[illegible]

Equipment Information					
Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EMI Tx Transmitter	SPX Radiodetection	RD9000	10TX-168-5221	RD 10	11/12/2020
EMI Rx Receiver	SPX Radiodetection	RD9000	108KFDLB-14596	RD 10	11/12/2020
GPR	Leica IDS	Opera DS2000	010-20-00037	GPR 18	13/01/2021

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
In addition the client has provided MK Surveys with historical record information. As per PAS 128:2014 this record information is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information. Site staff provided further local knowledge.

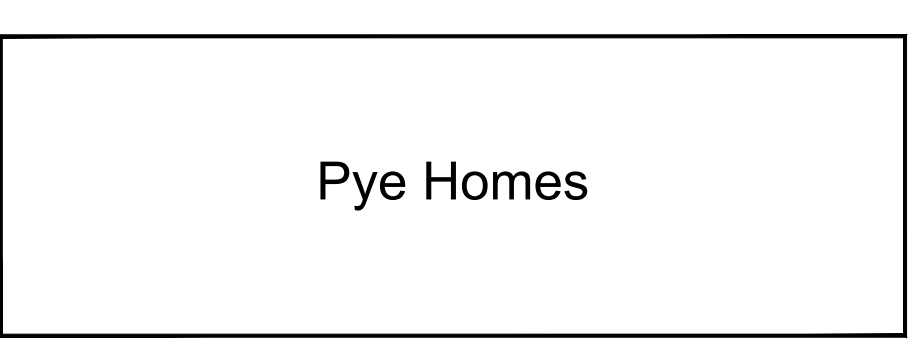
No evidence of C-19V Network identified during the survey. Records information can confirm this.

UNKNOWN

Some unknown targets identified in the drawing using GPS 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 large targets with depths (e.g. not linking two or more depth readings). These do 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 (PAC 126.204 survey type A) are carried out to identify these targets in critical areas. All unknown anomalies were located using EDM or GPS techniques. Recommend that excavations to confirm identity and position and depths in critical areas.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

Revision	Description	Surv. by/ Chk. by	Appr. by/ Date
m	2	4	6
	8	10	12
	14	16	18
	20	22	



PAS 128:2014 Utility Survey

Equipment Information				
Equipment	Manufacturer	Serial Number	MKS REF	Date of Calibration
EM, Tx Transmitter	SPK Radioelectronic	RD8000	107X-108-5221	RD10 11/10/2020
EM, Rx Receiver	SPK Radioelectronic	RD8000	108970LB-1456	RD10 11/10/2020
GPR	Leica GDS	Serial 10000	970-20-00007	QPR18 12/1/2021

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BS). 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 Insert/ey section of the key for reference.

DESKTOP UTILITY REPORT

In addition the client has provided MK Surveys with historical record information. As per PAS 128:2014 this record information is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information. Site staff provided further local knowledge.

DETECTION SURVEY

DRAINAGE
Drainage was traced with pipe sizes and invert levels recorded. Whenever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external drainwater pipes and manholes have been recorded wherever possible into manholes and sewer runs by radio so close location and/or GPR. Where a saddle connection is present the position is assumed only until proven to GBD or above. In instances where other detection methods were unsuccessful connections between manholes have been assumed to be straight and labelled as QBA. All drainage should be cross checked in critical areas by CCTV survey or verification survey type A. A100102 was unable to be located with a metal detector. We have traced a foul water pipe out of M85 but due to the pipe being blocked we were unable to trace the full route of the pipe.

WATER

Water utilities located using EML with electronically derived depths or GPR derived depths to the crown of the pipe. Where utilities have not been successfully detected, the position has been drawn in relation to the supplied utility records information. Recommend trial excavations to confirm depth and position in critical areas.

GAS

Gas utilities located using GPR derived depths to the crown of the pipe. Where utilities have not been successfully detected, the position has been drawn in relation to the supplied utility records information. Recommend trial excavations to confirm depth and position in critical 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. Record information shows a 11KV HV cable in the carpark park to the south of the site. Survey result confirms this doesn't enter the site boundary. 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 whenever possible. For further information regarding BT apparatus please contact Openreach directly.

CATV

No evidence of CATV Network identified during the survey. Records information can confirm this.

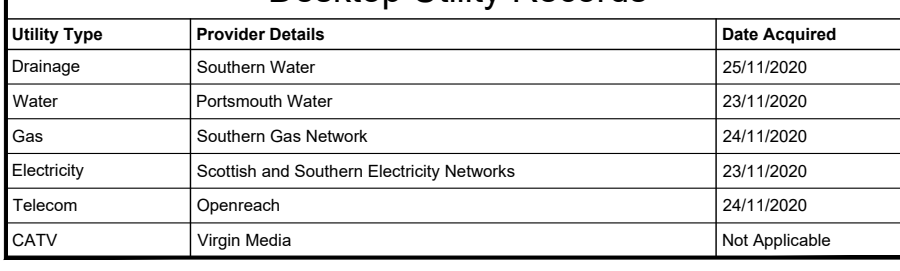
UNKNOWN

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 taking 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

