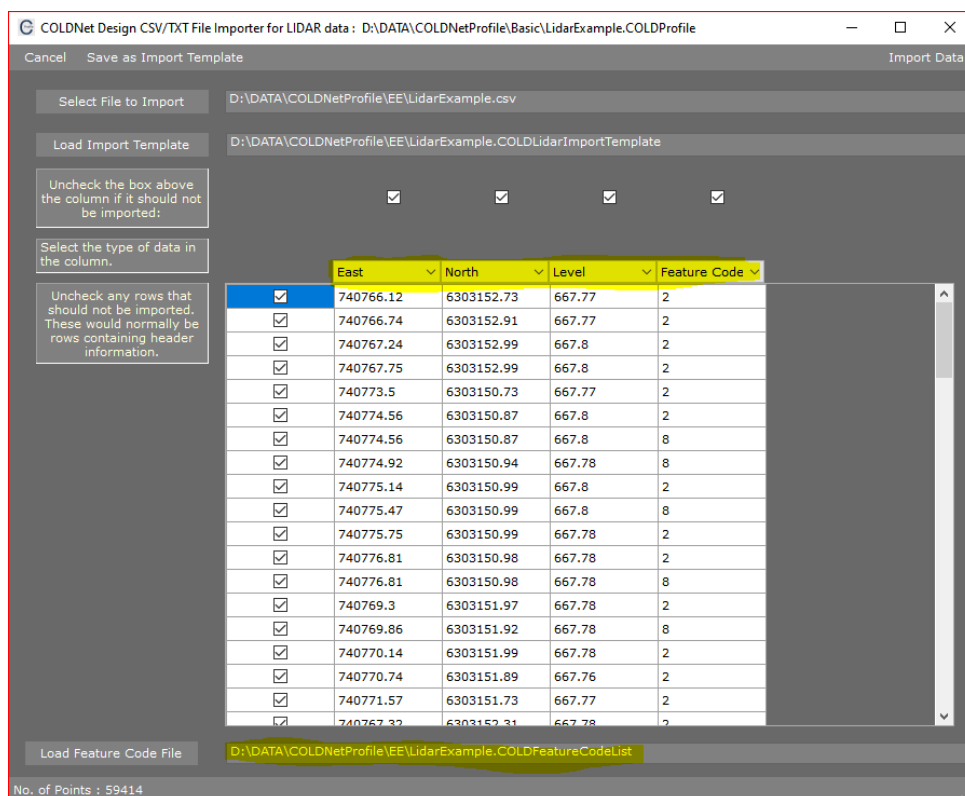
Uncheck any rows that should not be imported. These would normally be rows containing header information.

	East	North	Level	Feature Code
<input checked="" type="checkbox"/>	740766.12	6303152.73	667.77	2
<input checked="" type="checkbox"/>	740766.74	6303152.91	667.77	2
<input checked="" type="checkbox"/>	740767.24	6303152.99	667.8	2
<input checked="" type="checkbox"/>	740767.75	6303152.99	667.8	2
<input checked="" type="checkbox"/>	740773.5	6303150.73	667.77	2
<input checked="" type="checkbox"/>	740774.56	6303150.87	667.8	2
<input checked="" type="checkbox"/>	740774.56	6303150.87	667.8	8
<input checked="" type="checkbox"/>	740774.92	6303150.94	667.78	8
<input checked="" type="checkbox"/>	740775.14	6303150.99	667.8	2
<input checked="" type="checkbox"/>	740775.47	6303150.99	667.8	8
<input checked="" type="checkbox"/>	740775.75	6303150.99	667.78	2
<input checked="" type="checkbox"/>	740776.81	6303150.98	667.78	2
<input checked="" type="checkbox"/>	740776.81	6303150.98	667.78	8
<input checked="" type="checkbox"/>	740769.3	6303151.97	667.78	2
<input checked="" type="checkbox"/>	740769.86	6303151.92	667.78	8
<input checked="" type="checkbox"/>	740770.14	6303151.99	667.78	2
<input checked="" type="checkbox"/>	740770.74	6303151.89	667.76	2
<input checked="" type="checkbox"/>	740771.57	6303151.73	667.77	2
<input checked="" type="checkbox"/>	740767.32	6303152.31	667.78	2

Load Feature Code File

No. of Points : 59414

- Select the downloaded file **LidarExample.COLDNetLidarImportTemplate**. The template file stores information of the type of data in each column and the Feature Code file as highlighted below.



COLDNet Design CSV/TXT File Importer for LIDAR data : D:\DATA\COLDNetProfile\Basic\LidarExample.COLDProfile

Cancel Save as Import Template Import Data

Select File to Import D:\DATA\COLDNetProfile\EE\LidarExample.csv

Load Import Template

Uncheck the box above the column if it should not be imported:

Select the type of data in the column.

Uncheck any rows that should not be imported. These would normally be rows containing header information.

	East	North	Level	Feature Code
<input checked="" type="checkbox"/>	740766.12	6303152.73	667.77	2
<input checked="" type="checkbox"/>	740766.74	6303152.91	667.77	2
<input checked="" type="checkbox"/>	740767.24	6303152.99	667.8	2
<input checked="" type="checkbox"/>	740767.75	6303152.99	667.8	2
<input checked="" type="checkbox"/>	740773.5	6303150.73	667.77	2
<input checked="" type="checkbox"/>	740774.56	6303150.87	667.8	2
<input checked="" type="checkbox"/>	740774.56	6303150.87	667.8	8
<input checked="" type="checkbox"/>	740774.92	6303150.94	667.78	8
<input checked="" type="checkbox"/>	740775.14	6303150.99	667.8	2
<input checked="" type="checkbox"/>	740775.47	6303150.99	667.8	8
<input checked="" type="checkbox"/>	740775.75	6303150.99	667.78	2
<input checked="" type="checkbox"/>	740776.81	6303150.98	667.78	2
<input checked="" type="checkbox"/>	740776.81	6303150.98	667.78	8
<input checked="" type="checkbox"/>	740769.3	6303151.97	667.78	2
<input checked="" type="checkbox"/>	740769.86	6303151.92	667.78	8
<input checked="" type="checkbox"/>	740770.14	6303151.99	667.78	2
<input checked="" type="checkbox"/>	740770.74	6303151.89	667.76	2
<input checked="" type="checkbox"/>	740771.57	6303151.73	667.77	2
<input checked="" type="checkbox"/>	740767.32	6303152.31	667.78	2

Load Feature Code File D:\DATA\COLDNetProfile\EE\LidarExample.COLDFeatureCodeList

No. of Points : 59414

The feature code file stores the point cloud feature code classifications. More information on this is provided later in the walkthrough.

