

**LEGEND**  
**Underground Utilities**

Water Main	Gas
Fire Water	Hydrogen Pipe
Process Water	Oil Pipe
Storm Water Drainage	Magnet
Foul Sewer	Asphalt
Combined Sewer	Traffic
Manhole Chamber	Heating Pipe
Telecom	Electrical
NL/Migh	Public Lighting
ENET/OCEAN	GPR Anomaly
BT/ESAT	Unknown Cable
Cable	Unknown Duct
Bend / Weel	Nitrogen Pipe
Oxygen Pipe	Undetected Service
Photo point	WELD
Depth from ground level to Top of Pipe/GPR target (m)	UTD Manhole / Inspection Cover
Reinforced Concrete (GPR)	Unstable to Open
Other observations - see description (GPR)	Possible Stab (GPR)

ST Survey Station

The orange line, as shown, on this particular drawing and bounding the entire of the utility survey area is merely for the purpose of indicating the extent of the area that was surveyed. It must not be taken as being commensurate with the extents of the entire of the plot of ground that the Client may own [or not]. In order to establish the ownership of the survey area Murphy Surveys do advise consulting with your Client and their legal team.

**Murphy Surveys Ltd. Disclaimer**

The survey aims to map all existing utilities and sub surface structures and provide information with respect to pipe size, material type and drainage connectivity. However GPR surveying is limited by the following guidelines and it may not be possible to accurately survey, define and locate all services and sub surface features.

- Locational accuracy is determined by referring to the manufacturers guidelines for the detectors used.
- Existing record information showing underground services is often incomplete and unknown accuracy; therefore it should be regarded only as an indication.
- In ideal conditions these spatial accuracies for the underground utilities are +/- 5% for the P30000 and +/- 10% at depth for the GPR to 2.5m deep. However, variations within the subsurface may alter this estimated accuracy.
- Although all reasonable steps have been taken to locate all features, there is no guarantee that all will be shown on the drawings as some above ground features may have obstructed the survey.
- GPR surveying operates best within high resistivity material. Clay overburden can impair GPR surveying.
- Due to the attenuation of the radar signal with depth, resolution is restricted, hence making identification of anomalies difficult with increasing depth.
- The depth penetration and quality of the data depends on the ground conditions on the site. Poor data may be a result of areas with high conductivity. Also, high reflective materials close to the surface i.e. rebar may hide deeper anomalies.
- It is not always possible to trace the entire length of each underground service.
- It is always our intention to use the Utility providers' details, if supplied prior to every commencement as a guide for location purposes. However, should we not be able to locate those guided services we shall not be held responsible for the accuracy, or otherwise, of the location of that service, as issued by the utility provider and therefore shown "Taken from Records" on the drawing and we are not liable for any loss that may arise due to the lack of accuracy in the guided information.
- Unless otherwise stated, all services and sub surface structures shown on Murphy Surveys Limited plans/drawings have been surveyed using approved detectors and the connections between manholes, if not traced, are assumed to run straight.
- Plan accuracies of the order of + or - 150mm may be achieved but this figure will depend on the depth of the service below ground level. Where similar services run on close proximity, separation may be impossible. Successful tracing of non metallic pipes may be limited.
- Please note that not all buried pipes, cables and ducts can be detected and mapped in consideration of their depth, location, material type, geology and proximity to other utilities. Even an appropriate and professionally executed survey may not be able to achieve a 100% detection rate.
- Services which have been untraceable are shown from Records where possible.
- DP represents distance from the surface level to the top of the service/ radar.

No allowance has been made within our quotation, unless otherwise stated, for the location and mapping of undetected services. Failure to detect or fully map any declared service will be recorded within the notes accompanying our final drawings.

Where technically possible, depth indications will be given. These should be used for guidance only and wherever critical accuracy is required these should be confirmed by the Client by undertaking trial excavations or similar. Bends, lateral service connections, or the close proximity of other services and local magnetic, atmospheric or ground conditions, could in certain situations influence the accuracy of the plan and depth indication facility. Depths will not be provided unless we are reasonably confident of their validity.

