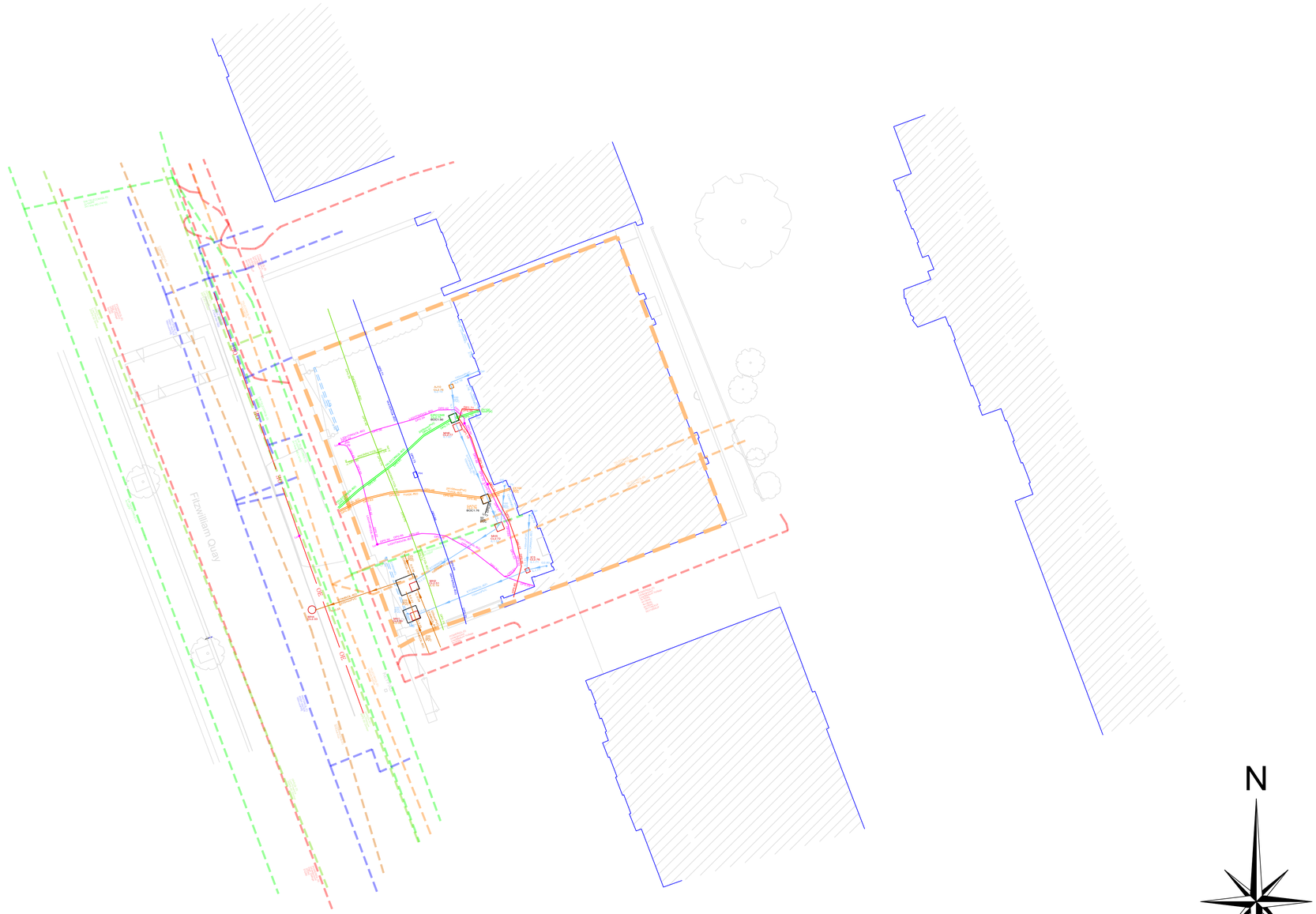



## PAS 128: 2014 (Quality of Survey Level Outputs):

| | |
|---|---|
| DESKTOP UTILITY RECORDS SEARCH | |
| QL-D | Drafted from utility records |
| SITE RECONNAISSANCE | |
| QL-C | Location Demonstrated by visual reference to street furniture or evidence of previous streetworks, ie - reinstatement scars |
| DETECTION | |
| QL-B4 | A segment of utility suspected to exist but has not been detected by a geophysical technique |
| QL-B3 | Horizontal location only of the utility detected by one of the geophysical techniques used |
| QL-B2 | Horizontal and vertical location of the utility detected by one of the geophysical techniques used |
| QL-B1 | Horizontal and vertical location of the utility detected by multiple geophysical techniques |
| VERIFICATION | |
| QL-A | Horizontal and vertical location of the top and/or bottom of the utility |

