

**Land at Palmerston Crescent and Bowed
Road**

Utility Mapping Survey

Site Report

Project No. 1178

Prepared by:
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Commissioned by: Arcadis

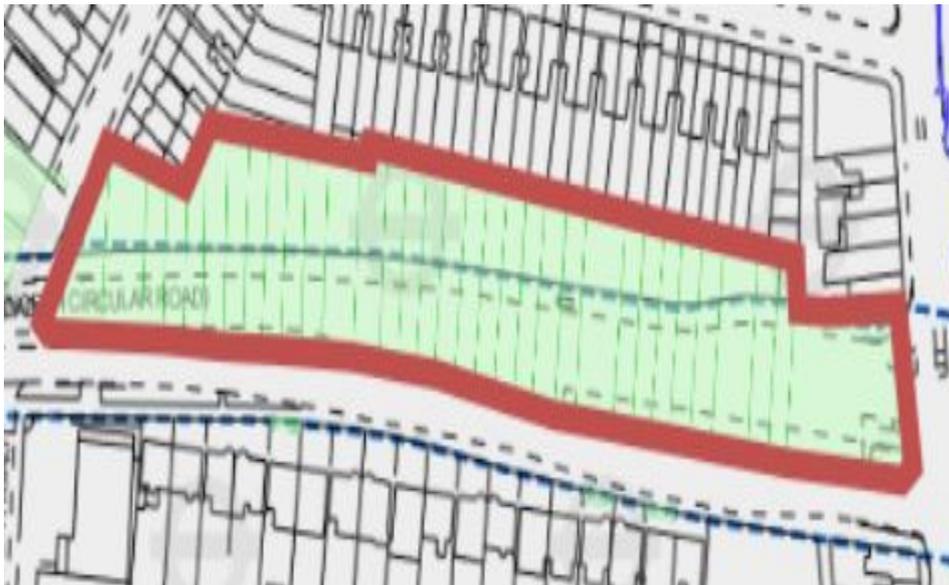
Table of Contents

1.....Title Page
 2.....Survey Details
 3..... Specification Notes
 4.....Existing Service Records
 4.....Field Equipment
 4..... Survey Results
 5..... Notes
 6.....Site Photographs & GPR Scans
 12..... Comments

<p>Utility Surveyor: Simon Farrell, Daniel Hutton</p> <p>Topographical Surveyor: Enri Filipi</p>
<p>Date of Survey: December 2019</p>
<p>Drawings Number Issued to the Client: 1178_ Palmerston Crescent_P.dwg</p>
<p>Type of Survey: Underground Utility Location & Mapping Survey.</p> <p>Survey Grid: ORDNANCE SURVEY - Related to OS Active Network using GPS.</p> <p>Survey Datum: ORDNANCE SURVEY - Levels related to OS Active Network using GPS.</p>
<p>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.</p>

Specification Notes:

1. All survey works carried out in the areas defined by Arcadis
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. CVU provided all available statutory authority information but cannot be guaranteed to be the latest information available.
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.

Defined Survey Extents:

Existing Service Records Provided to Field Surveyor

Service	Provider	Remarks
Telecoms	BT	PZW12019M
		NOTE: Other existing statutory undertakers' records were not available at the time of the survey or during the course of post processing.

Field Equipment

Type	Make	Model	Company I.D No.	Operator(s) Initials
Electrolocation Instrument	RD	8000	PDL007 TXT007	SF
Ground Radar	Mala	HDR Pro	ELP 006	SF
Electronic Total Station	Trimble	Trimble	Rob 024	EF

Utility Location & Mapping Survey Results

Service	Comment Number	Successes / Problems Differences between survey & "Stats"
Drainage	1	Gullies and kerb outlets located in the survey area but unable to be surveyed due to live traffic.
	2	Surface water route surveyed in the grassed area possibly used as a soakaway.
	3	Two manhole covers located at a junction were unable to be surveyed due to live traffic.
	4	No statutory record information available at time of survey.
Electric	1	Street lighting routes located and traced on site.
	2	Traffic lighting and traffic control cables traced on site.
	3	A full passive power sweep was performed utilizing radio frequency equipment.
	4	No statutory record information available at time of survey.
Telecom	1	Telecommunication routes located on site running along the length of the footpath.
	2	Statutory record information available at time of survey.

