

**Brill Owen  
Pakenham Street  
PAS128 M4P Utility Mapping Survey  
Site Report  
Project No. 1752**

Prepared by:  
James Ephgrave  
40SEVEN Limited

Unit E  
Great Hollenden Business Centre  
Underriver  
Sevenoaks  
Kent  
TN15 0SQ  
Tel: 08450 179 300

Commissioned by:  
Stephen Manship

Brill Owen  
Grove House  
2B Lichfield Grove  
Finchley Central  
London  
N3 2JP

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**Utility Surveyor:** James Ephgrave

**Topographical Surveyor:** Shaun Duggan

**Date of Survey:** June 2019

**Drawings Number Issued to the Client:** 1752 \_P.dwg

**Type of Survey:** Underground Utility Location & Mapping Survey.

**Survey Grid:** ORDNANCE SURVEY - Related to the OS Active Network via GPS observations.

**Survey Datum:** ORDNANCE SURVEY - Related to the OS Active Network via GPS observations.

**Accuracies:** Depth by Electromagnetic Detection: +/- 10% of Depth.

Plan position by Electromagnetic Detection: +/- 10% of Depth.

Depth by GPR: +/- 10% of depth (in Normal Ground Conditions)

Plan position by GPR: +/- 10% of Depth.

### Specification Notes:

1. All survey works carried out in the areas defined by Brill Owen.
2. All drawings must be read in conjunction with record information.
3. Field distortions from any above ground metallic objects i.e. temporary heras fences, temporary safety barriers or parked vehicles can limit the locatable signal due to interference from above ground fields.
4. Statutory information available at the time of survey, provided by the client.
5. All services have been surveyed robustly using a combination of Electromagnetic Detection & Ground Penetrating Radar (GPR). All utility positions were surveyed in using a Robotic Total Station.

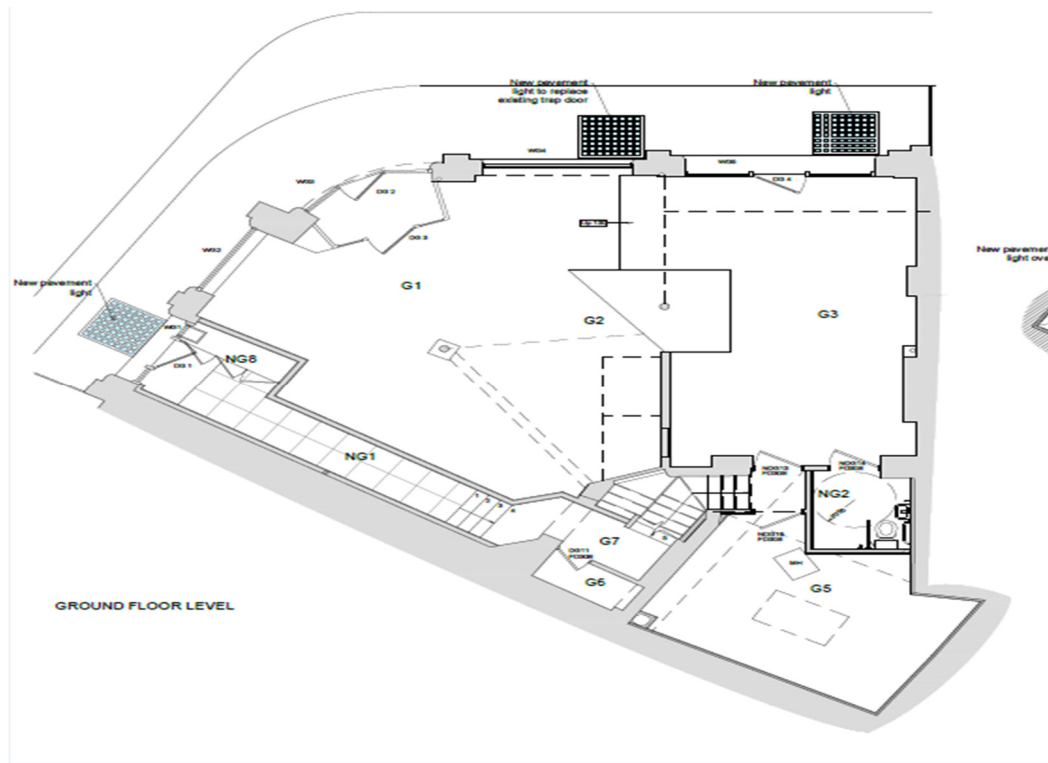
### Existing Service Records Provided to Field Surveyor

