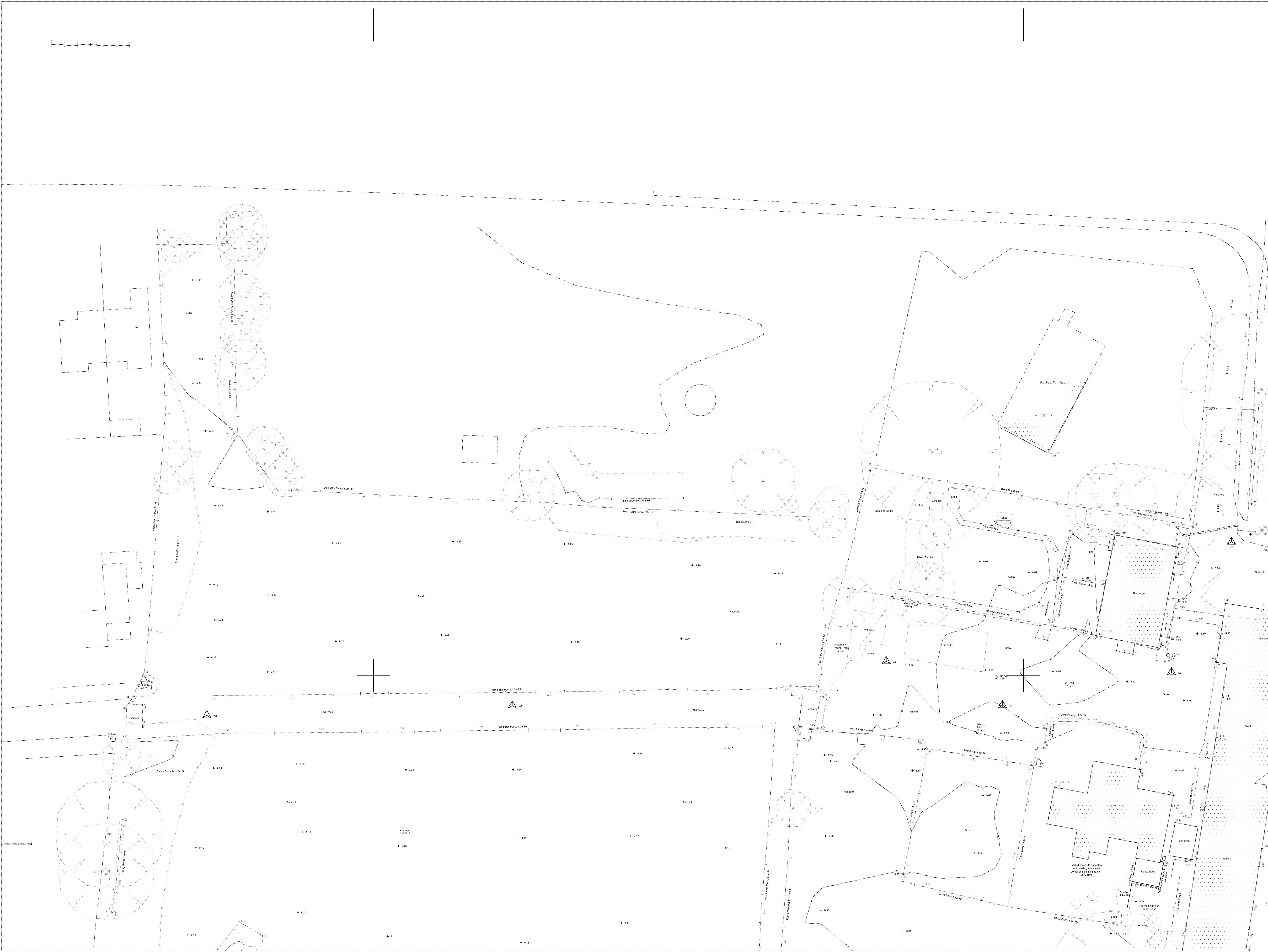


Appendix A Topographical Survey



Coordinate Table			
Station	Description	Eastings	Northings
G1	Nail	494096.7440	104195.4550
G2	Nail	494122.1480	104205.4581
G4	Nail	494131.9778	104220.5183
X3	Nail	494100.5880	104198.6400
X8	Nail	494122.4338	104148.5885
X9	Nail	494021.3860	104195.3230

Datum Details

Grid Datum: National Grid, Level Datum: Ordnance Datum

All levels refer to Permanent Ordnance Survey GPS Stations and related to Ordnance Datum Newlyn via the geoid model OSGM20.

Surveyed 10/03/2020

Note

Every effort is made to identify all visible above ground features, however it should be borne in mind that there may be items obscured at the time of survey

Sheet Layout

LEGEND	
SURVEY STATION	AIR VALVE
BANKING	BOLLARD
BUSHES	BOUNDARY POST
HEDGES	BUS STOP
TREES	CABLE TV INSPECTION COVER
GATE	CABLE TV INSPECTION COVER
BUILDING	CABLE TV INSPECTION COVER
FENCES	CABLE TV INSPECTION COVER
POST & RAIL FENCE	CABLE TV INSPECTION COVER
WIRE MESH FENCE	CABLE TV INSPECTION COVER
LANDSCAPING FENCE	CABLE TV INSPECTION COVER
ORDNANCE SURVEY BENCH MARK	CABLE TV INSPECTION COVER
TEMPORARY BENCH MARK	CABLE TV INSPECTION COVER

Rev

Notes

Name

Date

GREEN WORLD SURVEYS LTD
GREEN WORLD SURVEYS LTD - Land & Engineering Surveyors
Unit 22, Stockwood Business Park, Stockwood
Rushdon, Worsborough, R40 6SQ
Tel: 01386 791042
E-Mail: steve.mcbennett@greenworldsurveys.co.uk

