



# ≡ Demo Script

Civil Infrastructure  
03 FEBRUARY 2017

## TRIMBLE MX7 AND MX SOFTWARE WORKFLOW– DEMO SCRIPT

### ✓ Resources Required

1. **DATA** –
  - a. *Your own Trimble MX7 Demo Data (note keep demo data sets very small) or*  
Trimble demo data (**Trimble MX7 Demo Data Leads**) is available at:  
<https://drive.google.com/a/trimble.com/file/d/0B6tm7iPJZ9OETEx0TVdQTkpmBHM/view?usp=sharing>.
  - b. This data is also published on our server at <http://217.243.229.188:1111/demonstrator/index.html>.
2. **SOFTWARE** – POSPac MMS
3. **SOFTWARE** – Trimble Business Center (v3.81+) or Trimble MX7 Data Converter
4. **SOFTWARE** – Trimble MX Asset Modeler

### 1. Data Download – Trimble MX7

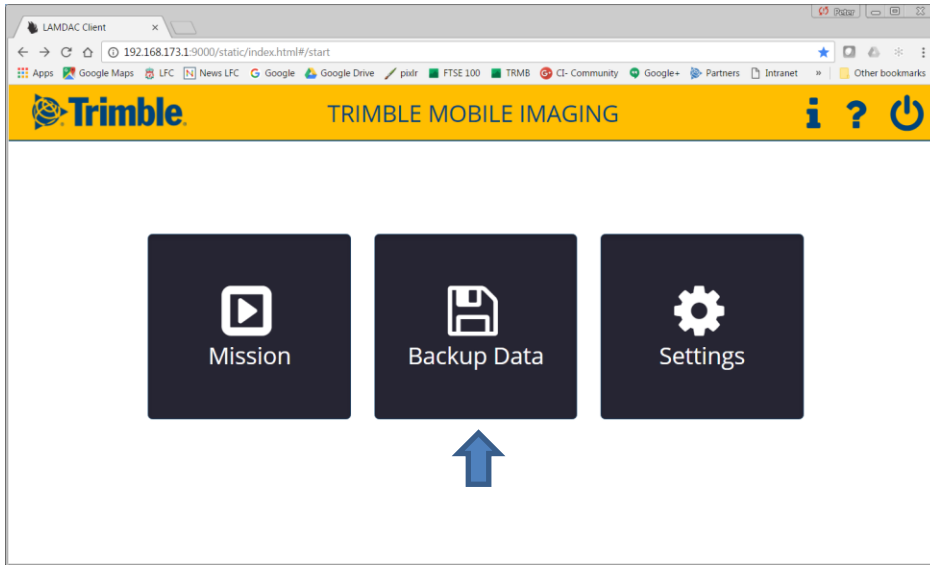
Power-up the MX7 and connect a USB hard disk to the USB port on the MX7 (an SSD is recommended in order to maximize download speed).



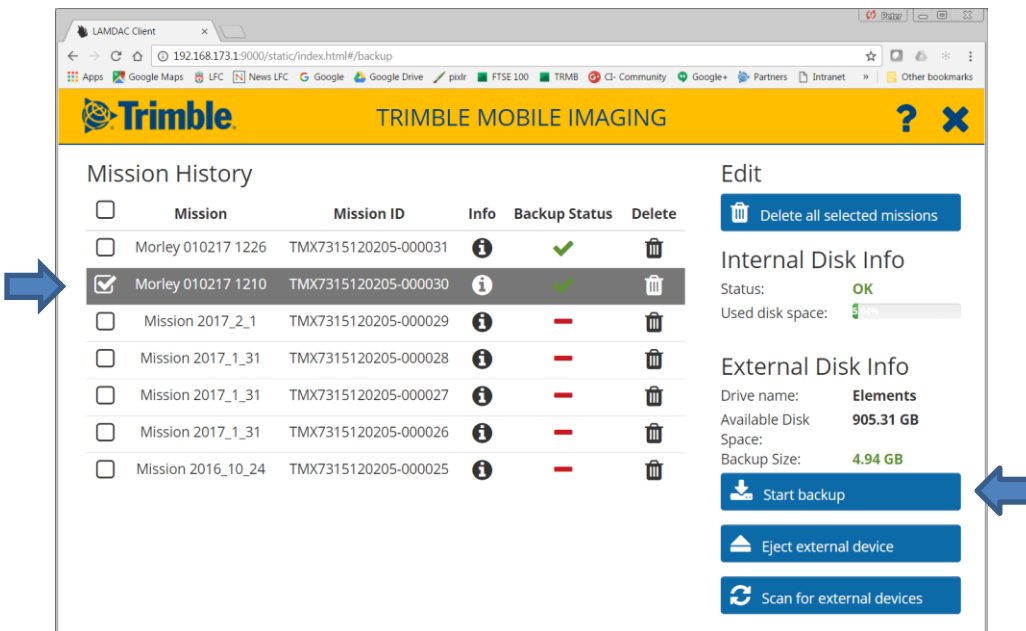
In Trimble Mobile Imaging Software select **Backup Data**.

<http://xxxpartners.trimble.com>   [www.trimble.com](http://www.trimble.com)   (remove non-applicable)

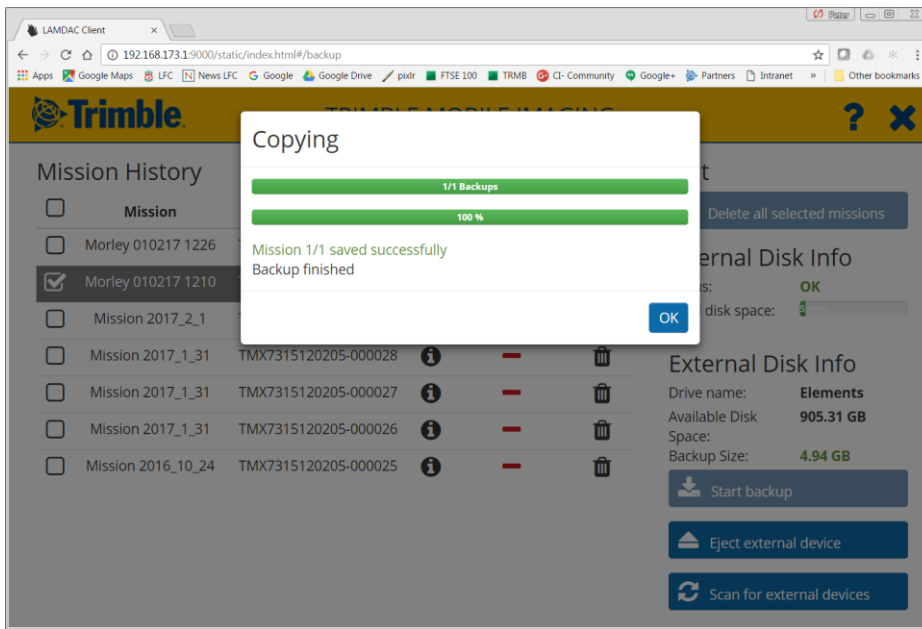
© 2016, Trimble Navigation Limited. All rights reserved. Trimble and the Globe & Triangle logo are trademarks of Trimble Navigation Limited registered in the United States and in other countries. All other trademarks are the property of their respective owners.



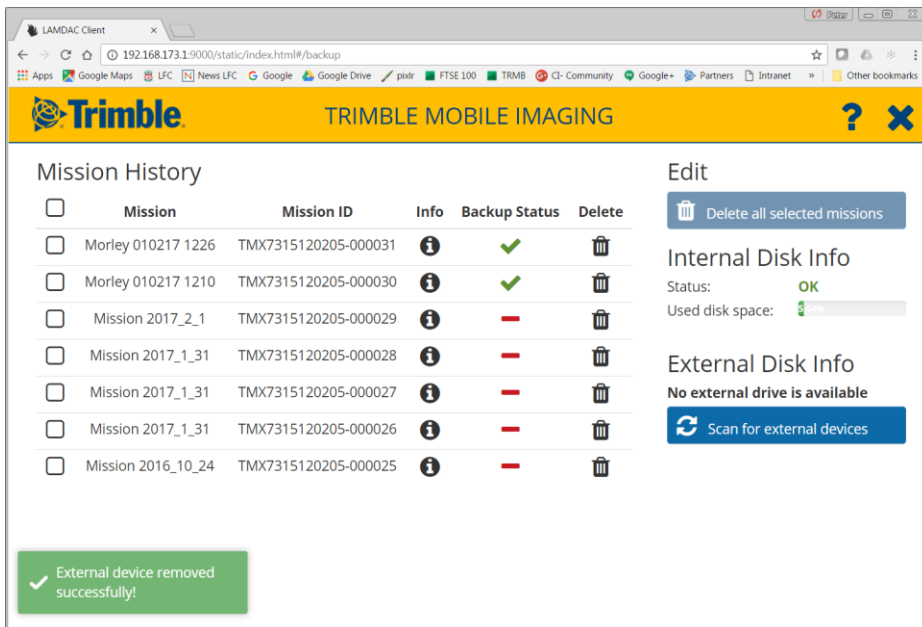
Select the Mission(s) you require to download and **Start backup**.



The selected Mission will now copy from the MX7 computer hard disk to your external hard disk.

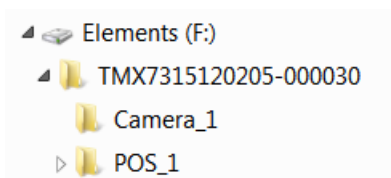


You can now Eject your external device and remove it when prompted.

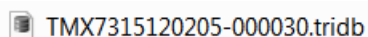


You are now ready to work with the data on your PC.

Your will look like this:



The main mission folder will contain a database file of the capture mission like:

A screenshot showing a single file icon with the name "TMX7315120205-000030.tridb".

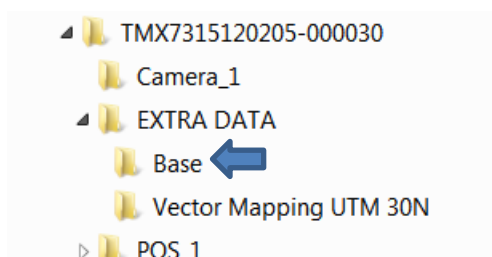
The folder Camera\_1 contains the image data in PGR format.

The POS\_1 folder contains the raw Applanix position data.

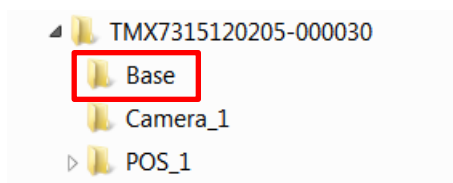
## 2. Process Vehicle Trajectory – POSpac MMS

Firstly you need to find base station data for the same time period as the full mission. This could be a standalone base station or data from a publicly available network such as a CORS or VRS network.

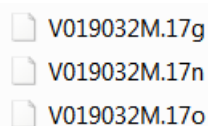
The demo data set provided contains base station data in folder:



Suggest creating a folder in your data structure and put your base station data in there eg.



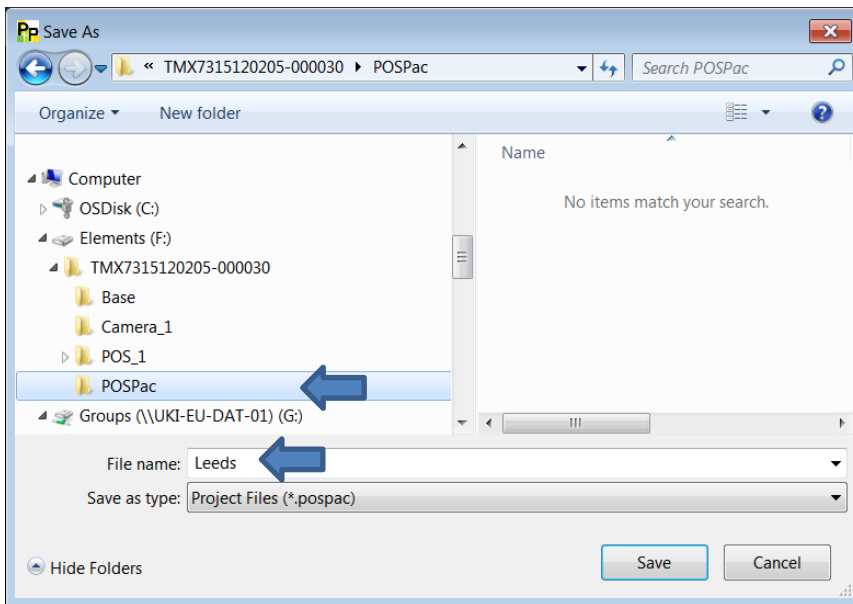
The demo data set provided contains the following RINEX files for a VRS base station:

A screenshot showing three file icons with the following names: "V019032M.17g", "V019032M.17n", and "V019032M.17o".

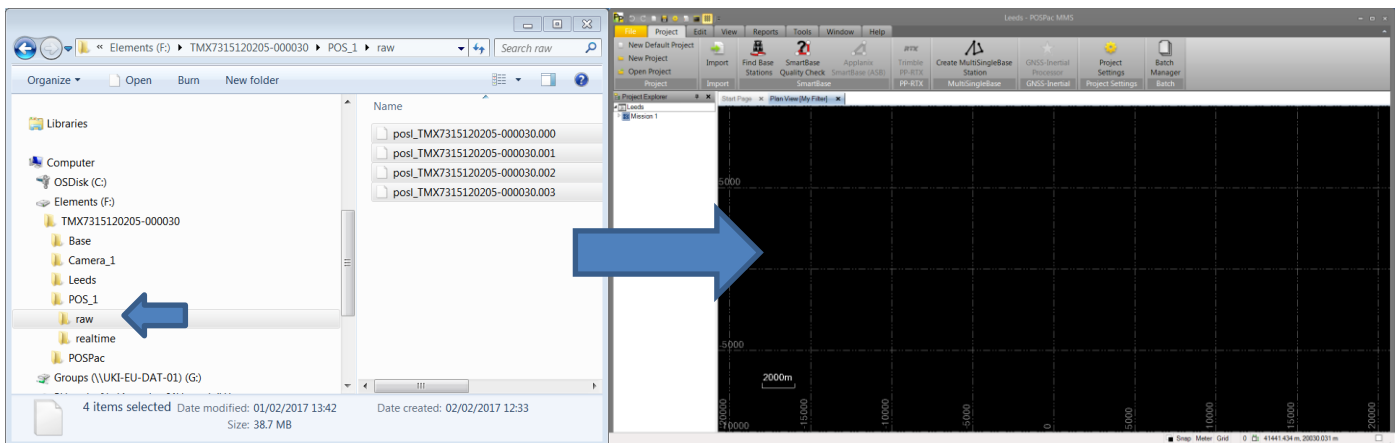
Open POSpac MMS.

Start a New Project. Now save this project to your folder structure.

Suggest making a folder called POSpac under your mission folder and storing your POSpac data there.