Service	Provider	Remarks
Drainage	Thames Water	No Map Reference Available
Water	Thames Water	No Map Reference Available
Gas	Cadent	Map Reference: TQ3082
Electric	UKPN	No Map Reference Available
Telecom	BT Openreach	Map Reference: TQ3089982422
CATV	Virgin Media	No Map Reference Available
Comms	Zayo	Job Reference: 15786652
		NOTE: No other existing statutory undertaker's records were available at the time of the survey or during post processing.

### Field Equipment

Type	Make	Model	Company I.D No.	Operator(s) Initials
Electrolocation Instrument	RD	8000	PDL007 TXT007	JE
GPR	Mala	HDR Pro	ELP012	JE
Robotic Total Station	Trimble	S3	Rob 25	SD
GPS	Trimble	R6	Base20	SD

**Defined Survey Extents:**



## Utility Location & Mapping Survey Results

Service	Comment Number	Successes / Problems Differences between survey & "Stats"
Drainage	1	No surface water drainage located within the survey extents.
	2	No foul sewer drainage located within the survey extents.
	3	No statutory record information available at time of survey.
Electric	1	Routes located and traced by direct connection to multiple lampposts and electric boxes positioned throughout the survey extents.
	2	A full passive power sweep has been carried out across the survey area using electromagnetic location instrument.
	3	No statutory record information available at time of survey.
Gas	1	Gas valve identified within the survey extents. Unable to directly connect to the valve as it was too deep.
	2	A full passive power sweep has been carried out across the survey area using electromagnetic location instrument.
	3	Statutory record information available at time of survey provided by 40Seven although private service connections are not shown.
Water	1	Several valves located in the footpath on Pakenham Street. Routes located and traced by direct connection.
	2	Valves, washouts and water meters identified throughout the survey extents. Unable to generate radio frequency response possibly due to non-metallic pipe.
	3	A full passive power sweep has been carried out across the survey area using electromagnetic location instrument.
	4	No statutory record information available at time of survey.
Telecom	1	BT inspection covers located within the survey extents. These routes have been located and traced by direct connection to the cables within chambers.
	2	A flexi trace was used when we were unable to generate a radio frequency response when connected to the cables.
	3	A full passive power sweep has been carried out across the survey area using electromagnetic location instrument.
	4	Statutory record information available at time of survey provided by 40Seven.
CATV	1	CATV inspection covers located inside the survey extents. Routes have been located and traced by direct connection to the cables within chambers.
	2	Unable to generate a radio frequency response on several cables within the inspection chambers. Routes traced by flexi tracing cable ducts.
	3	A full passive power sweep has been carried out across the survey area using electromagnetic location instrument.
	4	No statutory record information available at time of survey.



Service	Comment Number	Successes / Problems Differences between survey & "Stats"
GPR	1	The radar reflects changes in the electrical properties of materials in the sub-surface. The data prevents definition of unknown targets.
	2	A PAS128 M4P survey has been carried out across the site where possible.
	3	GPR images shown within this report are not necessarily indicative of actual routes / anomalies detected.
	4	Unable to utilize the radar in certain areas within the survey extents due to obstructions. see photo 7.
Others	1	Unknown route was located within the survey extents. This was located using active induction techniques. Unable to associate any fittings or features in the vicinity to help establish utility types.