Title: TOPOGRAPHICAL SURVEY
Land at Woodgate Centre
Westgate

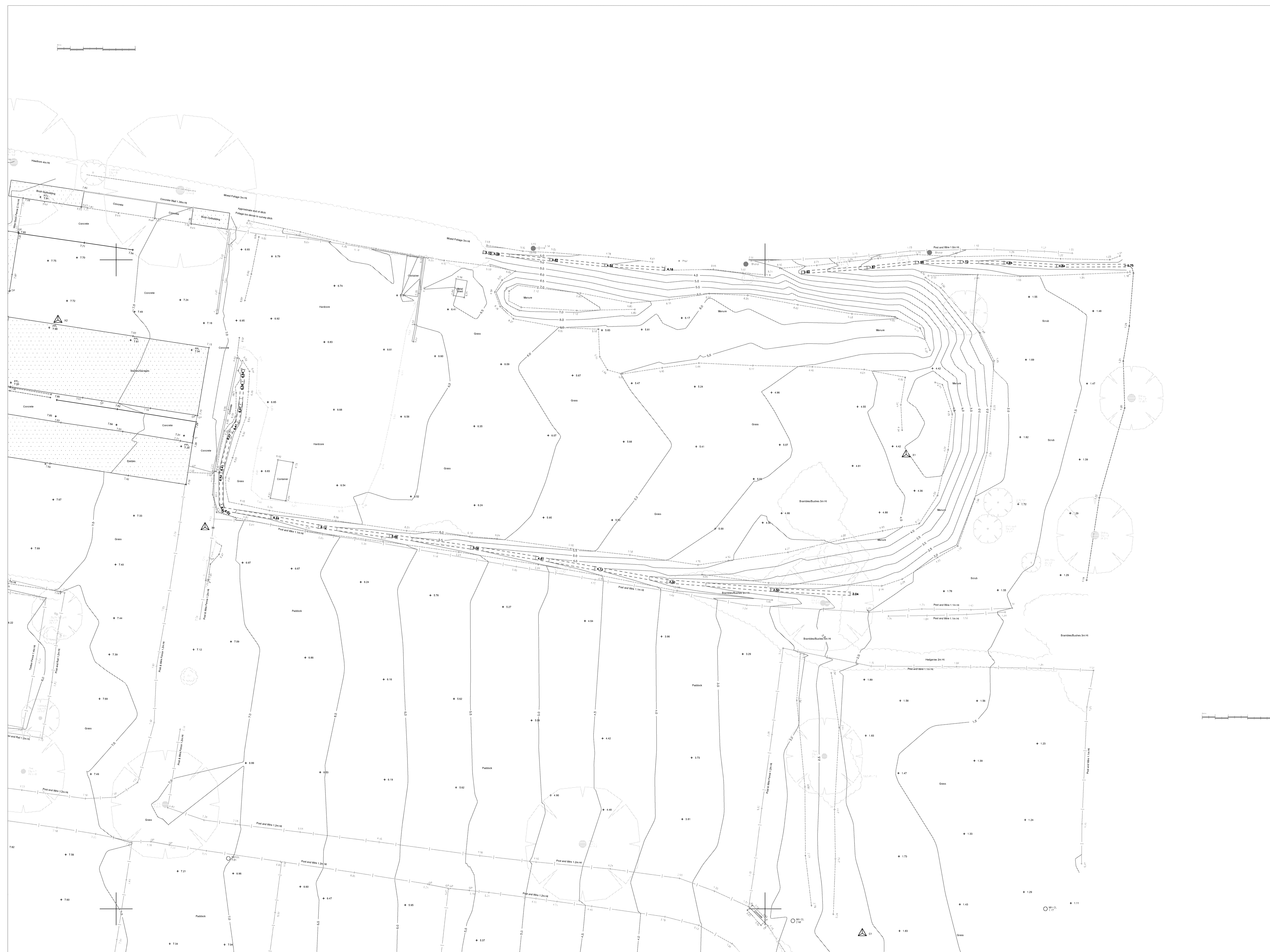
Client: PYE HOMES OFFICES
LANGFORD LOCKS
KIDLINGTON
OXON
OX5 1HZ

Drawing No: PYE/GW0164/1

Drawn: CW
Checked: SPM
Scale: 1:200@A0
Date: 09/04/2020

CAD Reference: PYE-W0164-1.DWG
Sheet: 1 of 6

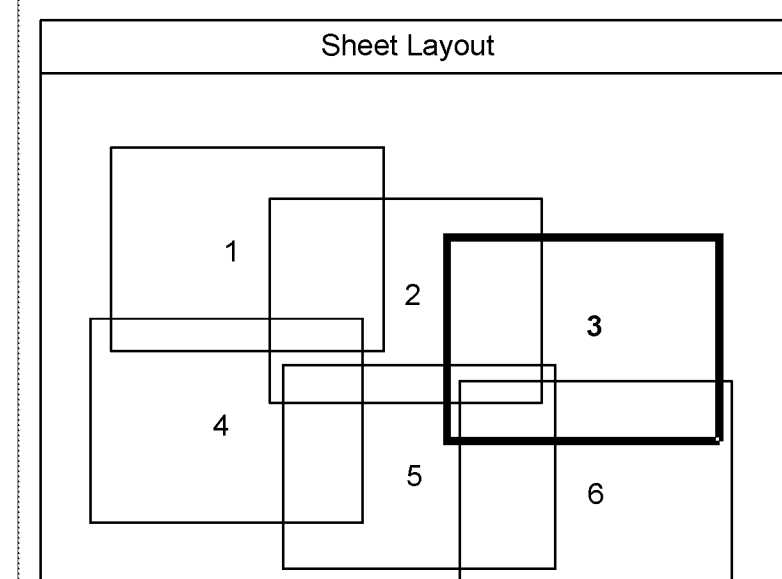
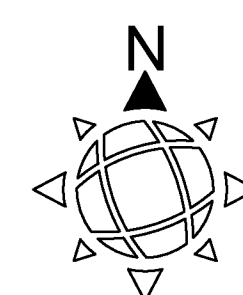
GREEN WORLD SURVEYS LTD



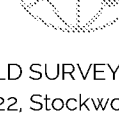
Coordinate Table				
Station	Description	Eastings	Northings	Height
G1	Nail	484096.7460	104195.4530	9.2155
G2	Nail	484122.7496	104200.4581	8.8855
G4	Nail	484131.9778	104220.5183	8.8488
X3	Nail	484120.5860	104186.4600	8.4000
X5	Nail	484122.4338	104146.5095	8.5783
W2	Nail	484021.3895	104165.3230	9.4000