Service	Comment Number	Successes / Problems Differences between survey & "Stats"
Water	1	A water route is partially located on site due to loss of signal.
	2	No statutory record information available at time of survey.
GPR Scans	1	The radar reflects changes in the electrical properties of materials in the sub-surface. The data prevents definition of unknown targets.
	2	A full M3P GPR survey has been carried out on the site.
	3	GPR images shown within this report are not necessarily indicative of actual routes / anomalies detected.
	4	Several unknown targets detected within the survey extents although only partially in several areas due to losses of reflection. Unable to associate any fittings or features in the vicinity to help establish utility types.

Site Notes:

1. Survey was undertaken in the areas defined by Arcadis.
2. Access to buildings in survey extents.
3. Various utilities on site could not be proven or completed and the appropriate comments have been added to the drawing.
4. Services plotted outside survey extents should not be considered to be exhaustive.
5. 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.

Site Photos:

Photo 1



Description: General view of site.

Photo 2



Description: General view of site.

Photo 3



Description: General view of site.

Photo 5



Description: General view of site.

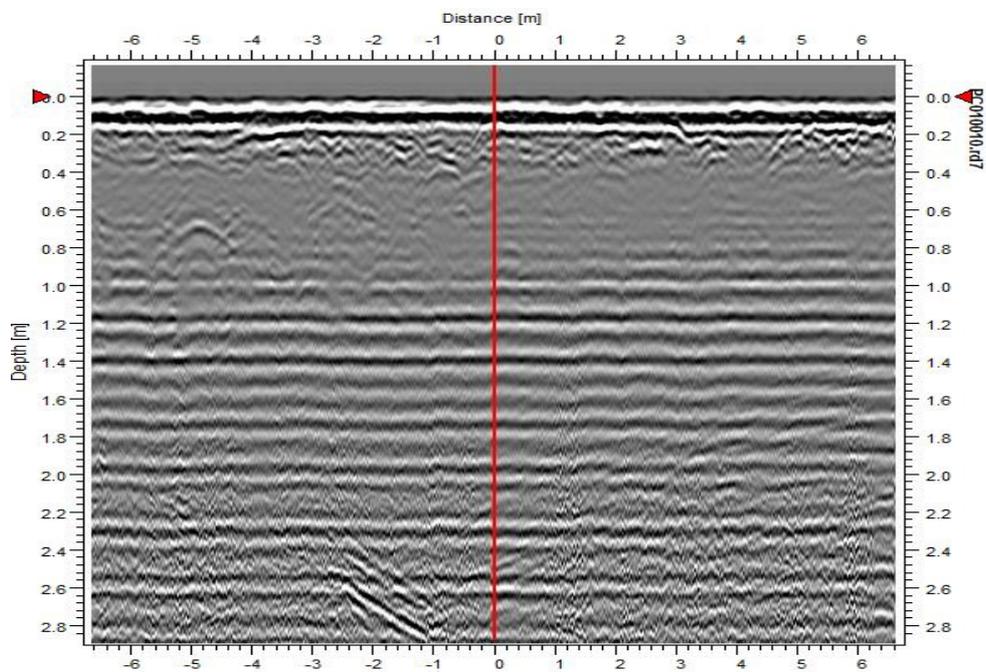
Photo 6



Description: General view of site.

