

Survey Deliverables

When surveying, the position of existing features and ground detail are recorded and then plotted at a suitable scale either graphically or digitally.

As discussed previously a variety of equipment and methodologies can be employed in undertaking a survey and regard must be given to the purpose of the survey and deliverables required.

In some instances a simple 2D plan survey may be required for some small scale garden landscaping, in other cases the survey may be required for ground modelling, whether over a small area to calculate a muck shift or over a much larger area for floodplain mapping.

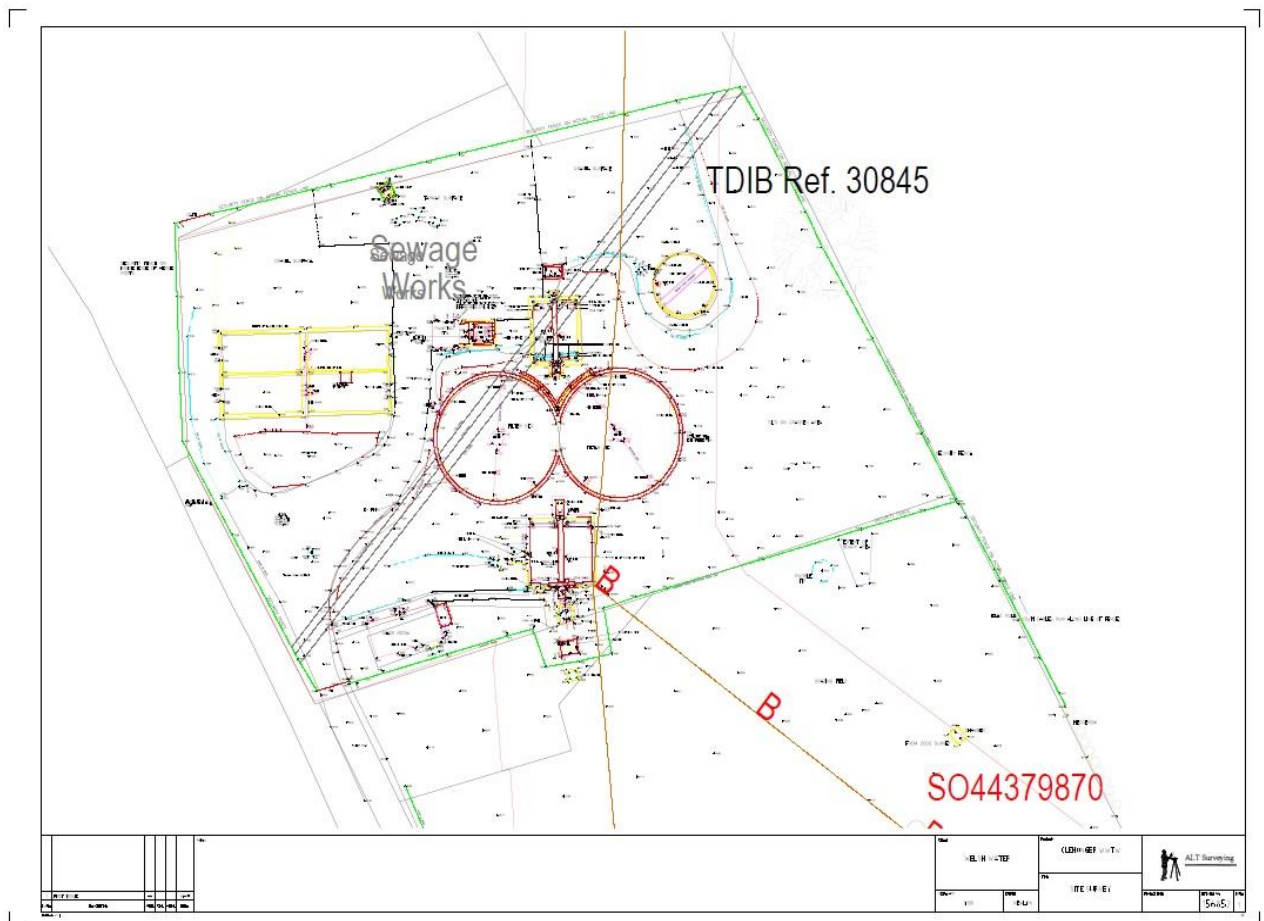
Other surveys may be required for monitoring works, possibly looking at vertical displacement due to settlement or subsidence, or horizontal displacement as a result of structural failure within the fabric of a building.

