

Notes

1. Topographical information has been taken from drawing '12981–PUM–3D–T–0001–P01.01', some information may have been removed for clarity. Please refer to original drawing for full details.
2. This drawing should be read in conjunction with the utility survey report.
3. All depths are taken to top of service, unless "I.L." is indicated, in this instance the depth is to the invert of the pipe. This is for drainage pipes at manholes only.
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5. Non–intrusive surveys cannot guarantee every possible service under the ground is located. Care must be taken when site works begin, as services that are not locatable through non–intrusive methods may exist on site.

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The data presented in this drawing have been collected using a combination of the following: consultation of utility asset information, visual survey & inspection of manholes and inspection chambers; electromagnetic location techniques; ground penetrating radar, and, where applicable, trial hole excavations. These techniques have been deployed in accordance with the BSI PAS128 Specification for Underground Utility Detection, Verification and Location using the search methodologies indicated below and described in the accompanying report. This drawing should be used in conjunction with the accompanying report which details the limitations of these techniques and any hindering factors encountered during this survey.

Unless otherwise stated, all utilities shown on this plan have been surveyed using approved detectors and the connections between inspection chambers, if unable to be detected, are generally assumed to be direct unless there are indications to the contrary. The detection confidence for each utility segment is depicted in line with the PAS128 scheme outlined below. Information depicted as QL-C or QL-D cannot be guaranteed as it is based on historic utility records which can be inaccurate and incomplete.

The utility routes depicted may reflect the routes of multiple cables or pipes. It is not always possible to differentiate between buried construction features, utilities and other subsurface linear features therefore it is possible that some features shown are not utility related, and due to the limitations of electromagnetic techniques all utility identifications should be treated with caution and verified prior to use during design/building works.

If the location or depth of utilities and features is of particular importance to a project then it is recommended that discussions are held with Precision Utility Mapping regarding any possible limitations or anomalies.

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. Where an area of utilities is likely to affect client project requirements, it is strongly recommended that a PAS128 Quality Level A verification survey is carried out

No utility mapping survey can be considered a 100% accurate depiction of the sub-surface environment, and the use of these drawings does not remove the requirement for the use of safe digging techniques at all times. Any excavations undertaken on site are to be in accordance with HSA Code of Practice for Avoiding Danger from Underground Services 2016.

SUB-SURFACE KEY

- COMBINED HEATING AND POWER
- DISTRICT HEATING
- DRAINAGE COMBINED *
- DRAINAGE FOUL*
- DRAINAGE SURFACE*
- DRAINAGE UNIDENTIFIED*
- [* FLOW DIRECTION DENOTED BY ARROW (>) or (<) IF KNOWN]
- ELECTRIC
- ELECTRIC LV
- ELECTRIC HV
- ELECTRIC STREET LIGHTING
- GAS
- OIL/FUEL PIPELINE
- STREET FURNITURE CABLES
- TELECOMS
- TELECOMS - FIBRE OPTIC
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- EIRCOMM
- TRAFFIC CONTROL
- WATER
- UNIDENTIFIED UTILITY
- UNIDENTIFIED CABLES
- UNIDENTIFIED EMPTY DUCT
- GPR LINEAR FEATURE
- EML LINEAR FEATURE

WITH EXAMPLE CONFIDENCE LEVELS

- GPR AREA ANOMALY
- GPR AREA ANOMALY - REBAR
- CHAMBER EXTENTS

MEASURED DEPTH BGL TO PIPE/CABLE/DUCT	0.65m
INVERT LEVEL OF PIPE/DUCT/CABLE (TO OS DATUM)	IL 12.34
SOFFIT LEVEL (TO OS DATUM)	SL 45.67
COVER LEVEL OF INSPECTION CHAMBER (TO OS DATUM)	CL 78.90
DIAMETER OF PIPE/DUCT IN MILLIMETERS	150Ø

[BGL - BELOW GROUND LEVEL]

- AREA UNABLE TO BE SURVEYED DUE TO SURFACE OBSTRUCTIONS, VEGETATION OR LACK OF ACCESS
- TRENCH SCAR / SURFACE SCAR
- EXTENT OF SURVEY - BOUNDARY

UTILITY CONFIDENCE LEVELS (Listed from High to Low)

- (A) HORIZONTAL AND VERTICAL POSITION VERIFIED VISUALLY (Accuracy: Horizontal (±25mm) Vertical(±50mm)
- (B1P) HORIZONTAL AND VERTICAL POSITION DETECTED BY MULTIPLE METHODS WITH POST PROCESSING OF GPR DATA (Estimated Accuracy: ±150mm OR ±15% of detected depth)
- (B1) HORIZONTAL AND VERTICAL POSITION DETECTED BY MULTIPLE METHODS (Estimated Accuracy: ±150mm OR ±15% of detected depth)
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- (B3) HORIZONTAL POSITION DETECTED BY A SINGLE METHOD (Estimated Accuracy: ±500mm in the Horizontal - Depth is undefined)
- (B4) A utility segment which is suspected to exist but has not been detected and is therefore shown as an assumed route. (Accuracy Undefined)

Rev	Date	Drawn	Description	Chkd	Appd
C01	08.10.26	F.M	SURVEY COMPLETED	P.P	K.S

PRECISION UTILITY MAPPING

Unit 45,Eastlink Business Pk, Ballysimon Road, Limerick, Ireland. V94AW26
w www.Precision–UM.ie

Client KERRY COUNTY COUNCIL

Title Tralee Regional Sports and Leisure Complex, Tralee, V92 HX5T.

Sheet 01 of 04

Surveyor	M.Rotoli	M.R	Eng check	K.Sheehan	K.S
Drawn	F. Malppan	F.M	Coordination	K.Sheehan	K.S
Dwg check	P.Przysucha	P.P	Approved	K.Sheehan	K.S.

