KEY

TOPOGRAPHICAL KEY

SURVEY STATION — 5
BANKING — TOP / BOTTOM
HEDGE SPREADS
WOODLAND CANOPY
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS
TREES — SPREAD & GIRTH SHOWN TO SCALE
GATE
KERB CHANNEL
ROAD UNKERBED
FENCE
WALL
BUILDING
OPEN SIDED BUILDING
OVERHANG / CANOPY
GLASSHOUSE
CONTOUR — 25.50
SPOT LEVEL + 127.13 — SONAR LEVEL ⊙ 127.13
BORE HOLE — BH
TRIAL HOLE — TH
FOOTPATH
CHANGE IN SURFACE

GENERAL

Av.	AVERAGE
(ACP)	ASSUMED CONNECTION POINT
CDW	CABLE ON WALL
CW	COMBINED WATER
DEC	DECEASED
DK	DROP KERB
EML	ELECTROMAGNETIC LOCATOR
EOT	END OF TRACE
FO	FIBRE OPTIC
FP	FOOTPATH
FW	FOUL WATER
GF	GARAGE FLOOR
GPR	GROUND PENETRATING RADAR
HB	HARD BED
HP	HIGH PRESSURE
HV	HIGH VOLTAGE
KV	KILO VOLT
IP	INTERMEDIATE PRESSURE
LP	LOW PRESSURE
LV	LOW VOLTAGE
MP	MEDIUM PRESSURE
ND	NO DEPTH INFORMATION
NFI	NO FURTHER INFORMATION
NDV	NO DUCTS VISIBLE
NPV	NO PIPES VISIBLE
OSBM	ORDNANCE SURVEY BENCHMARK
POW	PIPE ON WALL
PSM	PROJECT SITE
RED	REDUNDANT SERVICE
RW	RETAINING WALL
SB	SOFT BED
SNP	STREET NAME PLATE
SW	SURFACE WATER
TAC	TACTILE PAVING
TBM	TEMPORARY BM
TW	TRADE EFFLUENT WATER
UTL	UNABLE TO LOCATE
UTR	UNABLE TO RAISE
UTS	UNABLE TO SURVEY

APPARATUS

ACU	AIR CONDITIONING UNIT
AV	AIR VALVE
BCN	BELISHA BEACON
BO	BOLLARD
BOL	BOLLARD LIGHT
BS	BUS STOP
CATV	CABLE TELEVISION
CB	CONTROL BOX
CCB	CROSSING CONTROL BUTTON
CH	CATCH PIT
CR	CABLE RISER
DCH	DRAINAGE CHANNEL
EB	ELECTRIC CONTROL BOX
EP	ELECTRIC POLE
ER	EARTH ROD
FD	FILTER DRAIN
FHP	FIRE HYDRANT, POINT
FHL	FIRE HYDRANT, LINE
GR	GAS RISER
GV	GAS VALVE
GY	GULLY
IC	INSPECTION COVER
INT	INTERCEPTOR
IT	INLET
KO	KERB OUTLET
LD	LAMP DETECTOR
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MK	MARKER POST / PLATE
MT	METER
MW	MONITORING WELL
OG	OUTFALL
OU	OUTFALL
PO	POST
PTG	PIPE TO GROUND
PTS	PIPE TO SURFACE
PU	PUMP
RE	RODDING EYE
RG	ROAD GUIDE
RM	RISING MAIN
RWP	RAIN WATER PIPE
SC	STOP COCK
SO	SOAKAWAY
SP	SOIL PIPE
ST	STAY CABLE
SVP	STOP VALVE
TCB	TELEPHONE CALL BOX
TEL	TELECOM INSPECTION COVER
TL	TRAFFIC LIGHT
TLC	TRAFFIC LIGHT COVER
TM	TICKET MACHINE
TP	TELECOM POLE
VP	VENT PIPE
WM	WATER METER
WO	WASH OUT
WR	WATER RISER
WT	WATER TAP
WW	WET WELL

DEPTHS

d	ELECTRONICALLY DERIVED
Pd	PASSIVELY DERIVED
Bd	BASE DEPTH
Cd	DEPTH TO CROWN
Id	DEPTH TO INVERT
Sd	DEPTH TO SOFFIT

PIPE MATERIALS

AC	ASBESTOS CEMENT
ALK	ALKATHENE
BK	BRICK
CI	CAST IRON
CON	CONCRETE
DI	DUCTILE IRON
HDPE	HIGH DENSITY PE
MDPE	MEDIUM DENSITY PE
PE	POLYETHYLENE
PF	PITCH FIBRE
PP	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE
PVC-U	ULTRA RIGID PVC
SI	SPUN IRON
ST	STEEL
VC	VITRIFIED CLAY

