Processing RTK data in Pix4d Mapper.

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Introduction.

As part of my workflow, I use either a DJI M200v2 fitted with a X5s and 15mm lens or a DJI M300 fitted with a P1 camera and either a 35mm or 24mm lens. For this explanation I will use the data gathered with the M300 and P1 fitted with the 35mm lens.

It is important the P1 and lens is calibrated correctly and details on how this should be done not be covered in this process however the calibration process can be found on DJI website or a google search.

To start the process, it is important that the data collected is the best it can be. To that end, when I am using the M300 with the P1 I use at least 70% side overlap and 80% front and rear overlaps, make sure elevation optimisation is switched OFF and fly the drone as slow as possible but fast enough to make the flight efficient.

Keep the height as low as possible however keep with the drone code for this. Remember that the lower you fly the lower the GSD (Ground Sample Distance) but the longer the flight will take.

To start the process, you will need the following software installed, Microsoft Excell. Grid inquest and Pix4d mapper. It is very important that when you copy the images from the SD card to your PC **DO NOT** rename the individual files, only the folder if you need to.

The first stage after you have transferred the file to your PC is to copy the EXIF data from the images and to covert them from WGS84 to OSGB36. This is done as below.

1. Open Pix4d mapper start a new project.
2. Select the location for the project and click Next.
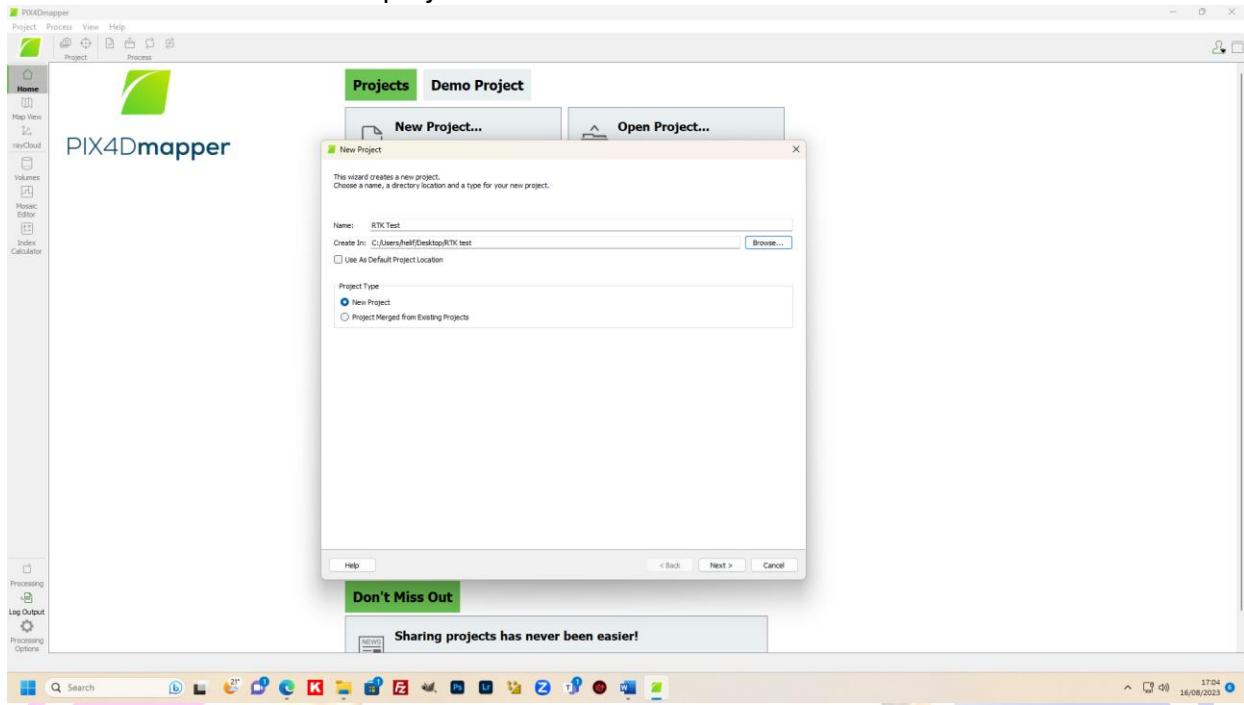
3. Next you need to select all the images for the project. Click on Add images and find the folder with the images in. Then click next.
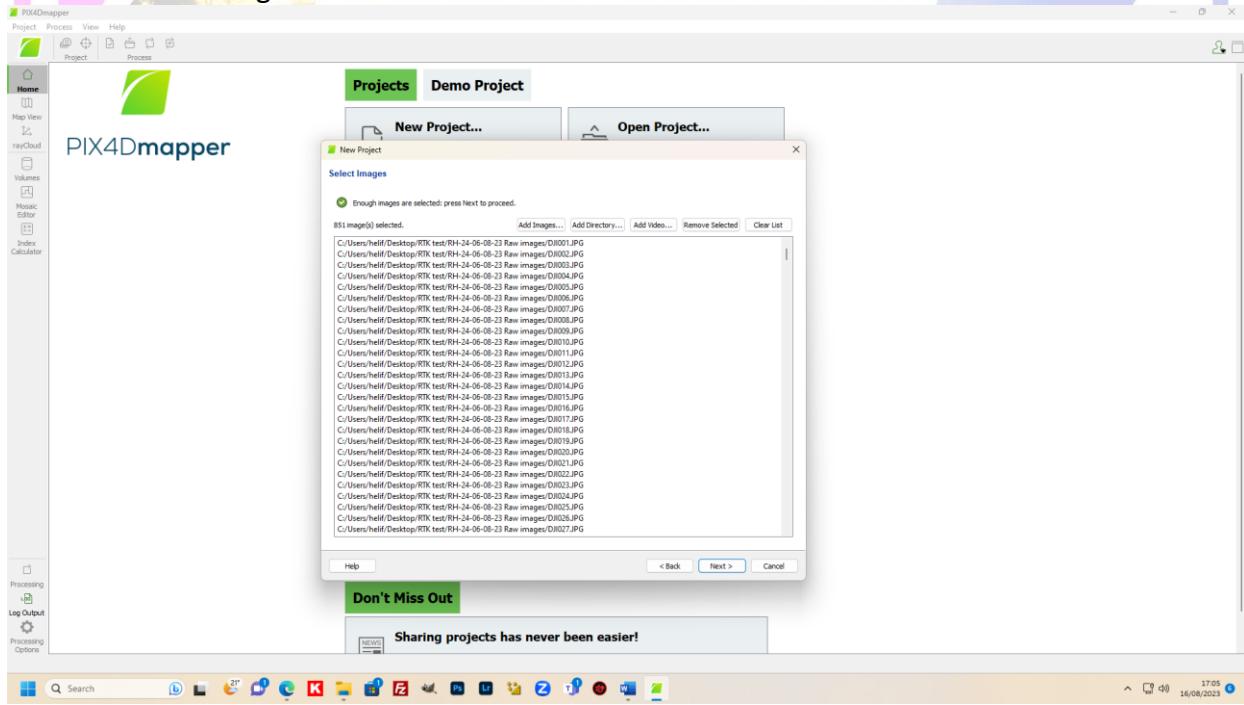
4. When all the images are loaded the program will extract the EXIF data from the images.
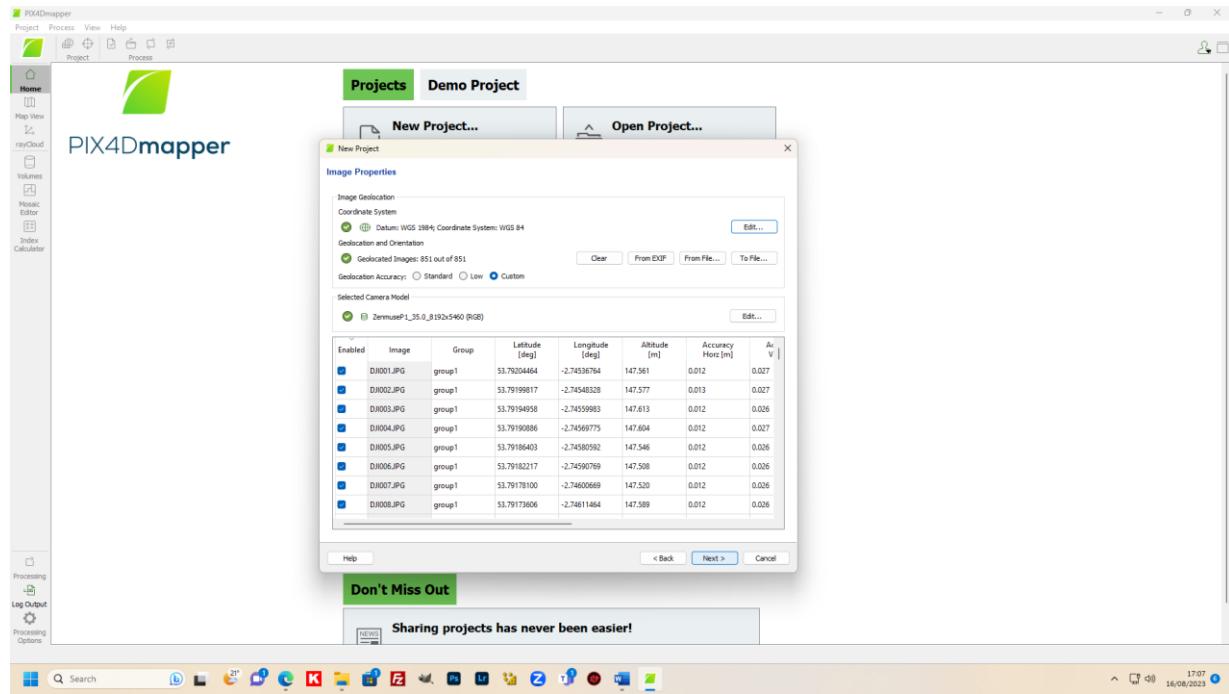
5. First you need to edit the input coordinate system.
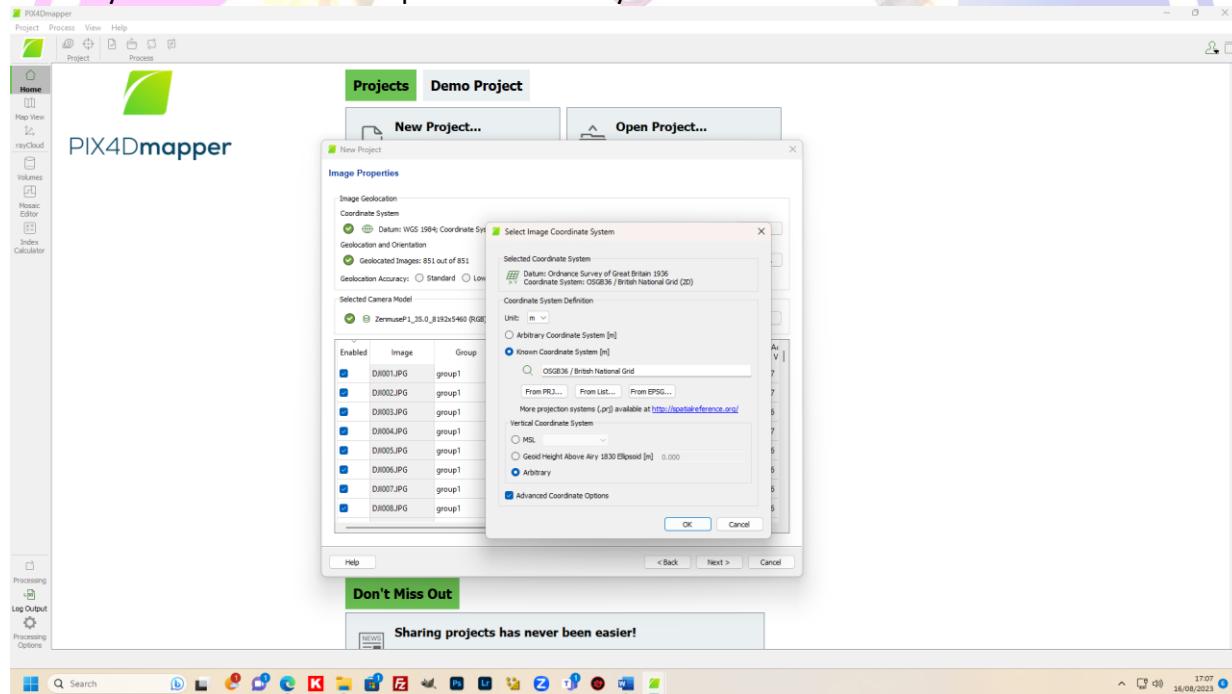
Click edit to the right of the selected Input coordinate system. Type in OSGB and select
OSGB1936 British national grid or type 27700 and OSGB1936 British national grid should
appear. Select it and then tick the Advanced coordinate options
From the new menu click Arbitrary. Then click OK.