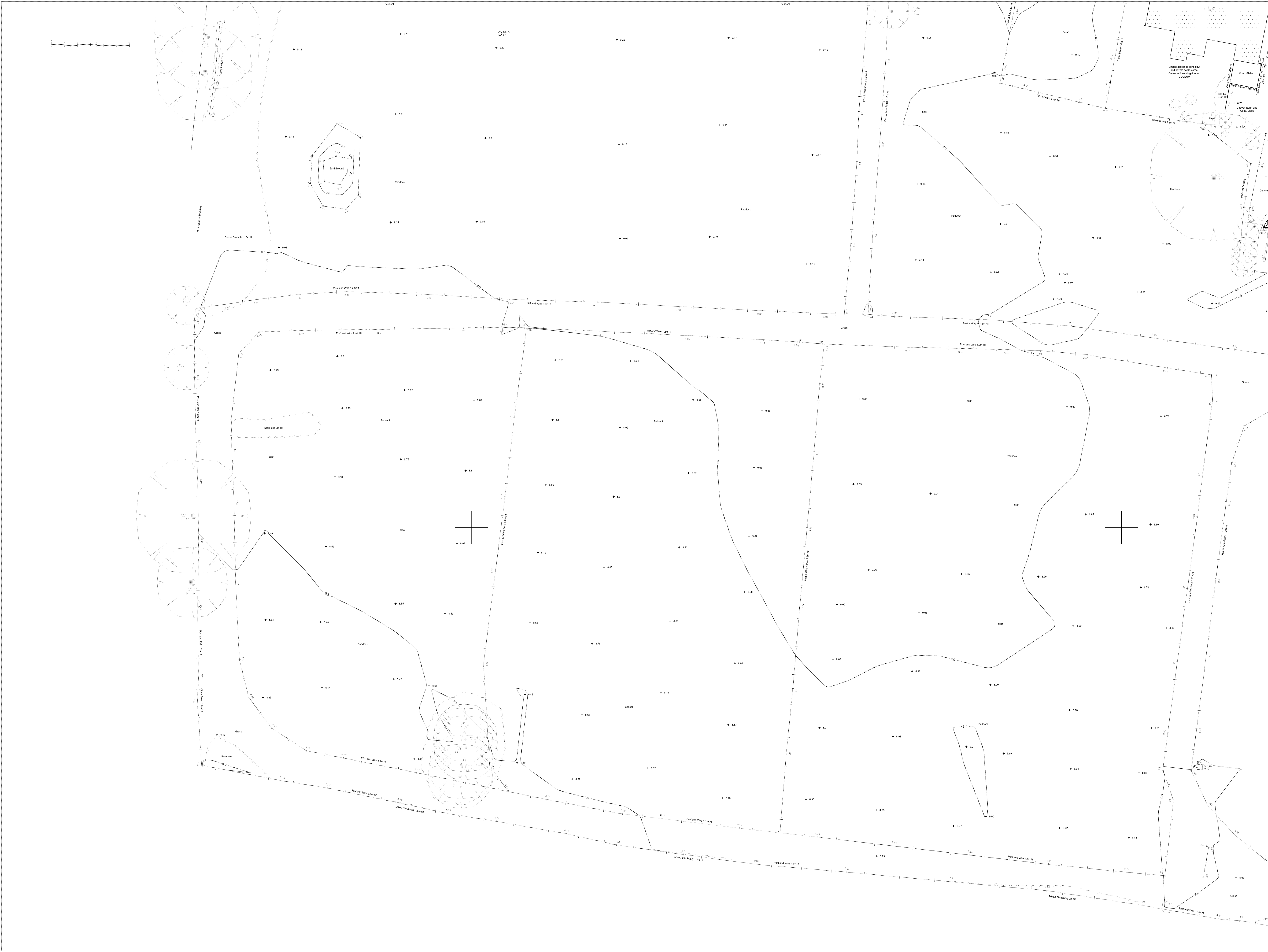
Datum Details
Grid Datum: National Grid, Level Datum: Ordnance Datum
All levels refer to Permanent Ordnance Survey GPS Stations and related to Ordnance Datum Newlyn via the geoid model CGGM02.
Surveyed 10/03/2020

Note
Every effort is made to identify all visible above ground features, however it should be borne in mind that there may be items obscured at the time of survey

[illegible]

Rev.	Notes:	Name:	Date:

 GREEN WORLD SURVEYS LTD				
GREEN WORLD SURVEYS LTD - Land & Engineering Surveys Unit 22, Stockwood Business Park, Stockwood Redditch, Worcestershire, B96 6DQ Tel: 01286 791042 E-Mail: steve.mcnebert@greengrorldsurveys.co.uk				
				
TOPOGRAPHICAL SURVEY Land at Woodgate Centre Westlegate				
Client:				
PYE HOMES OFFICES LANGFORD LOCKS RIDLINGTON OXON OX5 1HZ				
Drawing No:			Rev:	
PYE/GW/0164/1				
Drawn:	Checked:	Scale:	Date:	
CW	SPM	1:200 @ A1	09/04/2016	
CAD Reference:		Sheet:		
PYE/0164-1.DWG		3 of 6		



Coordinate Table			
Station	Description	Eastings	Northings
G1	Nail	494096.7440	104195.4550
G2	Nail	494122.1480	104205.4581
G4	Nail	494131.9778	104220.5183
X3	Nail	494100.5880	104198.6400
X8	Nail	494122.4338	104148.5695
W2	Nail	494021.3860	104195.3230

Datum Details		
Grid Datum: National Grid, Level Datum: Ordnance Datum		
All levels refer to Permanent Ordnance Survey GPS Stations and related to Ordnance Datum Newlyn via the geoid model OSGM02.		
Surveyed 10/03/2020		

Note

Every effort is made to identify all visible above ground features, however it should be borne in mind that there may be items obscured at the time of survey