COLDNet Profile – Import Lidar Data

6. Select Import Data.

Cancel Save as Import Template Import Data

Select File to Import D:\DATA\COLDNetProfile\Basic\LidarExample.COLDProfile

Load Import Template D:\DATA\COLDNetProfile\Basic\LidarExample.COLDLidarImportTemplate

Uncheck the box above the column if it should not be imported:

Select the type of data in the column.

Uncheck any rows that should not be imported. These would normally be rows containing header information.

	East	North	Level	Feature Code
<input checked="" type="checkbox"/>	740766.12	6303152.73	667.77	2
<input checked="" type="checkbox"/>	740766.74	6303152.91	667.77	2
<input checked="" type="checkbox"/>	740767.24	6303152.99	667.8	2
<input checked="" type="checkbox"/>	740767.75	6303152.99	667.8	2
<input checked="" type="checkbox"/>	740773.5	6303150.73	667.77	2
<input checked="" type="checkbox"/>	740774.56	6303150.87	667.8	2
<input checked="" type="checkbox"/>	740774.56	6303150.87	667.8	8
<input checked="" type="checkbox"/>	740774.92	6303150.94	667.78	8
<input checked="" type="checkbox"/>	740775.14	6303150.99	667.8	2
<input checked="" type="checkbox"/>	740775.47	6303150.99	667.8	8
<input checked="" type="checkbox"/>	740775.75	6303150.99	667.78	2
<input checked="" type="checkbox"/>	740776.81	6303150.98	667.78	2
<input checked="" type="checkbox"/>	740776.81	6303150.98	667.78	8
<input checked="" type="checkbox"/>	740769.3	6303151.97	667.78	2
<input checked="" type="checkbox"/>	740769.86	6303151.92	667.78	8
<input checked="" type="checkbox"/>	740770.14	6303151.99	667.78	2

Load Feature Code File D:\DATA\COLDNetProfile\Basic\LidarExample.COLDFeatureCodeList

No. of Points : 59414

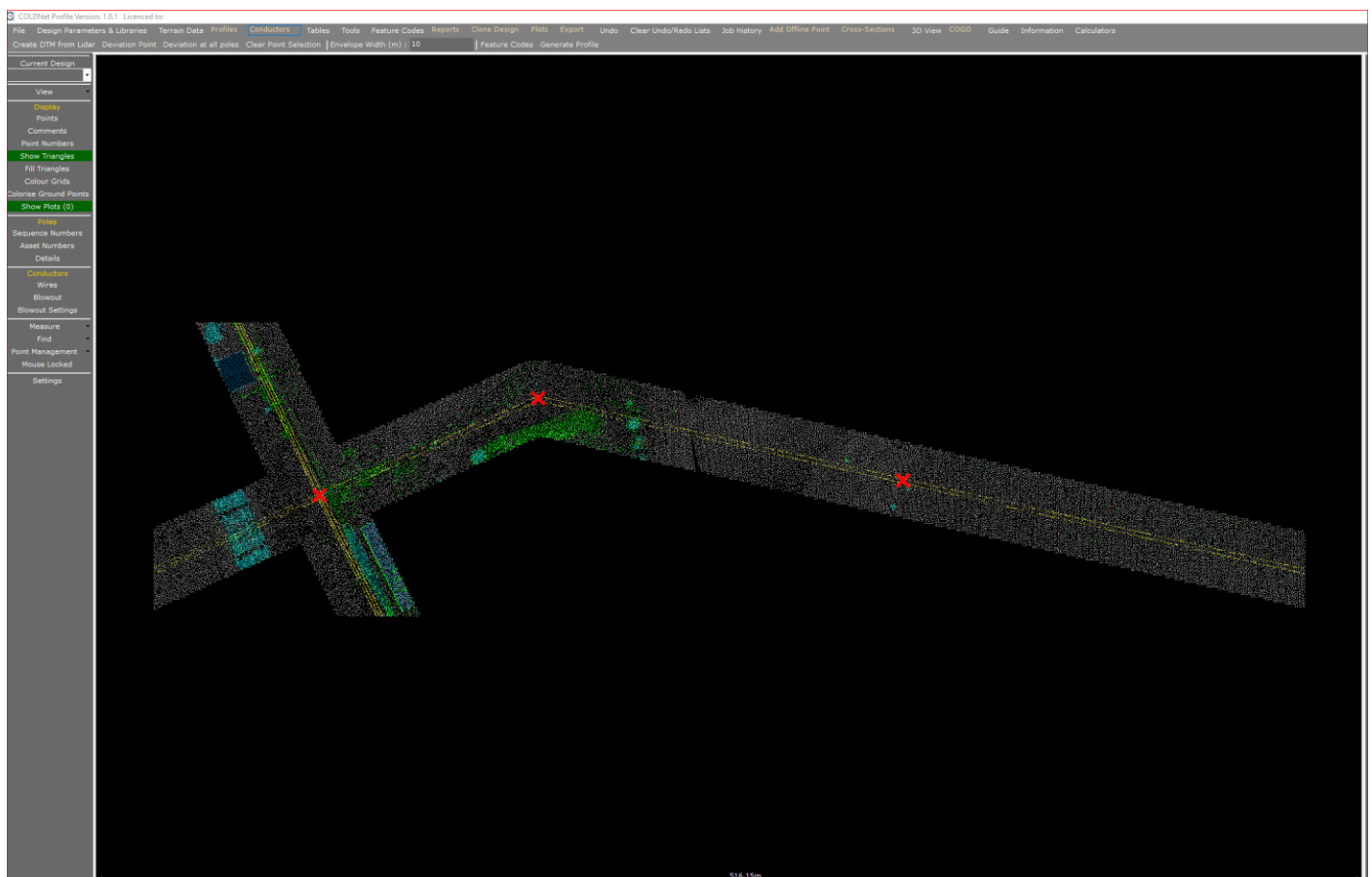
You will be given the opportunity to save the template at the next step in case you have made changes. Select **No**

Save as Template

Do you want to save these settings as a template before you proceed?