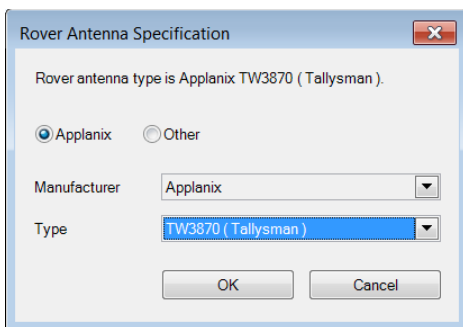


Drag and drop your vehicle trajectory “POS” files into POSPac.

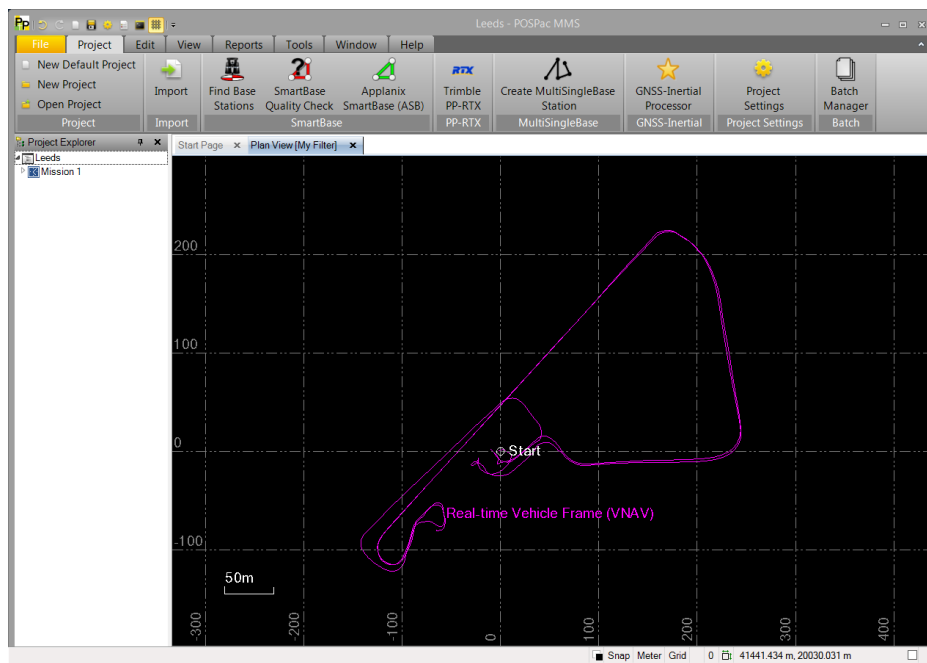


Wait for various downloads and checks to be completed.

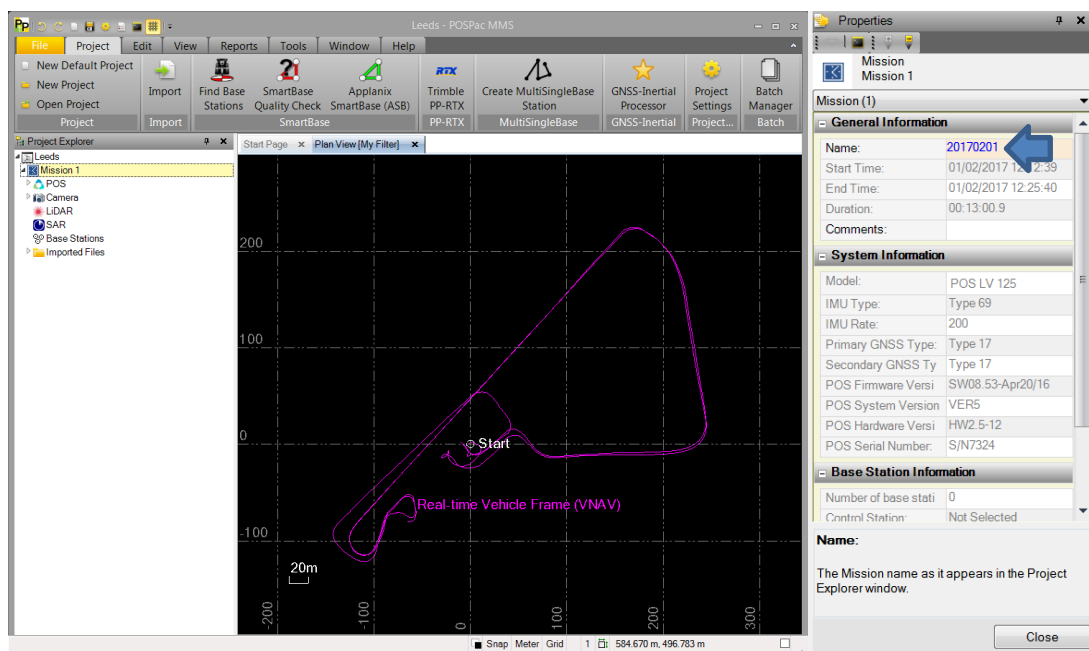
If you are prompted to select an antenna – select:



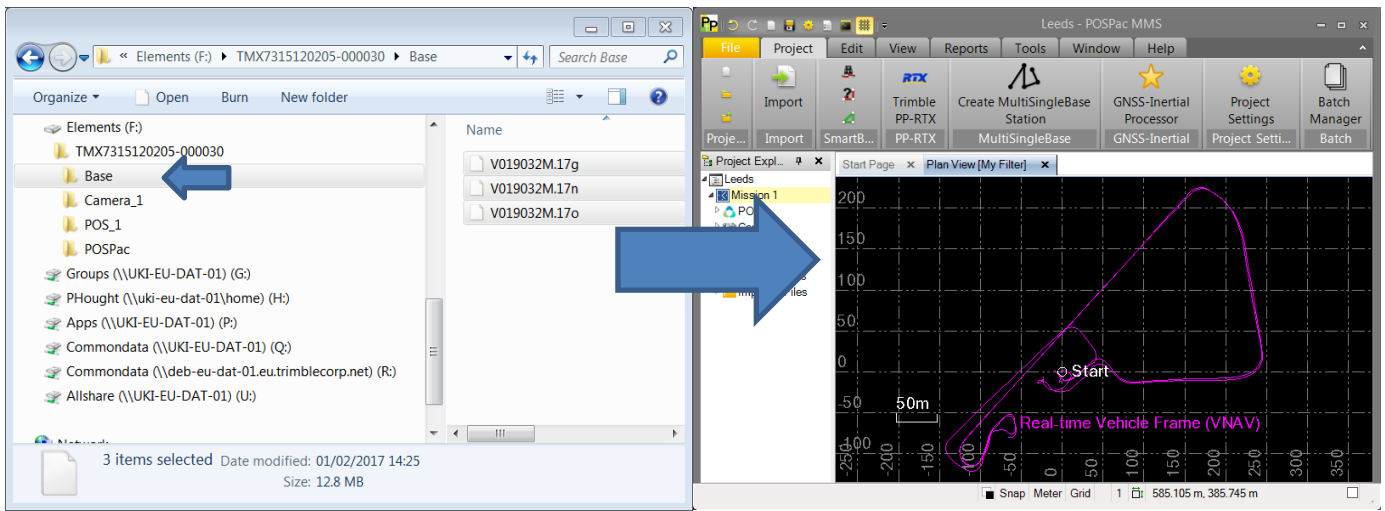
You will see your unprocessed vehicle trajectory in the Pan View:



Suggest changing Mission name by right clicking on “Mission 1” in Project Explorer “Properties” and change the Mission name to the date(YYYYMMDD) in the order shown below.

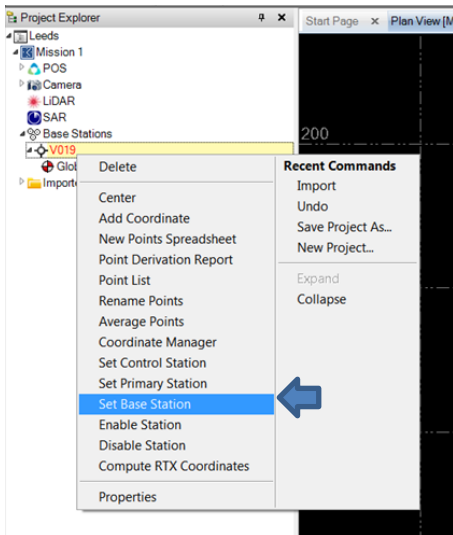


Now Drag and Drop Base Station files:



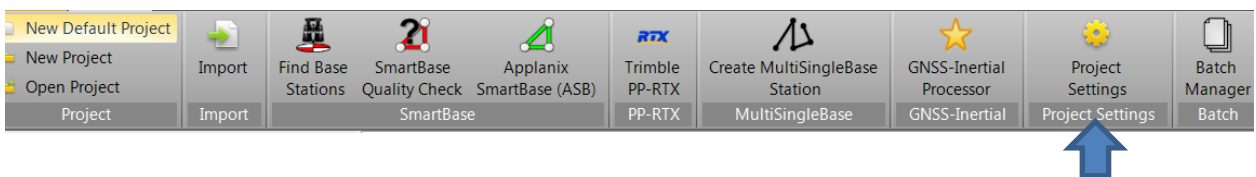
Click okay at the Checkin window.

In the Project Explorer Window right click on your Base Station and **Set Base Station**:

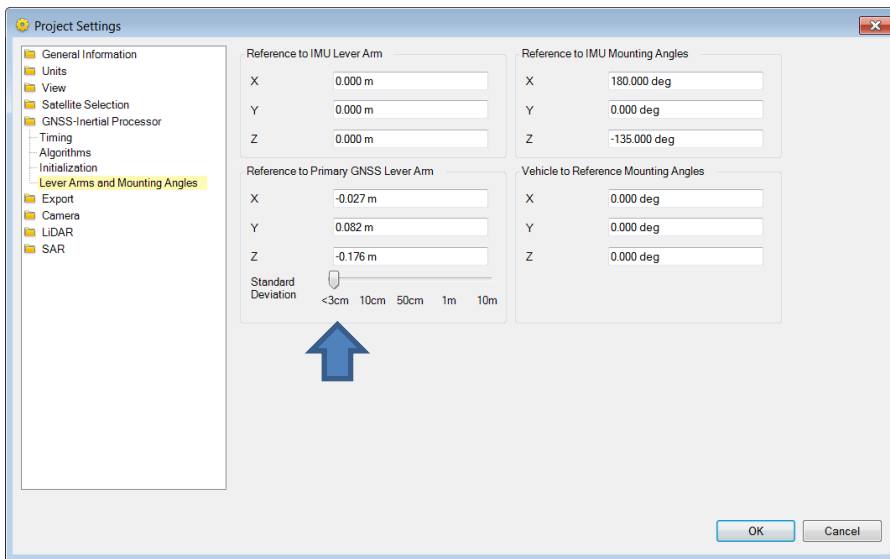


Click okay at the GNSS QC Statistics window.

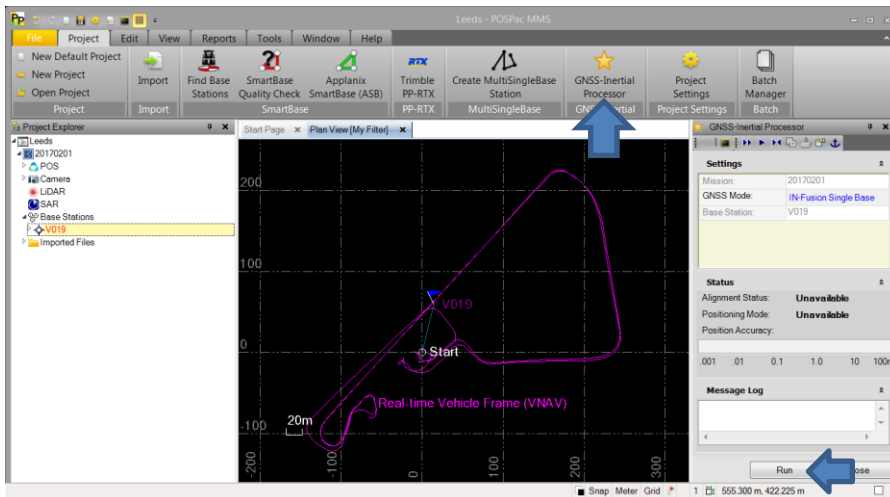
Select **“Project Settings”** from main tool bar



Set **Lever Arms and Mounting Angles Standard Deviation** to **<3cm**:

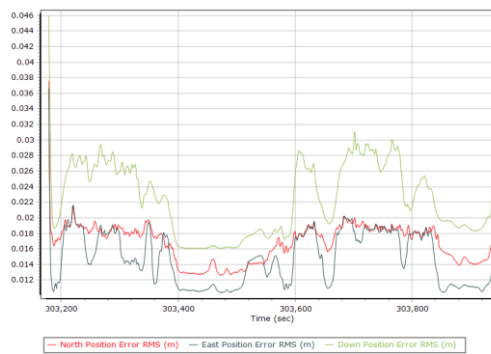
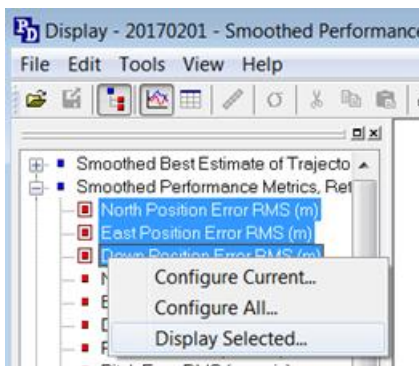


Now select **GNSS-Inertial Processor** from the main toolbar and **Run**.



**\*\*\*Optional** – If you need to show some quality checks on the processing of the trajectory:

Select **Reports/Display Plots** – Right Mouse Click and Select North, East, Down Error RMS and **Display Selected**:





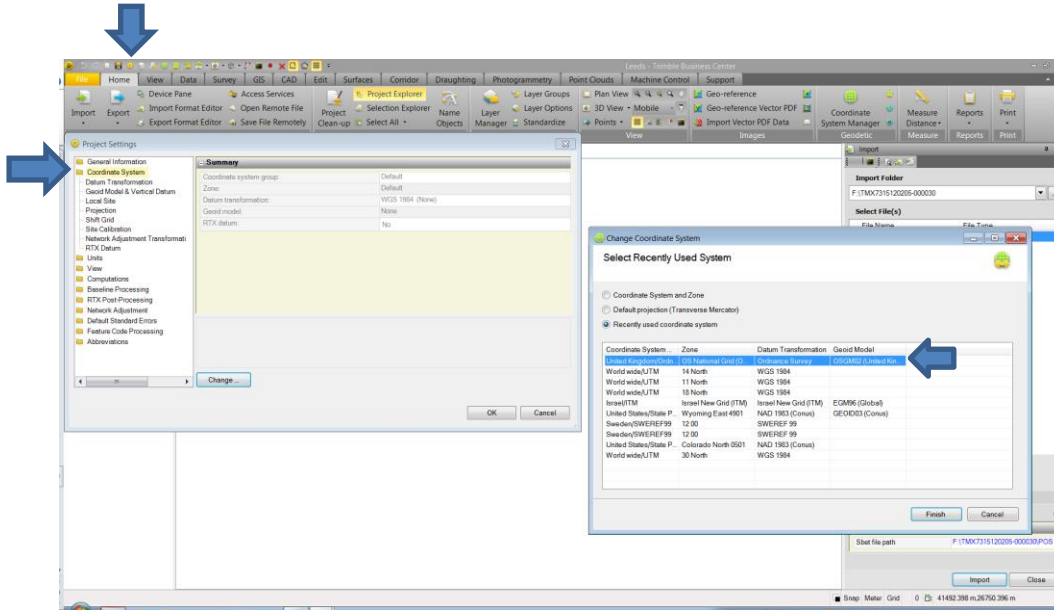
File/Save and Quit POSpac.