FENCES

B/W	BARBED WIRE FENCE
C/B	CLOSED BOARDED FENCE
C/P	CONCRETE PANEL FENCE
C/I	CORRUGATED IRON FENCE
CNP	CHESTNUT PALING
C/L	CHAIN LINK FENCE
I/R	IRON RAILINGS
L/L	LARCH LAP FENCE
P/R	POST AND RAIL FENCE
P/W	POST AND WIRE FENCE
W/M	WIRE MESH FENCE

LEVELS

BD	BACKDROP LEVEL
BL	BASE LEVEL
CL	COVER LEVEL
CRL	CROWN LEVEL
DPC	DAMP PROOF COURSE
FL	FLOOR LEVEL
IL	INVERT LEVEL
PT	P TRAP LEVEL
RL	ROOF LEVEL
SL	SOFFIT LEVEL
SOF	SOFFIT LEVEL
THL	THRESHOLD LEVEL
WL	WATER LEVEL

LINESTYLE

INTERNAL METER — MT
POT ENDED SERVICE
SEWER CAPPED RUN
SURVEY ABANDONED
INTERNAL VALVE
UNKNOWN UNDERGROUND ANOMALY
UNDERGROUND CHAMBERS
POST PROCESSING AREA — PP1,PP2,PP3
ABOVE GROUND — (AG)
ASSUMED ROUTE — QB4(AR)
EMPTY DUCTS — (E)
OVERHEAD — (OH)
BACK DROP
P TRAP
UTILITY CROSSOVER
SURVEY BOUNDARY
VERBAL INFORMATION — QB4(V)
RECORD INFORMATION — QB4(R)
REDUNDANT SERVICE
RISING MAIN
CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

CATV / DATA
ELECTRICITY (HV)
ELECTRICITY (LV)
FUEL
GAS
HEATING
OVERHEAD ELECTRIC
OVERHEAD TELECOM
TRADE EFFLUENT
COMBINED SEWER
FOUL SEWER
SURFACE SEWER
UNIDENTIFIED SEWER
TELECOM
UNKNOWN SERVICE
WATER

CAUTIONARY NOTES

1. EML techniques have been used in the detection of underground utilities as outlined in Table 2 of PAS 128:2014, the results are not infallible and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
2. GPR techniques has been used in the detection of non-metallic utilities as outlined in Table 2 of PAS 128:2014. The interpretation of these results is not infallible and success will depend on a number of factors including soil type, ground water, noise and other adverse conditions. Trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
3. Depths derived via EML are taken to the centre of the conductor (cable, metallic pipe) and those derived via GPR are usually to the crown of the utility unless otherwise indicated.
4. Where cables cannot be detected individually an average depth has been obtained and trial excavations are recommended to confirm number and depths of cables banded together.
5. 'Pot-ended' cables are often difficult to detect and although we have made all reasonable efforts to locate or transpose this information from records, we cannot guarantee that all 'pot-ended' cables have been located.
6. Fibre optic cables are often difficult to detect, and commonly access chambers can be locked and thereby made inaccessible by the utility provider. All reasonable efforts have been made to locate these ducts using GPR. Cables not located have been transposed from records.
7. Within close proximity of electric substations and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
8. Underneath overhead power lines results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
9. Drainage information has been obtained without man entry into the chamber.
10. Wherever possible we have attempted to locate the route of the sewer. Issues such as blockages, surcharging, flooding, sedimentation, sewer collapse, root ingress, excessive depth, obstructions or heavy traffic flow may have hindered our ability to obtain meaningful results. In these cases recommendations have been made for further survey or maintenance work.
11. Pipe / duct sizes have been recorded from surface inspection or taken from record information. Pipe sizes have been recorded in millimetres and depths in metres, except in instances where sizes are indicated in imperial units on the record information.
12. Water and Gas utilities to individual properties are often of a size that cannot be detected using EML or GPR techniques and are dependent upon the route has been added from surface evidence (pipe risers, valves, etc), but this should be used as a guide only.
13. All utilities detected by MK Surveys should be considered live unless confirmed otherwise by client or service provider.
14. MK Surveys cannot confirm when utilities are redundant unless there is visual or record evidence to indicate this. In addition MK Surveys cannot guarantee being able to detect all redundant utilities.
15. Wherever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected on site, the information has been added to the drawing and indicated as QB4 (R). However it should be noted that the completeness and accuracy of the records cannot be guaranteed.
16. The utility information has been obtained from non-intrusive survey techniques. It always remains possible that there are additional utilities within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all utility records are used in conjunction with this survey.
17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate within the surveyed area, who shall be liable to the asset owner and any third party who may be affected in any way for any loss or damage.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD8000	10/TX-108-5221	RD10	05/03/2020
EML Rx Receiver	SPX Radiodetection	RD8000	10/BKPDLB-14096	RD10	05/03/2020
GPR	IDS Georadar	Opera	8991A	GPR7	22/11/2019