Scale at A0: 1:200 | Status: Complete | Rev: C01

Drawing Number: 13075–PUM–2D–U–0001

ABBREVIATIONS

AR ASSUMED ROUTE
AV AIR VALVE
BB BELISHA BEACON
BD BACKDROP
Bdl BED LEVEL
BH BOREHOLE
BHch BASEMENT HATCH COVER
Bin LITTER / GRIT SALT BIN
BL BASEMENT LIGHT
Bol BOLLARD
BP BOUNDARY POST
BS BUS STOP
BTIC BRITISH TELECOM CHAMBER
CatL CATENARY LEVEL
CATV CABLE TV COVER
CB CONTROL BOX
CBlt CONVEYOR BELT
CC COAL CHUTE
CGrd CATTLE GRID
ChL CHANNEL LEVEL
Chy CHIMNEY
CI CAST IRON
CL COVER LEVEL
CO CONCRETE
CP CABLE PIT
CpL COPING LEVEL
Cpsn CAPSTAN
Cpst CAMERA POST
CrL CROWN LEVEL
CulP CULVERT PIPE
CWM CABLE WINDING MACHINERY
d DEPTH
DIA DIAMETER
DS DIRECTION SIGN
EIC ELECTRIC INSPECTION COVER
EoC EDGE OF CANOPY
EOR END OF RECORDS
EOT END OF TRACE
EP ELECTRICITY POLE
ER EARTH ROD
EShw EMERGENCY SHOWER
ESP ELECTRICITY SUPPLY POINT
Esw ELECTRICAL SWITCH
FB FOOTBRIDGE
FH FIRE HYDRANT
FL FLOOR LEVEL
FS FLAG STAFF/ POLE
Gy GULLY
G= GIRTH
GIP GAS INLET PIPE
GP GUIDE POST
GPR TRACED BY G.P.R.
Grl GRILLE
GV GAS VALVE
Hgt HEIGHT
Hrl HANDRAIL
HV HIGH VOLTAGE
IC INSPECTION CHAMBER
IL INVERT LEVEL
IP INLET PIPE
JN JUNCTION
KO KERB OUTLET
Lby LIFEBOUY
Lck LOCK GATE
Lrd LADDER
LH LAMP HOLE
LP LAMP POST
LV LOW VOLTAGE
MgP MOORING POST
mH METERS HIGH
Mhcy MACHINERY
MH MANHOLE
MKr MARKER POST
MKrE MARKER POST (ELECTRIC)
MKrG MARKER POST (GAS)
MKrR MARKER POST (RAILWAY)
MKrT MARKER POST (TELECOM)
MKrW MARKER POST (WATER)
MP MILE POST
MS MILE STONE
NL NOT LOCATED
NP NAME PLATE
OSA OUTSIDE SURVEY AREA
OSBM O.S BENCH MARK
OGP OVERGROUND PIPE
OHCu O/H CABLE (UNIDENTIFIED)
OHE OVERHEAD CABLE (ELECTRIC)
OHG OVERHEAD GANTRY
OHP OVERHEAD PIPE
OHT OVERHEAD CABLE (TELECOM)
OP OUTLET PIPE
P POST
Pb PARK BENCH
PB POST BOX
PCsg PEDESTRIAN CROSSING
PE POLYETHYLENE
PF PITCH FIBER
PI PILE
Pir MOVEMENT DETECTOR
Pmd PLANT MOTOR DRIVE
PP PETROL / DIESEL PUMP
PR PIPE RISER
Psk PENSTOCK
PV PUMPPIPE (VERTICAL)
PVC POLYVINYL CHLORIDE
Pyl PYLON
Pz PIEZOMETER
RE RODDING EYE
RG RAIN GAUGE
RMP RESERVOIR MONITORING PNT
RP REFLECTOR POST
RS ROAD SIGN
RSP RAILWAY SIGNAL POST
RWP RAIN WATER PIPE
S SPREAD
SA SURVEY ABANDONED
SB SIGN BOARD
Shtr SHELTER (BUS / TRAM)
SI SPUN IRON
SL SOFFIT LEVEL
SltL SILT LEVEL (TOP)
SMP SETTLEMENT MONITORING PNT
SiL SIGNAL LOST
SP SIGN POST
SPil SHEET PILING
Spr SPRING
SPt SAMPLING POINT
ST STOP TAP
Sti STILE
Stl STRUCTURE TOP LEVEL
Stp STUMP (TREE)
StP STAND PIPE
StPO STAY POST
StW STAY WIRE
SV STOP VALVE
SVP SOIL VENT PIPE
TBM TEMPORARY BENCH MARK
TCB TELEPHONE CALL BOX
TEL TELECOM CHAMBER COVER
TFR TAKEN FROM RECORDS
Thl THRESHOLD LEVEL
TL TRAFFIC LIGHT
TP TELEGRAPH POLE
Tpt TRIAL PIT
Tr TROUGH
UTF UNABLE TO FIND
UTGA UNABLE TO GAIN ACCESS
UTL UNABLE TO LIFT
UTR UNABLE TO ROD
UTS UNABLE TO SURVEY
UTT UNABLE TO TRACE
VC VITREOUS CLAY
VP VENT PIPE
VR VAPOUR RECOVERY
VS VENTILATION SHAFT
VW VALVE / SLUICE WHEEL
WB WEIGHBRIDGE
WL WATER LEVEL
WM WATER METER
WO WASH OUT VALVE
Wr WEIR
WrL WEIR LEVEL
WrP WEIR PLATE (TOP)
WWP WASTE WATER PIPE

DUCT FORMATION

- 1W: 1 WAY SINGLE DUCT
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- 12W:4/3 12 WAY: 4 WIDE, 3 DEEP