### 3a. Data Conversion – Trimble Business Center (Data Conversion – Option 1)

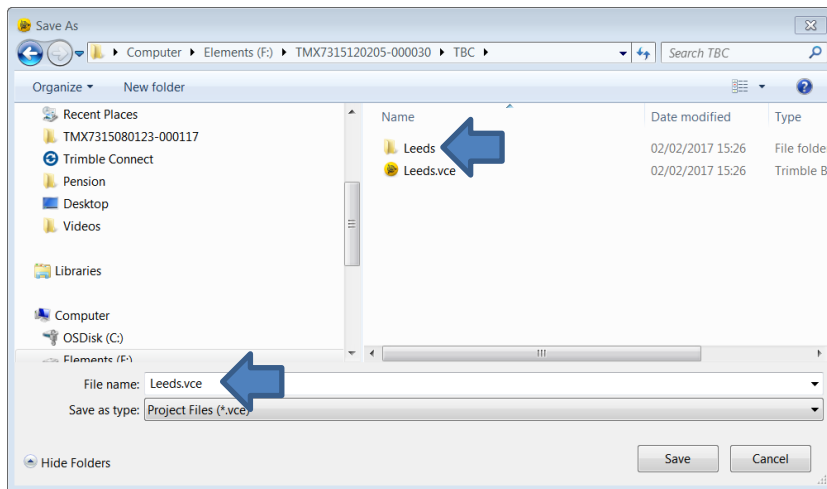
Open Trimble Business Center (v3.81+).

Start a new project.

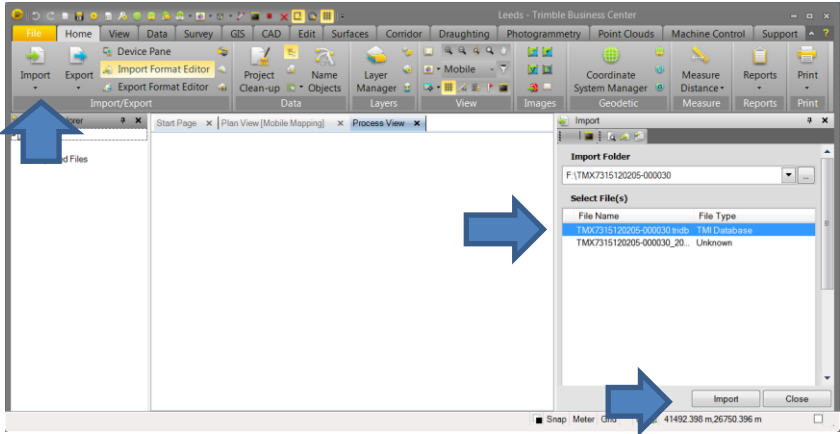
Change the project coordinate system to something useful (it doesn't really matter what - as data used later in other software will be WGS84 lat, long – but set up a grid coordinate system for now, this seems to be needed by TBC):



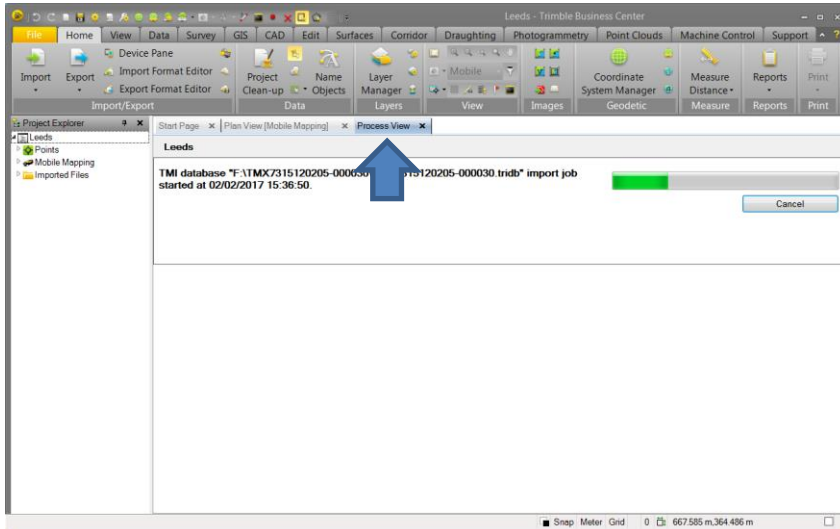
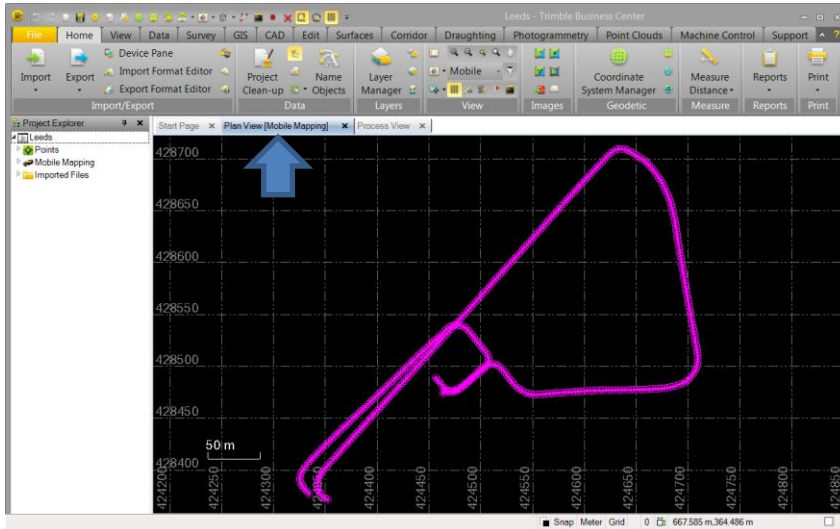
File/Save Project As/ - Create A folder under the Mission folder called, say, TBC.



Import the database file from your MX7 data capture:

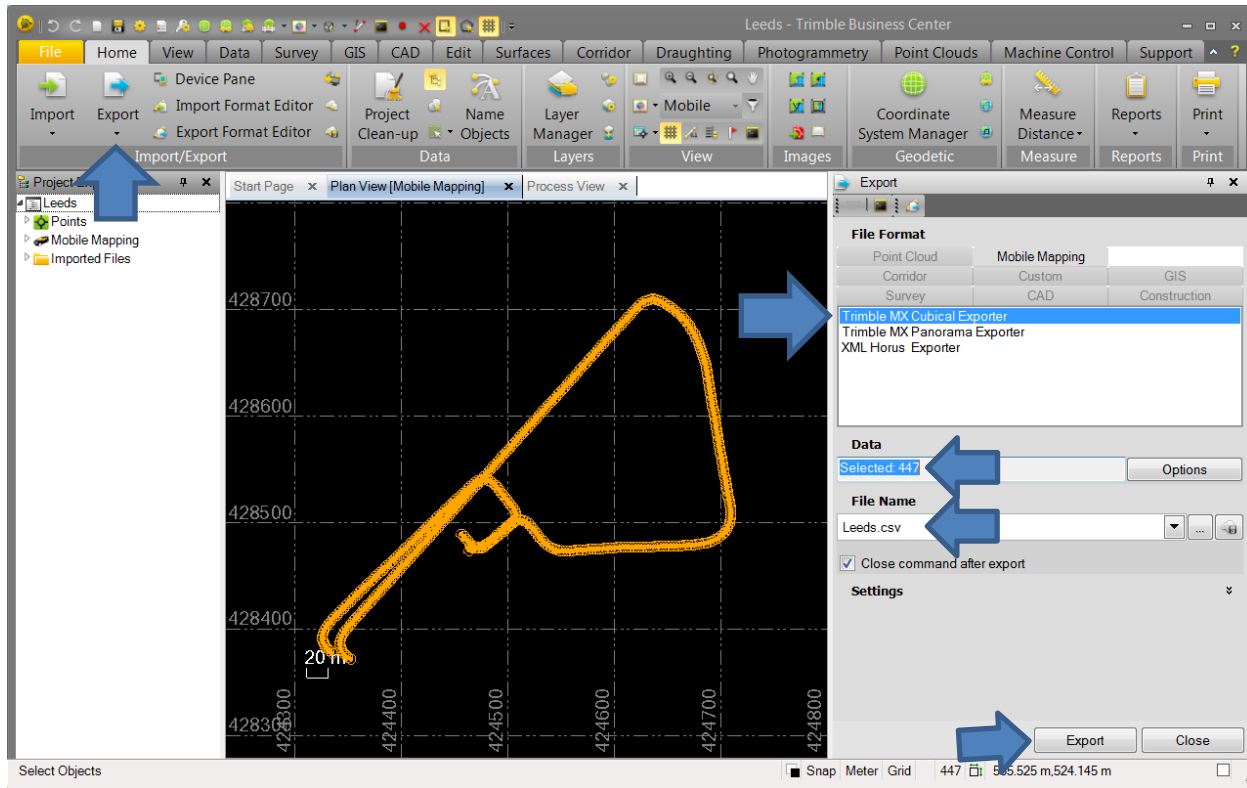


TBC will display the trajectory in Plan View. The processing window will continue to work. This will take some time – maybe hours (!) for a large mission.

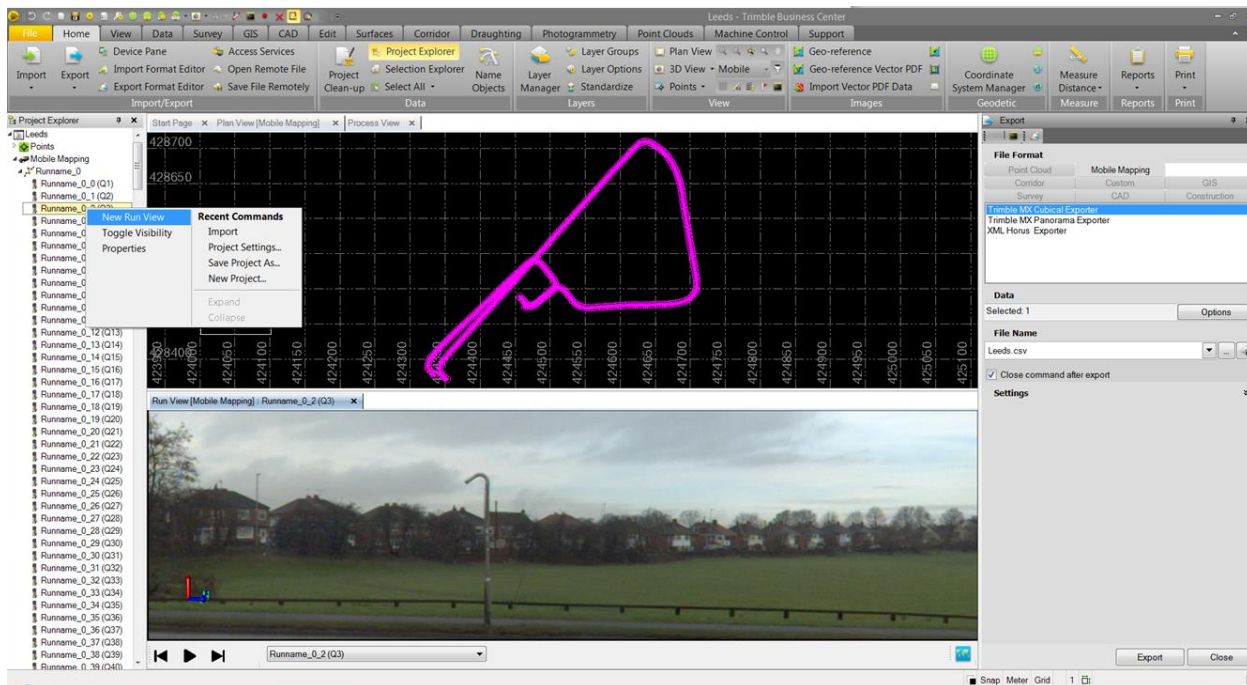


Once processing is complete you need to export 2 text files ready for import into Trimble MX Asset Modeler (a trajectory file and a panorama file).

Export/Mobile Mapping (select all points on the trajectory you want to export):

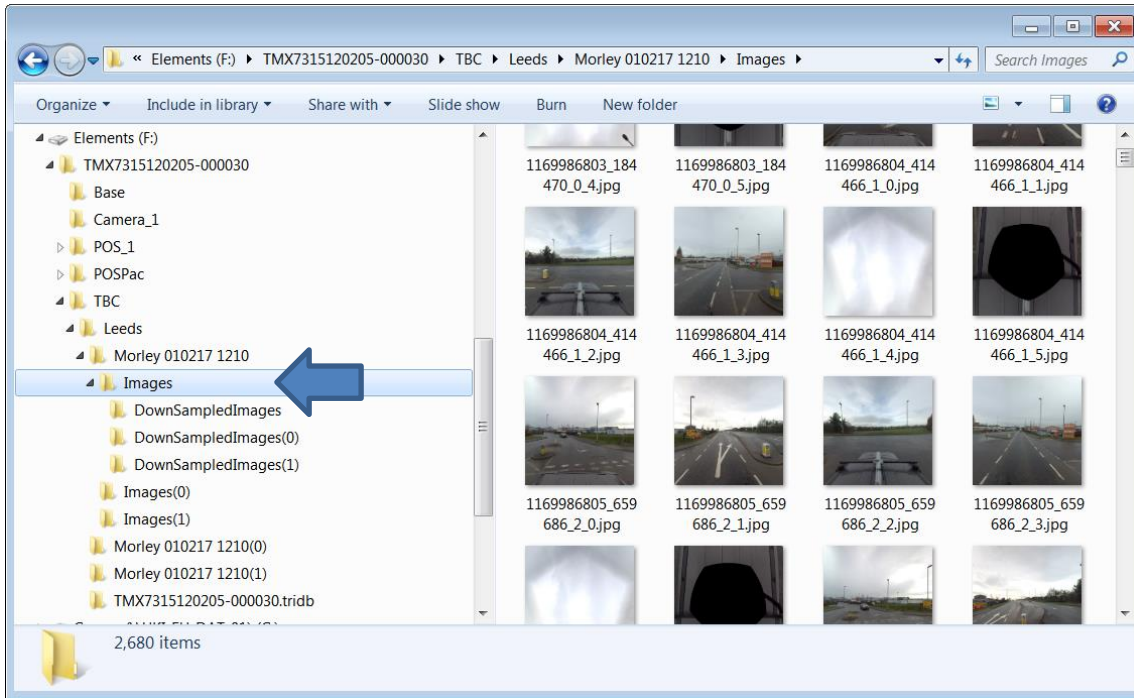


It is possible to view and browse through the image scenes in TBC as follows:

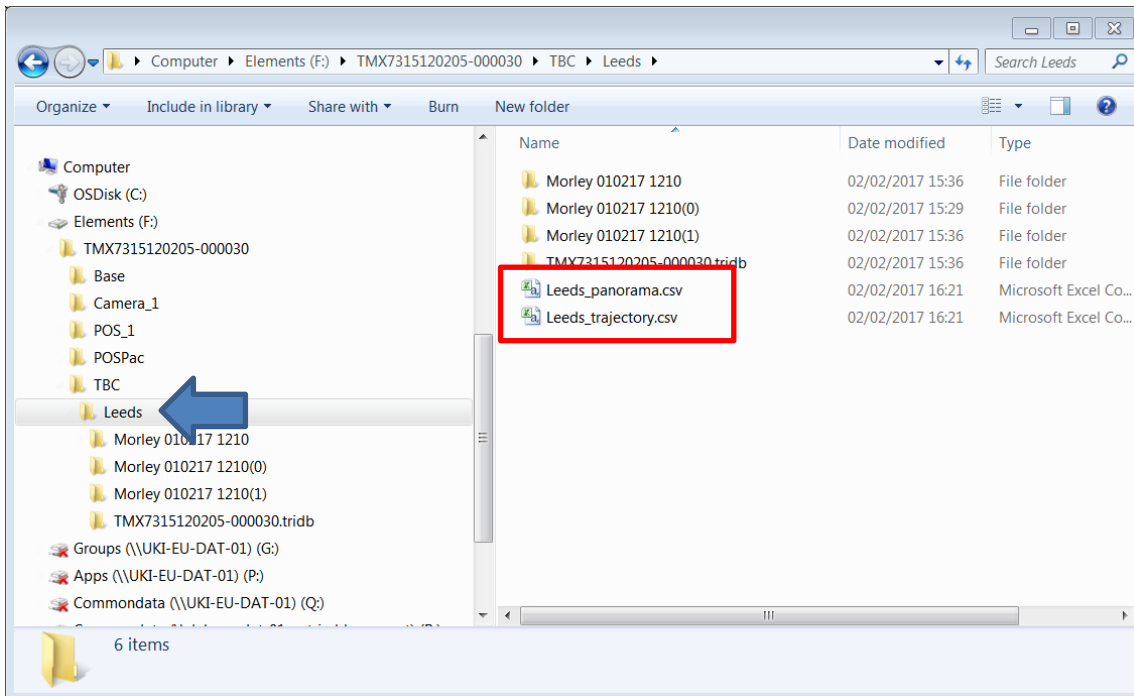


The files you will need to import into Trimble MX Asset Modeler are:

Image files (jpg's) – 6 x jpg's for each spherical image (format is referred to as "Cubic").



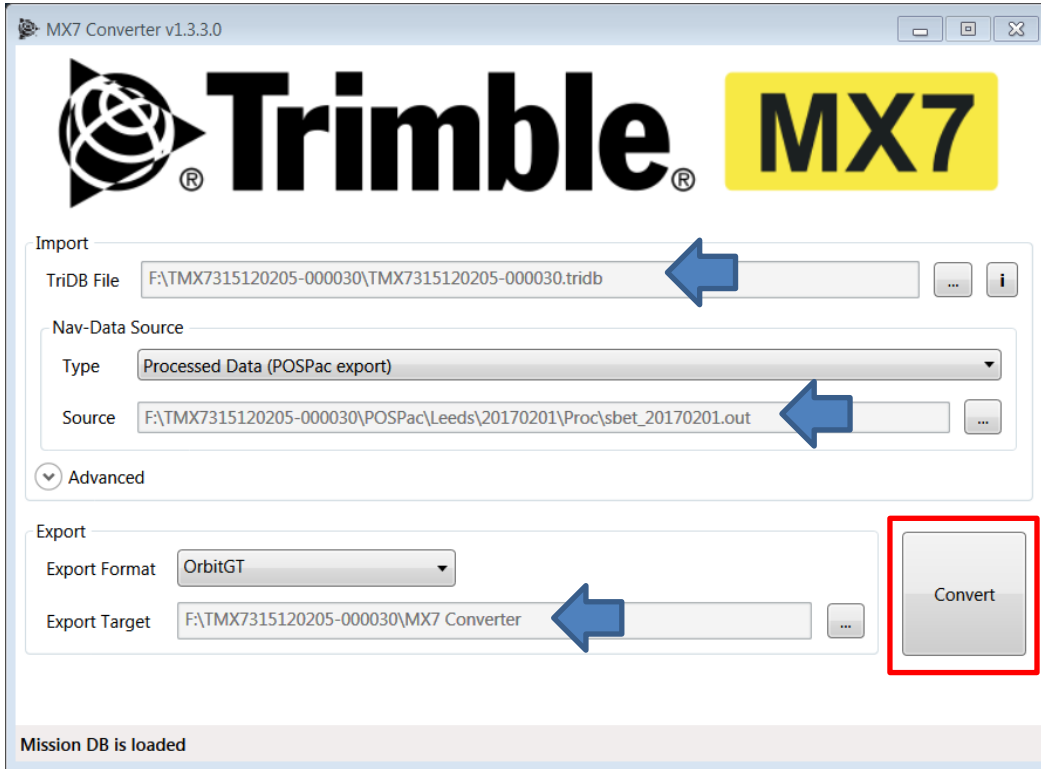
2 x csv files (one for trajectory in general, the other for panoramas):



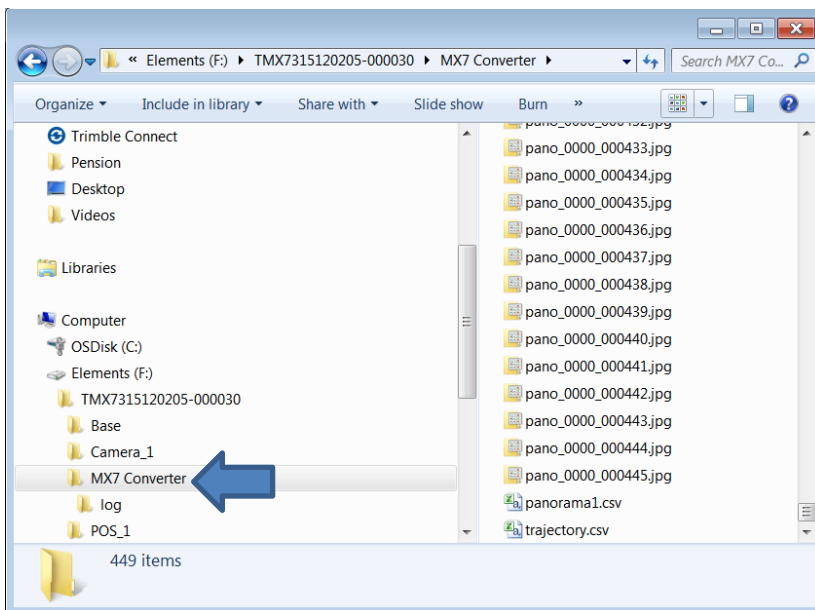
### 3b. Alternative Data Conversion – MX7 Converter (Data Conversion – Option 2)

Start The Trimble MX7 Converter Software.

Point at the tridb database file. Select the correct sbet from POSpac. Select an output folder and **Convert**.



The output from this conversion looks like this:



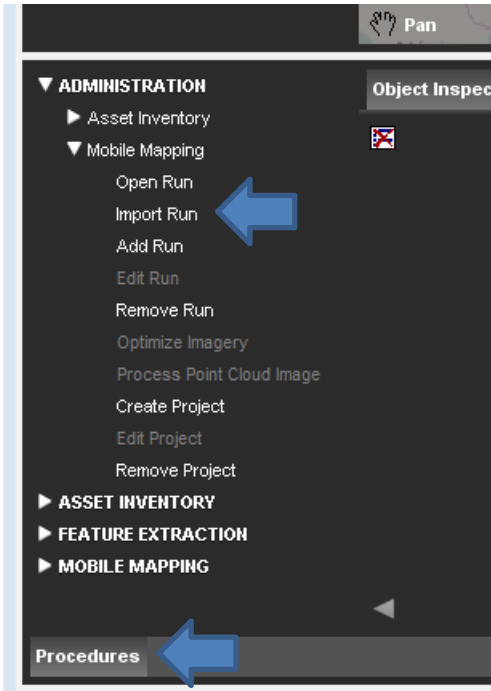
One panoramic jpg for each sphere along with a trajectory and panorama coordinate text file. The data format is called equirectangular.

## 4. Import and Data Extraction in Trimble MX Asset Modeler

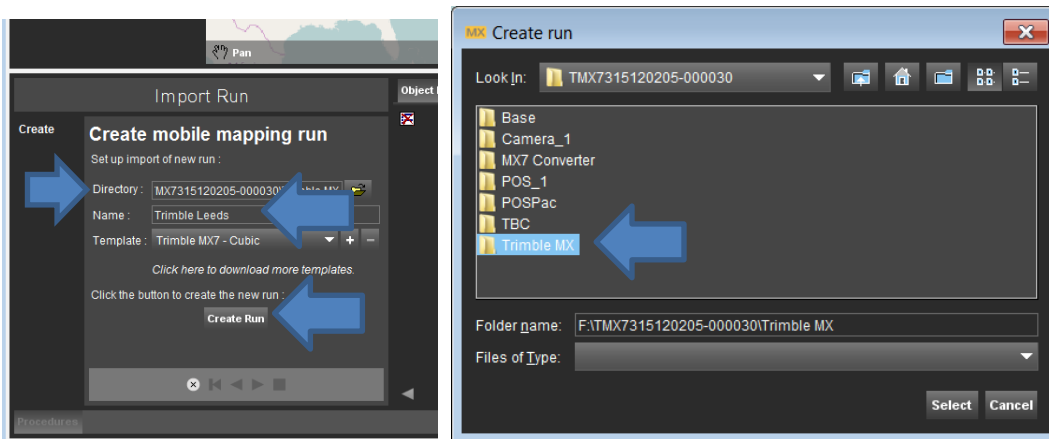
Launch Trimble MX Asset Modeler.

### Data Import (from Trimble Business Center)

Procedures/ADMINISTRATION/Mobile Mapping/Import Run



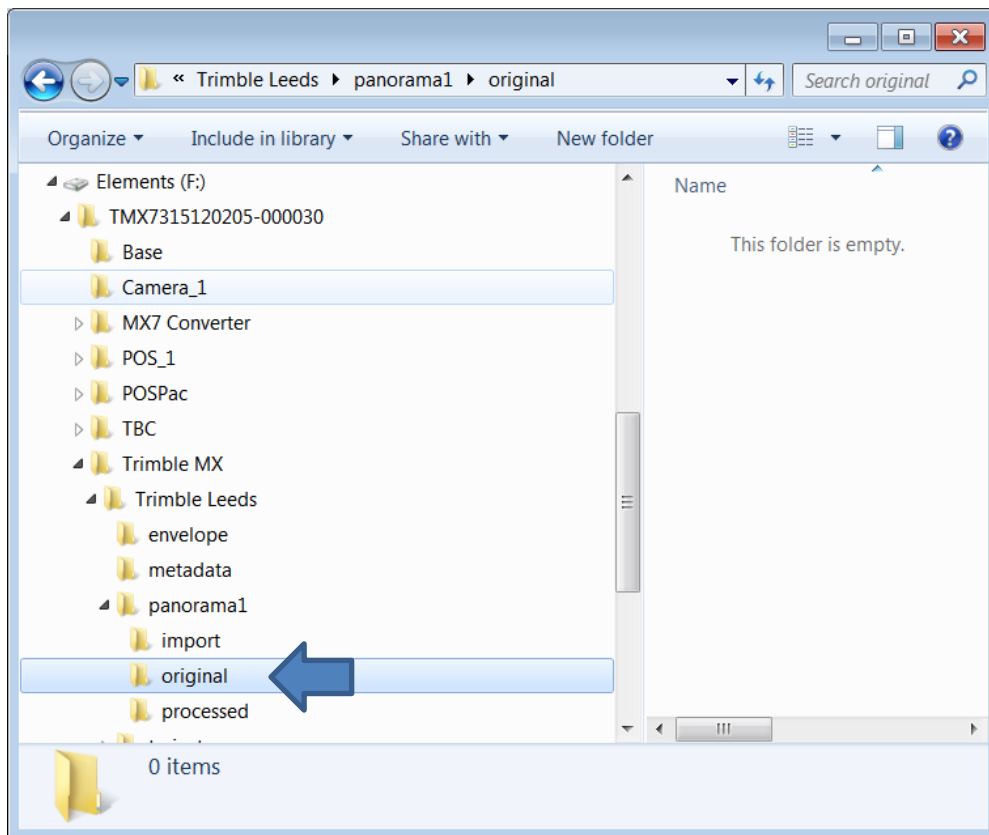
Suggest you make a folder called Trimble MX underneath the folder of your Mission. Use template – Trimble MX7 Cubic for TBC data.



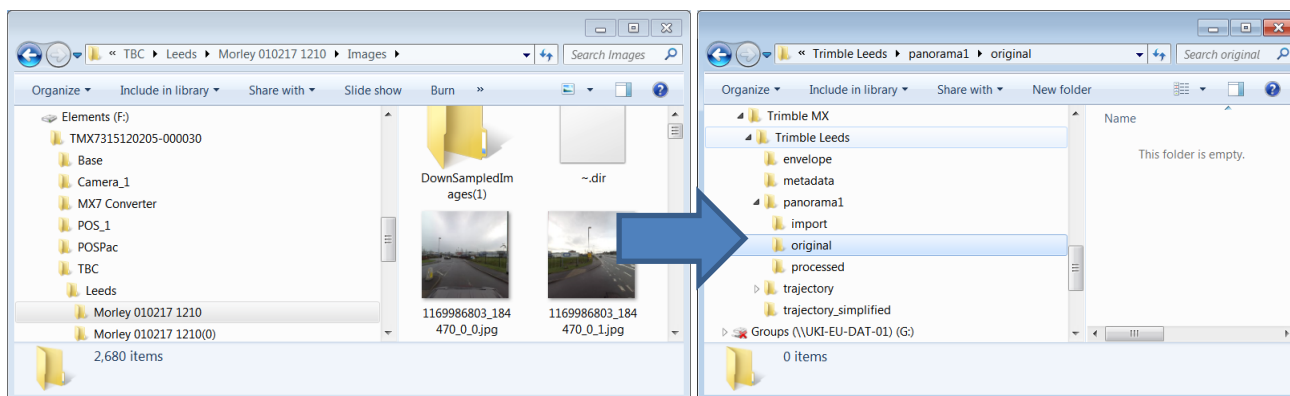
Select **Create Run**.

At this point (before proceeding with data import) launch windows File Manager.