Desktop Utility Records		
Utility Type	Provider	Date Acquired
Drainage	Southern Water	25/1/2020
Water	Portsmouth Water	25/1/2020
Gas	Southern Gas Network	24/1/2020
Electricity	Scottish and Southern Electricity Networks	25/1/2020
Telecom	Openreach	24/1/2020
CATV	Virgin Media	Not Applicable

Sheet Layout: (Not to Scale)



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 definitive and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
2. GPR techniques have 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 accuracy will depend on a number of factors including soil type, ground water levels and surface conditions. Hence trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
3. Depths derived on 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 at an exact depth then been obtained and trial excavations are recommended to confirm number and depths of cables banded together.
5. The external cables are often difficult to detect and although we have made all reasonable efforts to locate or tracepass the information from records, we cannot guarantee that all detected cables have been located.
6. Flare 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 triangulated from records.
7. Where close proximity of electric cables and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR whenever conditions permitted.
8. Underground overhead power lines results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR whenever conditions permitted.
9. Drainage information has been obtained without entry into the chamber.
10. Whenever possible we have attempted to locate the route of the sewer: issues such as blockages, surcharging, blockages, obstructions, water collection and various factors increase depth, obstructions or heavy flows may have affected our ability to obtain meaningful results. In these cases recommendations have been made for further survey for more detailed information.
11. Pipe float sites have been recorded from surface inspection or taken from record information. Pipe sites have been recorded in relation to depth and depths in metres, except in instances where spots 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 detection, however possible the route has been added from surface evidence (pipe runs, valves, etc.) for the quantity of water/gas given off.
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. Whenever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected by us, the information has been added to the drawing and indicated as QBA (S). 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-invasive 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 the survey.
17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate. Where the proposed work will result in the removal of assets and any third party may be affected in any way for any loss or damage.

Notes :

1. UTILITY AND SERVICE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY GREEN WORLD SURVEYS LTD. JOB No PYEGW01641, DATE APRIL 2020, NO SITE VERIFICATION CARRIED OUT BY MK SURVEYS.
2. THIS SURVEY SHOULD ALWAYS BE READ IN CONJUNCTION WITH THE DESKTOP UTILITY REPORT THAT WAS CARRIED OUT AS A PREREQUISITE TO THE DETECTION SURVEY.