6. Next click "To file" and select a location to save the Geotags. Name the file and click save. Now minimise Pix4d
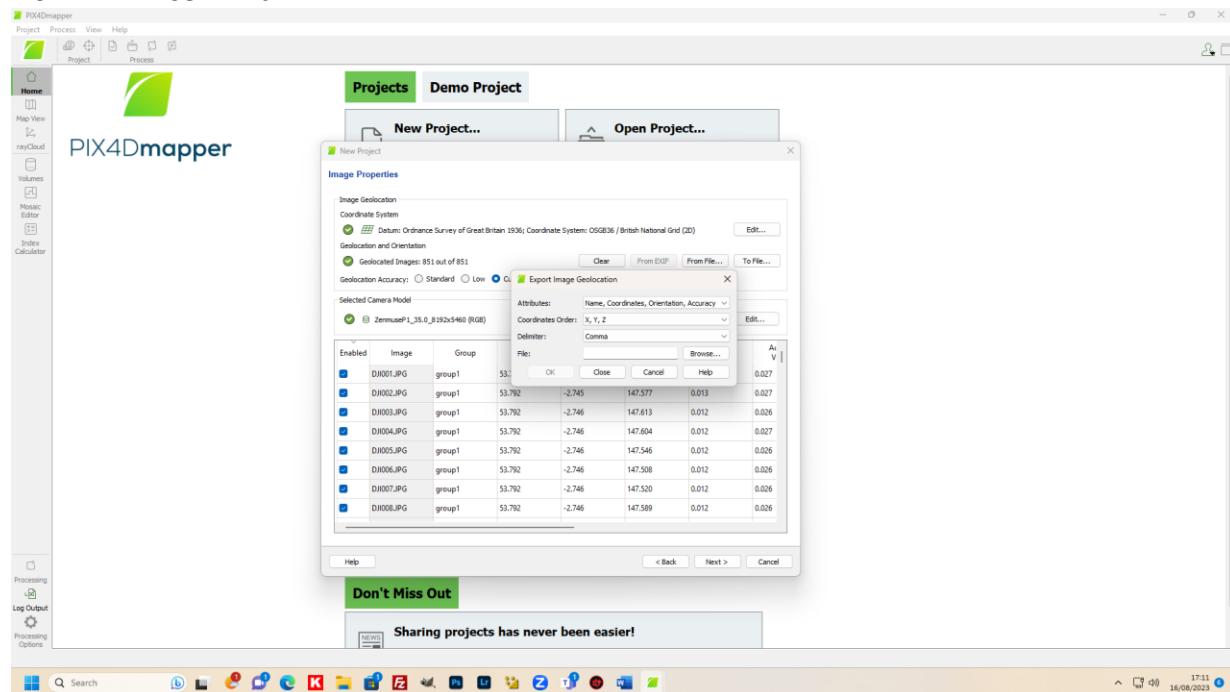
7. Find the file you just created and open it. It should open in note pad.
   In notepad select edit and then select all from the menu.
      Then select Edit then copy.
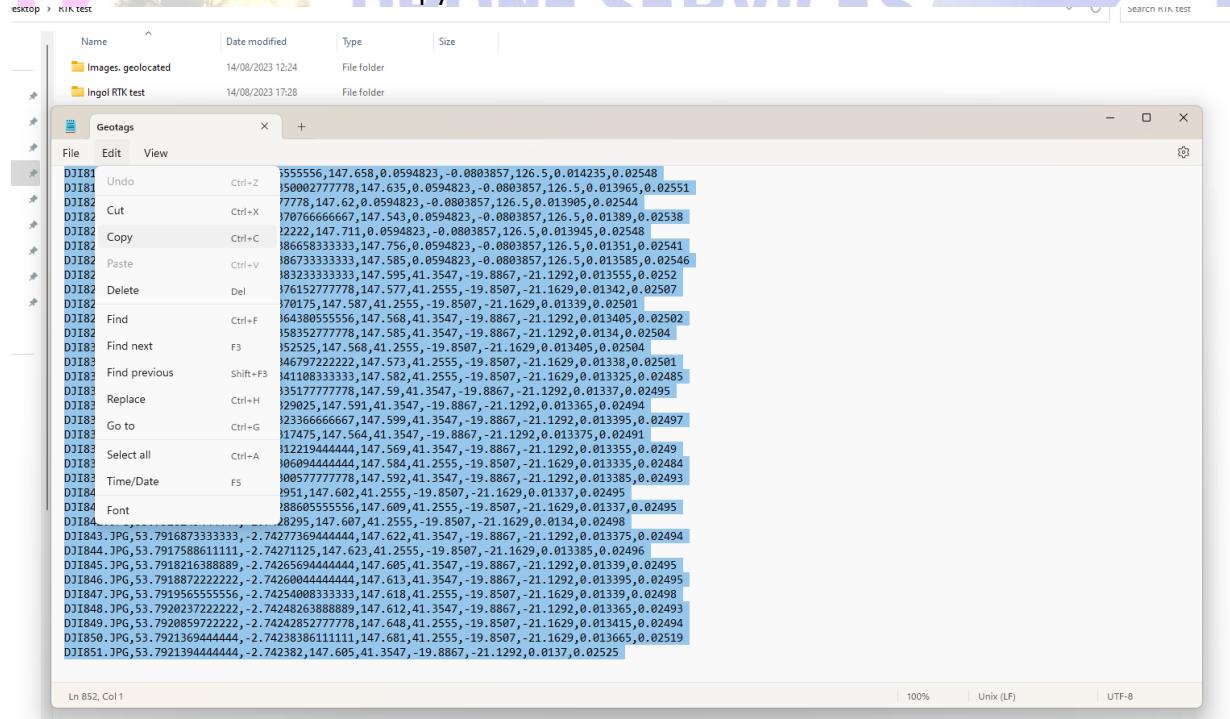
8. Next open excel and choose new workbook