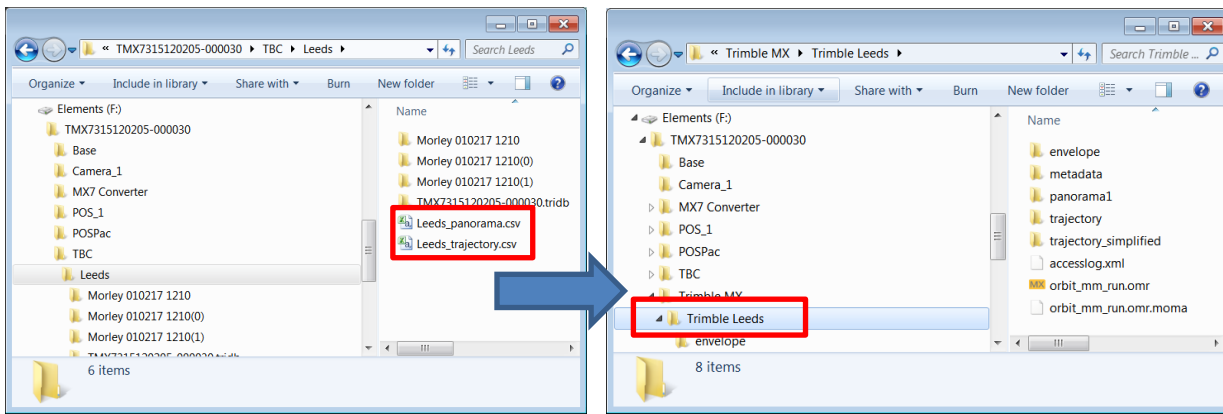
Trimble Asset Modeler has created this project folder structure:



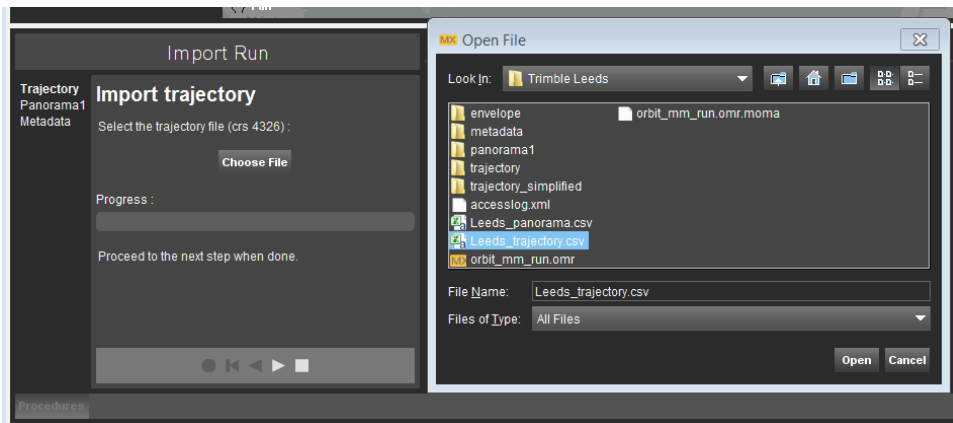
Move the image files from TBC to the “original” folder shown above. If you copy files rather than move make sure you have plenty of disk space!



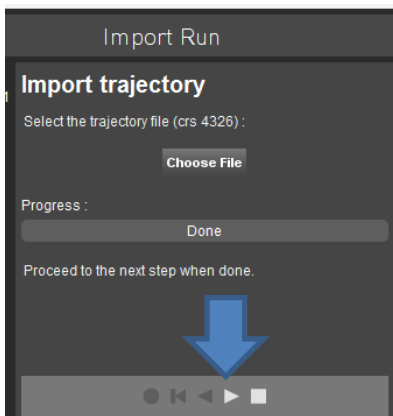
At the same time move or copy the trajectory and panorama csv file to your MX project folder eg:



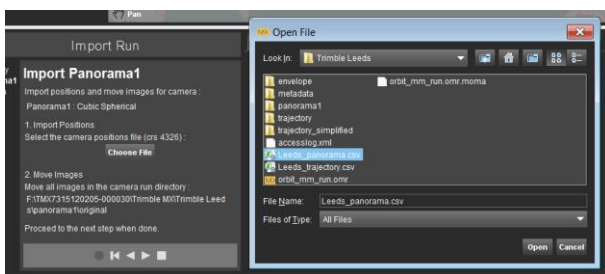
Choose your trajectory csv file:



Next select the arrow button on the Import Wizard:

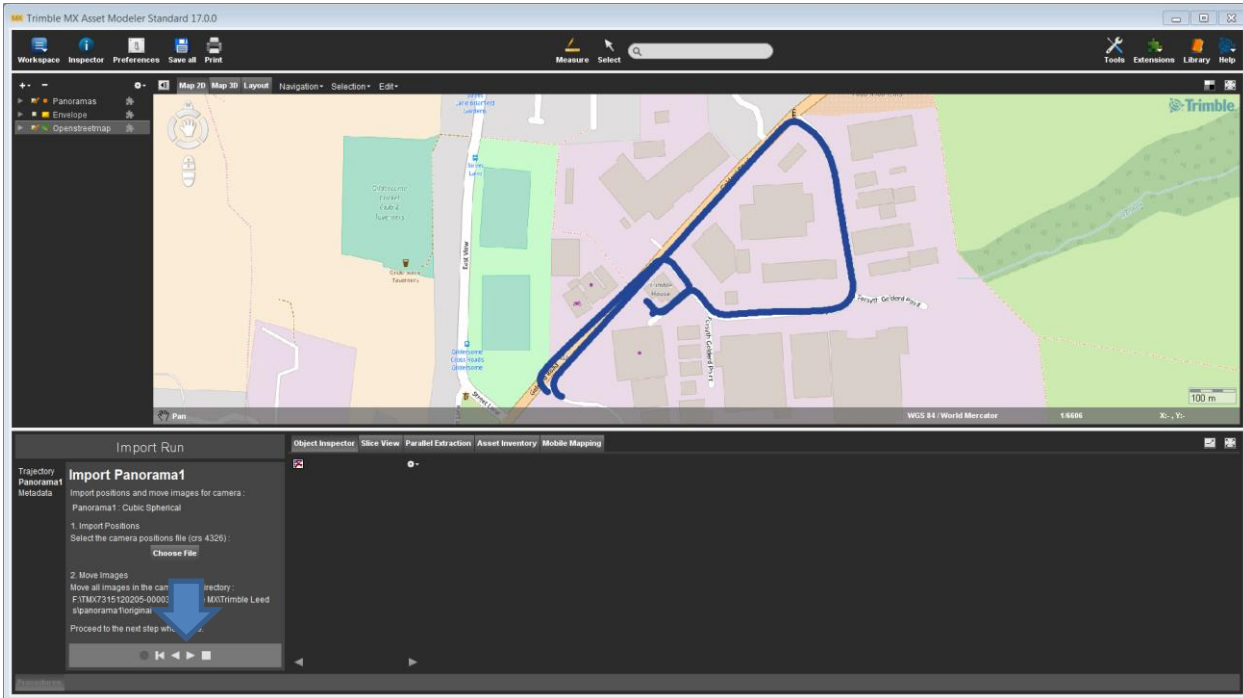


Select your panorama csv file:

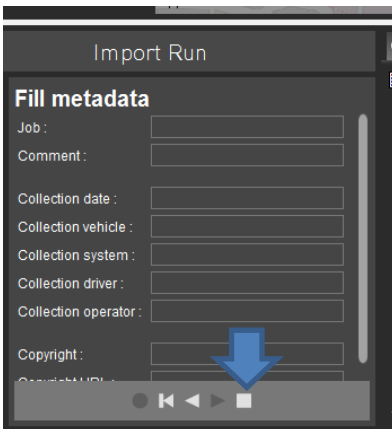




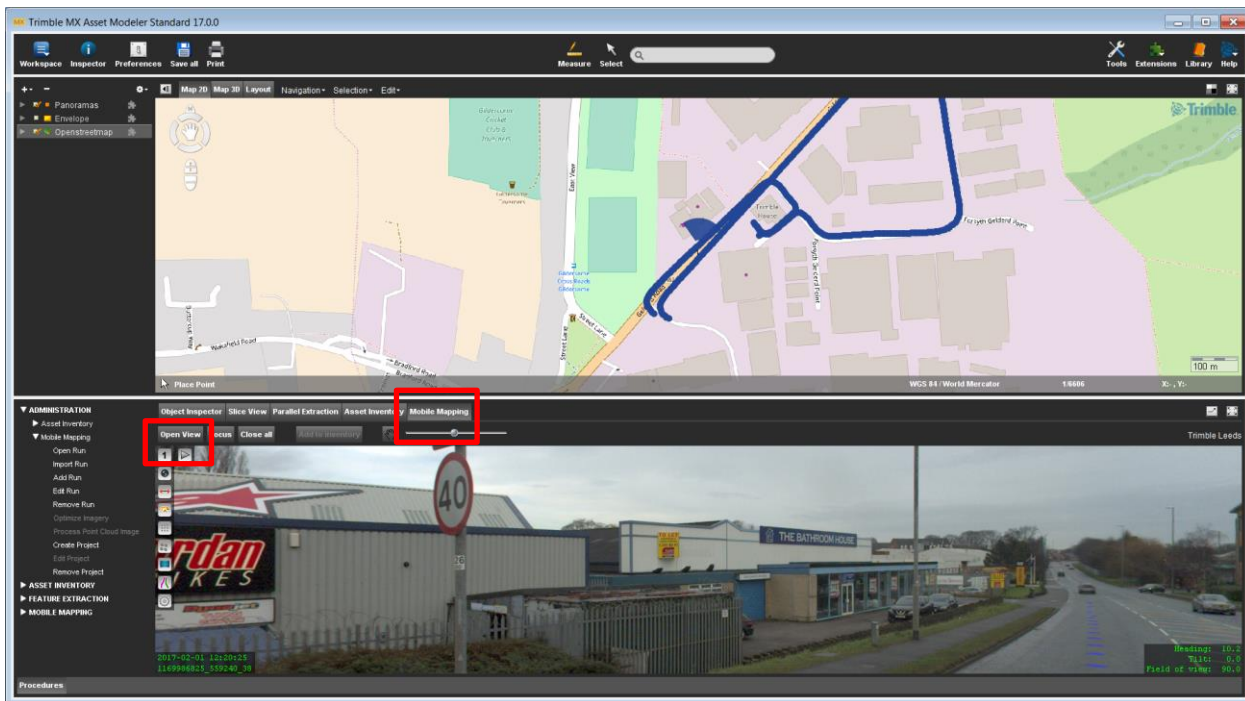
Next select the arrow button on the **Import Wizard**:



Select the “**square**” to complete the Import wizard (completing metadata is optional):



To check the data has imported correctly – Select **Mobile Mapping** and **Open View** then select a point on the trajectory in the map display.



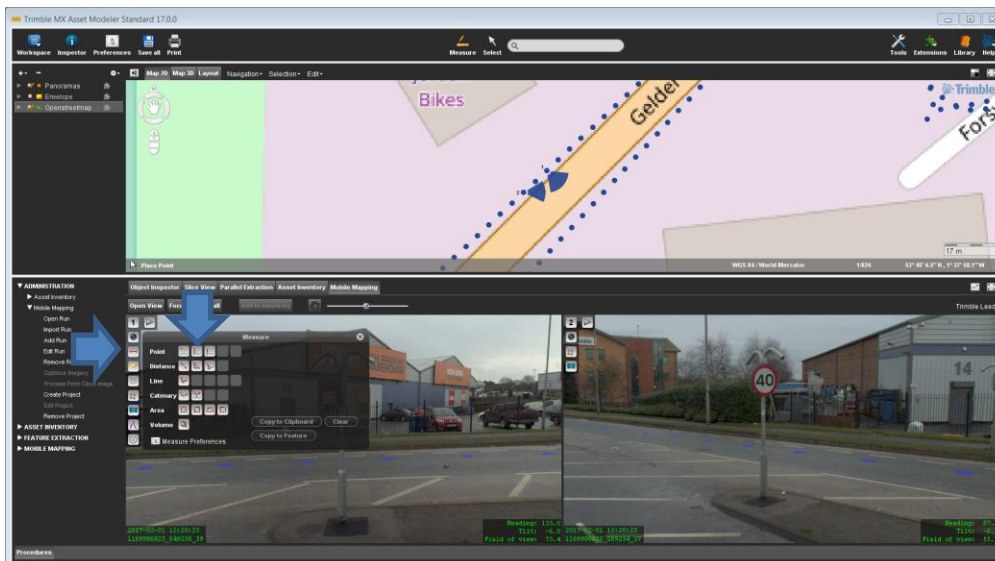
✓ The process for importing data from the standalone Trimble MX7 Converter is similar – except that you should use the template “Trimble MX7 – Equirectangular” from the Import Run Wizard.

## Demo Measure Tools

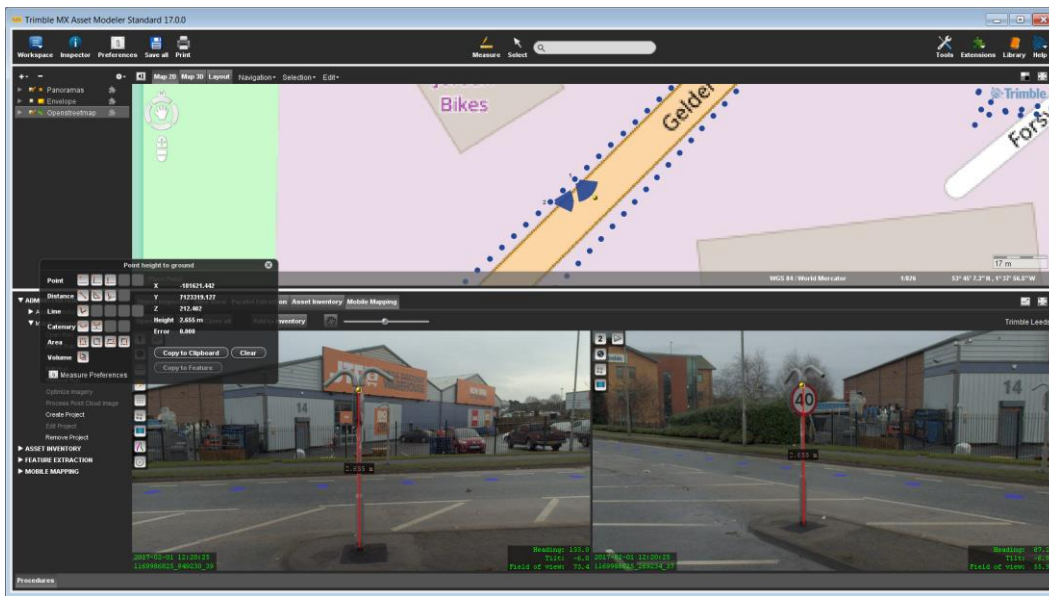
Choose a location with a road sign or lamp post. Open two views looking at the feature.

Select the Measure Tool and Point Height to ground.

Click on the object in both windows.