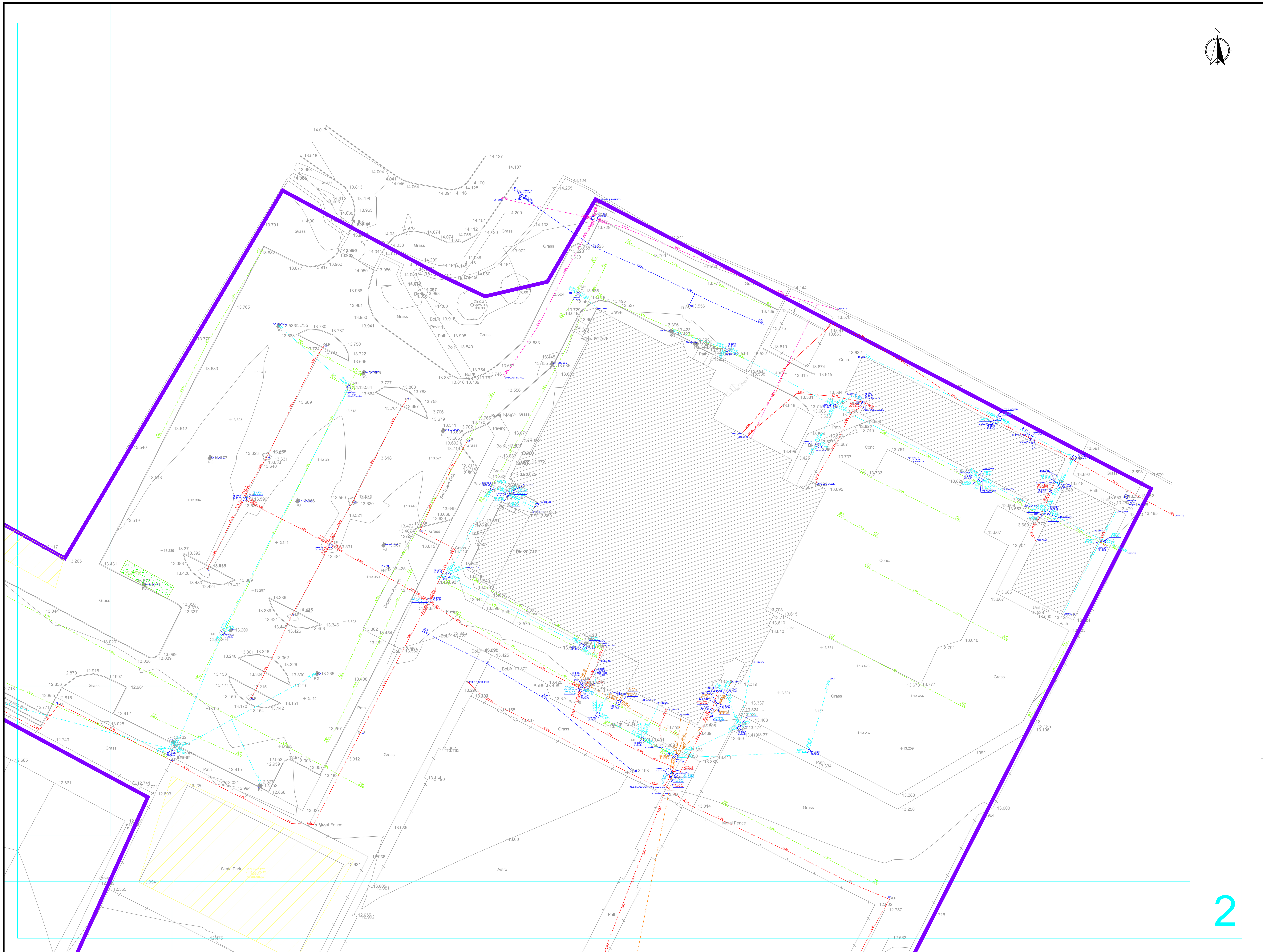
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ELECTROMAGNETIC DETECTION	GROUND PENETRATING RADAR	TOTAL STATION	GPS/GNSS
Vivax vLoc 3	IDS Opera Duo		Trimble R8s

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- M1P - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY AS APPROPRIATE. POST PROCESSING OF GPR DATA.
- M4 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS. GPR MARK-UP ON SITE
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WITH EXAMPLE CONFIDENCE LEVELS

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- CHAMBER EXTENTS

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Rev	Date	Drawn	Description	Chkd	Appd

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Unit 45,Eastlink Business Pk, Ballysimon Road, Limerick, Ireland. V94AW26
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Client KERRY COUNTY COUNCIL

Title Tralee Regional Sports and Leisure Complex, Tralee, V92 HX5T.

Sheet 02 of 04

Surveyor	M.Rotoli	M.R	Eng check	K.Sheehan	K.S
Drawn	F. Malppan	F.M	Coordination	K.Sheehan	K.S
Dwg check	P.Przysucha	P.P	Approved	K.Sheehan	K.S.

Scale at A0: 1:200 | Status: Complete | Rev: C01

Drawing Number: 13075–PUM–2D–U–0001

ABBREVIATIONS

AR ASSUMED ROUTE; AV AIR VALVE; BB BELISHA BEACON; BD BACKDROP; BdI BED LEVEL; BH BOREHOLE; BHch BASEMENT HATCH COVER; Bin LITTER / GRIT SALT BIN; BL BASEMENT LIGHT; Bol BOLLARD; BP BOUNDARY POST

BS BUS STOP; BTIC BRITISH TELECOM CHAMBER; CatL CATENARY LEVEL; CATV CABLE TV COVER; CB CONTROL BOX; CBlt CONVEYOR BELT; CC COAL CHUTE; CGrd CATTLE GRID; ChL CHANNEL LEVEL; Chy CHIMNEY; CI CAST IRON; CL COVER LEVEL; CO CONCRETE

CP CABLE PIT; CpL COPING LEVEL; Cpsn CAPSTAN; Cpst CAMERA POST; CrL CROWN LEVEL; CulP CULVERT PIPE; CWM CABLE WINDING MACHINERY; d DEPTH; DIA DIAMETER; DS DIRECTION SIGN; EIC ELECTRIC INSPECTION COVER; EoC EDGE OF CANOPY; EOR END OF RECORDS

EOT END OF TRACE; EP ELECTRICITY POLE; ER EARTH ROD; EShw EMERGENCY SHOWER; ESP ELECTRICITY SUPPLY POINT; Esw ELECTRICAL SWITCH; FB FOOTBRIDGE; FH FIRE HYDRANT; FL FLOOR LEVEL; FS FLAG STAFF/ POLE; Gy GULLY; G= GIRTH; GIP GAS INLET PIPE

GP GUIDE POST; GPR TRACED BY G.P.R.; Grl GRILLE; GV GAS VALVE; Hgt HEIGHT; Hrl HANDRAIL; HV HIGH VOLTAGE; IC INSPECTION CHAMBER; IL INVERT LEVEL; IP INLET PIPE; JN JUNCTION; KO KERB OUTLET; Lby LIFEBOUY

Lck LOCK GATE; Lrd LADDER; LH LAMP HOLE; LP LAMP POST; LV LOW VOLTAGE; MgP MOORING POST; mH METERS HIGH; Mhcy MACHINERY; MH MANHOLE; MKr MARKER POST; MKrE MARKER POST (ELECTRIC); MKrG MARKER POST (GAS); MKrR MARKER POST (RAILWAY)

MKrT MARKER POST (TELECOM); MKrW MARKER POST (WATER); MP MILE POST; MS MILE STONE; NL NOT LOCATED; NP NAME PLATE; OSA OUTSIDE SURVEY AREA; OSBM O.S BENCH MARK; OGP OVERGROUND PIPE; OHCu O/H CABLE (UNIDENTIFIED); OHE OVERHEAD CABLE (ELECTRIC); OHG OVERHEAD GANTRY; OHP OVERHEAD PIPE

OHT OVERHEAD CABLE (TELECOM); OP OUTLET PIPE; P POST; Pb PARK BENCH; PB POST BOX; PCsg PEDESTRIAN CROSSING; PE POLYETHYLENE; PF PITCH FIBER; PI PILE; Pir MOVEMENT DETECTOR; Pmd PLANT MOTOR DRIVE; PP PETROL / DIESEL PUMP; PR PIPE RISER