## Apex Surveys Ltd. Disclaimer - Utility Survey

The interpretative nature and the non-intrusive, indirect and non-destructive survey methods must be taken into account when considering the results of the surveys. Therefore Apex Surveys, while using appropriate practice to execute, interpret and present the data, gives no guarantees that all underground utilities and underground structures will be located and mapped. Furthermore, Apex Surveys cannot guarantee the accuracy of the utility depths annotated on the survey drawings.
Apex Survey shall not be liable for any omissions or inaccuracies in the survey which arise due to the limitations of the service. No liability shall attach to Apex Surveys, in any circumstances, howsoever arising, in respect of any consequential loss or damages suffered by the Client.

The following is a non-exhaustive list of the limitations of utility surveys:

The Survey aims to map existing utilities subsurface utilities and provide information with respect to pipe size, material type and drainage connectivity. However utility 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.

- Depth of Utility: The depth and size of a utility affect the signal response and the degree with which a utility can be located.
  Due to attenuation of the radar signal with depth, resolution is restricted, hence making identification of utilities more difficult with increasing depth.
- Size of Utility: The smaller the diameter of a utility the more difficult it is to locate. This difficulty increases with depth.
- Ground Conditions: The depth penetration and quality of the data depends on the ground conditions of the site. GPR Surveying works best within high resistivity material. Clay overburden can impair GPR Surveying. Poor data may be a result of areas with high conductivity.
- Utility Congestion: Where different utilities converge together into a service corridor or cross paths it becomes difficult to isolate a specific utility and to map its route. The reflected signal will display a single response to multiple utilities. Therefore multiple utilities may appear to be a single utility. Where similar services run on close proximity, separation may be impossible.
- Signal Jumping: Signal from surrounding services may 'jump' to a highly conductive line masking its true identity.
- Shadowing: (of deeper utilities by shallower objects) Shallow utilities will mask the existence of deeper utilities where they are in close proximity. Also, high reflective materials close to the surface i.e rebar may hide deeper anomalies.
- Surface Obstructions: The GPR system relies on a relatively flat and even surface on which to perform radar passes. If ground obstructions such as vehicles, organic material (long grass, scrub) or undulating ground surface are present then the acquired data will be of lower resolution and in some cases not viable.
- Loss of signal: It is not always possible to trace the entire length of each underground service.
- Connections between manholes: Connections between manhole chambers are assumed to be straight.
- Non-metallic objects: Nonmetallic objects are amongst the most difficult to trace therefore successful tracing of non-metallic pipes/ utilities may be limited.
- Fiber Optic Cables: Fiber optic cables may not be possible to locate except where laid with a built in tracer wire or similar conductor system.
- Defective / flooded manholes or pipework: It may not be possible to establish connections between flooded or defective manholes or pipework.
- Acute bends in pipework: It may not be possible to trace a pipe past an acute bend.

Accuracy estimates:

- Locational accuracy is determined by referring to the manufacturers guidelines for the detector used.
- In ideal conditions the spatial accuracies for the underground utilities may be +/- 5% for Radiodetection and +/- 10% of depth for the GPR to 2.5m deep. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
- Plan accuracies of + or - 150mm may be achieved but this figure will depend on the depth of service below ground level. However variations within the subsurface subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
- DP represents distance from the surface level to the top of the service/ target
- Where technically possible, depth indications will be given. These along with plan positions 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.

Record Drawing Information

- Services which have been untraceable are shown from records where possible or available. These lines are annotated as "Taken From Records" or "From Records".
- Existing record information showing underground services is often incomplete and with unknown accuracies therefore it should be regarded as indicative only.
- Where Apex Surveys issue a utility drawing, this should be read in conjunction with all available public or private utility records.
- Apex Surveys endeavor to add relevant Public Utility record information onto the final drawing. However, we would recommend that direct contact is made with the asset owner or statutory undertaker.
- We shall not be held responsible for the accuracy, or otherwise, of the location of a service, as issued by the utility provider and therefore shown as "Taken for Records" on the drawing.

The following have been excluded from the survey:

- Location of individual service feeds to properties or buildings as access would be required into each property to apply direct connections to inlet points and this would significantly increase the scope of works, survey cost and also cause possible disruption to occupants.
- Pot ended or disconnected cables or terminated short lengths of pipe.
- Internal building services.
- Small diameter cables less than 20mm diameter or pipes less than 40mm diameter.
- Above ground services unless specifically requested.
- Lifting manholes which require longer than 10 minutes effort using standard heavy duty apparatus.