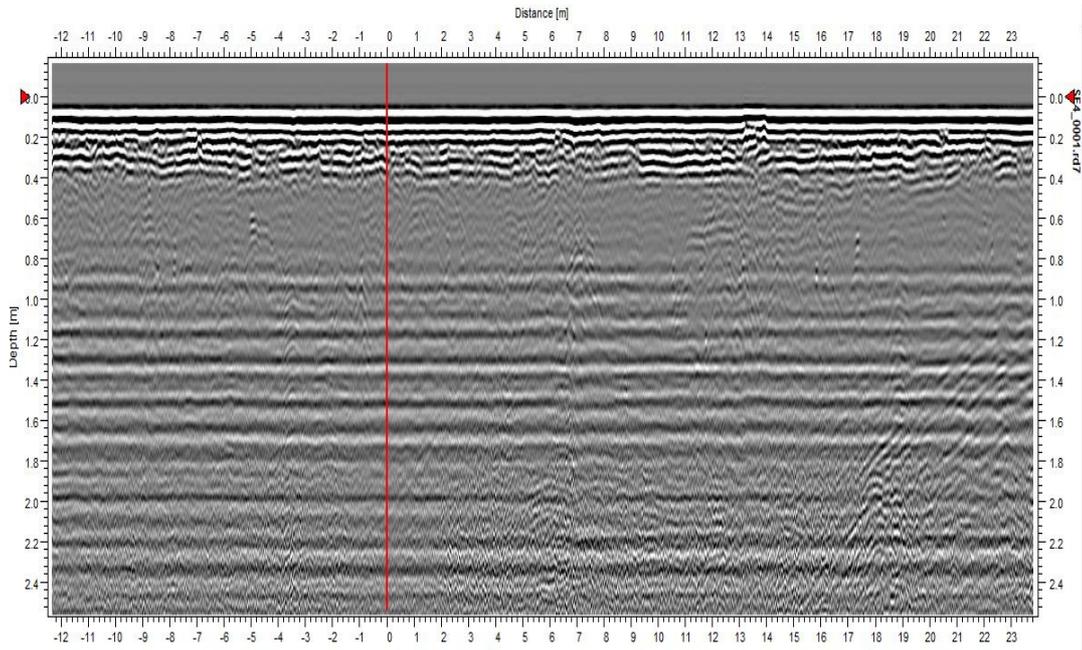
GPR Images:

GPR 1



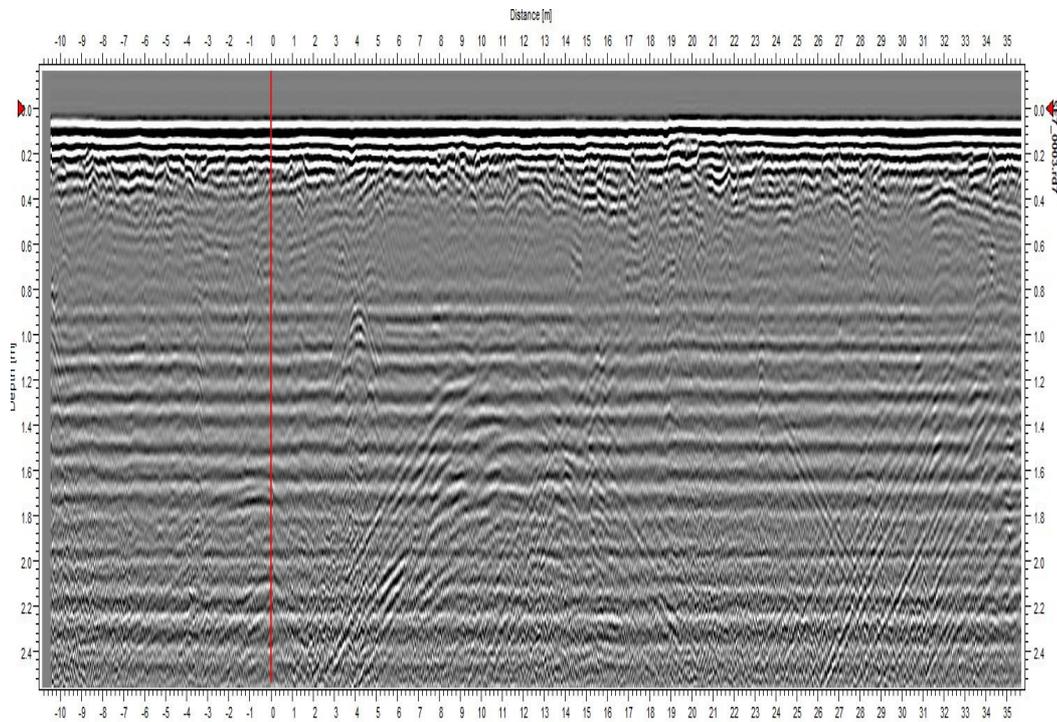
Description: Ground Penetrating Radar Image