Psk PENSTOCK; PV PUMPPIPE (VERTICAL); PVC POLYVINYL CHLORIDE; Pyl PYLON; Pz PIEZOMETER; RE RODDING EYE; RG RAIN GAUGE; RMP RESERVOIR MONITORING PNT; RP REFLECTOR POST; RS ROAD SIGN; RSP RAILWAY SIGNAL POST; RWP RAIN WATER PIPE; S SPREAD

SA SURVEY ABANDONED; SB SIGN BOARD; Shtr SHELTER (BUS / TRAM); SI SPUN IRON; SL SOFFIT LEVEL; SltL SILT LEVEL (TOP); SMP SETTLEMENT MONITORING PNT; SiL SIGNAL LOST; SP SIGN POST; SPil SHEET PILING; Spr SPRING; SPt SAMPLING POINT; ST STOP TAP

Sti STILE; Stl STRUCTURE TOP LEVEL; Stp STUMP (TREE); StP STAND PIPE; StPO STAY POST; StW STAY WIRE; SV STOP VALVE; SVP SOIL VENT PIPE; TBM TEMPORARY BENCH MARK; TCB TELEPHONE CALL BOX; TEL TELECOM CHAMBER COVER; TFR TAKEN FROM RECORDS; Thl THRESHOLD LEVEL

TL TRAFFIC LIGHT; TP TELEGRAPH POLE; Tpt TRIAL PIT; Tr TROUGH; UTF UNABLE TO FIND; UTGA UNABLE TO GAIN ACCESS; UTL UNABLE TO LIFT; UTR UNABLE TO ROD; UTS UNABLE TO SURVEY; UTT UNABLE TO TRACE; VC VITREOUS CLAY; VP VENT PIPE; VR VAPOUR RECOVERY

VS VENTILATION SHAFT; VW VALVE / SLUICE WHEEL; WB WEIGHBRIDGE; WL WATER LEVEL; WM WATER METER; WO WASH OUT VALVE; Wr WEIR; WrL WEIR LEVEL; WrP WEIR PLATE (TOP); WWP WASTE WATER PIPE

DUCT FORMATION

1W:	1 WAY SINGLE DUCT
2W:	2 WAY FLAT
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4W:2/2	4 WAY: 2 WIDE, 2 DEEP
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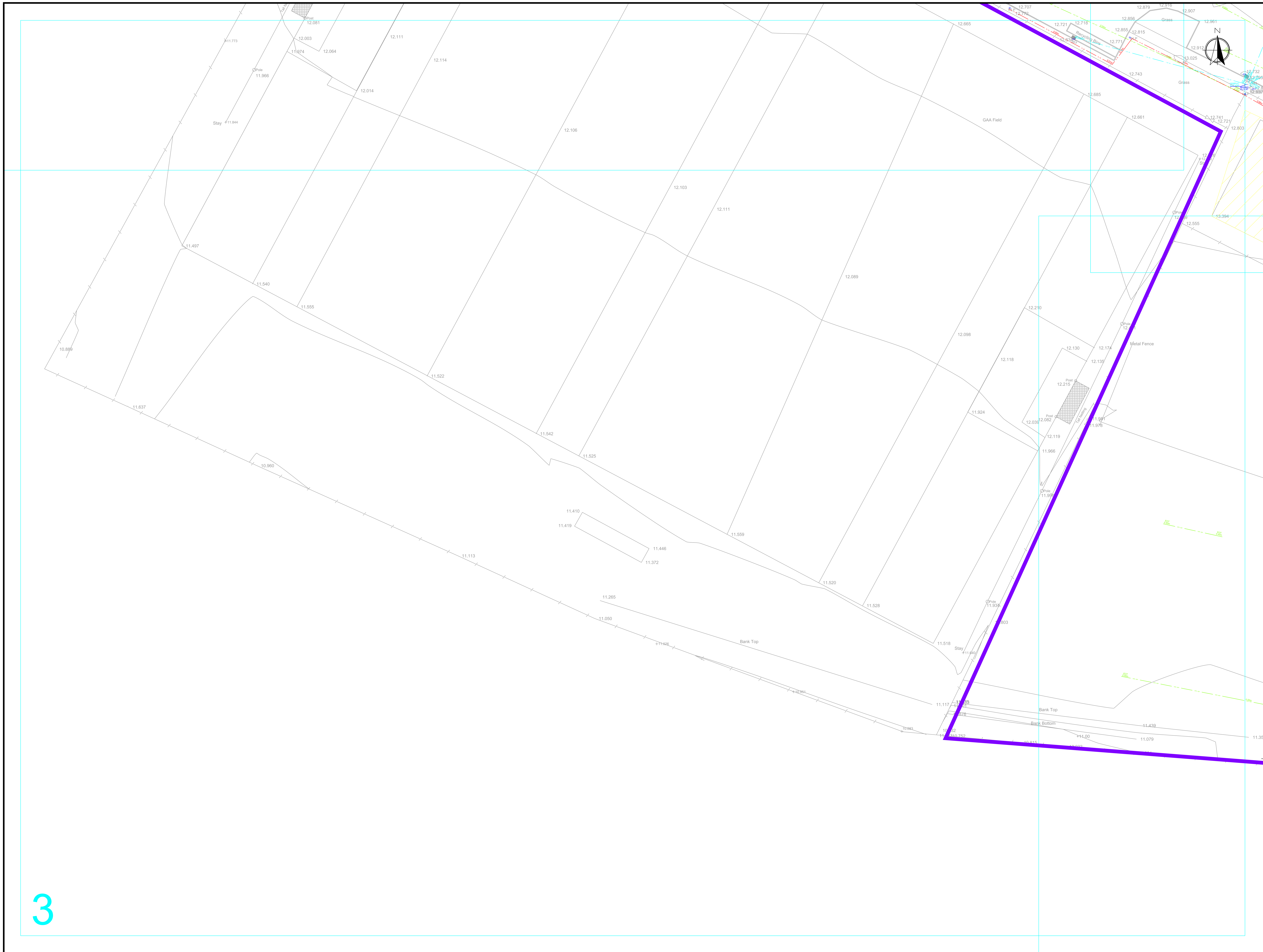
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- M1P - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY AS APPROPRIATE. POST PROCESSING OF GPR DATA.
- M4 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS. GPR MARK-UP ON SITE
- M3 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS. GPR MARK-UP ON SITE.
- M2 - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 2m INTERVALS. GPR SURVEY GRID AT 2m INTERVALS. GPR MARK-UP ON SITE.
- M1 - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY AS APPROPRIATE. GPR MARK-UP ON SITE



Notes

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5. Non–intrusive surveys cannot guarantee every possible service under the ground is located. Care must be taken when site works begin, as services that are not locatable through non–intrusive methods may exist on site.