Yes No Cancel

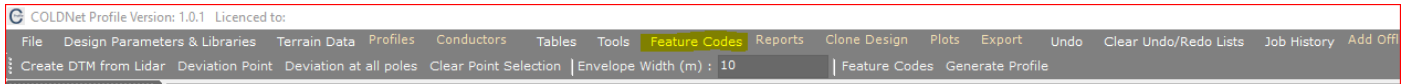
You will then be returned to the main form as shown below.



COLDNet Profile – Import Lidar Data



7. Select the option on the menu bar **Feature Codes**.



The form shown below will be displayed.

COLDNet Feature Codes										
All Visible All Invisible Invert Visibility Show/Hide Codes with no data Load Feature Code File Save Feature Code File Exclude All from triangulation Delete Highlighted Code Close Form										
Code	Description	Survey Code	Visible	Colour	Pixel Size	Pen Width	Style	Include in Triangulation	Aerial Points	Point Count
1	Point of intersection (PI)		<input checked="" type="checkbox"/>		10	5	X	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3
2	Ground		<input checked="" type="checkbox"/>		1	1	Pixel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	36336
5	Veg > 2m		<input checked="" type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	7500
6	Veg < 2m		<input checked="" type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5418
7	Building		<input checked="" type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	1441
8	Model Key Points		<input checked="" type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	1402
11	Conductor 11kV		<input checked="" type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2748
21	Grid Structure Towers		<input checked="" type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	287
23	Veg offset > 0.5 < 1.5m		<input type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	8
24	Veg offset > 1.5 < 2.5m		<input type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	33
25	Veg offset > 2.5 < 3.5m		<input type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	212
26	Veg offset > 3.5 < 4.5m		<input type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	489
27	Veg offset > 4.5 < 5.5m		<input type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	503
28	Veg offset > 5.5 < 6.5		<input type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	527
29	Veg offset > 6.5		<input type="checkbox"/>		1	1	Pixel	<input type="checkbox"/>	<input type="checkbox"/>	1953

Note that different lidar providers typically use different point cloud classifications or feature codes. In this example Feature Code 1 is the pole locations.

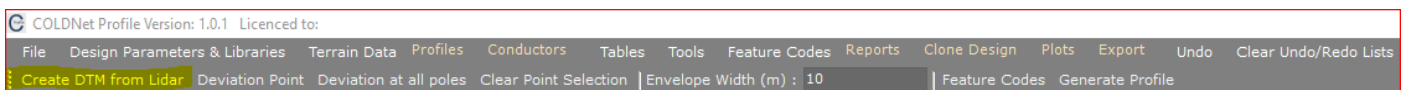
Here you can change the colours of the classifications as well as the pixel and pen size and style of the point.

Note that there is a column with the heading **Include in Triangulation**. Any ground point data must have this ticked to be used when the Digital Terrain Model (DTM) is built. Do not include any points that are not ground points.

8. Close this form.

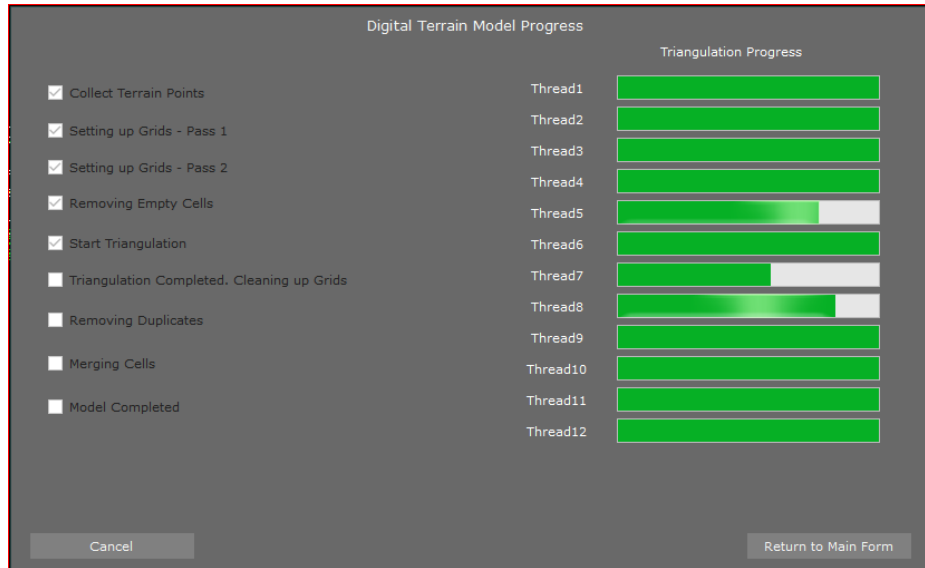
The processing of Lidar data into a Digital Terrain Model is a very computer intensive task. The software uses a multi-threaded solution for this, so all CPU's in your computer are used to create the model. The speed of this process depends on the number of cores and threads available on your computer, speed of memory and speed of disk drives.

9. Select **Create DTM from Lidar** as highlighted below.



COLDNet Profile – Import Lidar Data

A form will be displayed to show the progress of the creation of the DTM.