The most confrontational surveys are however, those that involve boundary disputes. Some people will want to argue over as little as 300mm of encroachment, when in lots of instances the Ordnance Survey mapping used to produce the Land registry title Deeds is not that accurate and the only drawings available from the Land Registry are paper plots or PDF's. In this instance the PDF's have to be saved as JPEG's, inserted into CAD as a raster image and rescaled to tie into the latest Ordnance Survey mapping, before it is possible to identify the encroachment by overlaying the survey drawing.

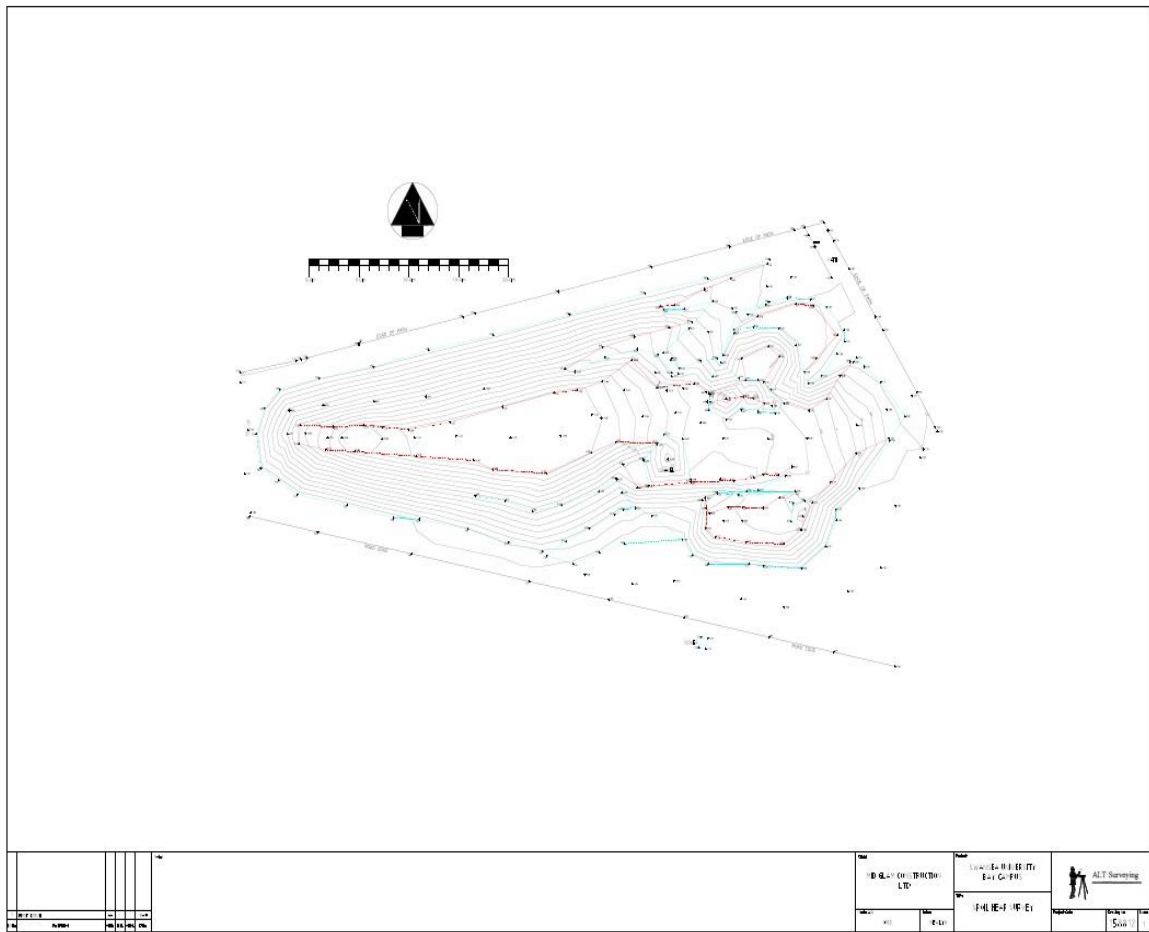
It's not just topographical surveys that are required when looking at a proposed development, environmental surveys, geophysical surveys, traffic flow surveys and many more will be required and used to best design the proposed development, so as to reduce its impact on the neighbouring area and minimise the risk of structural failure, while under construction or after transfer to client.