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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. Where an area of utilities is likely to affect client project requirements, it is strongly recommended that a PAS128 Quality Level A verification survey is carried out

No utility mapping survey can be considered a 100% accurate depiction of the sub-surface environment, and the use of these drawings does not remove the requirement for the use of safe digging techniques at all times. Any excavations undertaken on site are to be in accordance with HSA Code of Practice for Avoiding Danger from Underground Services 2016.

SUB-SURFACE KEY

- COMBINED HEATING AND POWER
- DISTRICT HEATING
- DRAINAGE COMBINED *
- DRAINAGE FOUL*
- DRAINAGE SURFACE*
- DRAINAGE UNIDENTIFIED*
- [* FLOW DIRECTION DENOTED BY ARROW (>) or (<) IF KNOWN]
- ELECTRIC
- ELECTRIC LV
- ELECTRIC HV
- ELECTRIC STREET LIGHTING
- GAS
- OIL/FUEL PIPELINE
- STREET FURNITURE CABLES
- TELECOMS
- TELECOMS - FIBRE OPTIC
- TELECOMS - BT
- TELECOMS - VIRGIN MEDIA
- EIRCOMM
- TRAFFIC CONTROL
- WATER
- UNIDENTIFIED UTILITY
- UNIDENTIFIED CABLES
- UNIDENTIFIED EMPTY DUCT
- GPR LINEAR FEATURE
- EML LINEAR FEATURE

WITH EXAMPLE CONFIDENCE LEVELS

- GPR AREA ANOMALY
- GPR AREA ANOMALY - REBAR
- CHAMBER EXTENTS

MEASURED DEPTH BGL TO PIPE/CABLE/DUCT	0.65m
INVERT LEVEL OF PIPE/DUCT/CABLE (TO OS DATUM)	IL 12.34
SOFFIT LEVEL (TO OS DATUM)	SL 45.67
COVER LEVEL OF INSPECTION CHAMBER (TO OS DATUM)	CL 78.90
DIAMETER OF PIPE/DUCT IN MILLIMETERS	150Ø

[BGL - BELOW GROUND LEVEL]

- AREA UNABLE TO BE SURVEYED DUE TO SURFACE OBSTRUCTIONS, VEGETATION OR LACK OF ACCESS
- TRENCH SCAR / SURFACE SCAR
- EXTENT OF SURVEY - BOUNDARY

UTILITY CONFIDENCE LEVELS (Listed from High to Low)

(A)	HORIZONTAL AND VERTICAL POSITION VERIFIED VISUALLY (Accuracy: Horizontal (±25mm) Vertical(±50mm)
(B1P)	HORIZONTAL AND VERTICAL POSITION DETECTED BY MULTIPLE METHODS WITH POST PROCESSING OF GPR DATA (Estimated Accuracy: ±150mm OR ±15% of detected depth)
(B1)	HORIZONTAL AND VERTICAL POSITION DETECTED BY MULTIPLE METHODS (Estimated Accuracy: ±150mm OR ±15% of detected depth)
(B2P)	HORIZONTAL AND VERTICAL POSITION DETECTED VIA POST-PROCESSED GPR (Estimated Accuracy: ±250mm OR ±40% of detected depth)
(B2)	HORIZONTAL AND VERTICAL POSITION DETECTED BY A SINGLE METHOD (Estimated Accuracy: ±250mm OR ±40% of detected depth)
(B3P)	HORIZONTAL POSITION DETECTED VIA POST-PROCESSED GPR (Estimated Accuracy: ±500mm in the Horizontal - Depth is undefined)
(B3)	HORIZONTAL POSITION DETECTED BY A SINGLE METHOD (Estimated Accuracy: ±500mm in the Horizontal - Depth is undefined)
(B4)	A utility segment which is suspected to exist but has not been detected and is therefore shown as an assumed route. (Accuracy Undefined)

Rev	Date	Drawn	Description	Chkd	Appd
C01	08.10.26	F.M	SURVEY COMPLETED	P.P	K.S

PRECISION UTILITY MAPPING

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Client KERRY COUNTY COUNCIL

Title Tralee Regional Sports and Leisure Complex, Tralee, V92 HX5T.

Sheet 03 of 04

Surveyor	M.Rotoli	M.R	Eng check	K.Sheehan	K.S
Drawn	F. Malppan	F.M	Coordination	K.Sheehan	K.S
Dwg check	P.Przysucha	P.P	Approved	K.Sheehan	K.S.
Scale at A0 1:200		Status Complete		Rev C01	