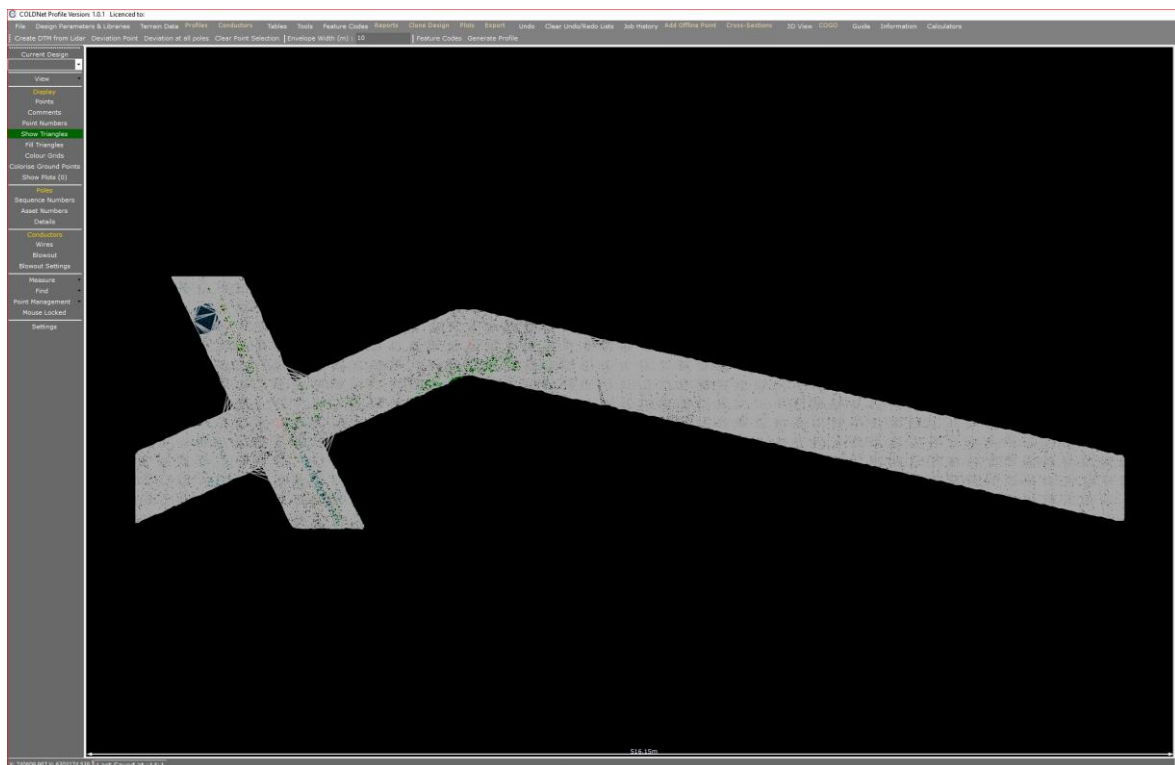
The dialog box titled "Digital Terrain Model Progress" shows the status of various tasks and the progress of 12 threads. The tasks are listed on the left with checkboxes, and the threads are listed on the right with corresponding progress bars.

Task	Thread	Progress
<input checked="" type="checkbox"/> Collect Terrain Points	Thread1	100%
<input checked="" type="checkbox"/> Setting up Grids - Pass 1	Thread2	100%
<input checked="" type="checkbox"/> Setting up Grids - Pass 2	Thread3	100%
<input checked="" type="checkbox"/> Removing Empty Cells	Thread4	100%
<input checked="" type="checkbox"/> Start Triangulation	Thread5	~80%
<input type="checkbox"/> Triangulation Completed, Cleaning up Grids	Thread6	100%
<input type="checkbox"/> Removing Duplicates	Thread7	~50%
<input type="checkbox"/> Merging Cells	Thread8	~80%
<input type="checkbox"/> Model Completed	Thread9	100%
	Thread10	100%
	Thread11	100%
	Thread12	100%

Buttons: Cancel, Return to Main Form

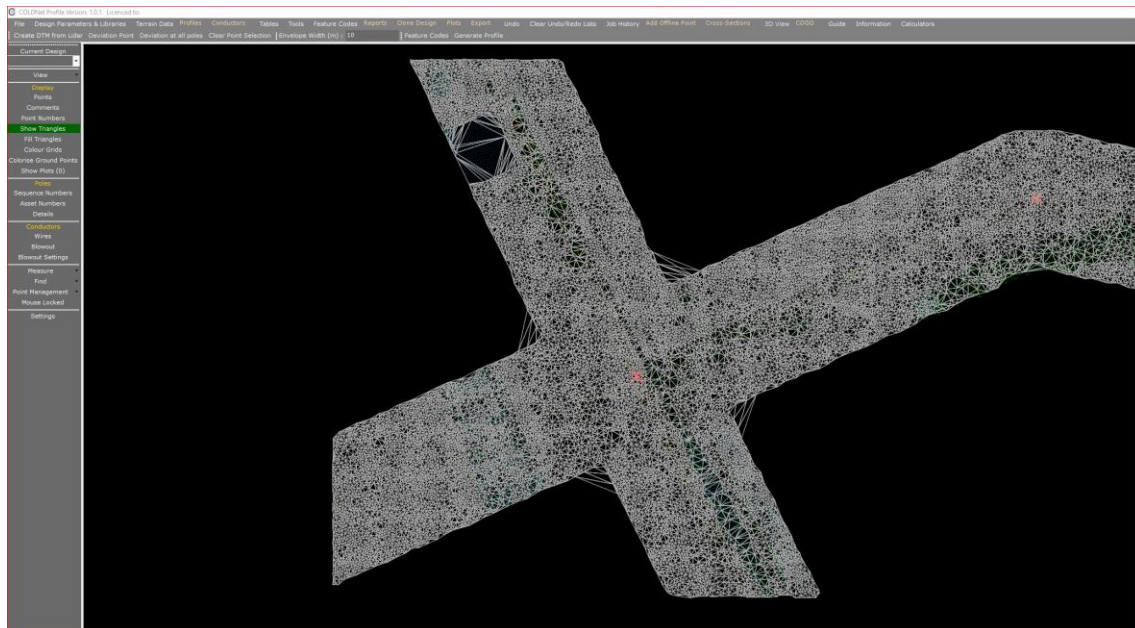
On the right hand side of this form there is a Progress Bar displayed for each thread.