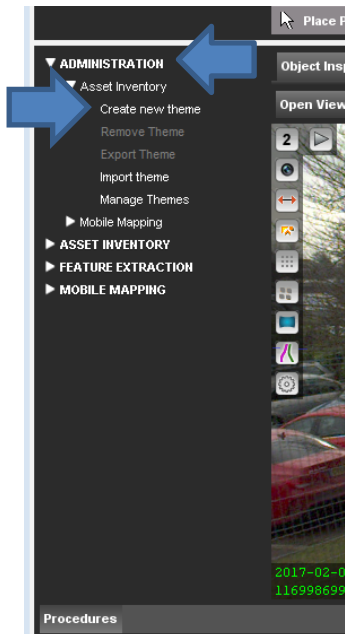


Click on the object in both windows.

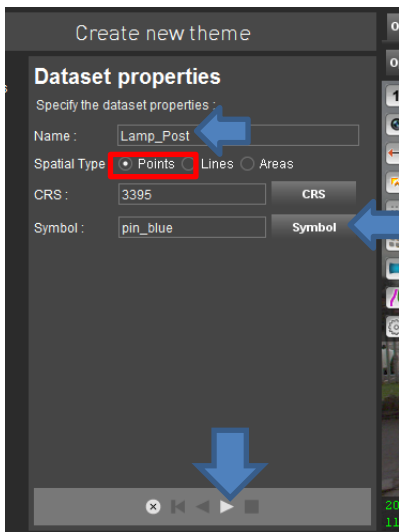


Try other measure tools – click on features first in image view 1 then in image view 2.

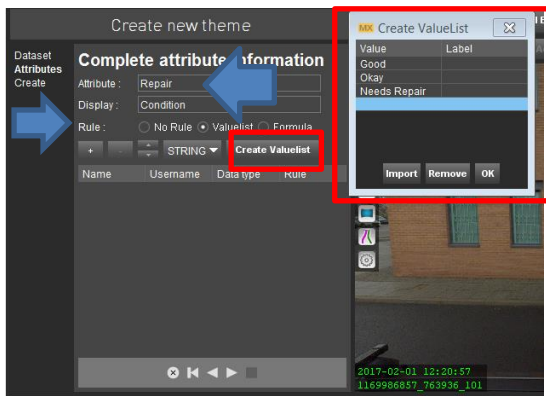
## Create a Point Feature and Extract ADMINISTRATION/Asset Inventory/Create new theme



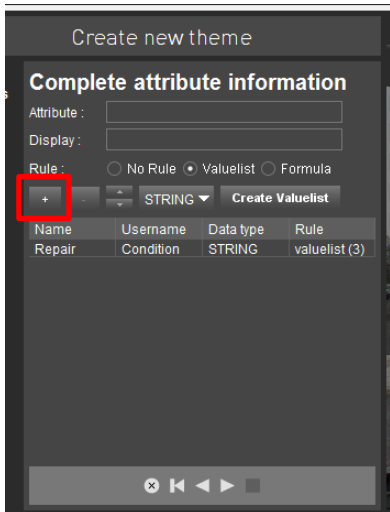
Give the feature a name and select a symbol. Select **Point** feature:



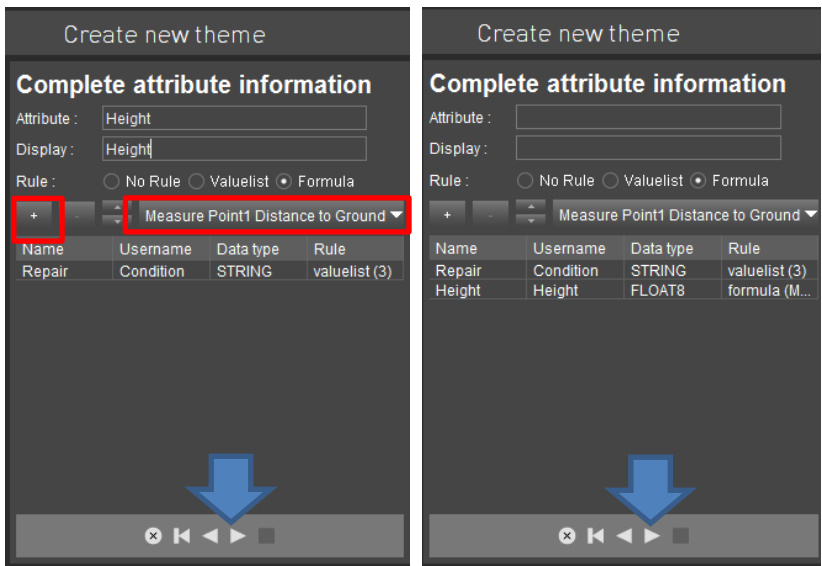
Create a “Valuelist” attribute as follows:



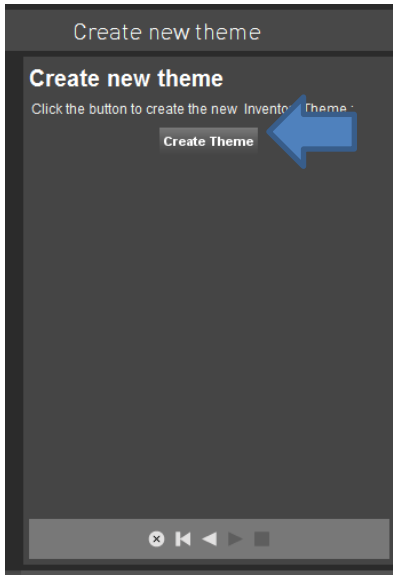
Add the attribute with “+”



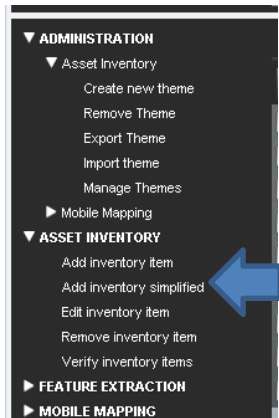
Create an attribute “Height” with Formula “Measure Point1 Distance to Ground” and “+” add it.



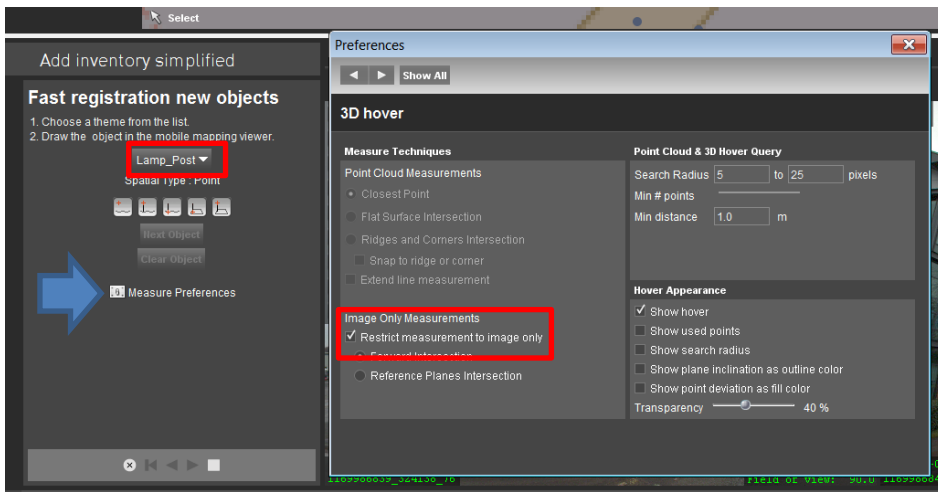
Create Theme.



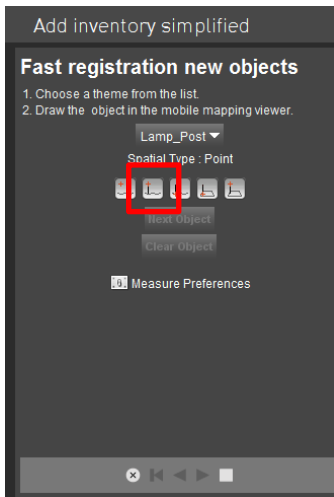
Now add a feature to this theme. ASSET INVENTORY/Add Inventory Item Simplified.



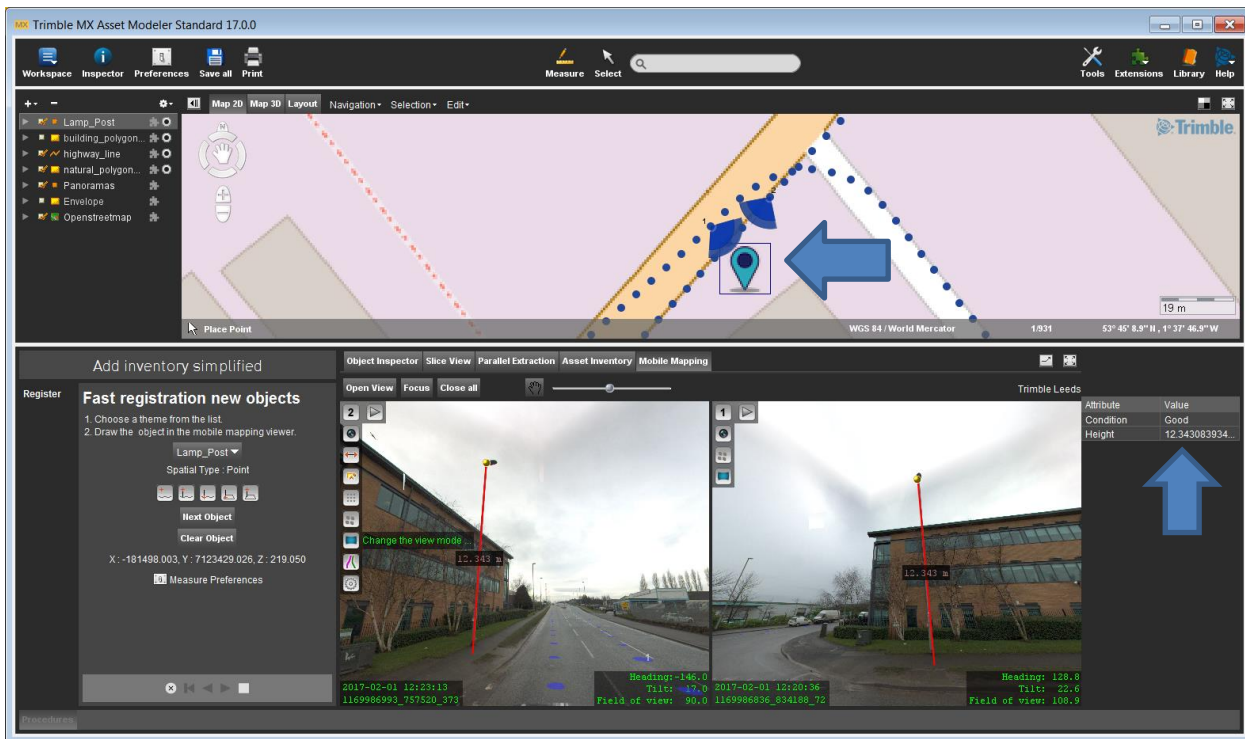
Choose Lamp\_Post and check preferences that measurements are Forward Intersection.



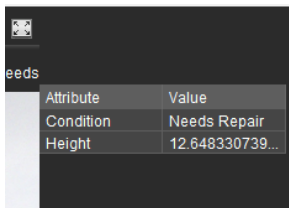
Select the measure tool “Measure Point and Height above Ground”.



Click on same object in 2 image views:



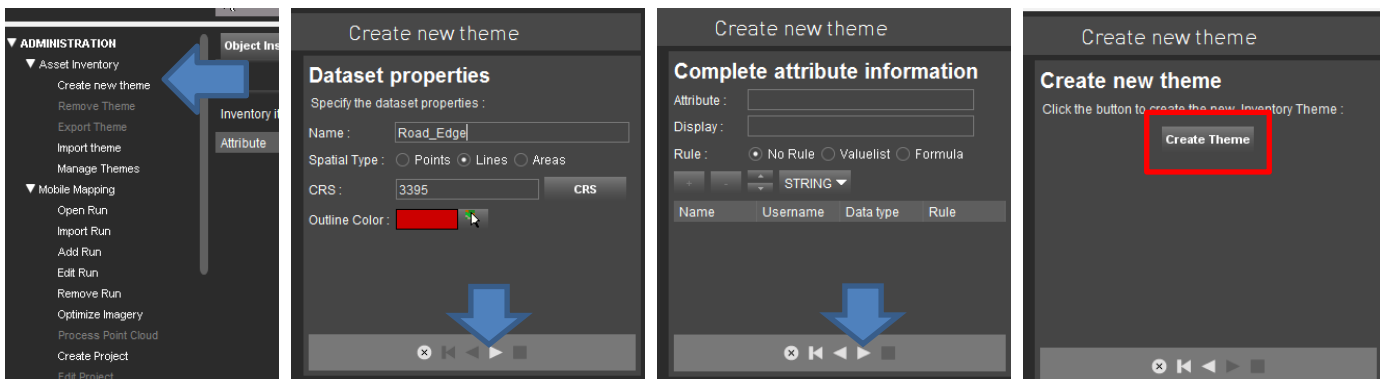
Notice the height attribute is auto populated. You can change the Condition Attribute from the selection list.



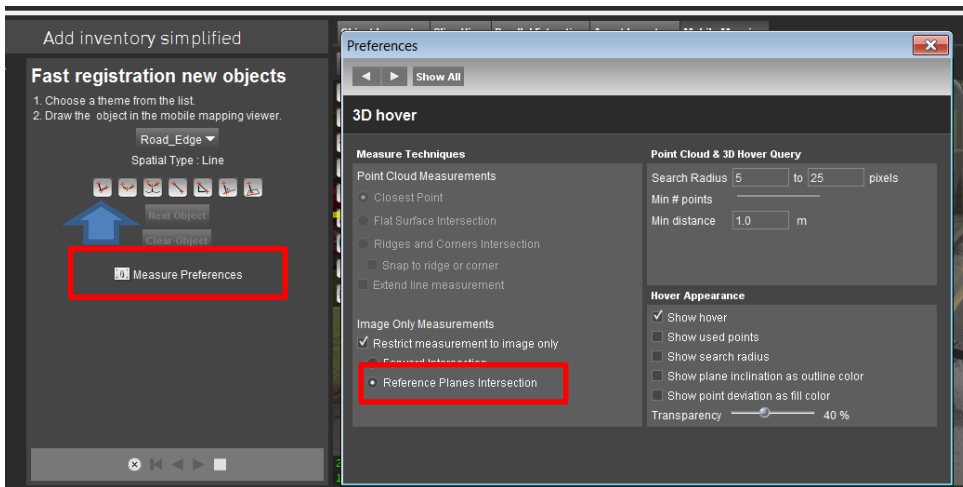
## Create a PolylineFeature and Extract

Extract some polylines on the road pavement surface.

Create a new theme with no attributes.