Sheet Layout

LEGEND

SURVEY STATION	AIR VALVE	AV
BANKING	BOLLARD	BD
BUSHES	BONE HOLE	BNH
BOUNDARY POST	BOUNDARY POST	BP
BUS STOP	BUS STOP	BS
CABLE TV INSPECTION COVER	CABLE TV INSPECTION COVER	CTV
CATCH PIT	CATCH PIT	CP
COVER LEVEL	COVER LEVEL	CL
COAM PIPE	COAM PIPE	CP
DROPPED KERB	DROPPED KERB	DK
ELECTRICITY CABLE PIT	ELECTRICITY CABLE PIT	ECL
ELECTRICITY CONTROL BOX	ELECTRICITY CONTROL BOX	ECB
DAVES HEADIT	DAVES HEADIT	EH
ELECTRIC POLE	ELECTRIC POLE	EP
EARTH ROD	EARTH ROD	ER
FIRE HYDRANT	FIRE HYDRANT	FH
PAVED FLOOR LEVEL	PAVED FLOOR LEVEL	PFL
POOL WATER	POOL WATER	PW
QUILTY	QUILTY	Q
GATE POST	GATE POST	GP
INSPECTION COVER	INSPECTION COVER	IC
INVERT LEVEL	INVERT LEVEL	IL
KEBS OUTLET	KEBS OUTLET	KO
LAMPPOST	LAMPPOST	LP
MANHOLE	MANHOLE	MH
PIPE LINE	PIPE LINE	PL
ELECTRICITY Pylon	ELECTRICITY Pylon	EPY
PARKING METER	PARKING METER	PM
POSSIBLE FENCE	POSSIBLE FENCE	PF
ROAD NAMEPLATE	ROAD NAMEPLATE	RNP
ROAD SIGN	ROAD SIGN	RS
SPOTT LEVEL	SPOTT LEVEL	SL
STOP LAMP	STOP LAMP	SLA
STORM WATER	STORM WATER	SW
WATER TAP	WATER TAP	WT
TELEPHONE CALL BOX	TELEPHONE CALL BOX	TCB
TRAFFIC LIGHT	TRAFFIC LIGHT	TL
TELEGRAPHY POLE	TELEGRAPHY POLE	TP
WATER TO LIFT	WATER TO LIFT	WTL
VENT PIPE	VENT PIPE	VP
WATER METER	WATER METER	WM
WATER OUT	WATER OUT	WO
SPOT LEVEL	SPOT LEVEL	SL
OVERHEAD ST CABLES	OVERHEAD ST CABLES	OSC
OVERHEAD POWER CABLES	OVERHEAD POWER CABLES	OPC

Rev	Notes	Name	Date

GREEN WORLD SURVEYS LTD

GREEN WORLD SURVEYS LTD - Land & Engineering Surveys
Unit 22, Stockwood Business Park, Stockwood
Russett, Worcester, B65 0SQ

Tel: 01385 791042
E-Mail: stove.mcbrnett@greenworldsurveys.co.uk

Title: **TOPOGRAPHICAL SURVEY**
Land at Woodgate Centre
Westgate

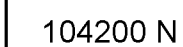
Client: **PYE HOMES OFFICES**
LANGFORD LOCKS
KIDLINGTON
OXON
OX5 1HZ

Drawing No:	PYE/GW0164/1	Rev:	
Drawn:	CW	Checked:	SPM
Scale:	1:200@A0	Date:	09/04/2020
CAD Reference:	PYE-W0164-1.DWG	Sheet:	4 of 6

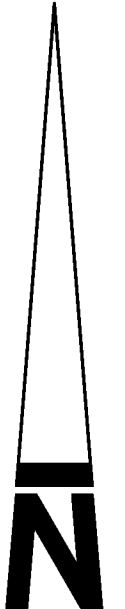
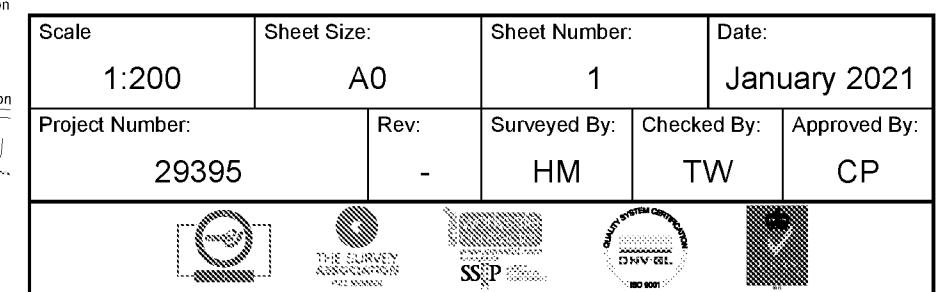
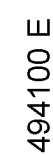
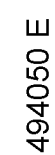
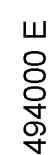
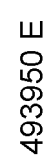
GREEN WORLD SURVEYS LTD

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

Sheet Layout: (Not to Scale)



104150 N



Notes :

1. UTILITY AND SERVICE INFORMATION ADDED TO TOPOGRAPHICAL SURVEY PRODUCED BY GREEN WORLD SURVEYS LTD., JOB No PYE/GWO/16471, 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.

[illegible][illegible]

Quality Level	Description	Accuracy
Q04	A utility is expected to exist but cannot be detected - (AR), (R), (V)	Undefined
Q03	Horizontal location only using one geophysical technique.	+/- 500mm Horizontal
Q02P	Horizontal location - ND	+/- 250mm
Q02	Horizontal and vertical location only using one geophysical technique.	+/- 250mm or +/- 40% of depth whichever is greater
Q01P	Horizontal location only using two geophysical techniques.	+/- 150mm or +/- 15% of depth whichever is greater
Q01	Horizontal and vertical location using two geophysical techniques.	+/- 150mm
QA	Service verified in an open excavation, inside an inspection chamber (above or at the point the service enters the ground).	+/- 50mm Horizontal +/- 25mm Vertical



Tel 01666 555551
Tel 01995 556779
Tel 0141 2641127
Tel 01794 464009
Tel 01403 243162

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Oxford
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enquiries@mksurveys.co.uk
oxford@mksurveys.co.uk
uk@mksurveys.co.uk
westmid@mksurveys.co.uk
horsham@mksurveys.co.uk

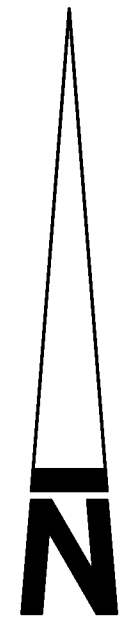
Pye Homes

Oak Tree Lane
Woodgate
West Sussex

PAS 128:2014 Utility Survey

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

DISTRICT COUNCIL, ALABAMA



- [illegible]

- [illegible]

- | | | |
|-----|----------------------|---|
| RE | ROOFING EYE | CCTV SECTION 4 AND 5 FAILURE ARE SHOWN IN RED |
| RD | ROAD DRAIN | |
| RM | RISING MAIN | |
| RWP | RAIN WATER PIPE | |
| SC | STOP COCK | CATV CATH |
| SO | SOAKAWAY | ELECTRICITY (TV) |
| SP | SOL PIPE | ELECTRICITY (LV) |
| ST | STAY CABLE | |
| SV | STOP / SERVICE VALVE | FUEL |
| VP | SOL VENT PIPE | 4-3 |
| TPB | TELEPHONE CALL BOX | |