Once the process is finished, this form will be closed, and you will be returned to the main screen which will look like the image below.



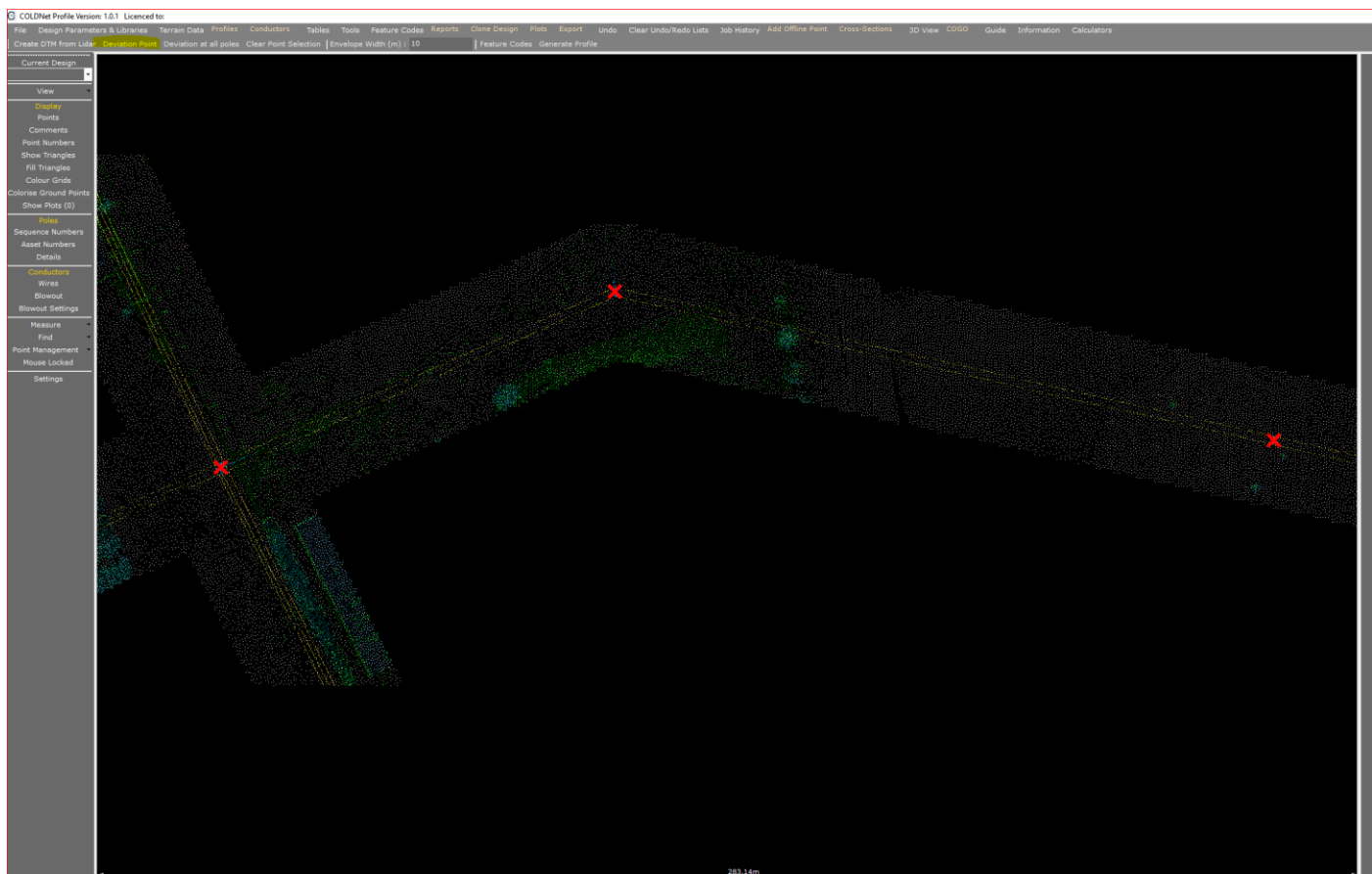
COLDNet Profile – Import Lidar Data

Zooming in will show the triangles that have been created.



10. Turn off the triangles by clicking on the highlighted **Show Triangles**.

The next step is to create the centreline. You will see points marked with a large red cross as shown below.



11. Select **Deviation Point** as highlighted in the menu on the image above then select the red cross on the left of the screen by moving the mouse over the point and pressing the left hand mouse button.

