

## Importing Control/Check Points into LP360

Platform: LP360 (Standalone)  
Minimum Licensing: Standard, sUAS  
Version: 2017.1 or higher

Author: L. Graham  
Date: 15 September 2018

### ***Introduction:***

This note describes how to import control and/or check points in text format into LP360 for use in accuracy assessment.

We distinguish these points as:

- Control Point – A point that was used in the modeling process. It generally should not be included in accuracy assessment.
- Check Point – A point that was not used in the modeling process and can therefore be used as a point to check accuracy.

The “native” feature file format for LP360 is Shape. If your control/check point file is in Shape format, you can simply import the file using the Feature import tool of LP360. If the file is in text (“ASCII<sup>1</sup>”) format, you will need to use the import tool of LP360 to convert this file to Shape.

You will need the points in the same Spatial Reference System (SRS) as the point cloud and/or image data in the project. LP360 allows you to convert the SRS on import so it is not necessary to use an external tool for this. Setting and converting SRS is described in a separate document.

### ***Control Point File Format:***

The format of the control point file is a comma separated values (CSV) text file (other delimiters are supported as well so if your control point file uses a different delimiter, this can be set in the import wizard). This file can be created in Microsoft Excel if your

---

<sup>1</sup> American Standard Code for Information Interchange

survey gear does not output a compatible format. The fields in this file are denoted in Table 1.

**Table 1: Control Point File Field Descriptions**

<i>Field</i>	<i>Data Type</i>	<i>Description</i>	<i>Level</i>
ID	Integer	An integer identification number for the point. They do not have to be sequential	Required
Name	String	A name for the point	Optional
Description	String	Description of the point	Optional
Type	String	Two-character field that describes the type of point: "ab" where a = F = Full V = Vertical H = Horizontal and "b" = K = Check Point C = Control Point	Required
Easting	Double	The Easting of the point. Use rover or approximate location for horizontal if this is a vertical only point.	Required
Northing	Double	The Northing of the point. Use rover or approximate location for horizontal if this is a vertical only point.	Required
Vertical	Double	The Vertical of the point. Use -9,999 for Horizontal only points.	Required
Sigma X	Double	The accuracy of the Easting	Optional and not currently used by LP360
Sigma Y	Double	The accuracy of the Easting	Optional and not currently used by LP360
Sigma Z	Double	The accuracy of the Easting	Optional and not currently used by LP360

The first row of the Control Point file can be field descriptions. I strongly recommend that you add these since it makes associating fields with variables when importing much easier. Here is an example of a control/check point file (Figure 1):

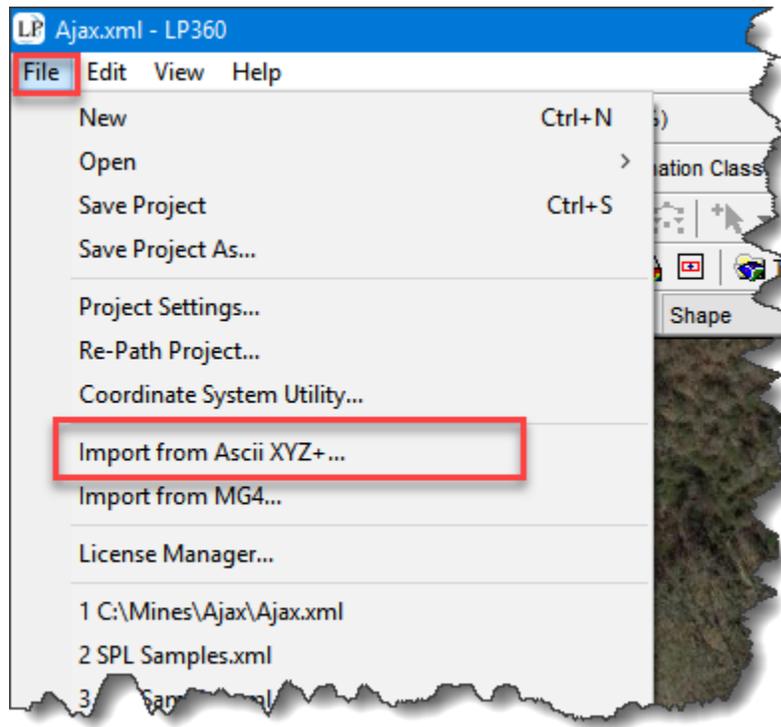
```
ID, Description, Easting, Northing, Elevation, Type
3,Base Station,858337.9690,386255.8010,362.4170,FK
10, ,858165.7598,386319.5334,364.0451,FC
11, ,858864.4229,386246.6754,358.1840,FC
12, ,858847.1663,385922.4312,356.9495,FC
13, ,859057.4477,385422.1548,369.7357,FC
14, ,858521.7577,385640.8200,357.8567,FC
15, ,858641.0186,385344.4816,354.7606,FK
16, ,858753.6238,385090.0788,360.9844,FC
17, ,858201.1545,385260.9771,361.4213,FC
18, ,858193.5260,385708.9747,358.8515,FC
19, ,858371.6242,385920.0835,360.1353,FC
```