Drawing Number 13075–PUM–2D–U–0001

ABBREVIATIONS

AR ASSUMED ROUTE
AV AIR VALVE
BB BELISHA BEACON
BD BACKDROP
Bdl BED LEVEL
BH BOREHOLE
BHch BASEMENT HATCH COVER
Bin LITTER / GRIT SALT BIN
BL BASEMENT LIGHT
Bol BOLLARD
BP BOUNDARY POST
BS BUS STOP
BTIC BRITISH TELECOM CHAMBER
CatL CATENARY LEVEL
CATV CABLE TV COVER
CB CONTROL BOX
CBlt CONVEYOR BELT
CC COAL CHUTE
CGrd CATTLE GRID
ChL CHANNEL LEVEL
Chy CHIMNEY
CI CAST IRON
CL COVER LEVEL
CO CONCRETE
CP CABLE PIT
CpL COPING LEVEL
Cpsn CAPSTAN
Cpst CAMERA POST
CrL CROWN LEVEL
CulP CULVERT PIPE
CWM CABLE WINDING MACHINERY
d DEPTH
DIA DIAMETER
DS DIRECTION SIGN
EIC ELECTRIC INSPECTION COVER
EoC EDGE OF CANOPY
EOR END OF RECORDS
EOT END OF TRACE
EP ELECTRICITY POLE
ER EARTH ROD
EShw EMERGENCY SHOWER
ESP ELECTRICITY SUPPLY POINT
Esw ELECTRICAL SWITCH
FB FOOTBRIDGE
FH FIRE HYDRANT
FL FLOOR LEVEL
FS FLAG STAFF/ POLE
Gy GULLY
G= GIRTH
GIP GAS INLET PIPE
GP GUIDE POST
GPR TRACED BY G.P.R.
Grl GRILLE
GV GAS VALVE
Hgt HEIGHT
Hrl HANDRAIL
HV HIGH VOLTAGE
IC INSPECTION CHAMBER
IL INVERT LEVEL
IP INLET PIPE
JN JUNCTION
KO KERB OUTLET
Lby LIFEBOUY
Lck LOCK GATE
Lrd LADDER
LH LAMP HOLE
LP LAMP POST
LV LOW VOLTAGE
MgP MOORING POST
mH METERS HIGH
Mhcy MACHINERY
MH MANHOLE
MKr MARKER POST
MKrE MARKER POST (ELECTRIC)
MKrG MARKER POST (GAS)
MKrR MARKER POST (RAILWAY)
MKrT MARKER POST (TELECOM)
MKrW MARKER POST (WATER)
MP MILE POST
MS MILE STONE
NL NOT LOCATED
NP NAME PLATE
OSA OUTSIDE SURVEY AREA
OSBM O.S BENCH MARK
OGP OVERGROUND PIPE
OHCu O/H CABLE (UNIDENTIFIED)
OHE OVERHEAD CABLE (ELECTRIC)
OHG OVERHEAD GANTRY
OHP OVERHEAD PIPE
OHT OVERHEAD CABLE (TELECOM)
OP OUTLET PIPE
P POST
Pb PARK BENCH
PB POST BOX
PCsg PEDESTRIAN CROSSING
PE POLYETHYLENE
PF PITCH FIBER
PI PILE
Pir MOVEMENT DETECTOR
Pmd PLANT MOTOR DRIVE
PP PETROL / DIESEL PUMP
PR PIPE RISER
Psk PENSTOCK
PV PUMPPIPE (VERTICAL)
PVC POLYVINYL CHLORIDE
Pyl PYLON
Pz PIEZOMETER
RE RODDING EYE
RG RAIN GAUGE
RMP RESERVOIR MONITORING PNT
RP REFLECTOR POST
RS ROAD SIGN
RSP RAILWAY SIGNAL POST
RWP RAIN WATER PIPE
S SPREAD
SA SURVEY ABANDONED
SB SIGN BOARD
Shtr SHELTER (BUS / TRAM)
SI SPUN IRON
SL SOFFIT LEVEL
SltL SILT LEVEL (TOP)
SMP SETTLEMENT MONITORING PNT
SiL SIGNAL LOST
SP SIGN POST
SPil SHEET PILING
Spr SPRING
SPt SAMPLING POINT
ST STOP TAP
Sti STILE
Stl STRUCTURE TOP LEVEL
Stp STUMP (TREE)
StP STAND PIPE
StPO STAY POST
StW STAY WIRE
SV STOP VALVE
SVP SOIL VENT PIPE
TBM TEMPORARY BENCH MARK
TCB TELEPHONE CALL BOX
TEL TELECOM CHAMBER COVER
TFR TAKEN FROM RECORDS
Thl THRESHOLD LEVEL
TL TRAFFIC LIGHT
TP TELEGRAPH POLE
Tpt TRIAL PIT
Tr TROUGH
UTF UNABLE TO FIND
UTGA UNABLE TO GAIN ACCESS
UTL UNABLE TO LIFT
UTR UNABLE TO ROD
UTS UNABLE TO SURVEY
UTT UNABLE TO TRACE
VC VITREOUS CLAY
VP VENT PIPE
VR VAPOUR RECOVERY
VS VENTILATION SHAFT
VW VALVE / SLUICE WHEEL
WB WEIGHBRIDGE
WL WATER LEVEL
WM WATER METER
WO WASH OUT VALVE
Wr WEIR
WrL WEIR LEVEL
WrP WEIR PLATE (TOP)
WWP WASTE WATER PIPE

DUCT FORMATION

- 1W: 1 WAY SINGLE DUCT
- 2W: 2 WAY FLAT
- 2W:1/2 2 WAY: 1 WIDE, 2 DEEP
- 4W:2/2 4 WAY: 2 WIDE, 2 DEEP
- 6W:3/2 6 WAY: 3 WIDE, 2 DEEP
- 12W:4/3 12 WAY: 4 WIDE, 3 DEEP