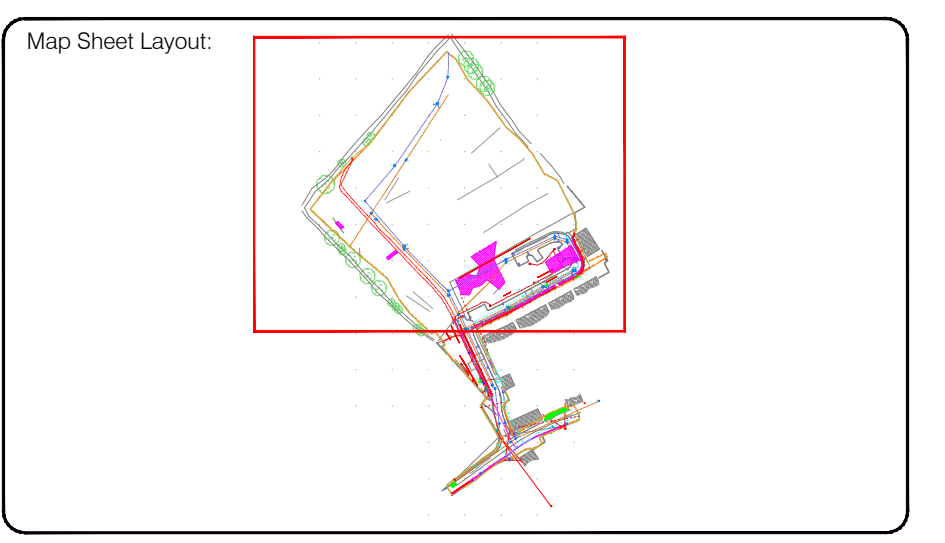
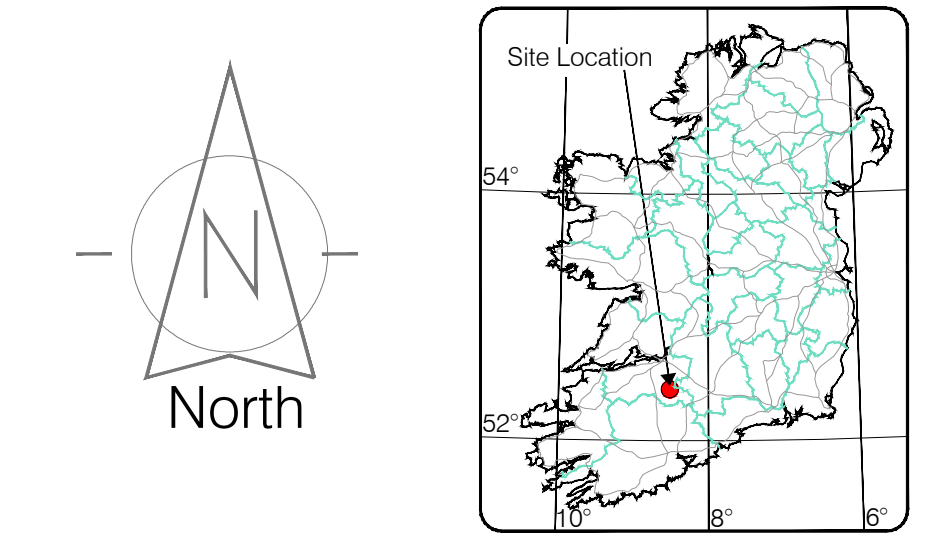
Where Murphy Surveys Limited issues a CAD drawn utility service plan, this should be read in conjunction with all available public utility records etc. As part of our extensive Quality Control procedures, Murphy Surveys Limited Endeavour to add relevant Public Utility record information onto the final issue drawing. An allowance should be made for the width of services, particularly where these are laid in bands or are of significant size etc. For clarification or appropriate assessment bands, we would recommend that direct contact is made with the Asset Owner or Statutory Undertaker.

We exclude the following, except where otherwise specified and possible to do so:

- All private service connections, (including water or gas fittings where no through flow of applied signal is possible).
- For ended or disconnected cables or terminated short lengths of pipe.
- Internal building services.
- Fibre optic cables (except where laid with a standard communications cable or built in tracer wire or similar conductor system) or can be closely located using ground penetrating radar.
- Small diameter cables less than 17mm diameter, or pipes less than 38mm diameter.
- Above ground services unless specifically requested.
- Lifting manhole covers which require longer than 10 minute effort using standard heavy duty lifting apparatus.
- Services positioned directly below other pipes or cables etc (i.e. masking signal) - intrusive verification options available on request.
- Deep non metallic pipes, ducts or culverts (unless probing or Pipe Track 3d is specified as part of the fully measured survey option).
- Passing through defective pipework (displaced joints etc) or acute bends between access points.

Please note that our Quotation does not allow for location of individual service leads to properties unless reasonable to do so, as access would be required into each property to apply direct connections to riser points and this would significantly increase the scope of work, survey cost and also cause possible disruption to occupants.

All work carried out by Murphy Surveys Limited (MSL) conforms to the guidelines set out by The Survey Association (TSA).



Surveyed by : T.J. PHILLIPS	Date : 16.08.2019	Datum : Mean Head
Drawn by : T.J. O'LOUGHLIN	Date : 07.10.2019	Grid System : Irish National Grid
Checked by : J.M.	Date : 16.10.2019	ITM 02

No	Date	Description
0	10.10.2019	First Drawing
1	14.02.2020	Address Survey by WS, Address info added from CD Environmental CCTV Survey

**SOCIETY OF CHARTERED SURVEYORS IRELAND**

**THE SURVEY ASSOCIATION FULL MEMBER**

**RICs** the mark of property measurement excellence

**EUROPEAN GPR ASSOCIATION**

**murphy SURVEYS**  
GLOBAL CONSULTING SURVEYORS

Topographic surveys, Measured Building Surveys, Setting Out, As-Built Surveys, Hydrographic Surveys, Legal Mapping, Pipeline Surveys, Services Location, Ground Penetrating Radar, Laser Scanning, Rectified Photography

**Kildare Cork Belfast Glasgow London**

<b>Client :</b>	Limerick City & County Council
<b>Project :</b>	Topo+Utility Surveys 19099 Kiltinnane,Limerick
<b>Date :</b>	14.02.2020
<b>Scale :</b>	1:250@A0
<b>Description :</b>	Utility Survey
<b>Drawing Number :</b>	MSL32976_U_Rev.1

© Copyright 2019 MURPHY SURVEYS LTD