- | | | |
|---------------|----------------------------|---------------------|
| TEL | TELEPHONE INSPECTION COVER | HEATING |
| TL | TRAIL LIGHT | HEADLAMP ELECTRIC |
| TC | TRAFIC LIGHT COVER | OVERHEAD ELECTRICAL |
| TM | TICKET MACHINE | TRUCK EXHAUST |
| TP | TELEPHONE POLE | COMBINED ENGINE |
| VP | VENT PIPE | FUEL PUMP |
| WM | WATER METER | SURFACE GROUND |
| WO | WASH COIL | UNIDENTIFIED GROUND |
| WR | WATER RISER | TELEPHONE |
| WT | WATER TAP | UNDERGROUND SERVICE |
| WW | WET WELL | WATER |
| DEPTHS | | |
| d | ELECTRONICALLY DERIVED | |
| fd | PASSIVELY DERIVED | |
| BS | BASE DEPTH | |
| C | DEPTH TO CROWN | |
| D | DEPTH TO NATURAL | |
| Sd | DEPTH TO SOFT | |
- SERVICES SURVEY MARKING
 

- CAUTIONARY NOTES**

- [illegible]

Quality Level	Description	Accuracy
Q04	A utility is expected to exist but cannot be detected - (NR), (R), (V)	Undefined
Q03 Q05P	Horizontal locations only using one geophysical technique. No depth information - NGI	± 500mm Horizontal ± 20% Depth
Q02 Q02P	Horizontal and vertical location only using one geophysical technique	± 250mm or ± 20% of depth whichever is greater
Q01 Q01P	Horizontal and vertical location only using two geophysical techniques	± 150mm or ± 15% of depth whichever is greater
QA	Service verified in an open excavation, includes an inspection chamber / draw pit, at the point the service enters / exits the ground.	± 50mm Horizontal ± 25mm Vertical

Equipment Information					
Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EWL Tx Transmitter	SFX Radiodetection	RD3000	107X-10R-5221	RD10	11/12/2020
EWL Rx Receiver	SFX Radiodetection	RD3000	107XPCUB-14599	RD10	11/12/2020
GPR	Leica DG	Open DG2000	010-20-00527	GPR18	12/01/2021

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BS1). 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 line/survey section of the key for reference.

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.

DRAINAGE
Drainage was fitted 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 proven wherever possible into manholes and sewer runs by radio sounds location and/or GPR. Where a solid connection is present the position is assumed only until proven to QBC or above. In instances where other detection methods are used, the connections between manholes have been assumed to be straight and labelled as QB4. All drainages should be cross checked in critical areas by CCTV survey or verification survey type A1. MH1012 was unable to be located with a metal detector. We have traced a foul water pipe out of MH8 but due to the pipe being blocked we were unable to trace the full route of the pipe.

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 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 caravan 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 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.

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

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 128/214 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 Details	Date Acquired
Drainage	Southern Water	25/11/2020
Water	Portsmouth Water	23/11/2020
Gas	Southern Gas Network	24/11/2020
Electricity	Scottish and Southern Electricity Networks	23/11/2020
Telecom	Openreach	24/11/2020
CATV	Virgin Media	Not Applicable



mksurveys

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Tel 01306 069678 Oxford oxford@hcsurvey.co.uk
Tel 0116 2849127 Epsom & Egham epsom@hcsurvey.co.uk
Tel 01384 404203 West Midlands westmidlands@hcsurvey.co.uk
Tel 01403 243162 Hoveham hoveham@hcsurvey.co.uk

Pye Homes

Oak Tree Lane
Woodgate
West Sussex

PAS 128:2014 Utility Survey

Scale 1:200	Sheet Size A0	Sheet Number 3	Date January 2021		
Project Number 29395	Rev. -	Surveyed By HM	Checked By TW	Approved By CP	

[illegible]

Appendix B Public Sewer Records



ARUN DISTRICT COUNCIL AL/107/21/PL



Printed By: Mercy

Date: 17-11-2020

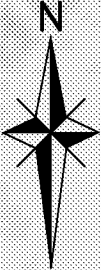
Site Plan

Requested By:



Appendix C Geological Mapping





NOTES

- 1. Do not scale from this drawing.
- 2. All dimensions are in metres unless shown otherwise.

KEY

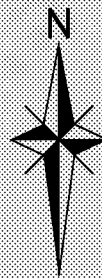
----- Site Boundary

Superficial deposits

- TOWN FLAT DEPOSITS: CLAY AND SILT
- BEACH AND TOWN FLAT DEPOSITS
- UNDIFFERENTIATED: SAND, SILT AND CLAY
- HEAD: CLAY SILT SAND AND GRAVEL
- HEAD 1: CLAY AND SILT
- HEAD 2: CLAY AND SILT
- STORM BEACH DEPOSITS: SAND AND GRAVEL

Rev	Amendments	On	Chk	App	Date
Scale	1:5000	Date	April 21	Designed	SC
Drawn	SC	Checked	SAC	Approved	GAC
Job No	20-061	Figure No	FIGURE 2-3		Rev
					-

 Charles & Associates Interact by  Landmark House Station Road Hook Hampshire RG27 9HA 01256 630620 Park House, Park Farm East Matting Tract Estate Bradbourne Lane Aylesford, Kent ME20 6SN 01732 448120	Job Title Land East of Woodgate Lane	Client Pye Homes
	Drawing Title BGS Superficial Deposits Map	



NOTES

1. Do not scale from this drawing.
2. All dimensions are in metres unless shown otherwise.

KEY

----- Site Boundary

Bedrock geology

- LONGKIN CLAY FORMATION - CLAY, SILT AND SAND
- LAMBETH GROUP - CLAY, SILT AND SAND
- LOWER MIDDLE CHALK FORMATION - BEAUFORT CHALK FORMATION - NEWBORN CHALK
- FORMATION - LOWER CHALK FORMATION AND PORTLAND CHALK FORMATION
- CONCRETIONARY CHALK

--	--	--	--	--	--

 Charles & Associates Intact by Landmark House Station Road Hook Hampshire RG27 9HA 01256 430630 Park House, Park Farm East Matting Trust Estate Bradbourne Lane Aylesford, Kent ME20 6SN 01732 448120	Job Title Land East of Woodgate Lane	Client Pye Homes	Rev	Amendments	On	Chk	App	Date
	Drawing Title BGS Bedrock Map		Scale 1:5000	Date April 21	Designed SC			
			Drawn SC	Checked SAC	Approved GAC			
	Job No. 20-061		Figure No. FIGURE 2-4	Rev -				

