Grid: OS National Grid
Using the OS GPS Network and applying OSTN15 Transformation and then removing the scale factor for true distances with a one-step transformation centred on "*[coordinate]*"

Datum: OS Level datum
Using the OS GPS Network and applying OSGM15 National Geoid Model to obtain local area corrections

NOTES

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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 the Detection, Verification and Location of Underground Utilities 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 services 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 service 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 services/features is of particular importance to a project then it is recommended that discussions are held with "*TSA member company*" 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, in line with the requirements of HSG47 and current CDM regulations.

Station Listing

STATION	EASTING	NORTHING	LEVEL
S5A	123456.106	123456.083	8.601
S5B	123456.230	123456.990	8.291
S5C	123456.182	123456.406	8.190
S5D	123456.111	123456.090	8.292
S6B	123456.841	123456.274	8.269

SUB–SURFACE KEY

- DRAINAGE COMBINED * — > CD – B1
- DRAINAGE FOUL* — > FD – B1
- DRAINAGE SURFACE* — > SD – B1
- DRAINAGE UNIDENTIFIED* — > UD – B2
- [* FLOW DIRECTION DENOTED BY ARROW (+) or (–) IF KNOWN]
- ELECTRIC — E – B1
- ELECTRIC LV — LV – B1
- ELECTRIC HV — HV – B1
- ELECTRIC STREET LIGHTING — SL – B1
- GAS — G – B1
- OIL/FUEL PIPELINE — O – B1
- TELECOMS — T – B1
- FIBRE OPTIC — FO – B1
- TELECOMS - BT — BT – B1
- TELECOMS - VIRGIN MEDIA — VM – B1
- TRAFFIC CONTROL — TC – B1
- WATER — W – B1
- UNIDENTIFIED UTILITY — U – B2
- UNIDENTIFIED CABLES — C – B2
- UNIDENTIFIED EMPTY DUCT — X – B2
- GPR LINEAR FEATURE — GPR – B2
- GPR AREA ANOMALY
- GPR AREA ANOMALY - REBAR
- CHAMBER EXTENTS
- AREA UNABLE TO BE SURVEYED DUE TO SURFACE OBSTRUCTIONS, VEGETATION OR LACK OF ACCESS
- TRENCH SCAR / SURFACE SCAR
- EXTENT OF SURVEY – BOUNDARY

(* NOT CONFIRMED BY INTRUSIVE DETECTS)

UTILITY CONFIDENCE LEVELS (Listed from High to Low)

- (A) HORIZONTAL AND VERTICAL POSITION VERIFIED VISUALLY (Accuracy: Horizontal (±25mm) Vertical(±50mm))
- (B1/P) 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)
- (B2/P) 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)
- (B3/P) 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)
- (C) ROUTE TRANSCRIBED FROM UTILITY ASSET PLANS AND CORRELATED TO VISUAL INDICATORS AND SURFACE FEATURES (Accuracy Undefined)
- (D) ROUTE TRANSCRIBED FROM UTILITY ASSET PLANS (Accuracy Undefined)

Layout Key

	(1)	