9. Click on the top left cell then click paste from the top ribbon bar.
All of the data from the previous sheet should appear in the top left cell.
Select the Data tab from the top ribbon bar then select then click Text to Column. From the menu click next on the bottom right. Select Comma as the delimiter. Click Next then finish.
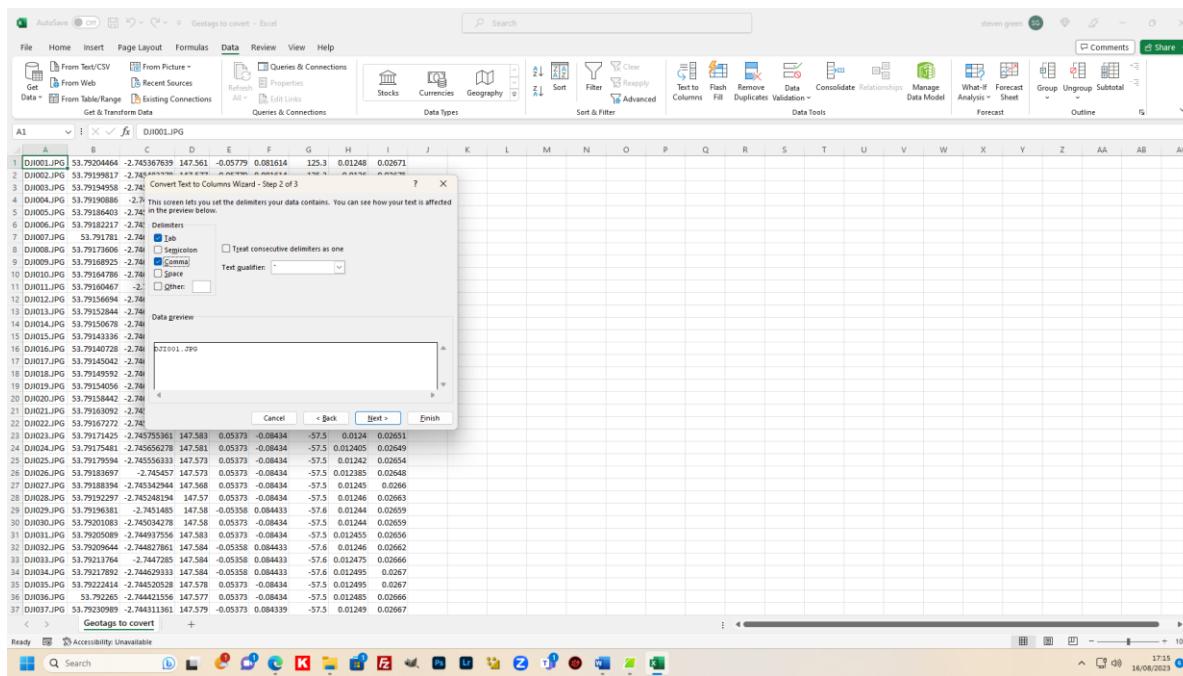
10. Click File then 'Save as' a CSV in a location you can find it on your PC.