**Site Photos:**

**Photo 1**



**Description: General View of survey extents.**

**Photo 2**



**Description: General View of survey extents.**



**Photo 3**



**Description: General View of survey extents.**

**Photo 4**



**Description: General View of survey extents.**



**Photo 5**



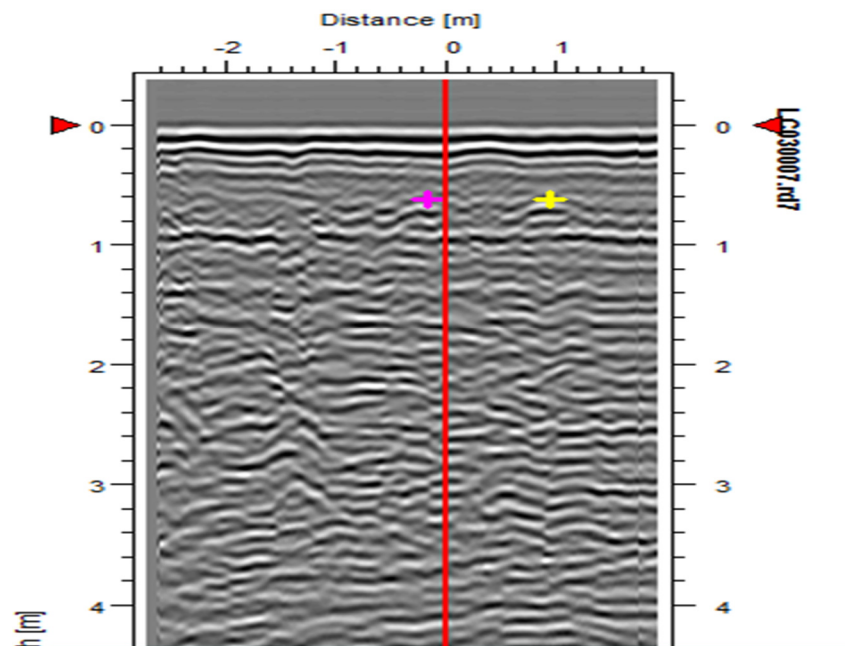
**Description: General View of survey extents.**

**Photo 6**



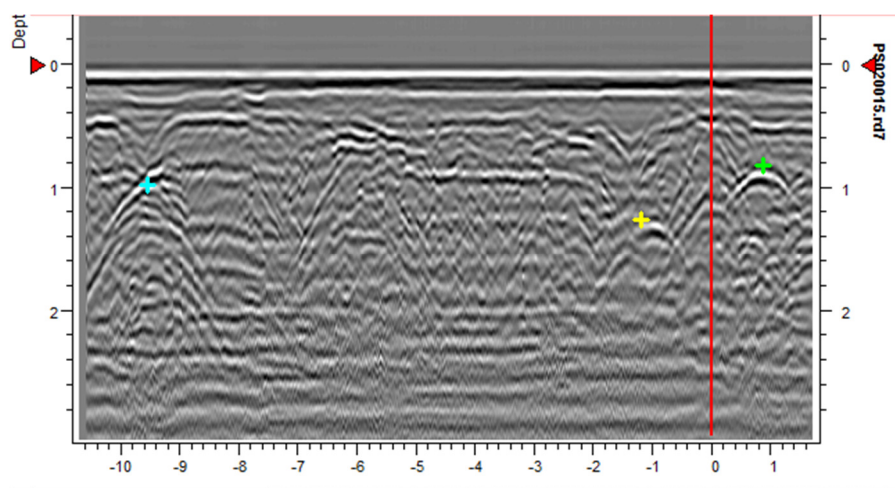
**Description: General View of survey extents.**

**GPR 1**



**Description: Examples of GPR Images.**

**GPR 2**



**Description: Examples of GPR Images.**

**Site Notes:**

1. Survey was undertaken in the areas defined by Brill Owen.
2. Various utilities on site could not be proven or completed and the appropriate comments have been added to the drawing.
3. Services plotted outside survey extents should not be considered exhaustive.
4. Through non-intrusive surveying techniques, it always remains possible that there are additional services within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all service providers records should be checked prior to any works being carried out.
5. Existing service provider's records were available during the site survey.

**CAD Operators Comments:**

1. Survey work corresponds to Utility Surveyor's fieldwork.
2. Services shown outside the survey extents should not be considered exhaustive.

**QA Managers Comments:**

1. All procedures have been followed.
2. Checked that all topographical features have utilities connected, or if not are appropriately notated.
3. Services shown outside the survey extents should not be considered exhaustive.

**Project Managers Comments:**

1. A full electromagnetic and GPR survey carried out across the site.
2. GPR works by emitting electromagnetic signals into the ground and analysing signal returns. The use of GPR is strongly dependent upon local soil properties. Depth of penetration is limited by the presence of clays or other highly conductive materials. There must be a significant electrical contrast between the target and the host materials.
3. If the survey interacts with any above ground metallic features this may hinder the survey therefore caution should be taken within those areas while excavating.
4. It is recommended that statutory authority records are acquired and read in conjunction with this information, as no guarantee can be made for the completeness of this drawing.