Appendix D Geotech Investigation Extract



EXECUTIVE SUMMARY

Project Information	
Project details	This Ground Investigation report has been prepared by T&P Regeneration Ltd (T&P) on behalf of Pye Homes for Oak Tree Lane, Woodgate PO20 3GU / NGR: 494160, 104140.
Site description and current land use	The site occupies approximately 8 hectares (ha), measuring approximately 390m east to west and 175m north to south. The site was found to be host to an arrangement of buildings located centrally, adjacent to the northern boundary comprising; two houses; three stable blocks together with some light commercial units, including a vehicle repair workshop located in the north east. The remaining area was broadly noted to be used as paddocks for horses. The north eastern field has been artificially raised. Anecdotal information suggests that a land filling/raising operation has been undertaken for a number of years and wastes may include animal carcasses, motor vehicles and animal wastes (faeces).
Proposed development	The proposed development is likely to comprise 159N° residential units including 36N° apartments and 123N° traditional two storey residential dwellings with associated areas of communal and private soft landscaping and hard landscaped access and parking.
Previous reports	This report has been prepared with reference to available previous reports including a Preliminary Investigation Report. The report comprised a Phase 1 Desk Study and development of a preliminary site conceptual model. (Soils Ltd. July 2019).
Site Setting	
Environmental setting	The environmental setting is summarised from previous third-party desk study information. The western and central portions of the site are shown to be underlain by Aeolian Deposits. These are described as mainly silt and formerly known as 'Brick earth'. The eastern site area is shown to be underlain by River Terrace Deposits that comprise sands and gravels. Beneath the superficial cover the London Clay Formation is indicated to be present. The underlying superficial deposits are classified as a Secondary A Aquifer. The bedrock geology is classified as an Unproductive Stratum. The site is not located within a groundwater Source Protection Zone. The nearest surface water feature is an undefined stream that forms the eastern site boundary. The majority of the site is located in a Flood Risk Zone 1, while the eastern site area is identified to cross Flood Risk Zone 2 and 3. Therefore, a Flood Risk Assessment will be required to support redevelopment. The site is not located within an environmentally sensitive area.
Site history	The earliest historical map of 1876 indicates the site to be undeveloped and spread across several agricultural fields. By 1974, Ryefields Piggeries is shown to have been constructed, comprising several rectangular buildings assumed to be housing pigs, two tanks are identified centrally within the buildings. The 1986 map shows the piggery is now identified as Ryefield Farm, the tanks are no longer shown. No further significant on-site changes are shown on the subsequent maps. The surrounding area is indicated to be broadly in agricultural use on the earliest map, with a railway track running from east to west approximately 100m north of the site. By 1937 an area of excavation is identified within 'Brick Field' located adjacent to the central section of the southern boundary. By 1979, the excavation is no longer shown and the 'Brick Field' is identified as a caravan park. No further significant changes other than the continued residential development of the area is shown to have occurred up to the present day.
Areas of potential concern	The following areas of potential concern were identified within the previous third-party desk study report: On-site: • Made ground associated with previous site development/activities. • Application of pesticides/herbicides associated with former agricultural practices. • Made ground associated with landfilling in the north eastern area of the site. • Historic tanks with unconfirmed storage/ contents. Off-site: • Potentially infilled pit located adjacent to the southern boundary. • Railway located 100m north of the site boundary.

Ground Investigation	
Scope of work	An intrusive ground investigation was undertaken on 25th November 2019 which comprised: - Excavation of 4N° trial pits to a maximum depth of 3.7 metres below ground level (mbgl). - Infiltration testing within 1N° trial pits. - Drilling of 7N° windowless soil sampling boreholes. Groundwater and gas monitoring points were installed in 4N° locations. - Three return groundwater and ground gas monitoring visits. The ground investigation coverage was restricted by the existing tenants due to the presence of animals across the fields and within the stables and restrictions in the active farm area. In order to minimise distress and possible injury to the animals, the area available for investigation was therefore considerably reduced as illustrated upon the attached GI plan. As a result, the main area of suspected infilled ground and the active farm area where the main contaminants sources were present were not accessible and require further investigation in due course.
Ground conditions	Made ground was only encountered in the north eastern site area at the edge of the area known to have been subject to landfilling. Made ground was found to comprise gravelly clay, which included brick, concrete, plastic and metal. Due to the anecdotal information that suggests further potentially significant sources of contamination may be present within the landfill area, additional more widespread investigation is required. Topsoil was encountered in the majority of exploratory locations with a typical thickness ranging between 0.15 and 0.20m. In general, the topsoil was found to comprise brown fine sand silt or silty clay. The western site area was found to be underlain by a succession of sandy, occasionally gravelly silt overlying silty fine, occasionally gravelly silty sandy gravel considered to represent the Aeolian deposits. In-situ density testing has indicated that the granular bands vary from very loose to medium dense. While, the eastern area was found to be underlain by a veneer of firm gravelly clay and loose clayey gravel considered to represent River Terrace Deposits to depths ranging from 0.70 to 1.50m. However, greater depths were recorded due to the raised levels within the north eastern field that has been subject to landfilling. Beneath the superficial cover firm to stiff and stiff silty clay was encountered considered to represent the London Clay Formation. With the exception of made ground within the north eastern field, no significant visible or olfactory evidence of any contamination was noted during the ground investigation.
Groundwater	Groundwater was encountered within the superficial deposits, with typical depths to groundwater strike ranging between 1.0 and 2.5mbgl.
Principal Findings and Conclusions	
Human health	All soil concentrations in made ground, topsoil and natural soils were recorded below adopted screening levels for residential use with vegetable uptake or considered not to present an unacceptable risk to human health. However, due to access restrictions during the ground investigation supplementary investigation will be required to assess the potential human health risk across the remaining areas of the site. It is recommended that provision of a clean capping layer in accordance with BRE guidance should be anticipated in the area of existing development and where development encroaches into the area of landfilling to mitigate human health risks.
Controlled waters	Due to the access restrictions encountered during the investigation the potential sources of contamination that include; historic tanks, vehicle repair workshop and landfill could not be fully investigated and characterised. Due to the presence of both surface and groundwater receptors and the presence of viable pathways and potential sources further investigation and assessment is warranted. It is recommended that supplementary investigation should comprise testing of surface waters up and down gradient of the landfill area to assess potential effects on surface water quality. Dependent of the findings of any supplementary investigation, groundwater monitoring and testing may also be required to evaluate the potential impacts to groundwaters.