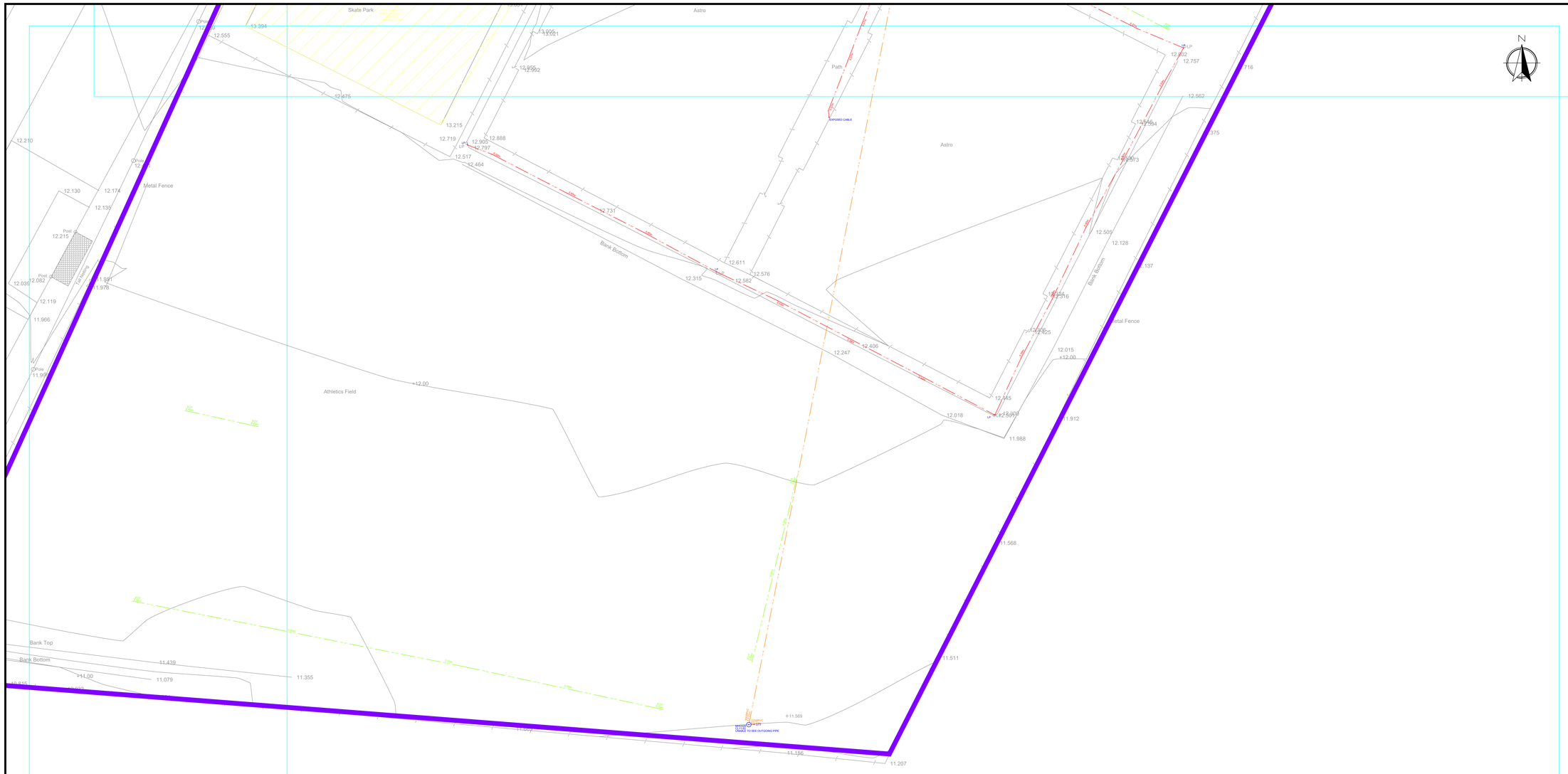
NB: TO BE ADAPTED TO FOR EACH CHAMBER

PAS128 SURVEY METHODOLOGY KEY

THIS SURVEY HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE PAS128 SPECIFICATION FOR UNDERGROUND UTILITY DETECTION, VERIFICATION & LOCATION. THE SPECIFICATION ALLOWS FOR A RANGE OF TECHNIQUES AND METHODS OF VARYING INTENSITY TO BE DEPLOYED. THE COLOUR CODED SCHEME INDICATES WHERE DIFFERENT SURVEY METHODOLOGIES HAVE BEEN USED ON SITE, AND THE LIST BELOW IDENTIFIES EQUIPMENT USED TO OBTAIN THE SURVEY RESULTS.
NB: PLEASE SEE ACCOMPANYING REPORT FOR FULL DETAILS.

ELECTROMAGNETIC DETECTION	GROUND PENETRATING RADAR	TOTAL STATION	GPS/GNSS
Vivax vLoc 3	IDS Opera Duo		Trimble R8s

- M4P - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
- M3P - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
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SUB-SURFACE KEY

COMBINED HEATING AND POWER	
DISTRICT HEATING	
DRAINAGE COMBINED *	
DRAINAGE FOUL*	
DRAINAGE SURFACE*	
DRAINAGE UNIDENTIFIED*	
[* FLOW DIRECTION DENOTED BY ARROW (>) or (<) IF KNOWN]	
ELECTRIC	
ELECTRIC LV	
ELECTRIC HV	
ELECTRIC STREET LIGHTING	
GAS	
OIL/FUEL PIPELINE	
STREET FURNITURE CABLES	
TELECOMS	
TELECOMS - FIBRE OPTIC	
TELECOMS - BT	
TELECOMS - VIRGIN MEDIA	
EIR/COMM	
TRAFFIC CONTROL	
WATER	
UNIDENTIFIED UTILITY	
UNIDENTIFIED CABLES	
UNIDENTIFIED EMPTY DUCT	
GPR LINEAR FEATURE	
EML LINEAR FEATURE	
GPR AREA ANOMALY	
GPR AREA ANOMALY - REBAR	
CHAMBER EXTENTS	

MULTI-CHANNEL CONDUCTS (UCLS)

MEASURED DEPTH BGL TO PIPE/CABLE/DUCT	0.65m
INVERT LEVEL OF PIPE/DUCT/CABLE (TO OS DATUM)	IL 12.34
SOFFIT LEVEL (TO OS DATUM)	SL 45.67
COVER LEVEL OF INSPECTION CHAMBER (TO OS DATUM)	CL 78.90
DIAMETER OF PIPE/DUCT IN MILLIMETERS	150Ø
[BGL - BELOW GROUND LEVEL]	
AREA UNABLE TO BE SURVEYED DUE TO SURFACE OBSTRUCTIONS, VEGETATION OR LACK OF ACCESS	
TRENCH SCAR / SURFACE SCAR	
EXTENT OF SURVEY - BOUNDARY	

UTILITY CONFIDENCE LEVELS (Listed from High to Low)

- (A) HORIZONTAL AND VERTICAL POSITION VERIFIED VISUALLY (Accuracy: Horizontal (±25mm) Vertical(±50mm))
- (B1P) HORIZONTAL AND VERTICAL POSITION DETECTED BY MULTIPLE METHODS WITH POST PROCESSING OF GPR DATA. (Estimated Accuracy: ±150mm OR ±15% of detected depth)
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- (B4) A utility segment which is suspected to exist but has not been detected and is therefore shown as an assumed route. (Accuracy Undefined)

Rev	Date	Drawn	Description	Chkd	Appd
C01	08.10.26	F.M	SURVEY COMPLETED	P.P	K.S

PRECISION UTILITY MAPPING
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Ballysimon Road,
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www.Precision-UM.ie

Client: KERRY COUNTY COUNCIL

Title: Tralee Regional Sports and Leisure Complex, Tralee, V92 HX5T.

Sheet 04 of 04

Surveyor	M.Rotoli	M.R	Eng check	K.Sheehan	K.S
Drawn	F. Malppan	F.M	Coordination	K.Sheehan	K.S
Dwg check	P.Przysucha	P.P	Approved	K.Sheehan	K.S.
Scale at A0 1: 200		Status Complete		Rev C01	