11. Now open grid inquest.
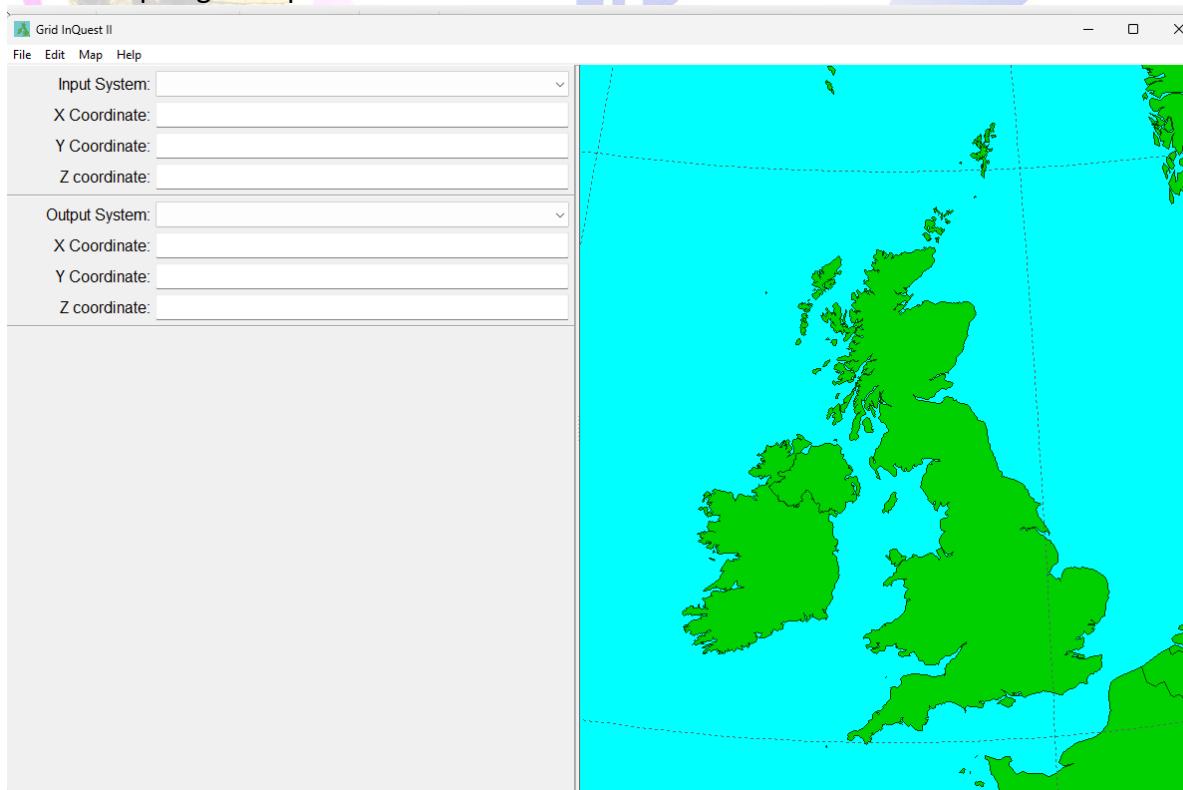
12. Click file then select Load data points. Then find the file you just created and select it.

In the menu that appears.

Select 1 in the box next to Data Starts Row

Select ETRS89 Geodetic for the input coordinate system.

Select Colum 2 for the Latitude.

Select Colum 3 for the Longitude.

Tick has vertical data.

Select Colum 4 for Altitude.

Select OSGB1936/ British national grid (TN15/GM15)

Tick Output vertical datum as additional field.