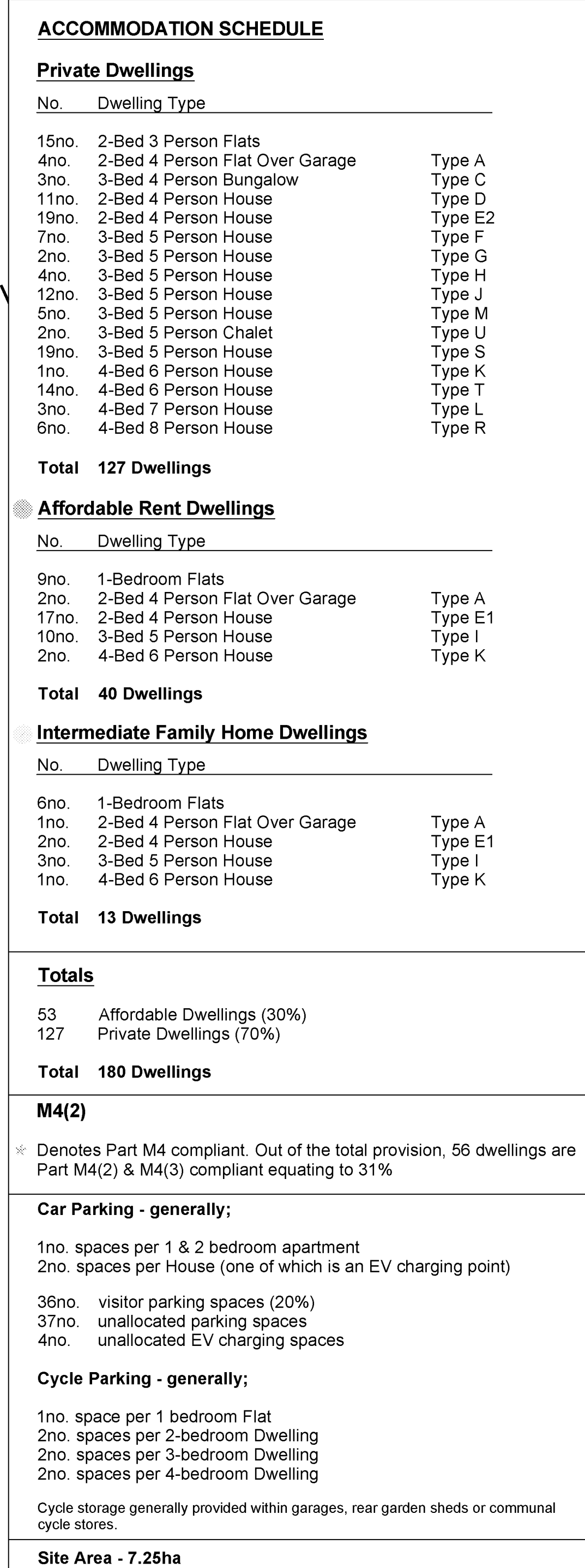
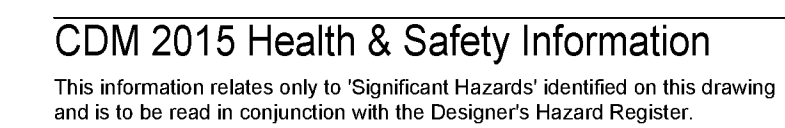
Gas protection	Radon protection measures are not considered necessary for the proposed development. Based upon the findings of the monitoring completed, it is considered that gas resistant membranes are unlikely to be required throughout the development. However, an allowance should be made for the provision of Amber 1 gas mitigation measures in the north-eastern section where the marginally elevated concentrations of carbon dioxide have been recorded in WS04 and across the area of infilled ground until further monitoring can be completed. Based upon the current guidance together with the sensitivity of the residential development, it is advised the ground gas monitoring programme is continued for a further 3N° rounds, making 6N° in total, preferably with at least 1N° completed during a period of low pressure <1000mB. This is also likely to be a regulator requirement to fully assess the ground gas regime beneath the inaccessible infilled parts of the site. Furthermore, and dependant on the findings during the demolition/supplementary ground investigation, it is likely that additional wells to increase coverage will be required.
Plant growth and buried potable supply pipework	Made ground and natural soils are not considered to pose a significant risk to the existing and proposed flora. However, with consideration of the physical composition of on-site made ground, which includes concrete, metal and plastic, that this will may be unsuitable to remain within areas of soft landscaping. It is considered likely that the majority of the site area will be suitable for standard pipework, however upgraded barrier pipework is considered likely to be required by the local water authority in the north eastern site area.
Waste	The made ground and natural soils are likely to be classified as non-hazardous waste. Based on the chemical data the soils should be treated as inert or stable non-reactive. The waste material present across the inaccessible north eastern section of the site may contain hazardous waste materials based upon the descriptions of the materials believed to have been placed there. Further evaluation post supplementary investigation is recommended. Further Waste Acceptance Criteria (WAC) testing may be required by the receiving site.
Infiltration testing	Based upon infiltration testing, site observations that recorded shallow groundwater, it is considered unlikely that traditional soakaways are likely to offer a viable solution for surface water discharge.
Engineering design	The cohesive soils have shown to be of medium to high shrinkage potential and as a result will be susceptible to the influence of trees. The western superficial deposits were found to be unstable below the groundwater level during the ground investigation. The instability suggests that the excavation of foundations to the formation level may not be achieved. CBR values of 3% are assumed for design purposes subject to firm clay being encountered at formation level. Sulphate testing of selected soil samples indicates that a suitable design mix for concrete for buried structures is likely to be DS1-AC1. It is noted that sulphate testing was limited to the shallow superficial deposits and any supplementary investigation should include further sulphate testing to fully characterise the London Clay beneath the site. Within the eastern area of the site, foundations could be overdeepened and placed depths of >1.0m within the London Clay Formation which was encountered at depths between 0.70 to 2.30m. Foundations placed within the firm to stiff and stiff London Clay may be designed for an allowable bearing capacity of 100kPa for acceptable settlement. However, when overdeepening foundations consideration should be given to the possibility of rapid groundwater ingress into excavations with may be problematic. In the western area, due to the thickness of superficial cover together with the instability and groundwater ingress observed within TP02 overdeepening of traditional foundations to a suitable formation is likely to be problematic and uneconomical. Given the above, it is likely that the western area of proposed development will require specialist foundations such as piles or that ground improvement could be carried out. The advice of specialist piling or ground improvement contractors should be sought to determine the most appropriate technique and method.

Considerations and Recommendations for Further Work	
Considerations	• The depth to competent founding strata was found to vary significantly across the site. • Relatively shallow groundwater was found in many areas across the site which may prove problematic for deeper foundation excavations and related construction. • The extent of investigation was limited by access restrictions, as a result supplementary investigation will be required. • Due to the restricted access further investigation will be required. • Infiltration testing was not undertaken in accordance with BRE Digest DG-365 (2016) as it was not possible to complete three infiltration tests at each location in the time available. However, because shallow groundwater was encountered in the monitoring wells, soakaways are unlikely to provide a viable drainage solution for this site. • The site is located within a Flood Risk Zone 2/3. As such, a Flood Risk Assessment will be required to support future development. • A large water supply pipeline is present within the central section of the site running north to south.