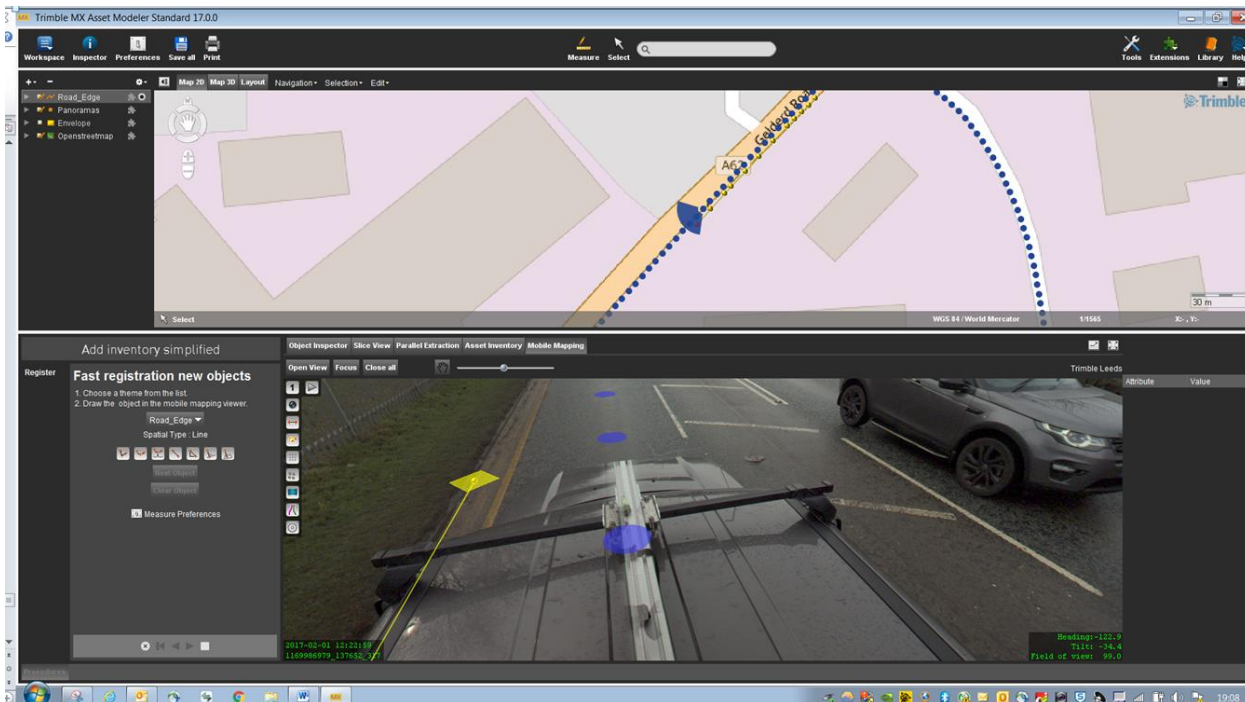


Add inventory item simplified.



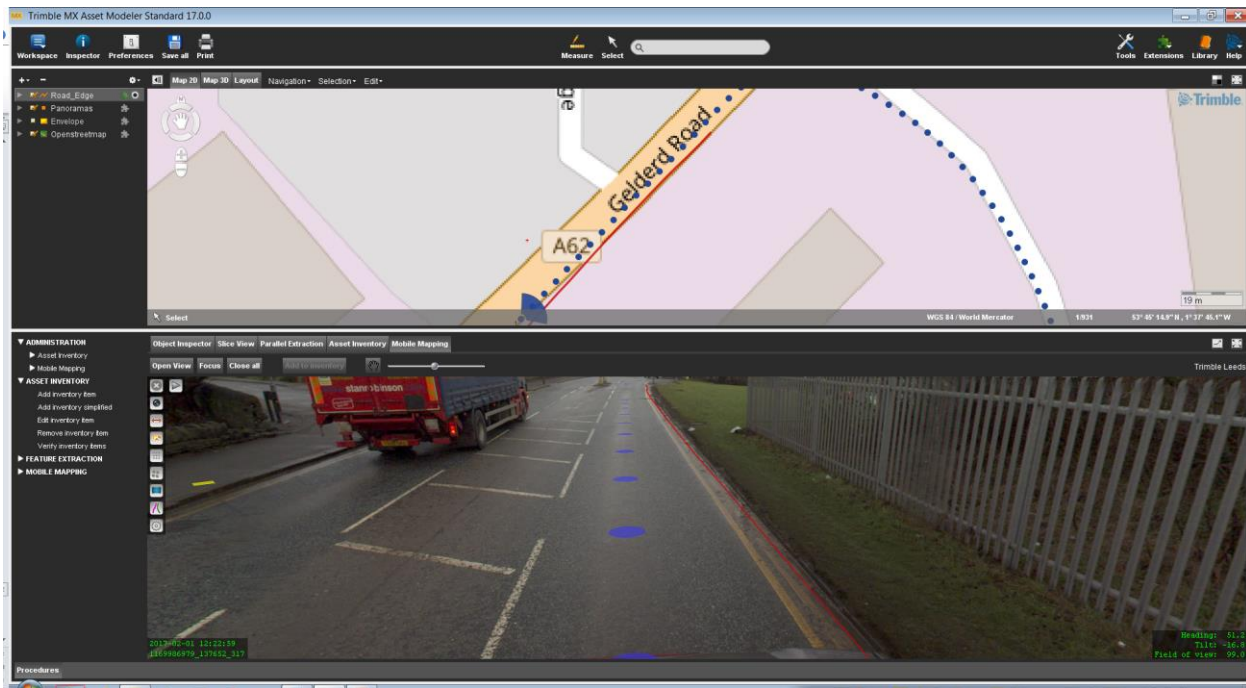
Ensure that Measure Preferences are set to Reference Plane Intersection. This allows one click measurement on a reference plane (in this case the road surface).

Click in the image and CTRL-MOUSE WHEEL SCROLL to next image. Click along road edge.



Show extracted line in image and on map.

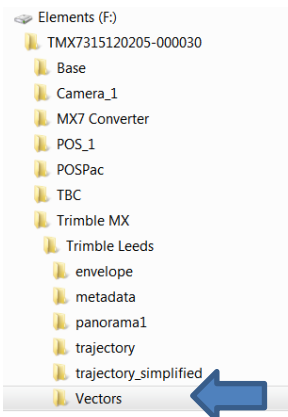




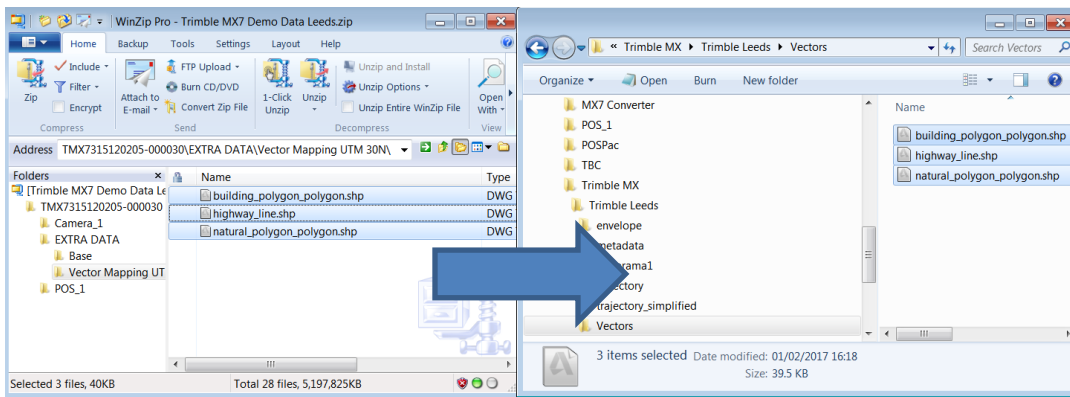
## Import Existing Layers and Measure on a Reference Plane (eg a building)

The demo data set provided has some vector files (shp) downloaded from the Trimble Market place. The data is on UTM Zone 30 N.

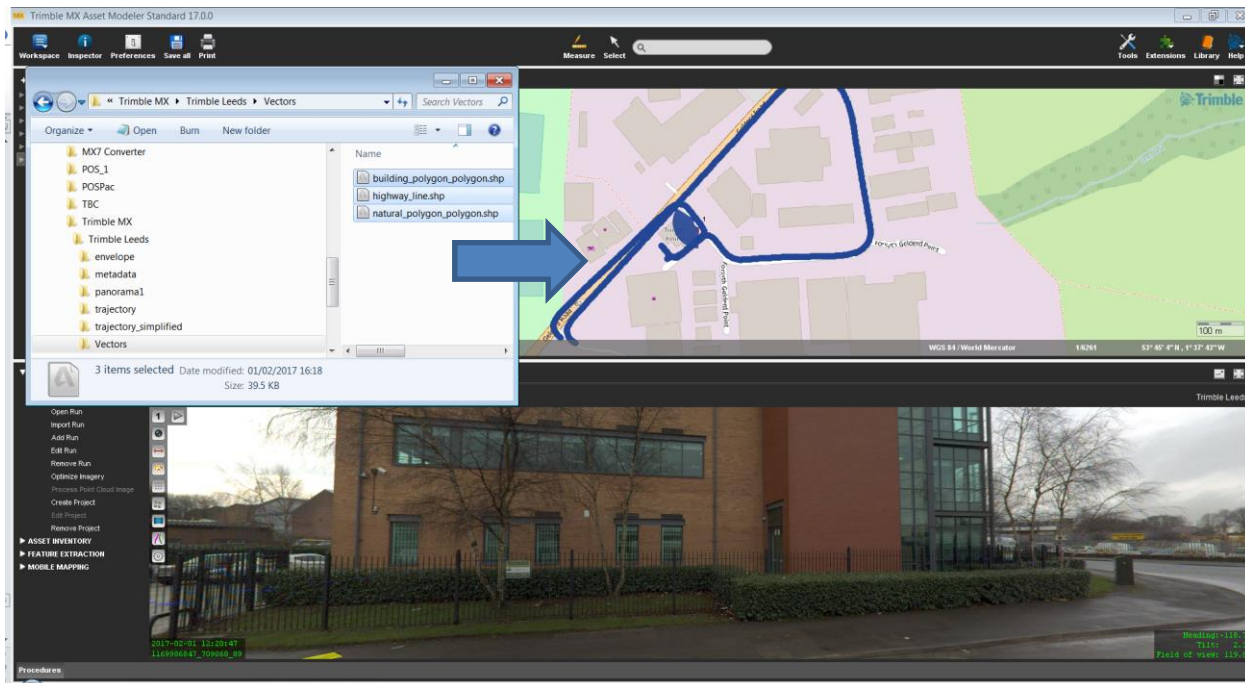
Create a folder under your Trimble MX project called “Vectors”:



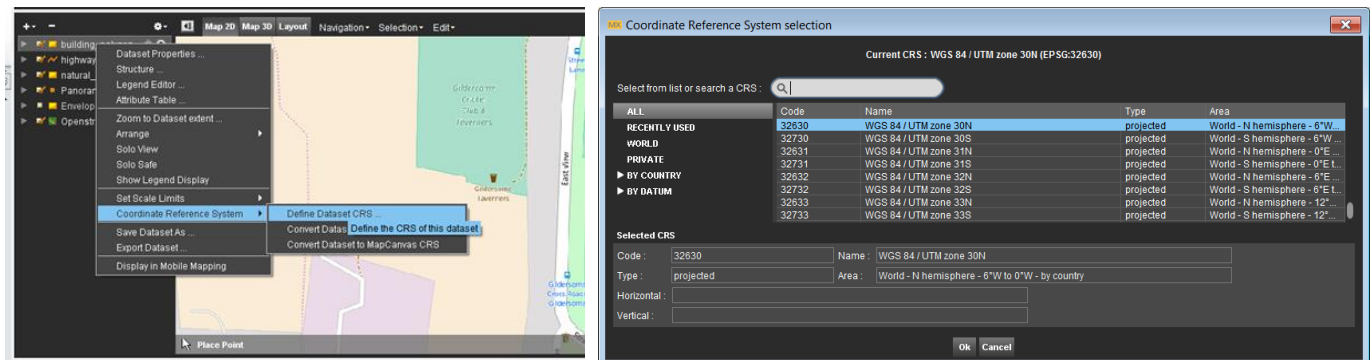
Copy the shp files provided (or your own data) into this folder:



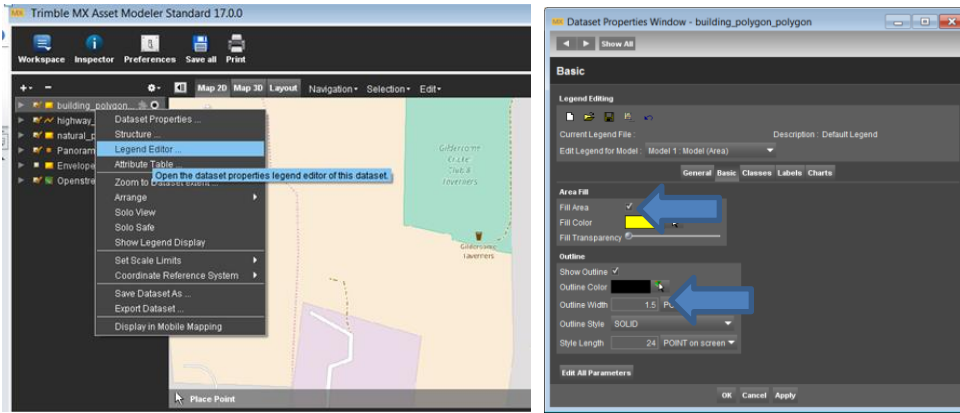
In Trimble MX Asset Modeler Drag & Drop the building polygon shp file into the map display.