Examples of deliverables may include:

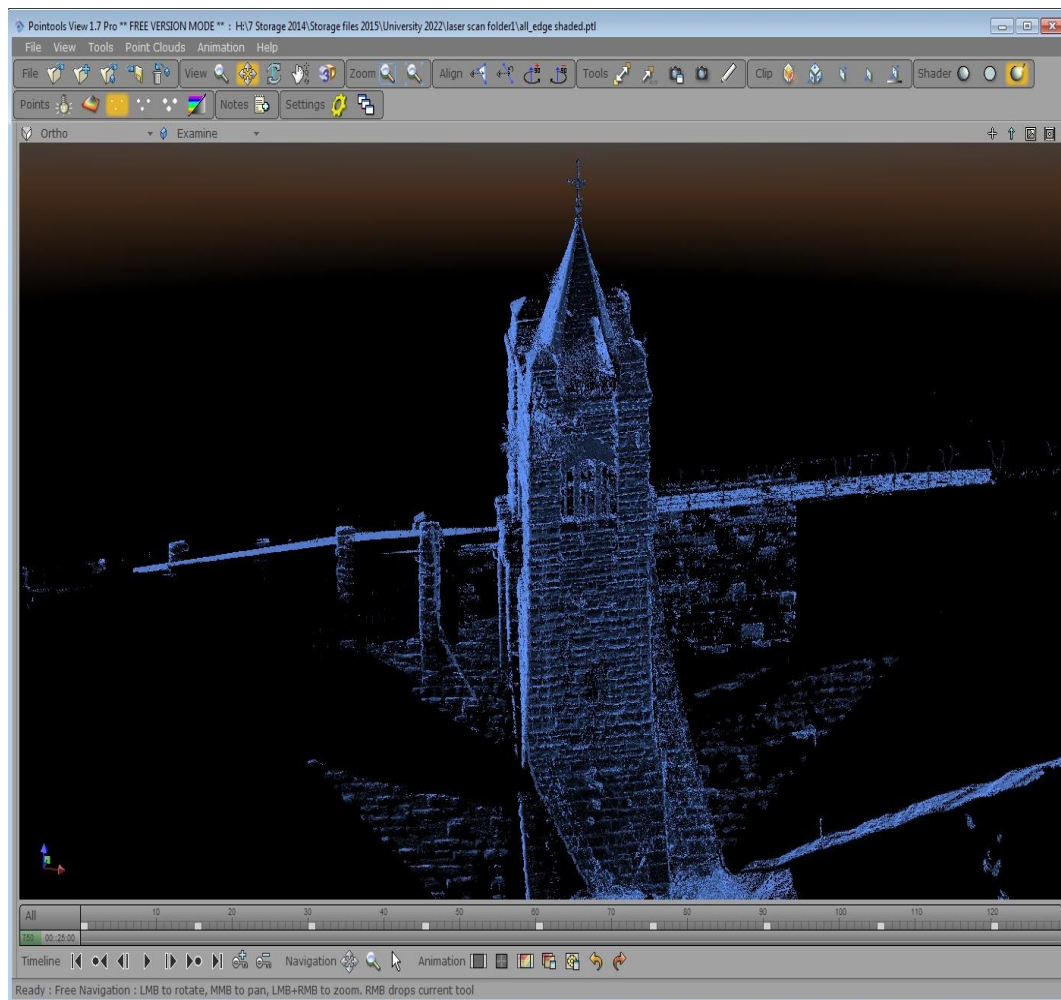
1. A 2D survey drawing, fitted to the digital Ordnance Survey mapping of the area. This is the typical deliverable issued to our client and is usually relative to the pseudo National Grid for small to midsize projects. For larger projects including major infrastructure schemes, such as highways, the survey drawings issued would be relative to the actual National Grid.



2. A 3D digital terrain model. This would be used required for producing floodplain mapping, where cross section data can be easily extracted and input into modelling software to calculate and predict your 1 in 10 year, 1 in 100 year etc. flood risk for an area. This is a requirement for all new developments in flood risk areas, as identified by Natural Resources Wales and the Environment Agency.