Recommendations	<u>Human health/Controlled Waters/ Ground gas</u> - It is recommended that further investigation and laboratory testing is undertaken in areas that have been identified as potential sources of contamination not accessible during this investigation. - It is recommended that that provision of a clean capping layer in accordance with BRE guidance should be anticipated in the area of existing development/farm and where development encroaches into the area of landfilling to mitigate human health risks. It is anticipated this will likely comprise up to 300mm in common areas of proposed public open space and up to 600mm in private garden areas with a geotextile separation/no-dig layer at the base/sides of excavations, where residual made ground is present. - Due to the access restrictions encountered during the investigation the potential sources of contamination that include; historic tanks, vehicle repair workshop and landfill could not be fully investigated and characterised. It is recommended that supplementary investigation should comprise testing of surface waters up and down gradient of the landfill area to assess potential effects on surface water quality. Dependent of the findings of any supplementary investigation, groundwater monitoring and testing may also be required to evaluate the potential impacts to groundwaters. - Subject to confirmation of physical suitability, it is considered that on-site made ground may be suitable for re-use within areas of shared soft landscaping or beneath hard landscaping. In the event that on-site re-use of soils is planned, a Materials Management Plan (MMP) may be required, in line with the CL:AIRE Definition of Waste Code of Practice. - Following the completion of supplementary investigation, a remediation strategy should be prepared detailing the recommended risk mitigation actions. - It is advised the ground gas monitoring programme is continued for a further 3N° rounds, to increase the number to 6N° in total, in line with CIRIA/NHBC guidelines. Furthermore, dependant on the findings during the supplementary ground investigation, additional wells may be required. <u>Plant growth and potable water supply pipework</u> - No significantly elevated phytotoxic contaminant compounds were detected in soils, and it was noted that existing vegetation was generally healthy. It should however be noted that further investigation is recommended to fully characterise the site. - It is recommended that testing in line with BS3882 requirements is undertaken to confirm suitability of site won topsoil for re-use aligned to the development landscaping proposals. - Elevated contaminants within the made ground with respect to the UKWIR guidelines indicate that upgraded water supply pipework will be required for any services installed in the made ground. - The statutory water provider should be consulted regarding suitable water supply pipework requirements. <u>Engineering</u> - Further investigation is recommended to provide further confidence in the extent and volume change potential of the near surface clay in the central northern section of the site. Following this a zonal plan should be produced to illustrate where differing floor slab solutions can be used. - Further investigation is also recommended to provide further confidence to the current foundation recommendations and to possibly zone areas of loose material which may lead to more favourable recommendations within the western area of the site. - Supplementary groundwater monitoring should be carried out to further assess the potential for significant groundwater ingress into foundation excavations. - The advice of specialist piling contractors should be sought to discuss the most cost-effective method of pile emplacement taking into account the ground and groundwater conditions described in this report. Piling contractors should also be made aware of very loose sand encountered beneath the water table in TP03 which could cause problems with rising/running sands within uncased boreholes. - Should any exceptionally soft spots or oversized material be noted during construction, they should be removed and replaced with compacted granular fill for road construction. - Based upon the recorded pH levels revealed on site when considered against the assessment levels in BRE Special Digest 1 (2005) a DS1-AC1 concrete design mix should be suitable for subsurface concrete across the site however, this should be confirmed following further assessment.
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	<u>General</u> • Discussions should be held with local landfill/soil waste treatment facilities to agree material classification/pre-treatment required for any soils to be disposed off-site as a result of proposed construction works. • Ground workers should remain vigilant for visible and olfactory signs of contamination following demolition of on-site buildings. • Although no areas of made ground were encountered during the investigation vigilance should be employed by the groundworks contractor during works. In the event that significant made ground is encountered, advice from a specialist geoenvironmental consultancy should be sought. • On-site monitoring wells should be protected from damage until such time as additional gas/groundwater monitoring has been completed and conclusions/recommendations within this report are agreed with the regulators. • On-site monitoring installations should be decommissioned in accordance with Environment Agency guidelines. • A site-specific health and safety plan should be prepared to inform on risks posed from the previous site use and mitigations for ground workers developing the site e.g. requirements for appropriate PPE, hygiene practices, environmental monitoring and requirements for mitigation measures during construction works. • A copy of this report should be provided to the relevant regulatory authorities to confirm that they are in agreement with the report findings.
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Appendix E Masterplans



	Q	29.07.21	Highway amendments	LT
	Q	29.07.21	Roadmental mix updated	LT
	Q	22.07.21	Parting a host of plots update	LT
	N	26.07.21	Layoff Updated	LT
	M	10.08.21	Layoff Updated	LT
	N	30.08.21	Layoff Updated	LT
	K	26.12.20	Layoff Updated	LT
	I	16.12.20	Site layout adjusted & No's increase	LT
	J	16.12.20	Site Layout updated	LT
	H	25.12.20	Colours added	LT
	G	18.12.20	M42 position reviewed	LT
	F	18.12.20	Layoff adjusted to consultant comment	LT
	F	18.12.20	Layoff adjusted to consultant comment	LT
	E	11.11.20	Available provision allocated	LT
	D	11.11.20	Site layout amended to bear a few highway comments	LT
	C	18.09.19	Parting provision added	LT
	B	18.09.19	Full Sewer position added	LT
	A	26.09.19	Site layout added	LT
Rev	Draw		Revisions Details	Dr



Client's Name
Pye Homes

Job Title
Land east of Woodgate Lane,
Woodgate

Drawing Title
Site Layout

Scale
1:500 @ A0 / 1:1000 @ A2

metres	10	20	30	40
Drawn	Checked			D.
KE	LT			02 03 2

Job No	Drawing No	Rev
6781	02	1

Status **APPROVAL**

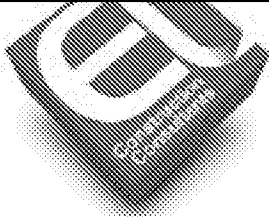
Appendix F WSCC & ADC Correspondence

Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF
www.arun.gov.uk



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Colin Shackelford CEng MICE IMA PS
Partner



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DIFFUSION OF CHLORINE

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5A 2010年01月01日

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