**Figure 1: Example Check/Control Point File**

Note that if you leave optional parameters out of some rows, include a space between the commas. For example, I have included a value for Description only for the first data row (“Base Station”). Where the slot occurs for Description in all other rows, I have simply included a space (“, ”) between the comma delimiters. Note that your parameters can be in any order so long as each row is in that same order.

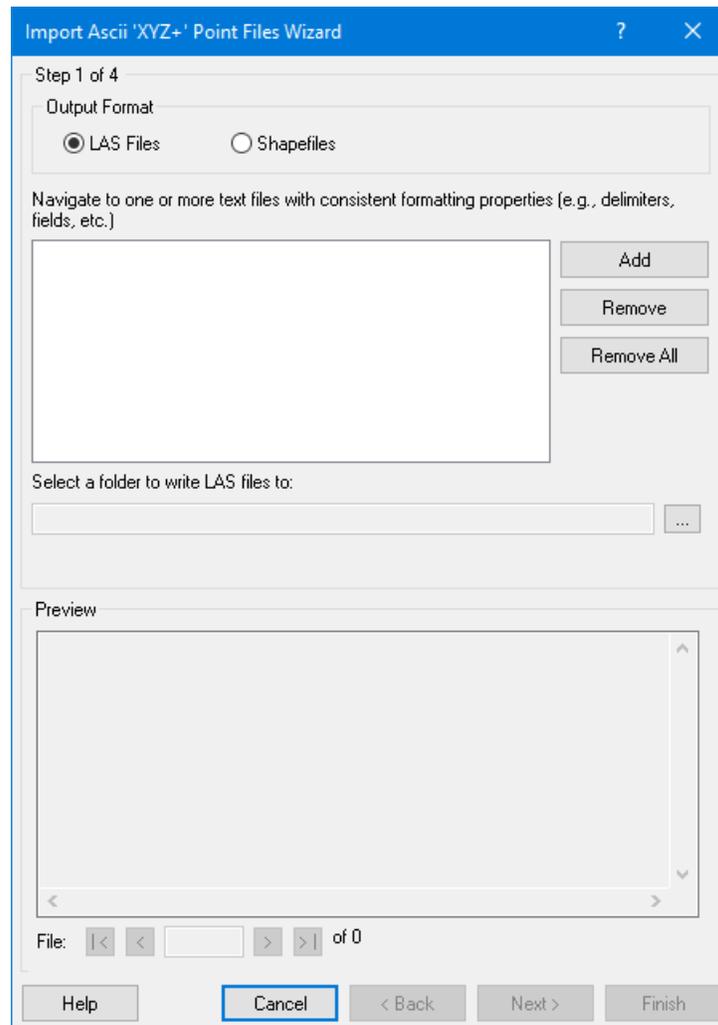
***Importing the File:***

An Import Wizard is used to import the control point file. This is invoked from the **File** menu by selecting “Import from Ascii XYZ...” (see Figure 2). Note that the same import wizard is used for importing point clouds that are in ASCII text format.



**Figure 2: Launching the ASCII File import wizard**

Choosing this selection brings up the ASCII File import wizard shown in Figure 3.