Click OK.
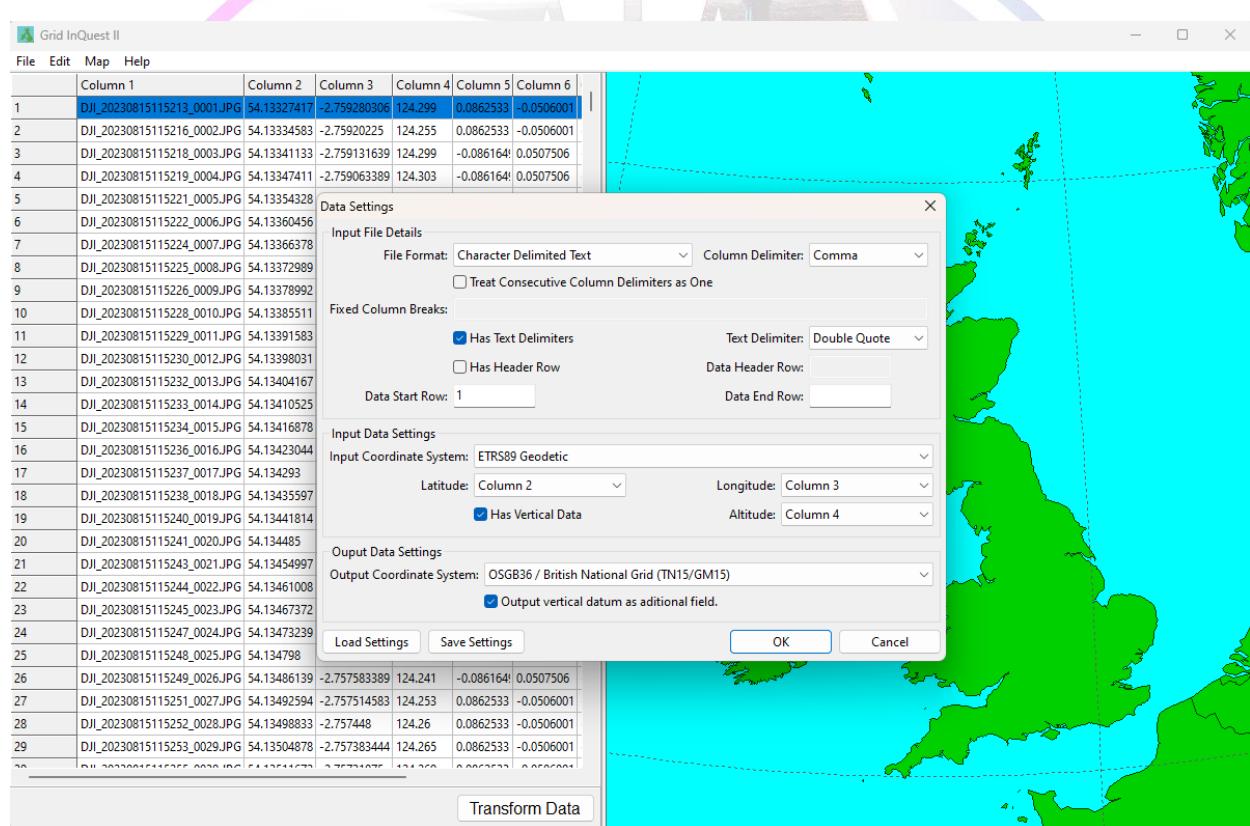
13. Next click Transform data.

You will now have a number of columns with the last 4 titled OSGB East, OSGB North, OSGB Height and OSGB Datum.
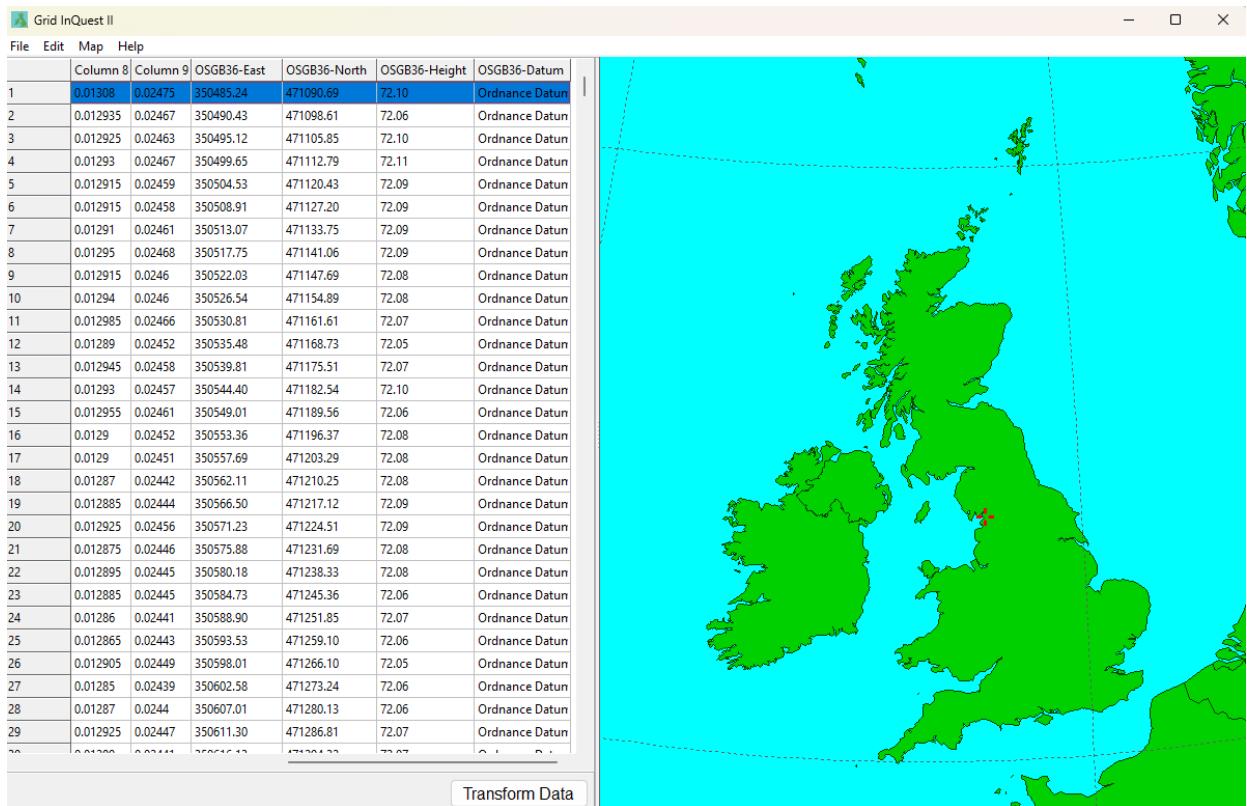
14. Click file the select save data points.