Rev	Date	Description	Check
-	--/--/----		--

PAS128 SURVEY METHODOLOGY LOCATION PLAN

TSA_MEMBER_COMPANY_LOGO

Client
NAME_OF_CLIENT
LOCATION_OF_CLIENT_OFFICE

Site
SITE_NAME
ADDRESS1
ADDRESS2
POST_CODE

Title
TITLE_OF_SURVEY
TYPE_OF_SURVEY

ABBREVIATIONS

AR	ASSUMED ROUTE
AV	AIR VALVE
BB	BELISHA BEACON
BD	BADGROP
BeE	BED LEVEL
BH	BOREHOLE
BHA	BASEMENT HATCH COVER
BHC	BASEMENT LIGHT BIN
BL	BASEMENT LIGHT
BoV	BOLLARD
BP	BOUNDARY POST
BS	BUS STOP
BTIC	BRITISH TELECOM CHAMBER
CaL	CATENARY LEVEL
CaV	CABLE TV COVER
CBP	CONCRETE POST
CB	CONVEYOR BELT
CC	COAL CHUTE
CGa	CATTLE GRID
ChL	CHANNEL LEVEL
CI	CAST IRON
CI	CAST IRON
CL	COVER LEVEL
CO	CONCRETE
CP	CABLE PIT
CpL	COPING LEVEL
Cpw	CARPETAN
CpV	CAMERA POST
CuP	CULVERT POST
CuP	CULVERT PIPE
CWM	CABLE WINDING MACHINERY
d	DEPTH
DIA	DIAMETER
DS	DIRECTIONAL SIGN
EC	ELECTRIC INSPECTION COVER
EoC	EDGE OF CANOPY
EOR	END OF RECORDS
EOT	END OF TRACE
EP	ELECTRICITY POLE
ER	EARTH ROD
EBw	EMERGENCY SHOWER
Esw	ELECTRICAL SUPPLY POINT
Esw	ELECTRICAL SWITCH
HV	HIGH VOLTAGE
IC	INSPECTION CHAMBER
IL	INVERT LEVEL
JB	JUNCTION BOX
JN	JUNCTION
KD	KERB OUTLET
Ly	LIFEBUOY
Lck	LOCK GATE
Ld	LADDER
LH	LAMP HOLE
LP	LAMP POST
LP	LIGHTING POLE
MgP	MOORING POST
mH	METERS HIGH
Mky	MACKINERY
MH	MANHOLE
MKP	MARKER POST
MKE	MARKER POST (ELECTRIC)
MKG	MARKER POST (GAS)
MKR	MARKER POST (RAILWAY)
MkT	MARKER POST (TELECOM)
MkW	MARKER POST (WATER)
MP	MILE POST
MS	MILE STONE
NP	NATIONAL GRID
NP	NAME PLATE
OSA	OUTSIDE SURVEY AREA
OSBM	O.S BENCH MARK
OGP	OVERGROUND PIPE
OHC	OVERHEAD CABLE (ELECTRIC)
OHE	OVERHEAD CABLE (ELECTRIC)
OHG	OVERHEAD GANTRY
OHP	OVERHEAD PIPE
OHT	OVERHEAD CABLE (TELECOM)
OP	OUTLET PIPE
Pa	POST
Pb	POST BENCH
PB	POST BOX
PCg	PEDESTRIAN CROSSING
PE	POLYETHYLENE
PF	PITCH FIBER
Pl	PILE
Pm	PAYMENT DETECTOR
Pmd	PLANT MOTOR DRIVE
PP	PETROL / DIESEL PUMP
PR	PIPE RISER
Pwa	PENSTOCK
PVC	POLYVINYL CHLORIDE
Py	PYLON
PZ	PIEZOMETER
RE	RODDING EYE
RG	RAIN GAUGE
RW	RESERVOIR MONITORING PNT
RP	REFLECTOR POST
RSP	RAIL SIGNAL
RSP	RAILWAY SIGNAL POST
RWP	RAIN WATER PIPE
S	SPREAD
SA	SURVEY ABANDONED
SB	SIGN BOARD
Shw	SHELTER (BUS / TRAM)
SI	SPUN IRON
SL	SITE LEVEL
SiL	SILT LEVEL (TOP)
SMP	SETTLEMENT MONITORING PNT
SiL	SIGNAL LOST
SP	SIGN POST
Spr	SPRING / SPRING
Spr	SPRING
SPl	SAMPLING POINT
ST	STOP TAP
St	STILE
SI	STRUCTURE TOP LEVEL
Tpl	TRIAL PIT
Sp	STAND PIPE
SPO	STAY PULLEY AND IRON
SW	STAY WIRE
SV	STOP VALVE
SVP	SOIL VENT PIPE
TBM	TEMPORARY BENCH MARK
TC	TELECOM CABINET
TEL	TELECOM CHAMBER COVER
TRF	TAKEN FROM RECORDS
TN	THRESHOLD LEVEL
TL	TRAFFIC LIGHT
TP	TELEGRAPH POLE
Tpl	TRIAL PIT
Tp	TREE
UTF	UNABLE TO FIND
UTGA	UNABLE TO GAIN ACCESS
UTF	UNABLE TO LIFT
UTR	UNABLE TO ROD
UTS	UNABLE TO SURVEY
UTV	UNABLE TO VISUALISE
VT	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	WIER
WL	WEIR LEVEL
WP	WEIR PLATE (TOP)
WWP	WASTE WATER PIPE
PCP	POST & CHAIN
PIF	POST & IRON RAIL
PRF	POST & RAIL
PWF	POST & WIRE
SPF	STEEL PALISADE
WMF	WIRE MESH

FENCE TYPES:

AMF	ARMCO
BWF	BARBED WIRE
CBF	CLOSE BOARDED
CLF	CHAIN LINK AND IRON
CLF	CHAIN LINK
CPF	CHESTNUT PALING
IRF	IRON RAILING
IWF	INTERWOVEN

DUCT FORMATION

1W:	1 WAY SINGLE DUCT
2W:	2 WAY FLAT
2W1/2	2 WAY, 1 WIDE, 2 DEEP
4W:2/2	4 WAY: 2 WIDE, 2 DEEP
6W:3/3	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 CODING OF THE UTILITY SEGMENTS DEPICTED ON THIS DRAWING WILL HAVE BEEN ASSIGNED 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
Equipment name	Equipment name	Equipment name	Equipment name
Equipment name	Equipment name	Equipment name	Equipment name
Equipment name	Equipment name	Equipment name	Equipment name

- MAP - 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.
- MSP - 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.
- MZP - 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.
- MYP - 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

Survey by	INITIALS	Drawn by	INITIALS
Check by	INITIALS	Date	DATE
Scale (A0 Sheet) SCALE	DWG Reference/number* ID_NUMBER		Status FINAL
Project/Job No	ID_NUMBER		Revision REV_ID