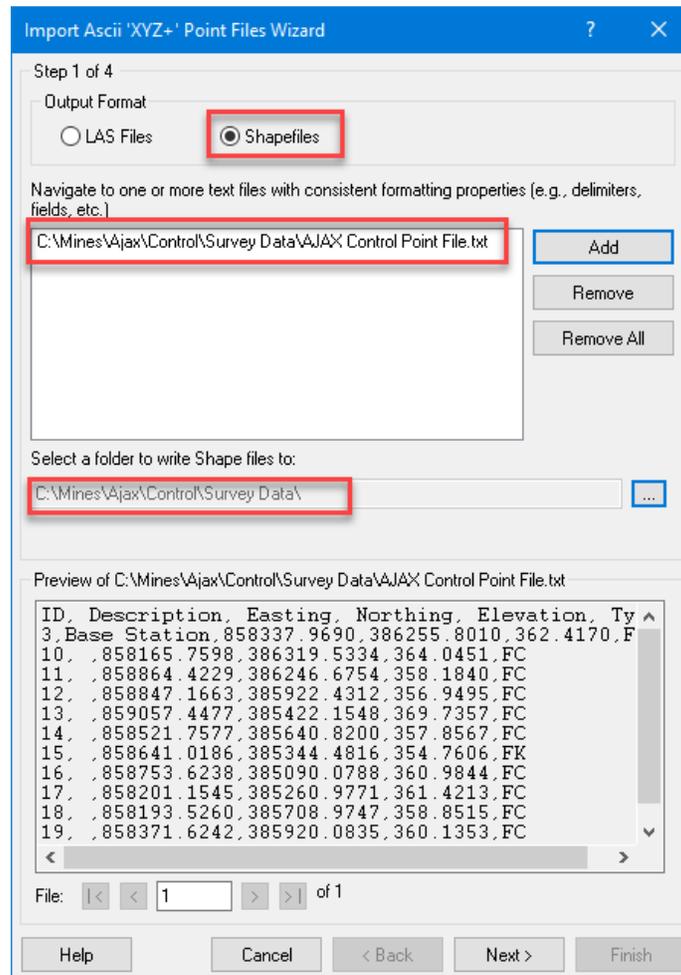
**Figure 3: ASCII File Import Wizard**

This tool can import ASCII text files into either point cloud format (“LAS”) or Shape feature file format. We want Shape feature file format so choose this in the Output Format section of the dialog. The Wizard can import more than one file in a single import operation. You will see a File selector at the bottom of each page of the Wizard where separate file operations might apply. This document focuses on importing a single file.

Use the Add button to browse for the text file that contains your control points.

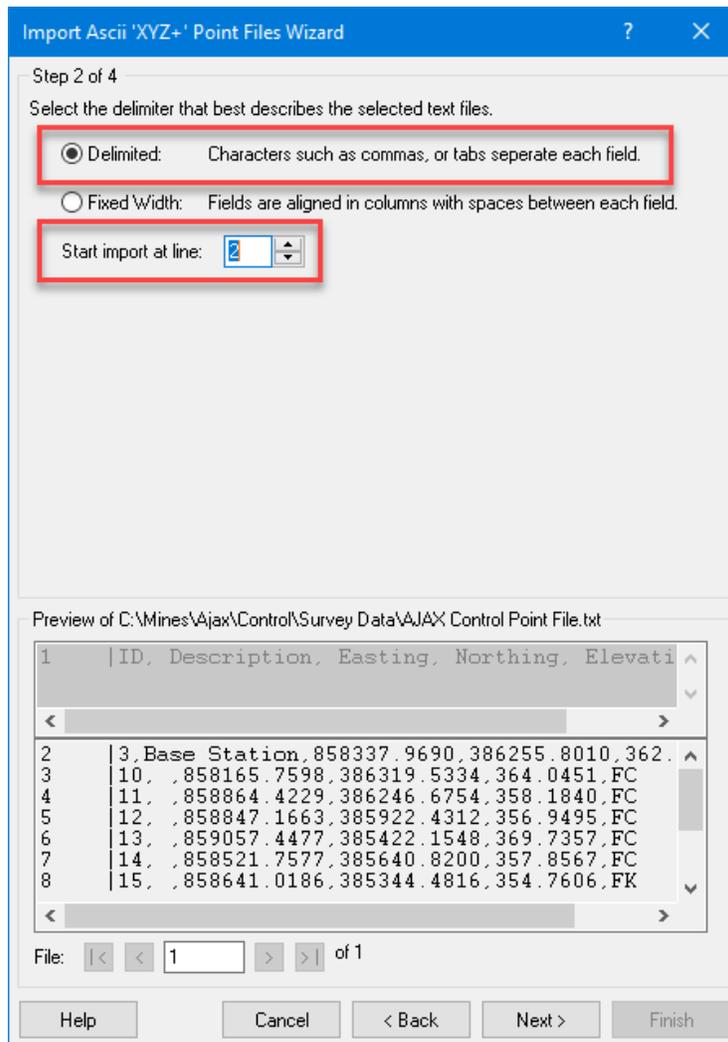
Set the folder where you want the output Shape file written in the “Select a folder to write the Shape files to:” section of the dialog.