All works carried out be Apex Surveys conforms to the guidelines set out by The Survey Association (TSA) and PAS:128 Standard for utility mapping

APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

### STREET FURNITURE :

| | |
|---|---|
| BOLLARDS | BD • |
| BUS STOP | BS • |
| CRASH BARRIER | CB |
| GATE | |
| ELECTRICITY POLE | EP • |
| TELEPHONE POLE | TP • |
| EARTHING ROD | ER + |
| LAMP POST | LP • |
| MARKER POST | MKR • |
| SIGN POST | SIGN |
| TRAFFIC LIGHT | TL • |
| TELEPHONE BOX | TB |
| POST | POST • |
| POST BOX | POST BOX |
| ROADSIGN | RS - RS |
| BORE HOLE | BH + |
| TRIAL PIT | TPIT + |

### SERVICES :

| | |
|---|---|
| AIR VALVE | AV |
| ARMSTRONG JUNCTION | AJ |
| CABLE TV IC | CATV |
| COVER LEVEL | CL |
| EIRCOM COVER | EIRCOM |
| EIRCOM JUNCTION BOX | EIRCOM BOX |
| ELECTRICAL CABLE PIT | ECP |
| ESAT COVER | ESAT |
| ESB COVER | ESB |
| ESB JUNCTION BOX | ESB BOX |
| FIRE HYDRANT | FH |
| GAS VALVE | GV |
| GULLY | G |
| INSPECTION COVER | IC |
| MANHOLE | MH |
| SEPTIC TANK | SEPTIC |
| SLUICE VALVE | SV • |

| | |
|---|---|
| STOPCOCK | ST • |
| SERVICE BOX ( UNKNOWN ) | BOX |
| TRAFFIC COVER | TLIC |
| VENT | VENT • |
| WATER METER | WM + |

### LEVELS :

| | |
|---|---|
| BED LEVEL | + BED101.50 |
| FLOOR LEVEL | + FL101.50 |
| INVERT LEVEL | + IL101.50 |
| ROAD LEVEL | + 101.50 |
| SOFFIT LEVEL | + SL101.50 |
| SPOT LEVEL | + 101.50 |
| TOP OF WALL LEVEL | + TOW101.50 |
| WATER LEVEL | + WL101.50 |
| SURVEY CONTROL STATION | |

| | | | |
|---|---|---|---|
| BOTTOM OF CHAMBER | BOC | DOWNPIPE | DP |
| CAST-IRON | C/I | EARTHENWARE | E/W |
| CONCRETE | CONC | NO FURTHER TRACE | NFT |
| DIAMETER | DIA | OFFSITE | O/S |
| START OF RUN | SOR | | |
| UNABLE TO OPEN | UTO | | |
| UNABLE TO TRACE | UTT | | |

### UNDERGROUND LEGEND :

| | |
|---|---|
| WATER MAIN | WATER |
| GAS MAIN | GAS |
| STORM DRAIN | STORM |
| FOUL SEWER | FOUL |
| COMBINED SEWER | COMB |
| ELECTRIC CABLE | POWER |
| ELECTRIC LIGHTING | LIGHTING |
| EIRCOM | EIRCOM |
| FIBRE OPTIC CABLE | F.OPTIC |
| BROADBAND | BROADBAND |
| CABLE TV | TV |
| TRAFFIC AND SIGNAL CABLE | TRAFFIC |
| CCTV | CCTV |
| IRRIGATION PIPE | IRRIGATION |
| EMPTY DUCT | EMPTY |
| GPR ANOMALY | ANOMALY |
| UNKNOWN CABLE | CABLE |
| O/HEAD ELECTRICITY | OE |
| O/HEAD TELECOM | OT |

### SHEET LAYOUT :

PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

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info@apexsurveys.ie
00353 1 691 0156

CLIENT:

De Siun Architects

PROJECT:

14-15 Fitzwilliam Quay Survey

| | |
|---|---|
| GRID SYSTEM: | Irish Transverse Mercator |
| DATUM: | Malin Head (OSGM15) |
| NOTES: | Drawing Contains Scale Factor |

REVISIONS:

| No. | Date | Description |
|---|---|---|
| 001 | N/A | Original Drawing |
| | | |
| | | |
| | | |

SCALE : 1/200 A1

DATE : 11/11/2025

DRG No: 7459

DESCRIPTION : 2D Utilities

SURVEYED BY : K.K.

SHEET: 1 of 1

PROCESSED BY : A.S.

CHECKED BY : A.B.