15. Save the file as a CSV in a location you can find it again.
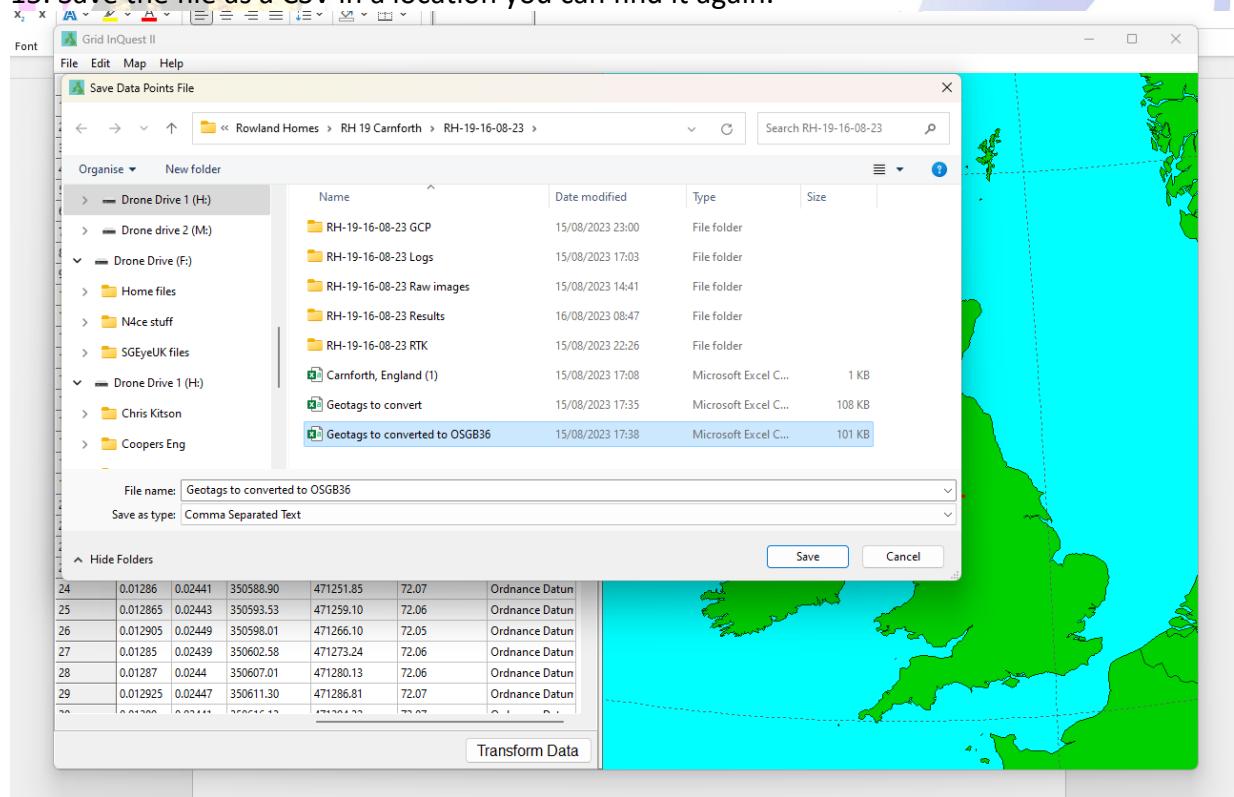
16. Open the CSV file and delete Colum H (this contains the name of the datum and is not needed)

17. Highlight columns E, F and G and drag them over the replace columns B, C and D. Click OK to replace the data. Then click save then close the file.

Please see Notes at the end of this document.