A preview of your file will appear in the lower section of the dialog. This is shown for my control point file in Figure 4. This Wizard is also used for converting point clouds in text format to LAS format so make sure you have set the Output format at the top of the dialog to Shape.



**Figure 4: Populating the first page of the Wizard**

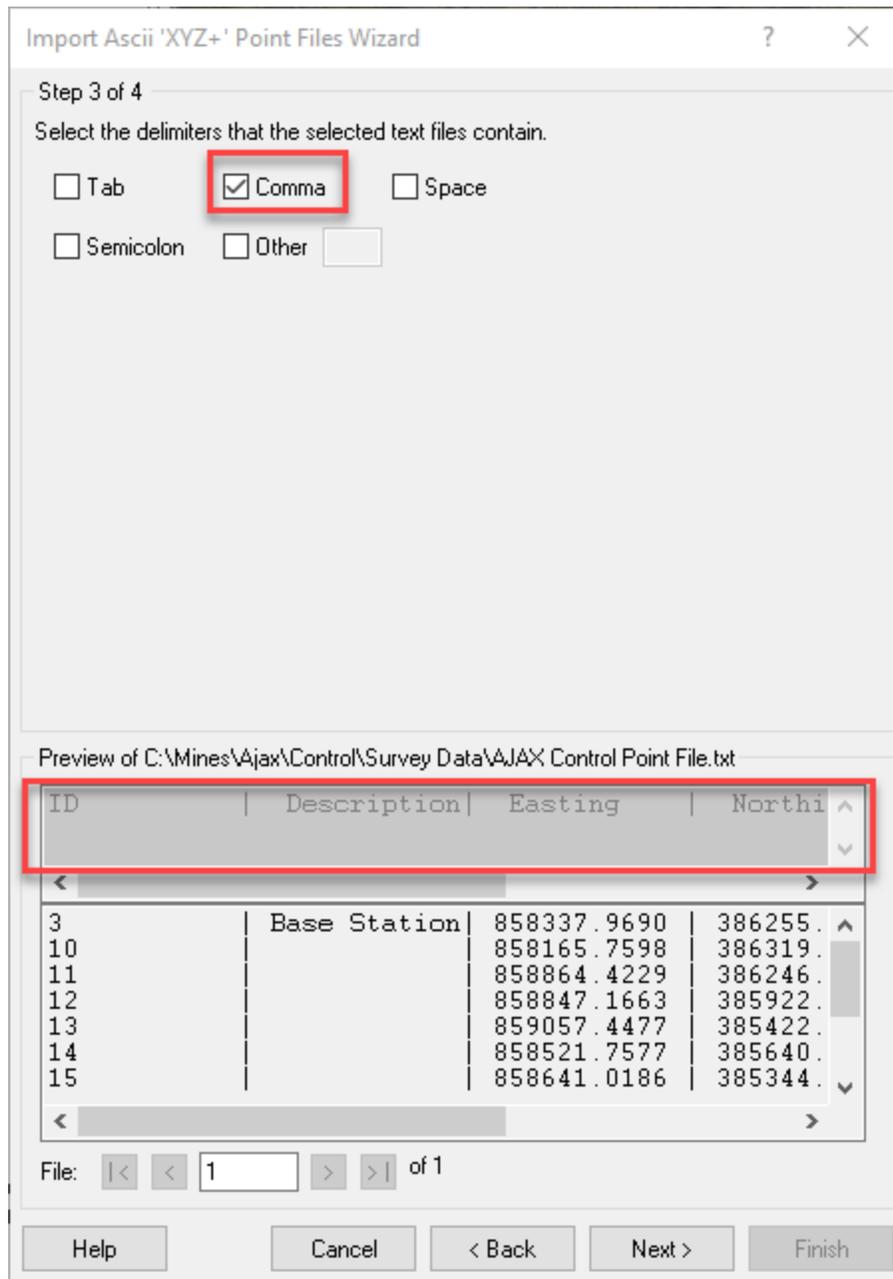
Click “Next >” at the bottom of the dialog to bring up the next page of the Wizard. On this page (Figure 5), set the delimiter mode to Delimited (since we are using a comma to delimit fields). Set the “Start import at line x” option to the line where actual data begins in your file. I recommend always putting labels in the first row of the import file. If you have followed this advice, your data start on row two so set this field to “2.” If you did not add descriptive fields, set this value to “1.”