Right mouse click on the building polygon layer (top left) and set the data set coordinate system to UTM Zone 30N:



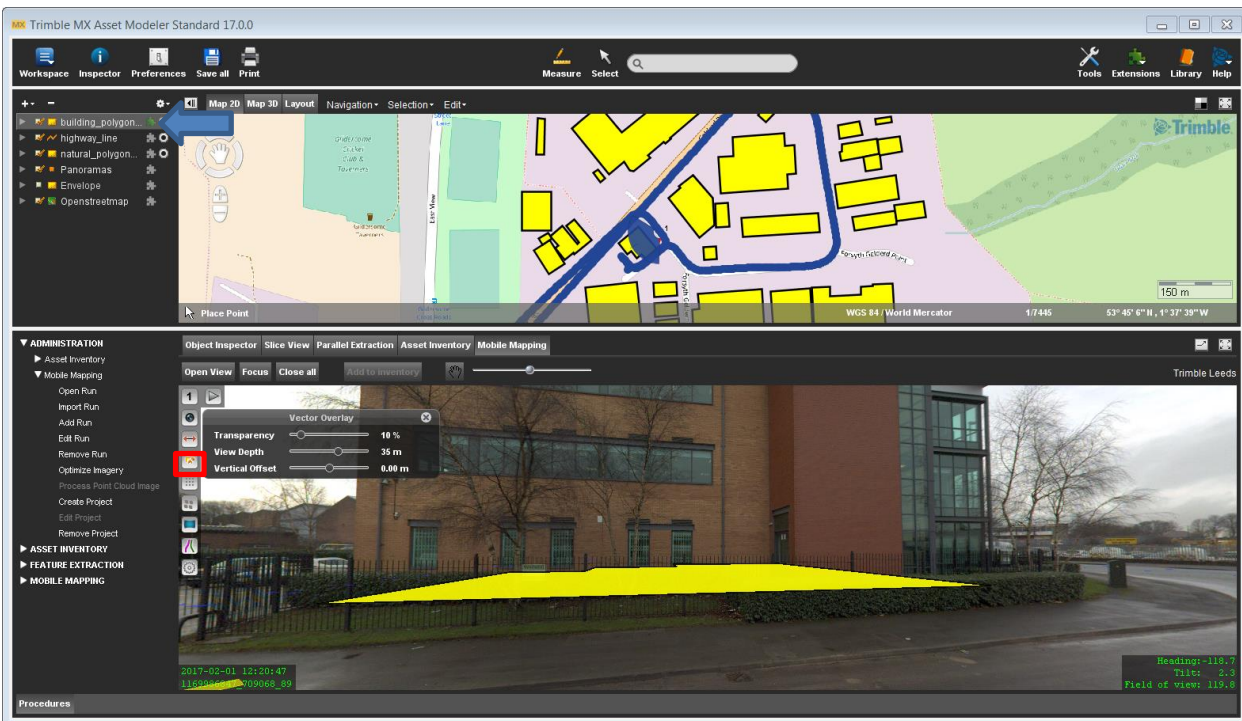
Set the color for the buildings layer. Right mouse click and select **Legend Editor**. Tick the **Fill Area Box** and Change **Outline Point Size** to 1.5:



You will see building displayed in the map:

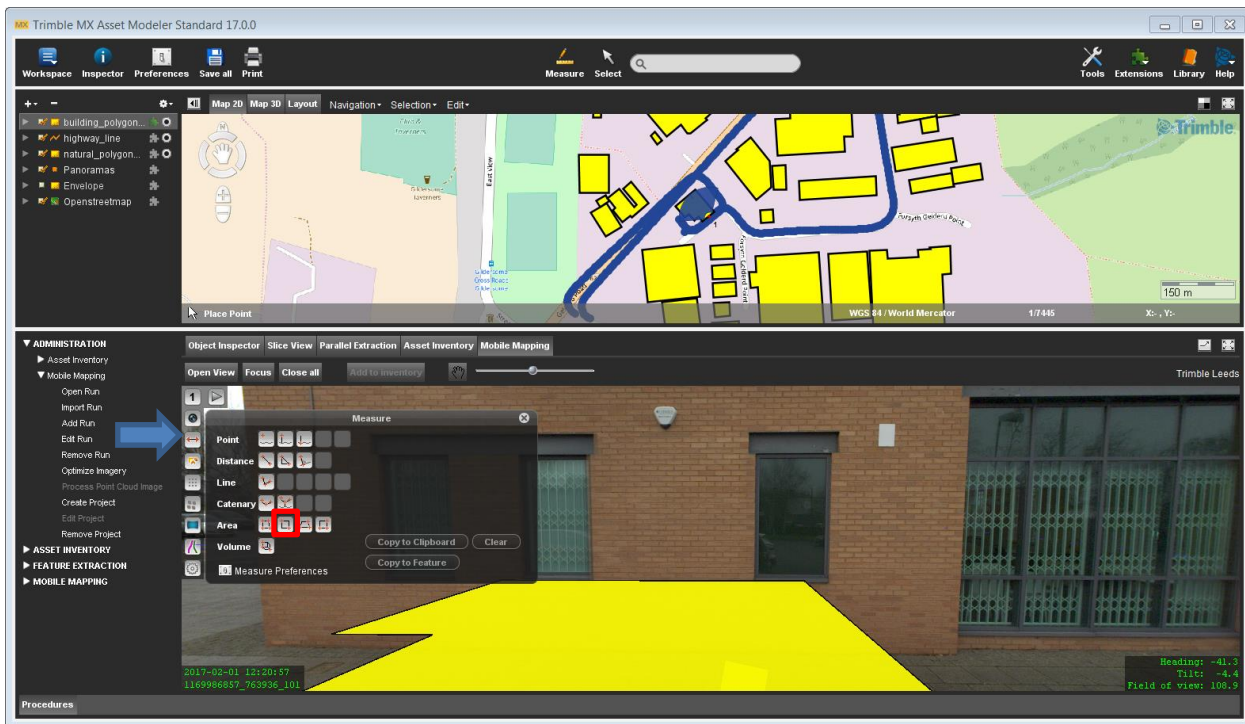


Right Click on the layer **puzzle icon** and the buildings will also appear in the imagery. You can adjust the vertical offset of the layer in the image as shown below:

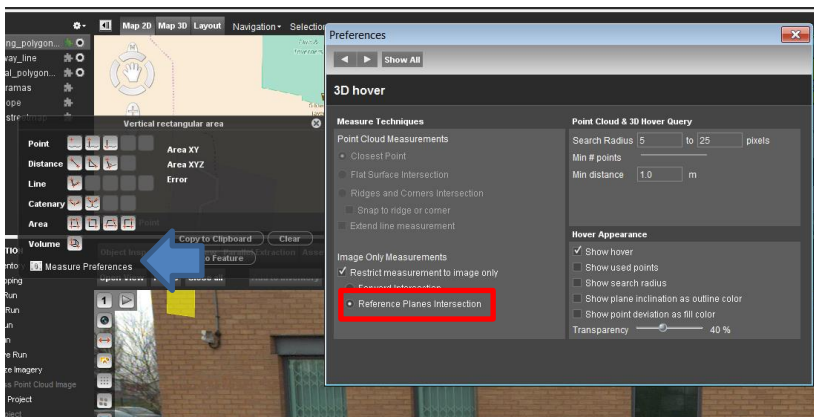


Choose a building that has an overlay.

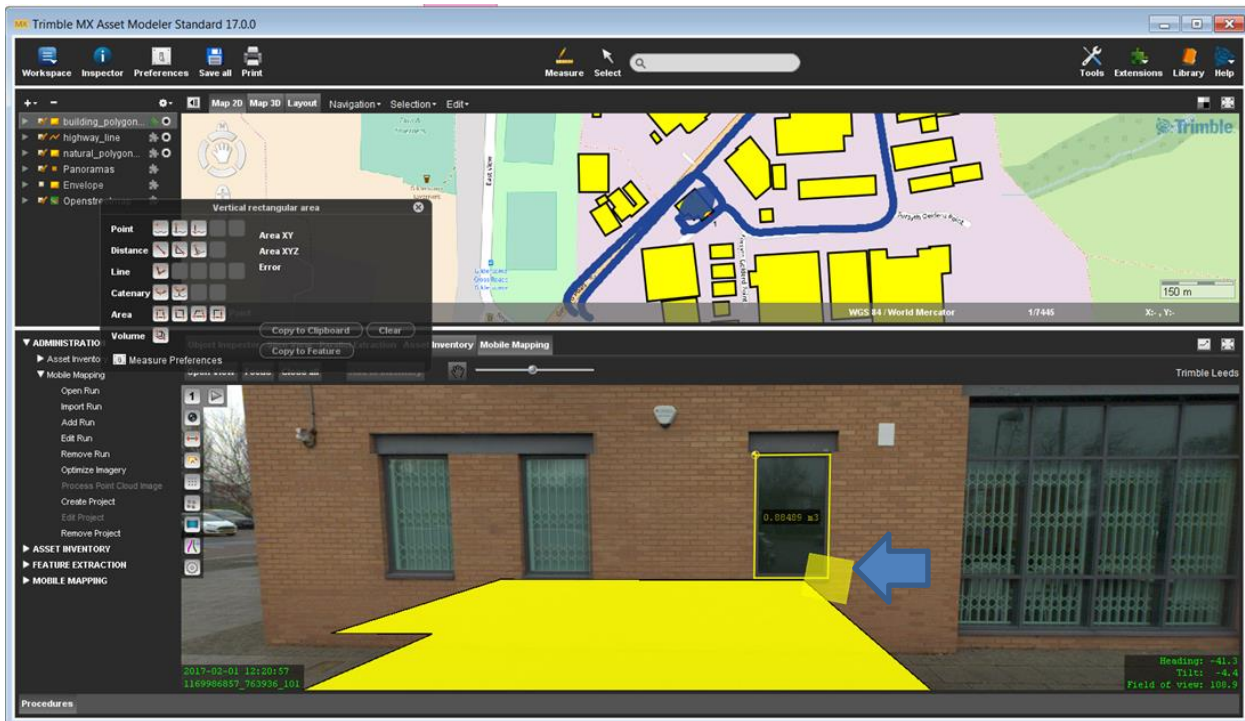
Select the **measure tool** and “Area” (2 points) as shown below:



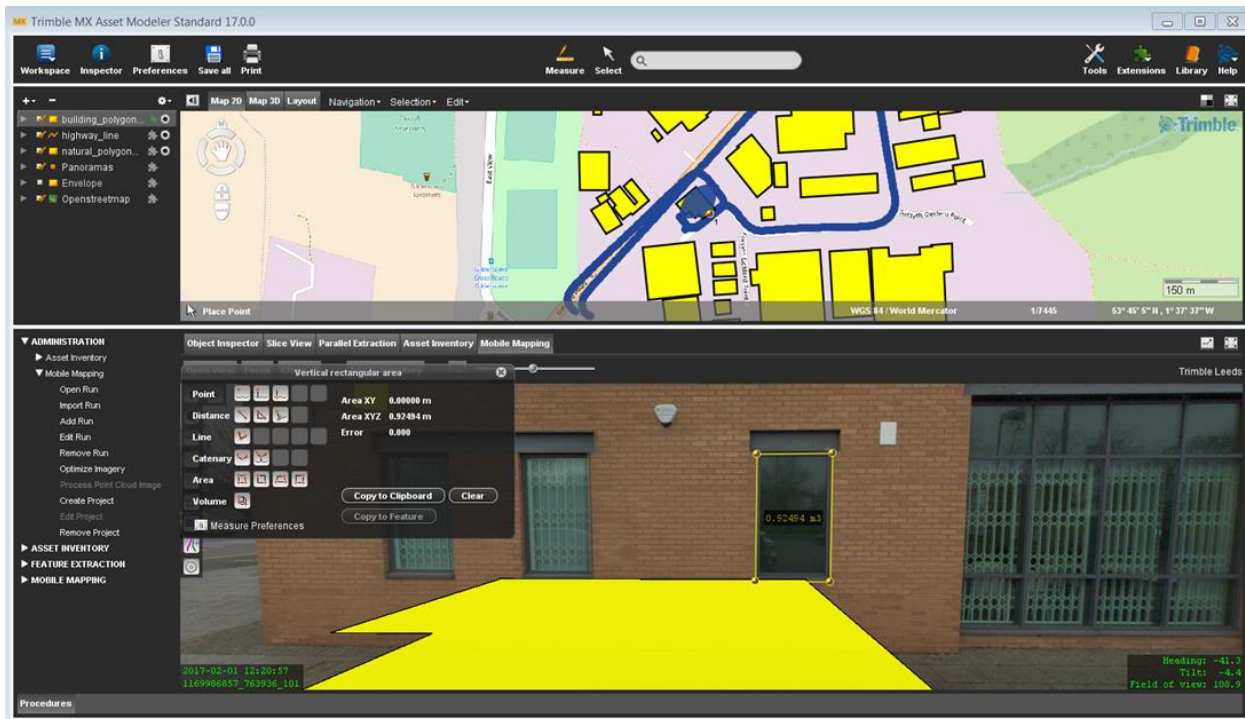
Make sure that **Measure Preferences/Image Only Measurements** are set to **“Reference Planes Intersection”**:



Measure top left and bottom right of a window in a single image as shown below:



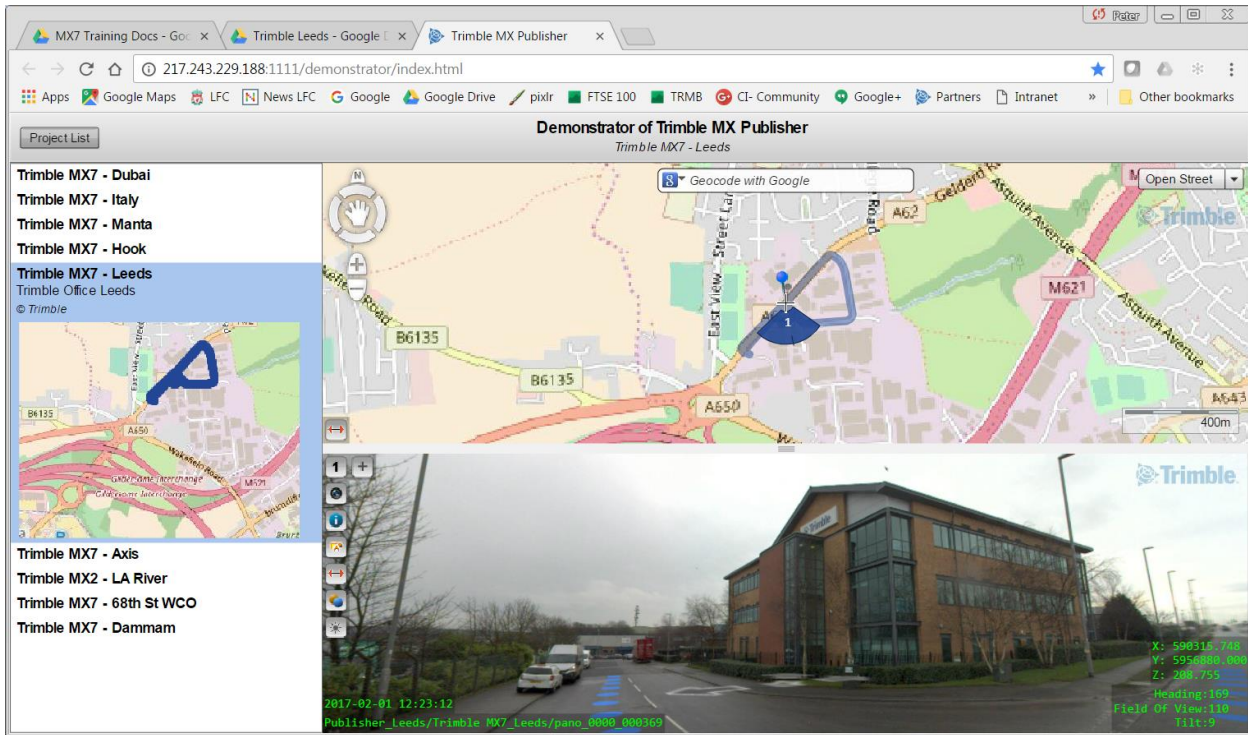
You will notice the icon in the image window shows a yellow square indicating that it is snapping onto a surface projection of the reference plane.



# 5. Published Data

This data set is available for anyone to browse in a published format using a web browser at:  
<http://217.243.229.188:1111/demonstrator/index.html>

This is a big advantage of the MX software solution – data can be published on a server and shared across an organization and beyond.



### For more information

For more information contact your local Trimble Distribution Partner.