COLDNet Profile – Import Lidar Data

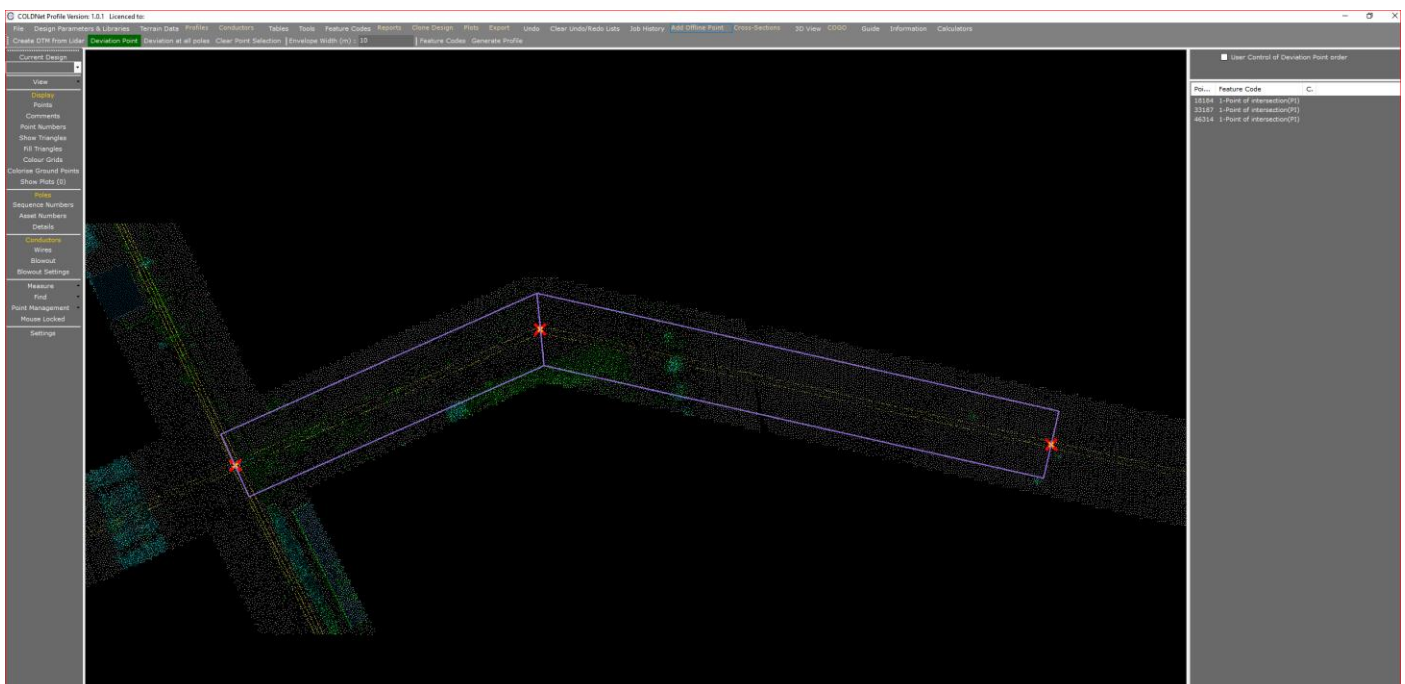


The speed and number of points found depends on how far you have zoomed in and the point density. Typically, with Lidar, the program will find a number of points near in the vicinity of where you clicked the mouse button. When multiple points are found, you will then need to select the required point from the list displayed to you.

- Find the Point 18184 as highlighted in the screen below. Note that with this lidar file, the point is marked as a Feature Code Type 1 which is a pole location. The press **Select Highlighted Point**.

Multiple Points Found							
Cancel							
	Point No	East (m)	North (m)	Elevation (m)	Feature Code	Comment	Is Deviation already
	18184	740598.400	6303115.240	664.060	1 - Point of intersection(P1)		<input checked="" type="checkbox"/>
	17834	740596.840	6303115.650	664.050	2 - Ground		<input type="checkbox"/>
	17871	740597.050	6303113.960	663.950	2 - Ground		<input type="checkbox"/>
	17905	740597.240	6303114.440	664.010	2 - Ground		<input type="checkbox"/>
	17917	740597.280	6303116.010	664.160	2 - Ground		<input type="checkbox"/>
	17922	740597.300	6303115.120	664.070	2 - Ground		<input type="checkbox"/>
	17966	740597.530	6303113.550	663.990	2 - Ground		<input type="checkbox"/>
	18038	740597.890	6303116.150	664.260	2 - Ground		<input type="checkbox"/>
	18075	740598.020	6303114.910	664.110	2 - Ground		<input type="checkbox"/>
	18089	740598.070	6303113.600	664.030	2 - Ground		<input type="checkbox"/>
	18195	740598.450	6303114.450	664.150	2 - Ground		<input type="checkbox"/>
	18199	740598.470	6303115.150	664.170	2 - Ground		<input type="checkbox"/>
	18214	740598.530	6303116.080	664.280	2 - Ground		<input type="checkbox"/>
	18268	740598.740	6303113.550	664.050	2 - Ground		<input type="checkbox"/>

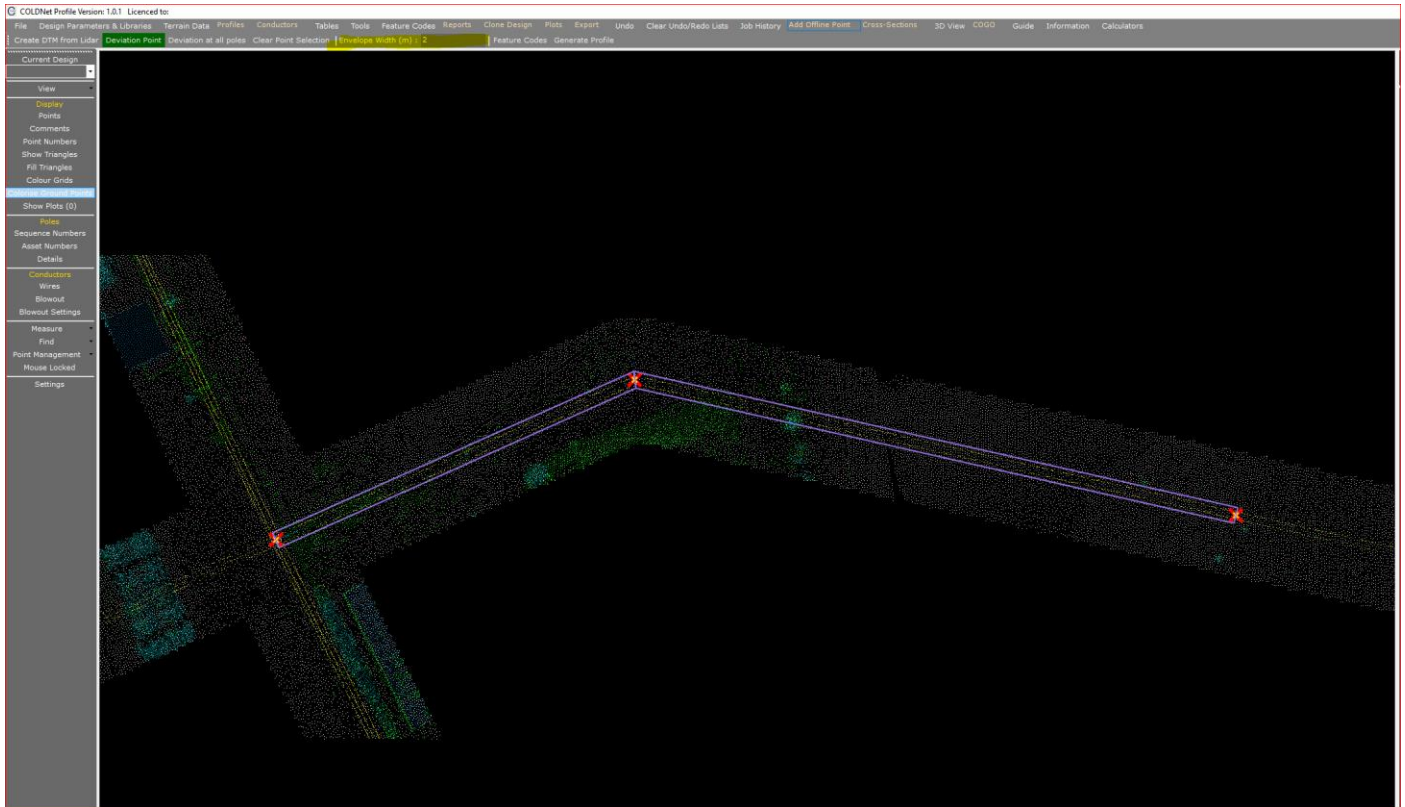
- Do the same for the other 2 points with the red cross. The point numbers are 33187 and 46314. The screen should now look like this.