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BSI). After a pre-survey consultation with the client it was agreed to carry out the detection survey using methodology M1 as per Table 2 of the PAS 128:2014. The survey boundary has been shown on the drawing; please see linestyle section of the key for reference.

DESKTOP UTILITY REPORT
Prior to the survey commencing record information was gathered and compiled in a separate desktop utility report. This report should be read in conjunction with the information contained in this utility detection survey. Record information was at the time of the survey less than 90 days old in accordance with the requirements of the PAS 128:2014. For a full list of the providers searched, records received and the dates the information was obtained, please refer to the attachments page of the desktop utility report.

DETECTION SURVEY
DRAINAGE
All Drainage was lifted with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external rainwater pipes and external soil stacks have been plotted where possible into manholes and sewer runs by radio sonde location and/or GPR. Where a saddle connection is present the position is assumed only until proven otherwise. In instances where other detection methods were unsuccessful connections between manholes have been assumed to be straight and labelled as QB4. All drainage should be cross checked in critical areas by CCTV survey or verification survey type A.

WATER
Water mains within the survey area have been located using EML with electronically derived depths. Recommend trial excavations to confirm depth and position in critical areas.

GAS
Unable to detect 2" PE pipe along North End Road through EML and GPR methods. The position of the utility have been added from records. Recommend trial excavations in key areas.

ELECTRICITY
Electric cables within the survey area have been located using EML methods with electronically derived depths recorded. Unable to confirm amount of cables within ducts from surface inspection. Recommend trial excavations to confirm depths and position in critical areas.

TELECOM
Telecom ducts have been traced with depths recorded. Due to laws protecting British Telecom apparatus all ducts have been located using remote detection techniques only and compared with record information. Chamber sizes have been recorded using GPR techniques wherever possible. For further information regarding BT apparatus please contact Openreach directly.

CATV
There have been no CATV utilities detected within this site boundary. Recommend trial excavations to confirm depths and position in critical areas.

UNKNOWNS
Some unknown targets identified on the drawing using GPR are classified as "non-linear targets". These are not consistent with what we expect to see when identifying a buried utility, and appear on the drawing as single targets with depths (i.e. not linking two or more depth readings). This does not mean they are not utilities, we are just unable to positively identify them as a utility. We would strongly recommend that further verification surveys (PAS 128:2014 survey type A) are carried out to identify these targets in critical areas.
All unknown anomalies were located using EML or GPR techniques. Recommend trial excavations to confirm identity position and depths in critical areas.