**Figure 5: Page 2 of the Import Wizard**

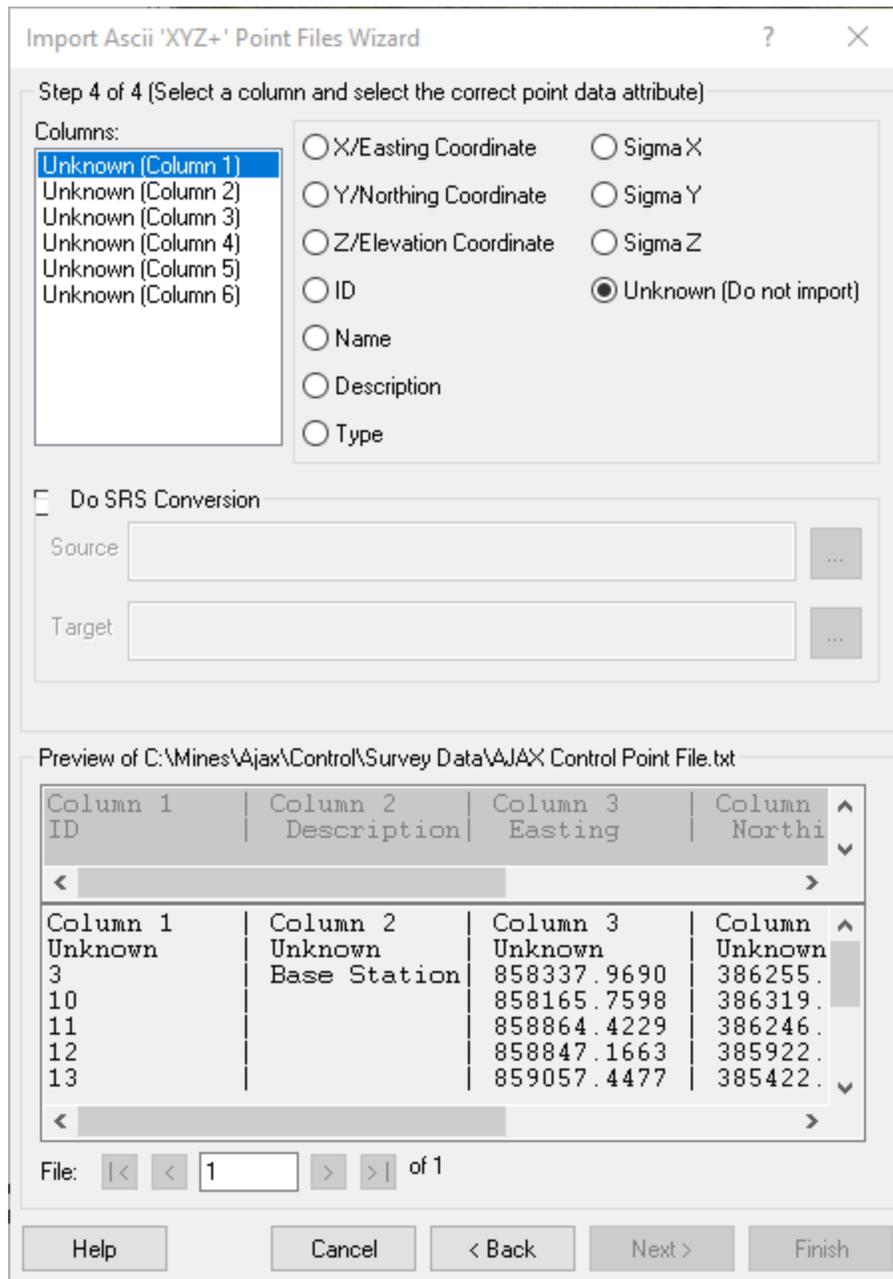
Click “Next >” at the bottom of the dialog to move on to page 3.

Select “Comma” as the delimiter (Figure 6). At this point you should see your data columns properly separated in the preview section at the bottom of the dialog. If you added a header row to your text file, you should see each column aligned beneath the label for that column. If not, go back and ensure all settings are correct in the wizard. If everything looks OK but the data are still not properly aligned, cancel the dialog and inspect your text file.