GPR 2

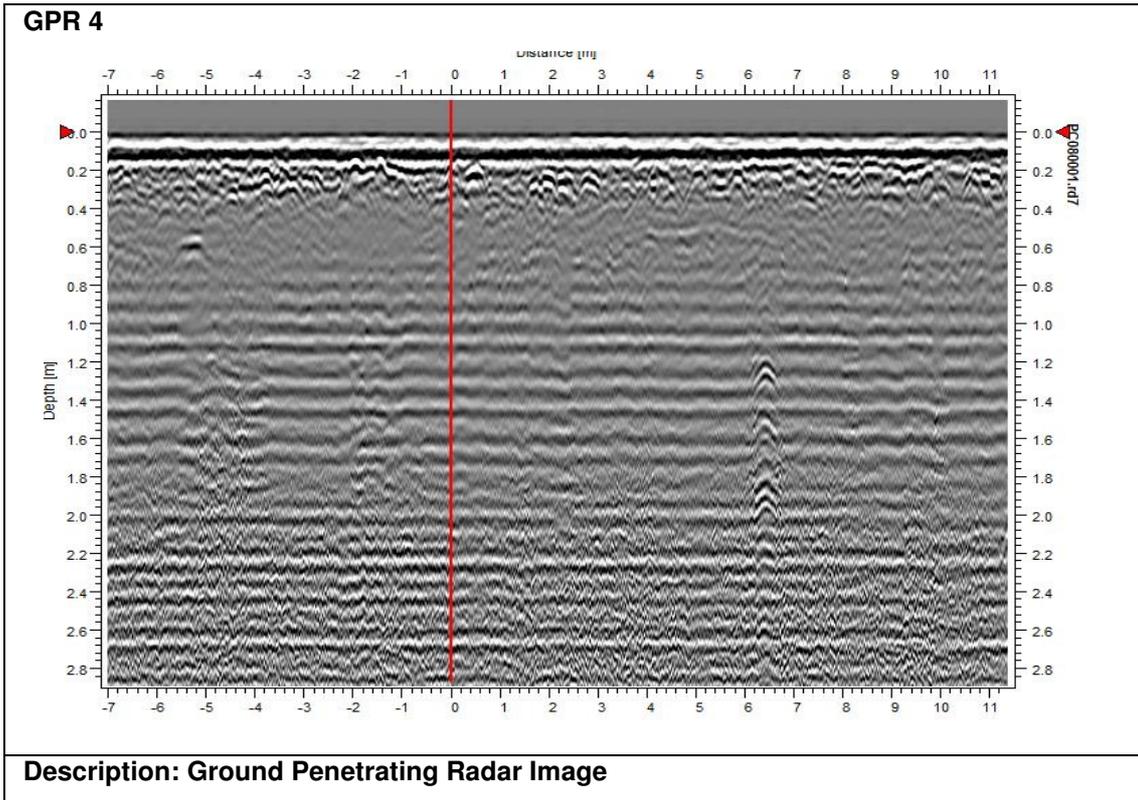


Description: Ground Penetrating Radar Image

GPR 3



Description: Ground Penetrating Radar Image



CAD Operators Comments:

1. Survey work corresponds to Utility Surveyor's fieldwork.
2. All record information added where necessary.
3. Services shown outside the survey extents should not be considered to be 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. Checked all guided information has been transferred correctly where appropriate.
4. Services shown outside the survey extents should not be considered to be exhaustive.

Project Managers Comments:

1. All statutory authority records should be checked prior to commencing any work.
2. A full electromagnetic and GPR survey carried out across the site.
3. 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.
4. Several unknown routes were detected by GPR, although it was not possible to decipher function. Future intrusive works (eg: trial pits) are recommended to gather further information.
5. 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.
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