Drawing Number 13075–PUM–2D–U–0001

4

ABBREVIATIONS

AR	ASSUMED ROUTE	BS	BUS STOP	CP	CABLE PIT	EOT	END OF TRACE	GP	GUIDE POST	Lck	LOCK GATE
AV	AIR VALVE	BTC	BRITISH TELECOM CHAMBER	CpL	COPING LEVEL	EP	ELECTRICITY POLE	GPR	TRACED BY G.P.R.	Ld	LADDER
BB	BELISHA BEACON	BW	BOUNDARY WALL	Cpt	CAPSTAN	ESB	ELECTRICITY BOX	Gr	GRATE	LP	LAMP POST
BD	BACKDROP	CaTv	CABLE TV COVER	Cwt	CAMERA POST	ESh	EMERGENCY SHOWER	GV	GAS VALVE	LV	LOW VOLTAGE
Bdl	BED LEVEL	CB	CONTROL BOX	CrL	CROWN LEVEL	ESP	ELECTRICITY SUPPLY POINT	Hgt	HEIGHT	MgP	MOORING POST
BH	BOREHOLE	CB	CONVEYOR BELT	CuP	CULVERT PIPE	Esw	ELECTRICAL SWITCH	HR	HANDRAIL	mH	METERS HIGH
BHch	BATTERY HATCH COVER	CC	COAL CHUTE	CWM	CABLE WINDING MACHINERY	FB	FOOTBRIDGE	HV	HIGH VOLTAGE	MHy	MACHINERY
Bin	BIN - OTHER / GRIT SALT BIN	CCnd	CATTLE GRID	d	DEPTH	FH	FIRE HYDRANT	IC	INSPECTION CHAMBER	MH	MANHOLE
BL	BASEMENT LIGHT	Chs	CHANNEL LEVEL	DIA	DIAMETER	FL	FLOOR LEVEL	IL	INVERT LEVEL	MkP	MARKER POST
Bol	BOLLARD	CI	CAST IRON	DS	DIRECTIONAL SIGN	FP	FLAG POLE / FLY POLE	JB	JUNCTION	MkR	MARKER POST (ELECTRIC)
BP	BOUNDARY POST	CL	COVER LEVEL	DC	ELECTRIC INSPECTION COVER	Gy	GULLY	JN	JUNCTION	MkG	MARKER POST (GAS)
		CO	CONCRETE	EoC	EDGE OF CANOPY	G+	GIRTH	KO	KERB OUTLET	MkR	MARKER POST (RAILWAY)
				EOR	END OF RECORDS	GP	GAS INLET PIPE	Lby	LIFEBUOY		

MkT	MARKER POST (TELECOM)	OHT	OVERHEAD CABLE (TELECOM)	Pnk	PENSTOCK	SA	SURVEY ABANDONED	TL	TRAFFIC LIGHT	VS	VENTILATION SHAFT
MkW	MARKER POST (WATER)	OP	OUTLET PIPE	PV	PUMPPIPE (VERTICAL)	SB	SIGN BOARD	TP	TELEGRAPH POLE	VW	VALVE / SLUICE WHEEL
ML	MAST LIGHT	Ox	OXYGEN	PVC	PUMPPIPE - PVC-CHLORIDE	SC	SIGNAL (SCUB / TRAM)	Tr	TREE	WC	WATER CLOSET
MS	MILE STONE	Pb	PARK BENCH	PyI	PYLON	Sl	SPUN IRON	TrG	TROUGH	WL	WATER LEVEL
NL	NOT LOCATED	PB	POST BOX	Pz	PIEZOMETER	SL	SORFIT LEVEL	UTF	UNABLE TO FIND	WM	WATER METER
NP	NAME PLATE	PCrg	PEDESTRIAN CROSSING	RE	RODDING EYE	SIL	SILT LEVEL (TOP)	UTGA	UNABLE TO GAIN ACCESS	WO	WASH OUT VALVE
OSA	OUTSIDE SURVEY AREA	PE	POLYSTHYLENE	RG	RAIN GAUGE	SMP	SETTLEMENT MONITORING PNT	UTL	UNABLE TO LIFT	W	WEIR
OSBM	O.S BENCH MARK	PF	PITCH FIBER	RMP	RESERVOIR MONITORING PNT	SL	SIGNAL LOST	UTR	UNABLE TO ROD	WL	WEIR LEVEL
OGP	OVERGROUND PIPE	PI	PILLAR	RP	REFLECTOR POST	SP	SIGN POST	UTS	UNABLE TO SURVEY	WP	WEIR PLATE (TOP)
OHC	OVERHEAD CABLE (UNIDENTIFIED)	Pr	MOVEMENT DETECTOR	RS	RAIL SIGNAL	Spl	SPILLING	VC	VITREOUS CLAY	WWP	WASTE WATER PIPE
OHE	OVERHEAD CABLE (ELECTRIC)	Pmd	PLANT MOTOR DRIVE	RSP	RAILWAY SIGNAL POST	Spr	SPRING	VC	VITREOUS CLAY		
OHG	OVERHEAD GANTRY	PP	PETROL / DIESEL PUMP	RWP	RAIN WATER PIPE	SPt	SAMPLING POINT	VP	VENT PIPE		
OHP	OVERHEAD PIPE	PR	PIPE RISER	S	SPREAD	ST	STOP TAP	VR	VAPOUR RECOVERY		

DUCT FORMATION

1W:	1 WAY SINGLE DUCT
2W:	2 WAY FLAT
2W 1/2	2 WAY 1 WIDE, 2 DEEP
4W 2/2	4 WAY: 2 WIDE, 2 DEEP
6W 3/2	6 WAY: 3 WIDE, 2 DEEP
12W 4/3	12 WAY: 4 WIDE, 3 DEEP

NB: TO BE ADAPTED TO FOR EACH CHAMBER

PAS128 SURVEY METHODOLOGY KEY

THIS SURVEY HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE PAS128 SPECIFICATION FOR UNDERGROUND UTILITY DETECTION, VERIFICATION & LOCATION. THE SPECIFICATION ALLOWS FOR A VARIETY OF SURVEY METHODOLOGIES TO BE EMPLOYED, INCLUDING THE FOLLOWING. COLOURED SCHEME INDICATES WHERE DIFFERENT SURVEY METHODOLOGIES HAVE BEEN USED ON SITE, AND THE LIST BELOW IDENTIFIES EQUIPMENT USED TO OBTAIN THE SURVEY RESULTS.
NB. PLEASE SEE ACCOMPANYING REPORT FOR FULL DETAILS

ELECTROMAGNETIC DETECTION	GROUND PENETRATING RADAR	TOTAL STATION	GPS/GNSS
Vivax-vLoc 3	GSI Opera Duo		Trimble R8s

- M4P - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
- M3P - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
- M2P - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 2m INTERVALS. GPR SURVEY GRID AT 2m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
- M1P - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY AS APPROPRIATE. POST PROCESSING OF GPR DATA.
- M4 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS. GPR MARK-UP ON SITE.
- M3 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS. GPR MARK-UP ON SITE.
- M2 - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 2m INTERVALS. GPR SURVEY GRID AT 2m INTERVALS. GPR MARK-UP ON SITE.
- M1 - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY AS APPROPRIATE. GPR MARK-UP ON SITE