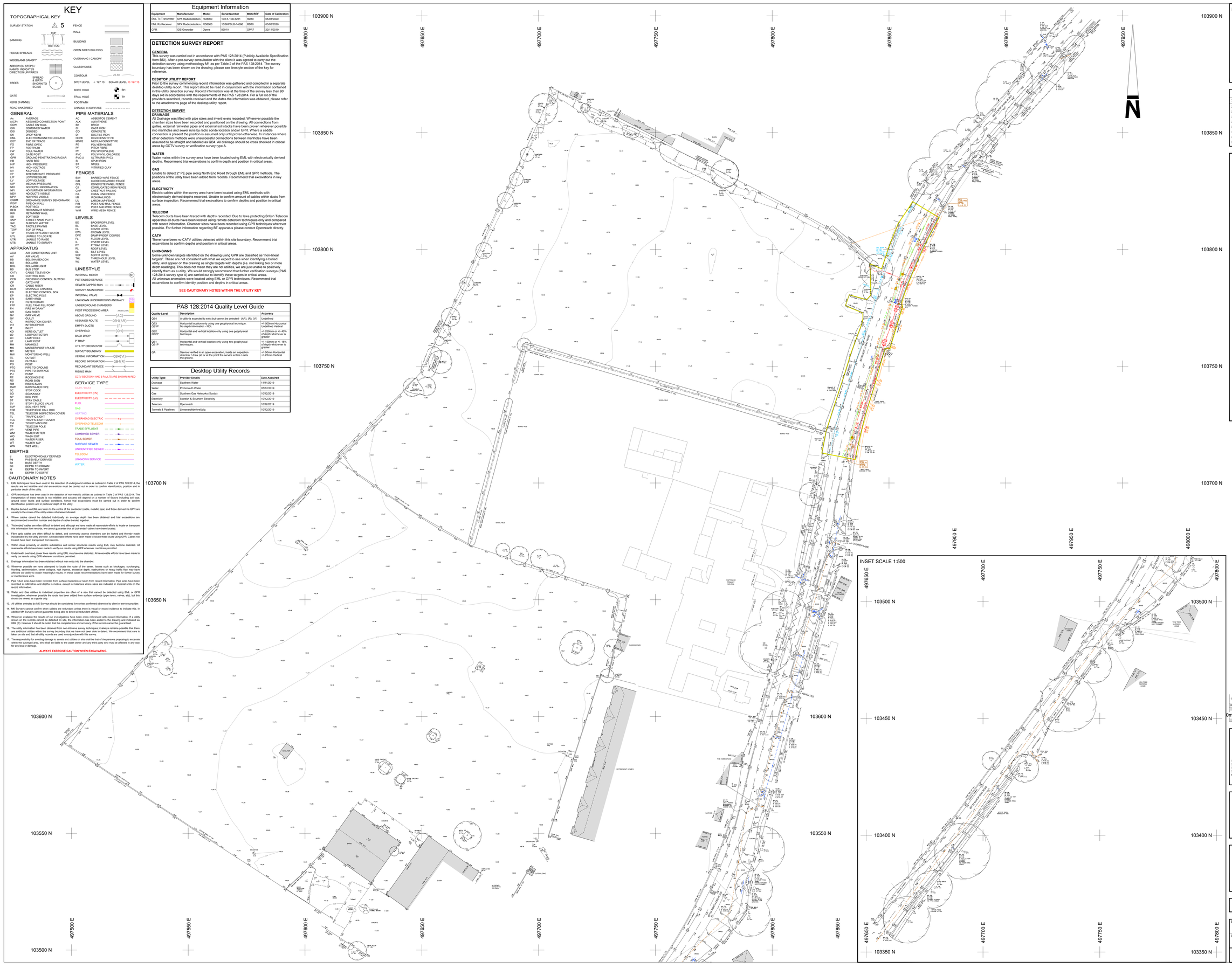
SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (V1)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI	+/- 500mm Horizontal Undefined Vertical
QB2 QB2P	Horizontal and vertical location only using one geophysical technique.	+/- 250mm or +/- 40% of depth whichever is greater
QB1 QB1P	Horizontal and vertical location only using two geophysical techniques.	+/- 150mm or +/- 15% of depth whichever is greater
QA	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 25mm Vertical

Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Southern Water	11/11/2019
Water	Portsmouth Water	05/12/2019
Gas	Southern Gas Networks (Scotia)	10/12/2019
Electricity	Scottish & Southern Electricity	10/12/2019
Telecom	Openreach	10/12/2019
Tunnels & Pipelines	Linesearchbeforeu3dg	10/12/2019



Notes:

1. GRID AND LEVELS BASED ON ORDNANCE DATUM, DERIVED FROM THE NATIONAL GNSS NETWORK. LOCAL SCALE FACTOR 0.99972 APPLIED.
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILST EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES /CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.
4. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.
5. BACKGROUND INFORMATION TAKEN FROM ORDNANCE SURVEY DIGITAL DATA.