KEY	
GENERAL	PIPE MATERIALS
COW CABLE ON WALL COB COMBINED WATER DB DISBURSED DA DRAINAGE EOT END OF TRACE EP ELECTROMAGNETIC LOCATOR FR FOOTPATH FW FUL WATER GP GATE POST GRN GROUND PENETRATING RADAR HB HAND HOLE HSB HIGH PRESSURE HV KVO VOLT IWM INTERMEDIATE PRESSURE LV LOW VOLTAGE MP MEDIUM PRESSURE NO NO FURTHER INFORMATION NOV NO OUTCUTS VISIBLE OSM ORDNANCE SURVEY BENCHMARK PBOX POST BOX PRC PR CABLE PSON POST SIGN RST RETAINING WALL SB SOFT BED SW SURFACE WATER TOW TOP OF WALL TRF TRADE EFFLUENT WATER UTL UNABLE TO LOCATE UTR UNABLE TO TRACE UTS UNABLE TO SURVEY	ALK ALKATHENE BK BRICK CI CAST IRON CO CORRUGATED CP CORRUGATED POLYESTER HO HOPE HSB HIGH STRENGTH PIPE PE POLYETHYLENE PCH POLYCHLORIDE PP POLYPROPYLENE PVC POLYVINYL CHLORIDE PVO ULTRA HD (PVC) ST STEEL VC VITRIFIED CLAY
FENCES	LEVELS
BW BARBED WIRE FENCE CR CLUSED BARBED FENCE CP CORRUGATED POLYESTER CNG CORRUGATED HIGH FENCE CHS CHAIN LINK FENCING LAR LARCH FENCE PR POST AND RAIL FENCE PWS POST AND WIRE FENCE WWS WIRE MESH FENCE	B0 BACKDROP LEVEL BL BASE LEVEL CL COVER LEVEL CML COVER LEVEL DFC DAMP PROOF COURSE FL FLOOR LEVEL IL INVERT LEVEL JT JOINT LEVEL RL RAIL LEVEL BL BUTT LEVEL SPT SLOTTED LEVEL THL THRESHOLD LEVEL WCL WHOLE LEVEL
APPARATUS	LINESTYLE
AC AIR CONDITIONING UNIT AV AIR VALVE BEB BELL END BLS BELL END LIGHT BS BUS STOP CATV CABLE TELEVISION BO BOLLARD BSL BELL END LIGHT CB CABLE CROSSING CONTROL BUTTON CCR CATCH CRY CR CABLE RISER DR DRAINAGE CHANNEL EB ELECTRIC CONTROL BOX EP ELECTRIC POLE FDR FILTER DRAIN FR FIRE HYDRANT GR GAS RISER GVA GAS VALVE GV GAS VALVE IC INSULATION COVER INT INTERSECTION KO KERB OUTLET LA LAMP PILE LH LAMP HEAD MH MANHOLE MP METER MW MONITORING WELL MS METER STOP OU OUTFALL PPS PIPE TO SURFACE PPS PIPE TO SURFACE RUM RAMP REE ROISING EYE RM ROAD SIGN RSM ROAD SIGN RWP RAIN WATER PIPE SC STOP COCK SO SOMANARY SP SOL PIPE ST STOP CABLE SV STOP VALVE SW STOP VALVE TLM TELECOM LIGHT COVER TLM TELECOM LIGHT COVER TM TRAFFIC LIGHT TL TELECOM INSPECTION COVER TRM TRAFFIC LIGHT TP TRAFFIC LIGHT COVER TRM TRAFFIC LIGHT TP TELECOM POLE VENT VENT WD WASH OUT WT WATER TAP WW WET WELL	INTERNAL METER POT HANG SERVICE SEVER CAPES RUN SURVEY ABANDONED INTERNAL VALVE LANDOWN UNDERGROUND ANOMALY UNDERGROUND CHAMBERS POST PROCESSING AREA VERIFICATION TRIAL HOSE/EXCAVATION ABOVE GROUND ASSIGNED ROUTE EMERGENCY OVERHEAD BACK DROP P TRAP UTILITY CROSSOVER SURVEY BOUNDARY VERBAL INFORMATION RECORD INFORMATION REDUNDANT SERVICE CUT SECTION AND FAULTS ARE SHOWN IN RED
SERVICE TYPE	DEPTHS
CATV DATA ELECTRICITY (V) ELECTRICITY (A) FUEL GAS HEATING OVERHEAD ELECTRIC OVERHEAD TELECOM OVERHEAD TRAFFIC TRADE EFFLUENT COMBINED SEWER FOLL SEWER SURFACE SEWER UNIDENTIFIED SEWER TELECOM UNKNOWN SERVICE WATER	H ELECTRONICALLY DERIVED P PASSIVELY DERIVED GISE GISE DEPTH TO CROWN DEPTH TO INVERT DEPTH TO SOFTY SERVICES SURVEY WARNING
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 definitive and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility. 2. GPR techniques have 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 accuracy will depend on a number of factors including soil type, ground water levels and surface conditions. Hence trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility. 3. Depths derived on 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 at an exact depth then been obtained and trial excavations are recommended to confirm number and depths of cables banded together. 5. The external cables are often difficult to detect and although we have made all reasonable efforts to locate or tracepass the information from records, we cannot guarantee that all detected cables have been located. 6. Flare 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 triangulated from records. 7. Where close proximity of electric cables and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR whenever conditions permitted. 8. Underground overhead power lines results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR whenever conditions permitted. 9. Drainage information has been obtained without entry into the chamber. 10. Whenever possible we have attempted to locate the route of the sewer: issues such as blockages, surcharging, blockages, obstructions, water collection and various factors increase depth, obstructions or heavy flows may have affected our ability to obtain meaningful results. In these cases recommendations have been made for further survey for more detailed information. 11. Pipe float sites have been recorded from surface inspection or taken from record information. Pipe sites have been recorded in relation to depth and depths in metres, except in instances where spots 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 detection, however possible the route has been added from surface evidence (pipe runs, valves, etc.) for the quantity of water/gas given off. 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. Whenever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected by us, the information has been added to the drawing and indicated as QBA (S). 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-invasive 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 the survey. 17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate. Where the proposed work will result in the removal of assets and any third party may be affected in any way for any loss or damage.	

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

PAS 128:2014 Quality Level Guide		
Quality Level	Description	Accuracy
QBA	A utility is expected to exist but cannot be detected - (AR), (R), (V)	Unidentified
QBS	Horizontal location only using one geophysical technique	± 500mm Horizontal
QBP	Horizontal and vertical location only using one geophysical technique	Unidentified Vertical
QBP	Horizontal and vertical location only using one geophysical technique	± 250mm or ±1-40% of depth whichever is greater
QBI	Horizontal and vertical location only using two geophysical techniques	± 100mm or ±1-15% of depth whichever is greater
QA	Service verified at an open excavation, beside an inspection chamber / drop pit, or at the point the service enters the ground	± 50mm Horizontal ± 25mm Vertical

Session	Description	Surv. by	CHK. by	Appr. by	Date
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0m 2 4 6 8 10 12 14 16 18 20 22

mk surveys		
Tel 01403 905061 Tel 01403 905075 Tel 0115 2940127 Tel 01403 243162	Oxford East Midlands West Midlands Hampshire	enquiries@mk-surveys.co.uk info@mk-surveys.co.uk admin@mk-surveys.co.uk hamp@mk-surveys.co.uk
www.mk-surveys.com		www.surveys4bm.co.uk

Pye Homes

Oak Tree Lane Woodgate West Sussex

PAS 128:2014 Utility Survey

Scale	Sheet Size	Sheet Number	Date
1:200	A0	5	January 2021
Project Number	Rev	Checked By	Approved By
29395	-	HM	TW

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494150 E

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