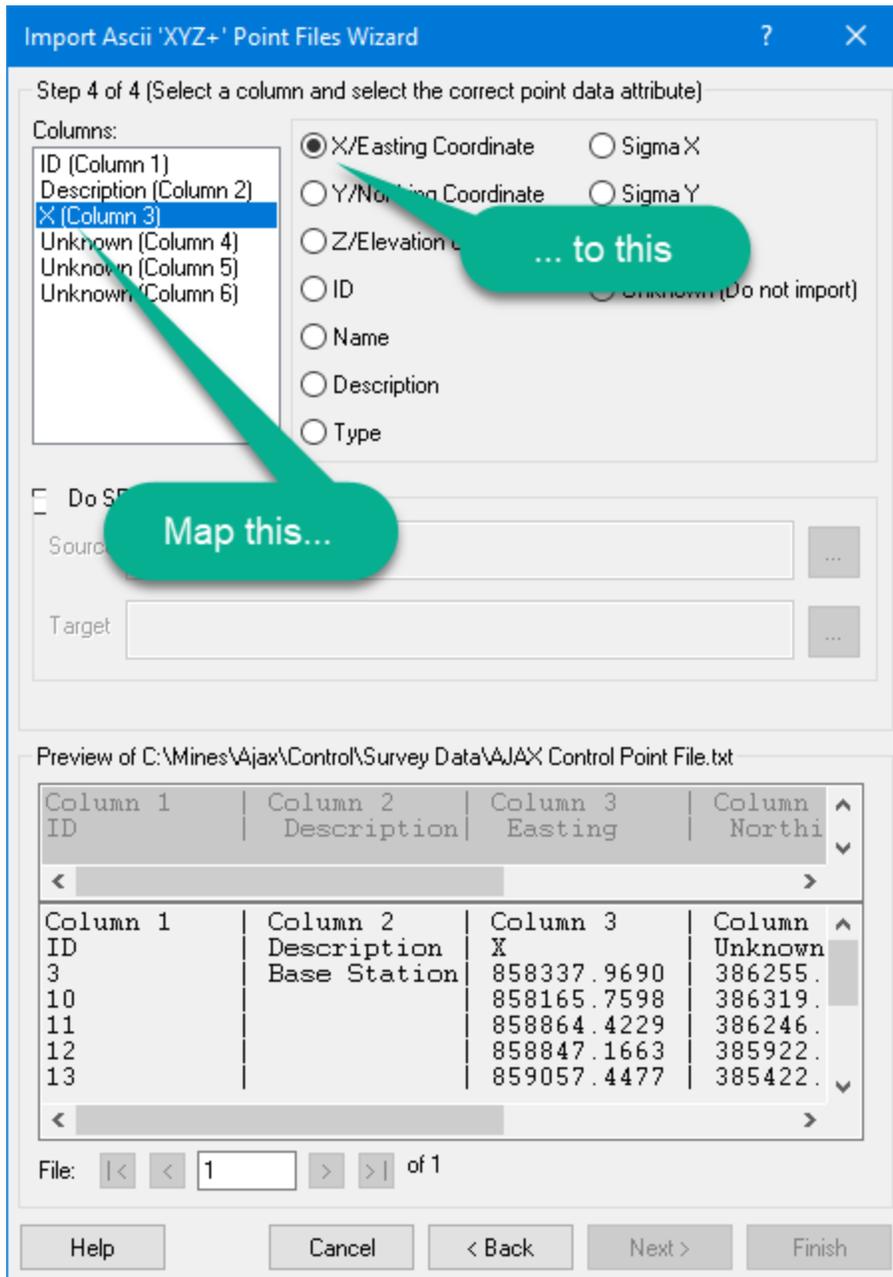
**Figure 6: Choose the delimiter being used in the file**

When all is well, press “Next >” to move on to the next page. This will display the column mapping and SRS page of the import wizard (Figure 7).



**Figure 7: Column mapping, SRS settings**

In this section of the import, you must map the columns of your file to the field types. This is done by choosing a column in the “Columns:” list in the upper right of the dialog and then selecting the appropriate data field from the choices in the upper right section of the dialog. I have depicted this process as I am mapping the third column of the file in Figure 8.



**Figure 8: Mapping data columns**

Note that all columns of the file must be mapped. If you do not need to import one or more columns, mark them as “Unknown (Do not import).”

The next section of this page of the dialog is used if you need to transform the Spatial Reference System (SRS) of your control/check points. To enable this section of the

dialog, check the “Do SRS Conversion” option. You then browse for the appropriate SRS for the input (your ASCII text file SRS) and the desired output SRS. Choosing SRS is described in a separate document.

When you have finished mapping all fields, the “Finish” button will enable in the lower right section of the dialog. Press this to convert the file.

Note that at version 2018.2.36.0 of LP360, the resultant file(s) is not imported. You will need to browse to the file using the Feature Import dialog of LP360 (we will have this dialog import files prior to the final release of 2018.2).