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Coordinate Table

Station	Description	Easting	Northing	Level
S1	PEG	497840.487	103739.087	5.949
S2	PEG	497820.111	103654.452	5.788
S3	PEG	497792.412	103554.429	5.686
S4	ROAD NAIL	497761.658	103490.433	5.663
S5	ROAD NAIL	497709.665	103436.234	5.261
S6	ROAD NAIL	497688.838	103407.274	5.144
S7	ROAD NAIL	497701.623	103542.691	6.751
S8	PEG	497641.149	103570.226	6.539

TOPOGRAPHICAL KEY

GENERAL ABBREVIATIONS

SURVEY STATION		AIR CONDITIONING UNIT	ACU
		AIR VALVE	AV
BANKING	TOP / BOTTOM	AVERAGE	Av.
		BACK DROP	BD
		BELISHA BEACON	BCN
HEDGE SPREADS		BOLLARD	BO
		BOLLARD LIGHT	BOL
WOODLAND CANOPY		BRICK	BK
		BUS STOP	BS
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS		CABLE RISER	CR
		CABLE TV COVER	CATV
TREES	SPREAD & GIRTH SHOWN TO SCALE	CABLES TO GROUND	CTG
		CATCH PIT	CP
		CONTROL BOX	CB
		COVER LEVEL	CL
GATE		CROSSING CONTROL BUTTON	CCB
		DAMP PROOF COURSE	DPC
		DRAINAGE CHANNEL	DCH
KERB CHANNEL		DROP KERB	DK
		ELECTRICITY POLE	EP
		FILTER DRAIN	FD
		FIRE HYDRANT	FH
		FLOOR LEVEL	FL
ROAD UNKERBED		FOOTPATH	FP
		FOUL WATER	FW
		GAS RISER	GR
FOOTPATH		GAS VALVE	GV
		GULLY	GY
CHANGE IN SURFACE		HARD BED	HB
		INSPECTION COVER	IC
		INVERT LEVEL	IL
FENCE		KERB OUTLET	KO
		LAMP HOLE	LH
WALL		MANHOLE	MH
		MARKER POST	MK
		METER	MT
OVERHEAD ELECTRIC		NO PIPES VISIBLE	NPV
		ORDNANCE SURVEY BENCH MARK	OSBM
OVERHEAD TELECOM		P-TRAP	PT
		PIPE	PI
FOUL SEWER		POST BOX	P BOX
		RODDING EYE	RE
SURFACE SEWER		ROAD SIGN	RS
		RAIN WATER PIPE	RWP
P-TRAP		RETAINING WALL	RW
		SOFT BED	SB
BACK DROP (EXTERNAL)		SOIL PIPE	SP
		STREET NAME PLATE	SNP
BACK DROP (INTERNAL)		STOP VALVE	SV
		SOIL PIPE	SP
BUILDING		SOIL VENT PIPE	SVP
		STAY CABLE	STA
OPEN SIDED BUILDING		TACTILE PAVING	TAC
		TELECOM POLE	TP
OVERHANG / CANOPY		TELECOM INSPECTION COVER	TEL
		TELEPHONE CALL BOX	TCB
GLASSHOUSE		TICKET MACHINE	TM
		TOP OF WALL	TOW
		TRAFFIC LIGHT	TL
		TRAFFIC LIGHT COVER	TLC
CONTOUR	25.50	THRESHOLD LEVEL	THL
		UNABLE TO LOCATE	UTL
SPOT LEVEL	+ 127.13	UNABLE TO RAISE	UTR
		UNABLE TO SURVEY	UTS
SONAR LEVEL	⊙ 127.13	VENT PIPE	VP
		WATER METER	WM
BORE HOLE	BH	WASH OUT	WO
		WATER RISER	WR
TRIAL HOLE	TH	WATER TAP	WT

FENCE ABBREVIATIONS

BARBED WIRE FENCE	B/W	IRON RAILINGS	I/R
CLOSE BOARDED FENCE	C/B	LARCH LAP FENCE	L/L
CONCRETE PANEL FENCE	C/PL	POST AND RAIL FENCE	P/R
CORRUGATED IRON FENCE	C/I	POST AND WIRE FENCE	P/W
CHAIN LINK FENCE	C/L	WIRE MESH FENCE	W/M
CHESTNUT PALING	CNP		

1	Additional area surveyed around the southern barns, and offsite buildings surveyed to the north. Utility survey of North End Road added at field entrance.	JH / LW	AJ / TW	CP / DSR 09/12/2019
Revision	Description	Surv by	Check by	Appr by / Date

0m 5 10 15 20 25 30 35 40 45 50 55

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dandara

North End Road
Yapton
West Sussex

Topographical and PAS 128:2014 Utility Survey

Scale	Sheet Size:	Sheet Number:	Date:
1:500	A0	1	March 2019

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
26714	1	RG	AJ	CP

MKS-26714-XXXX-V1.1(Issue)