COLDNet Profile – Import Lidar Data

The blue/purple envelopes show which aerial points will be visible in the profile view. It is best to match this to the type of data. Currently in this job the value is set to 10m either side of the centreline. Reduce this value to 2m.

14. Change the envelope width by entering a new value as shown in the image below. Note that the envelopes decrease in size.



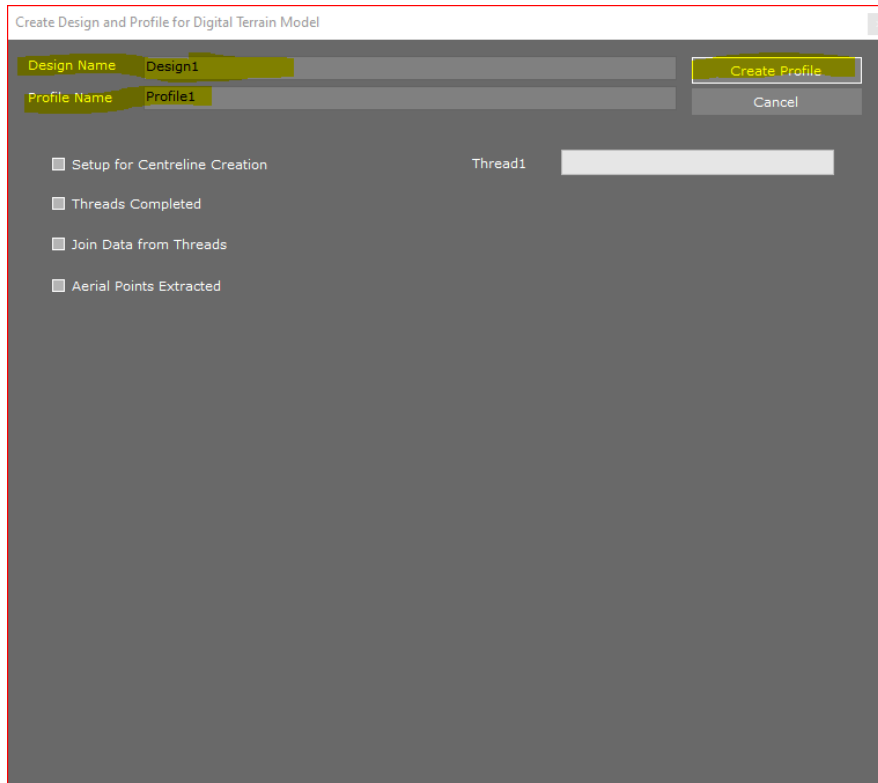
15. Select the menu option **Create Profile** as shown below.



COLDNet Profile – Import Lidar Data

The form below will be displayed. Here you can change the Design and Profile name. The creation of the centreline is also a multithreaded process and the speed of the process depends on the point cloud density, number of triangles and number of spans.