4. A 3D rendered pointcloud, required to create your 3D Revit model.



Copyright, Andrew Abraham, 2023

5. A 3D Revit Model required for BIM (Building Information Model), this allows for the management of a building and its infrastructure.
Note: 'Building Information Modelling, is a digital representation of physical and functional characteristics of a facility'

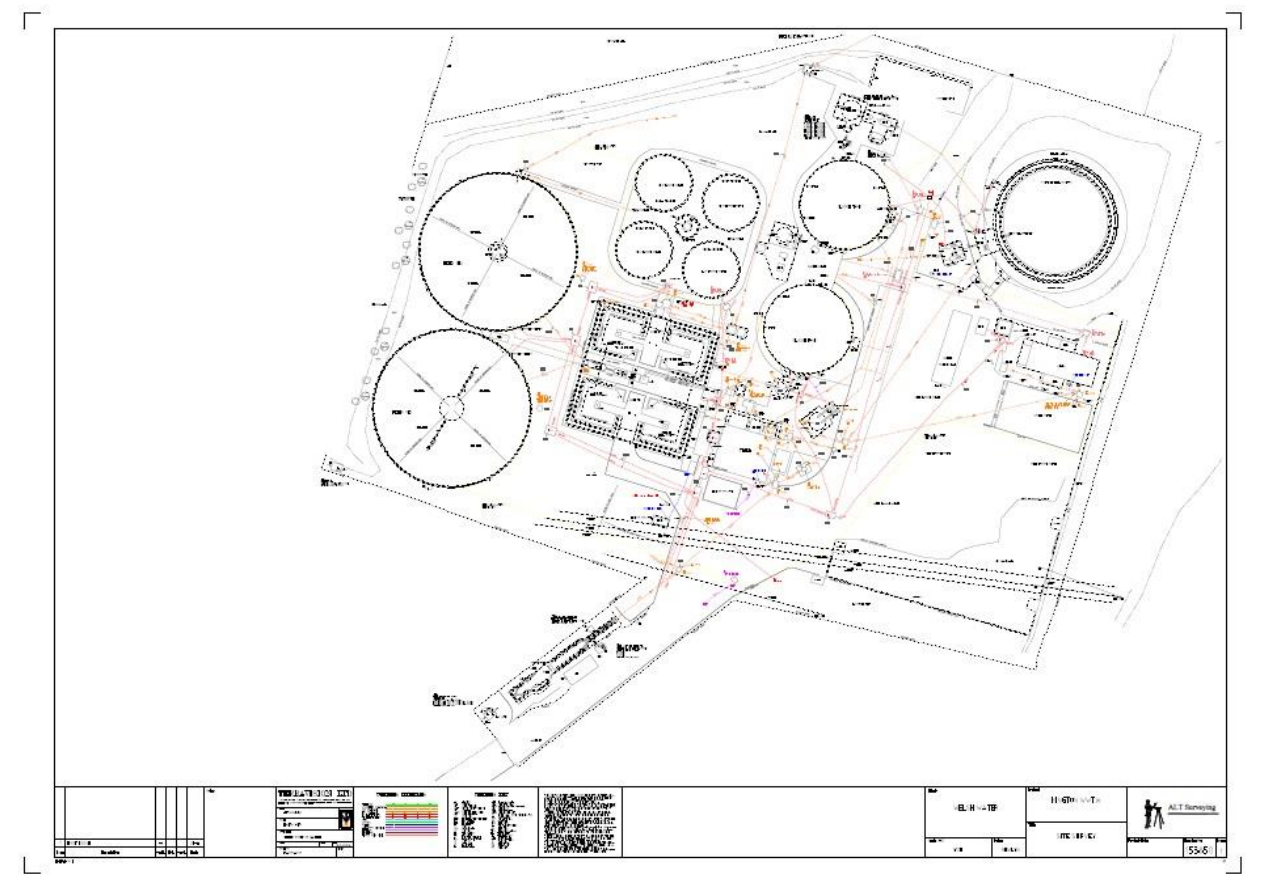
Levels of Detail

Although Levels of Detail and Levels of Definition are set out in PAS 1192-2, precise definition of these is somewhat fuzzy, compounded by the fact that LoDs used in the US are also commonly used in the UK.