18. Now go back to Pix4d and click "From file" and then click browse and lock the file you just amended. Then click OK. The coordinates should now change to OSGB from WGS84.
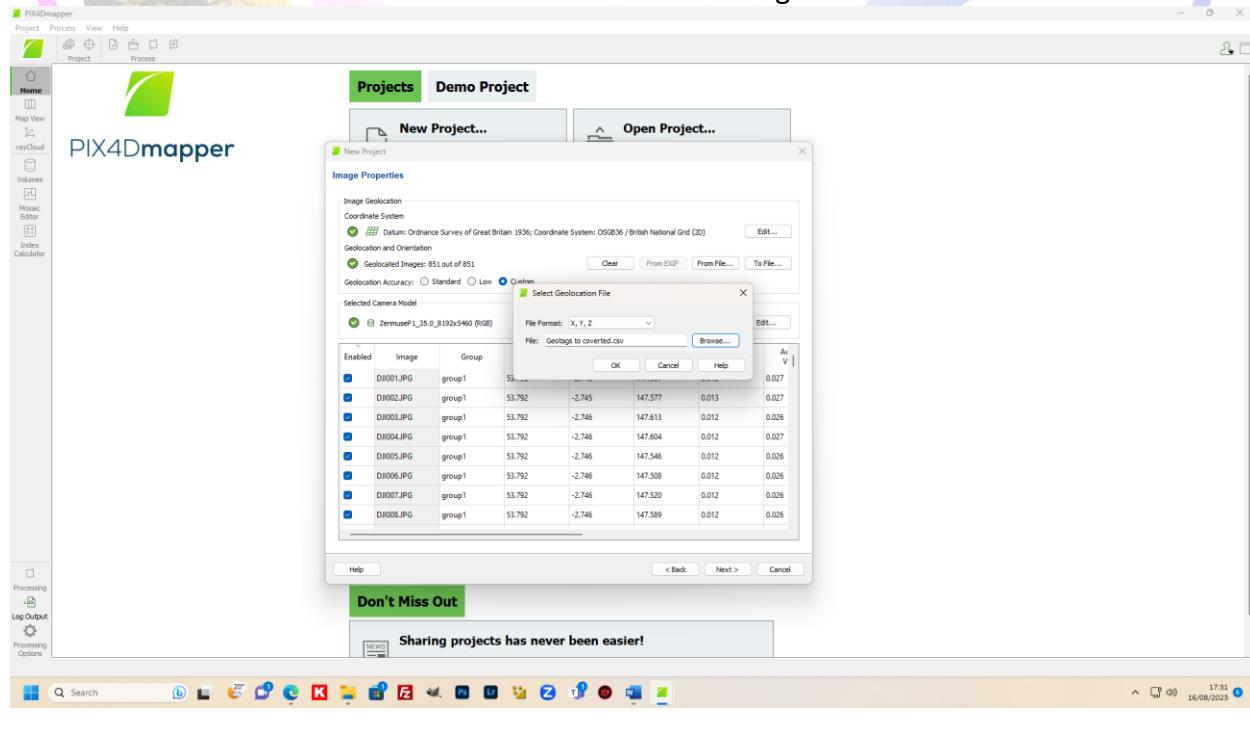
19. **Important that the input coordinates are XYZ.**
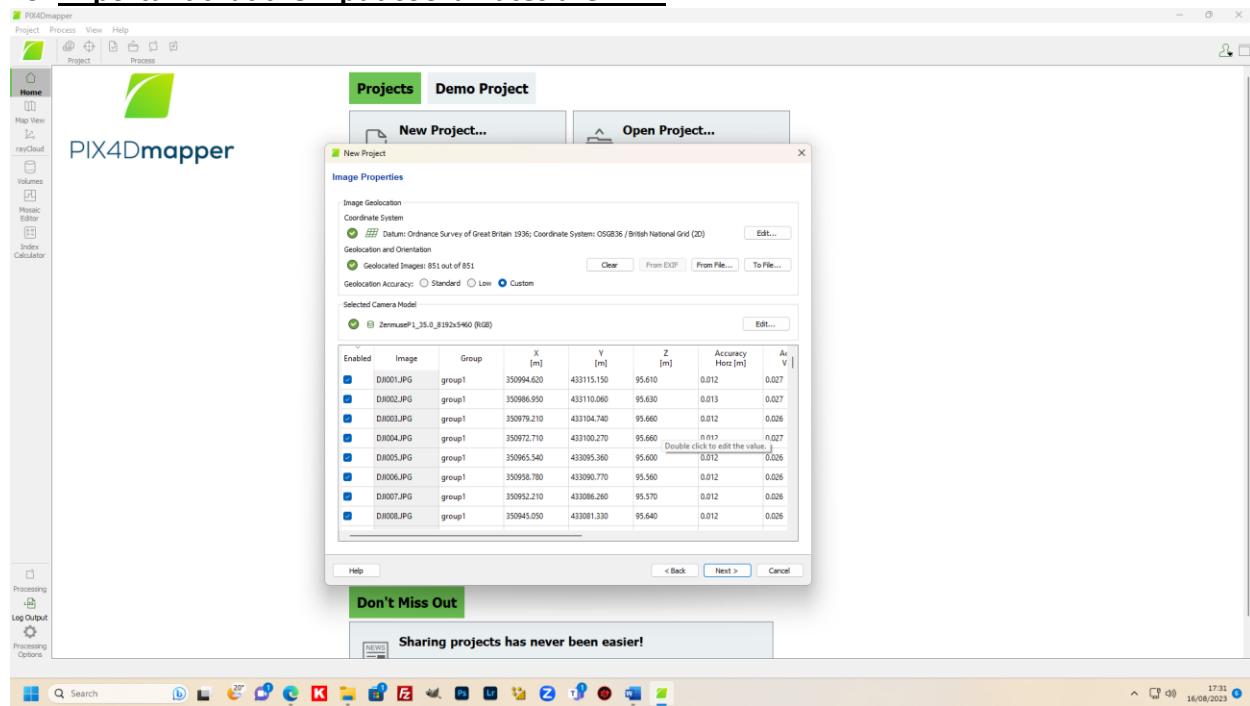
20. Now you can process in Pix4d as normal.

Note.

Sometimes the transformation creates an error on the first line of coordinates for the first image. As seen below there have been some extra symbols added to column A, line 2.

If left as is these extra symbols mean that the first image EXIF data won't transform in Pix4d. Simply delete these extra symbols without deleting the DJI file name for that image and save before you import this file into Pix4d.