16. Select **Create Profile**



Create Design and Profile for Digital Terrain Model

Design Name: Design1

Profile Name: Profile1

Create Profile

Cancel

☐ Setup for Centreline Creation

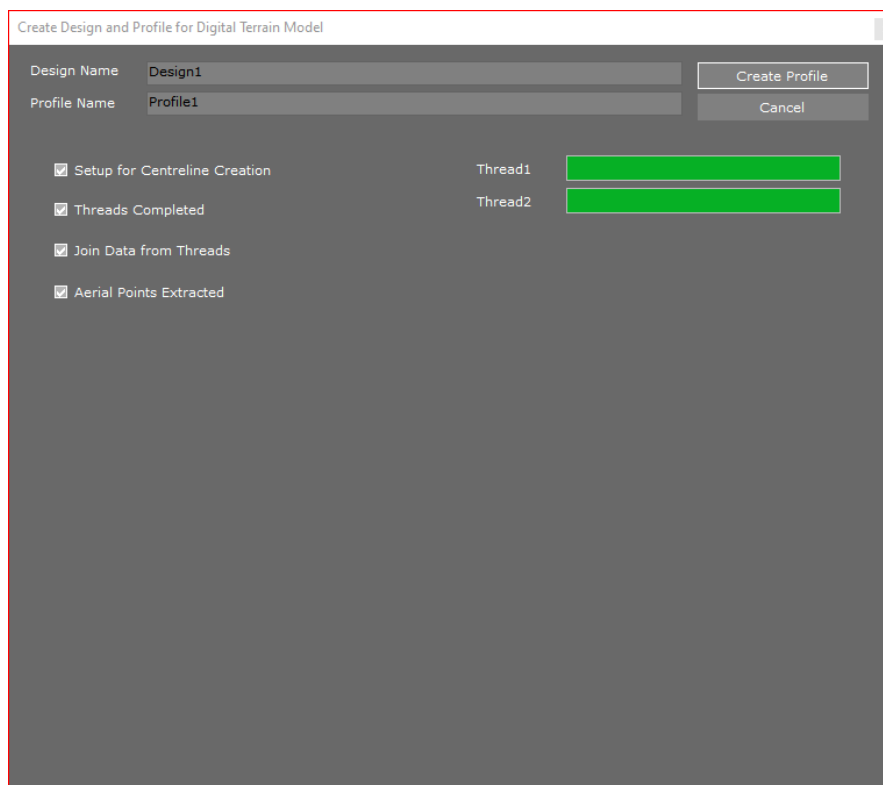
☐ Threads Completed

☐ Join Data from Threads

☐ Aerial Points Extracted

Thread1

The number of threads used depends on how many spans are being processed. In this case there are only 2 spans, so only 2 threads are used as shown below. You will be notified with a message box when the process has completed.



Create Design and Profile for Digital Terrain Model

Design Name: Design1

Profile Name: Profile1

Create Profile

Cancel

☒ Setup for Centreline Creation

☒ Threads Completed

☒ Join Data from Threads

☒ Aerial Points Extracted

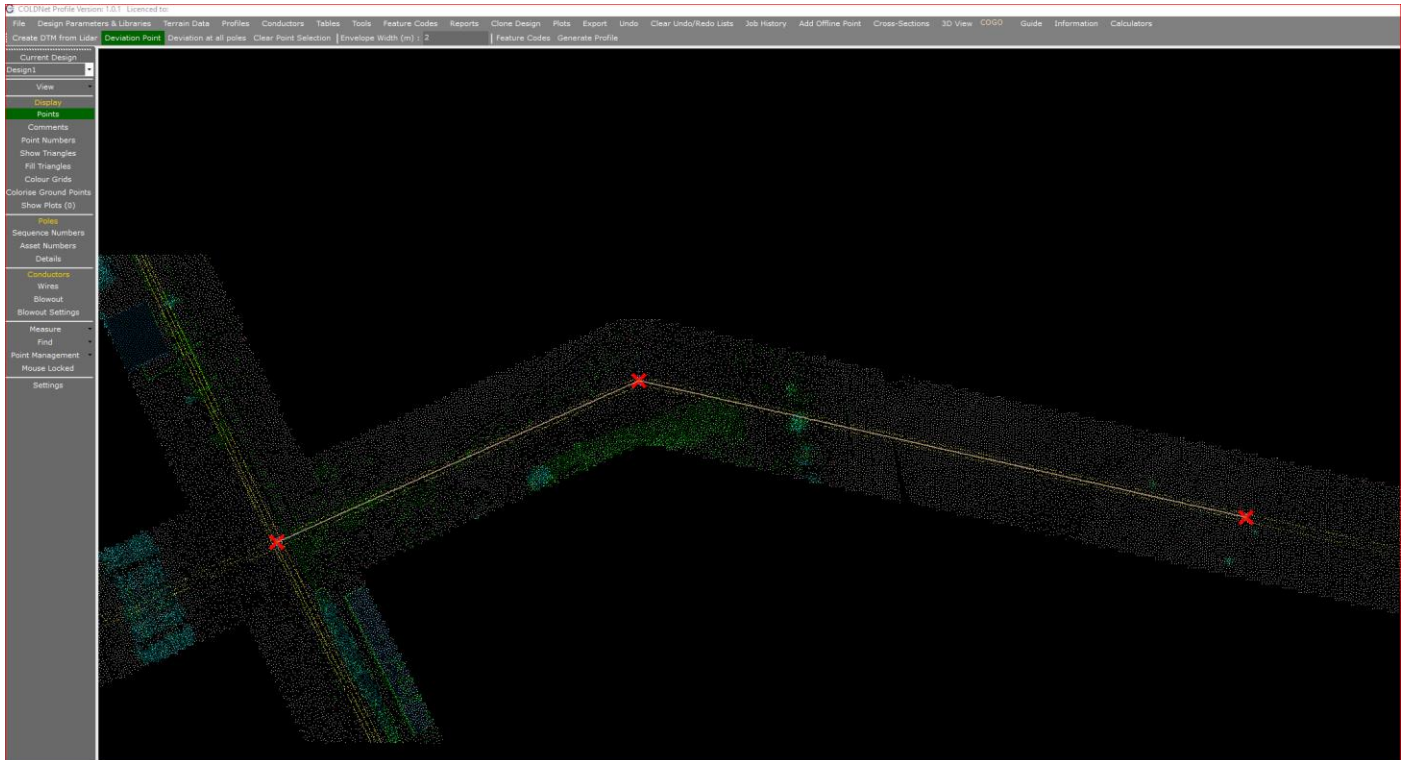
Thread1

Thread2

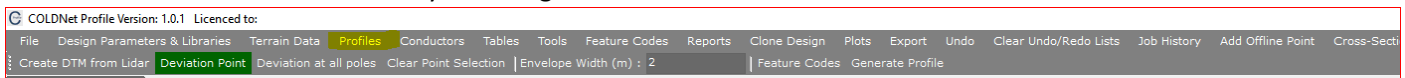
COLDNet Profile – Import Lidar Data



The view will now change to show a line between the pole locations as shown below.



17. Switch to the Profile view by selecting **Profiles** as shown below.



You should see this view below.