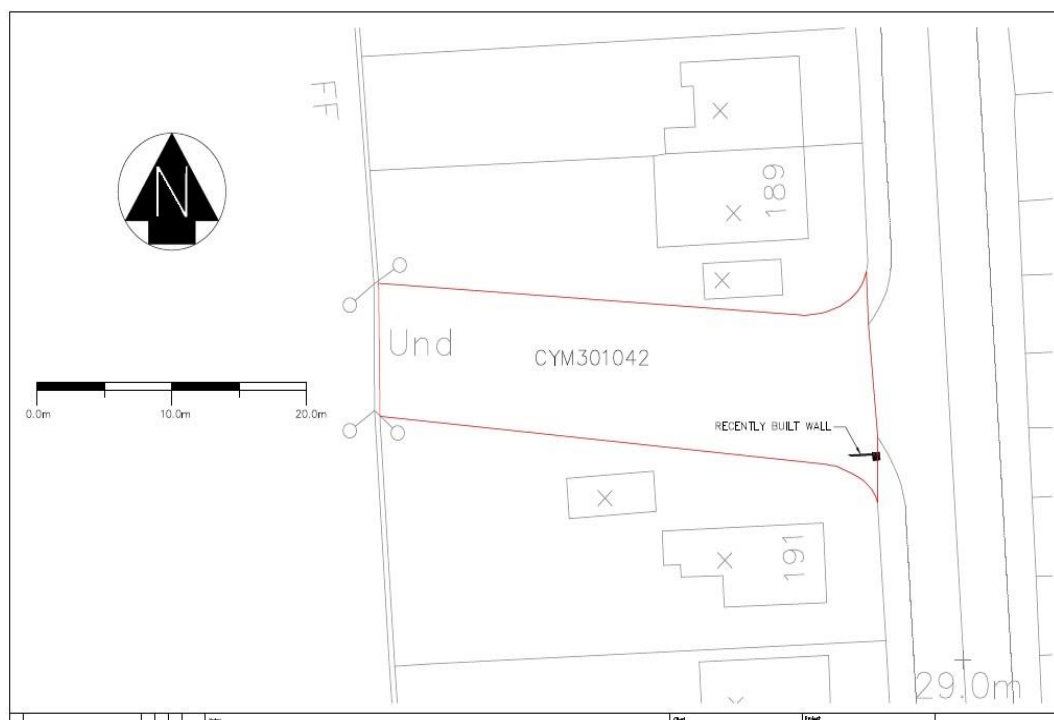
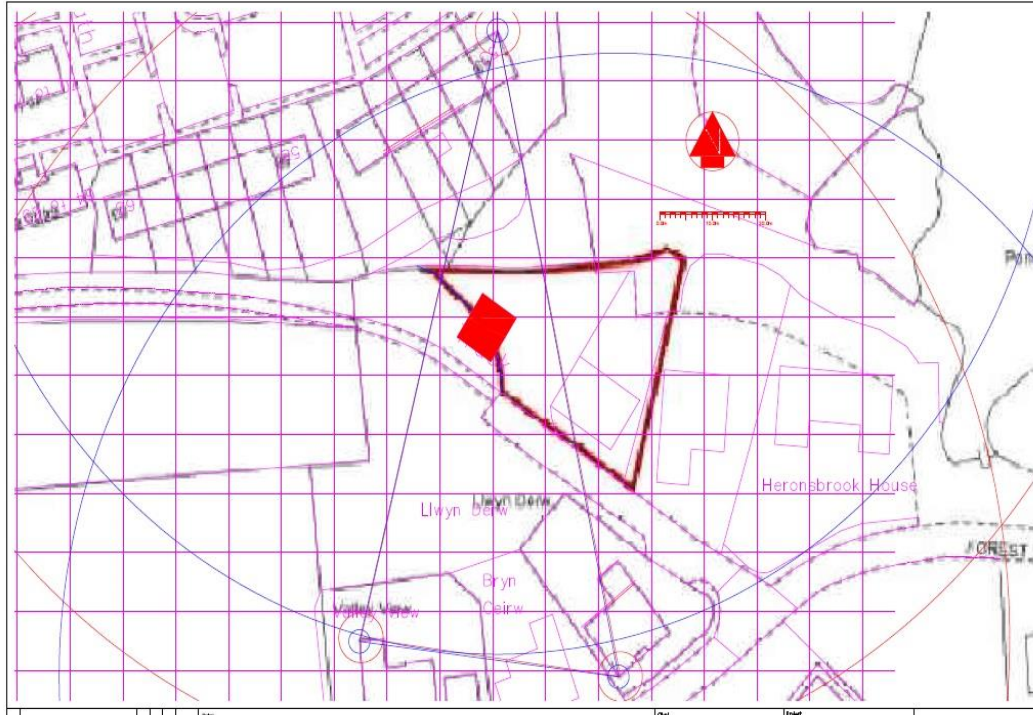
For ease of use and understanding we use a simple guide as follows:

 LOD100 (Level 1) This models the general form of the building, with no openings. Typically this is 'mass modelling'.	 LOD200 (Level 2) The model provides a conceptual form for the building and contains the most important structural elements and openings, including floors, ceilings/roofs, columns, walls, beams, basic door and window openings and windows, staircases.
 LOD300 (Level 3) The model is refined further, with basic architectural details included, such as window fenestration, RWPs, eaves, gutters etc.	 LOD400 (Level 4) The model now contains detailed structural and architectural features, included fixtures, fittings, attached services, cabinets, louvres, cornices, mouldings etc.

6. A 2D buried services drawing, produced using a combination of methodologies, including Ground Penetrating Radar (GPR), Cat and Genny, sonde etc. The detail is then marked out with paint lines on the ground surface, with these lines surveyed using conventional methods. The buried services surveys are required to ensure that buried infrastructure and archaeological sites are not disturbed or damaged during proposed developments.



7. Boundary survey drawings required to identify encroachment, whether that's as little as the construction of a boundary wall, that does not tie in with the actual position of the boundary line as indicated on the title deed or the construction of a building on a neighbour's property.



8. Spreadsheets used to identify the relative movement of a structure over a period of time, relative to a fixed control point, outside the area of concern.

Llanishen Reservoir April & June 2020 comparison adjusted.xlsx [Protected View] - Microsoft Excel

Protected View This file originated from an Internet location and might be unsafe. Click for more details. Enable Editing

	A	B	C	D	E	F	G	H	I	J	M	N	O	P	Q	R
1																
2					April 2020		June 2020									
3					Reduced Level		Reduced Level		Difference		Welsh Water reference				ALT reference	
4					46.6945		46.6945				TBM 1		TBM 1			1
5					47.2068		47.2065		0.0003		35					5
6					47.0591		47.0587		0.0004		34					6
7					47.1397		47.1396		0.0001		33					8
8					47.1327		47.1325		0.0002		32					9
9					47.1327		47.1325		0.0002		31					10
10					47.104		47.1035		0.0005		30					12
11					47.1645		47.164		0.0005		29					13
12					47.1408		47.1403		0.0005		28					14
13					47.2378		47.2369		0.0009		27					16
14					47.1993		47.1994		0.0001		26					52
15					47.1622		47.1626		0.0004		25					17
16					47.1114		47.1118		0.0004		24					18
17					47.1654		47.1653		0.0001		23					19
18					47.1664		47.1663		0.0001		22					24
19					47.2488 / 47.2472		47.2496 / 47.2500		0.0018		TBM 2		TBM 2			26
20					47.0354		47.0375		0.0021		21					27
21					47.1504		47.1526		0.0022		20					28
22					47.1448		47.1472		0.0024		19					29
23					47.2424		47.2448		0.0024		18					30
24					47.0676		47.07		0.0024		17					32
25					47.1406		47.1427		0.0021		16					33
26					47.1262		47.1283		0.0021		15					34
27					47.1176		47.1195		0.0019		14					53
28					47.1657		47.1671		0.0014		13					35
29					47.2418		47.2426		0.0008		12					36
30					47.291		47.2923		0.0013		11					37
31					46.8911		46.8922		0.0011		10					38
32					46.9998		47.0009		0.0011		9					39
33					47.1816		47.1829		0.0013		8					40
34					47.1564		47.1569		0.0005		7					41
35					47.0792		47.0797		0.0005		6					42
36					47.0947		47.0953		0.0006		5					43
37					47.1989		47.1997		0.0008		4					44
38					47.1439		47.1448		0.0009		3					54
39					47.1535		47.1538		0.0003		2					45
40					47.1042		47.1052		0.001		1					46
41					47.1322		47.1342		0.002		39					47
42					47.1019		47.104		0.0021		38					48

Sheet1 Sheet2 Sheet3

Ready

Copyright, Andrew Abraham, 2023