Appendix A

London Borough of Hillingdon SuDS Pro-forma

The London Sustainable Drainage Proforma

Introduction

This proforma is intended to accompany a drainage strategy prepared for a planning application where required by national or local planning policy. It should be used to summarise the key outputs from the strategy to allow assessing officers at the Lead Local Flood Authority (LLFA) to quickly assess compliance with sustainable drainage (SuDS) planning

The proforma is divided into 4 sections, which are intended to be used as follows:

1. Site and project information - Provide summary details of the development, site and drainage
2. Proposed discharge arrangement – Summarise site ground conditions to determine potential for infiltration. Select a surface water discharge method (or mix of methods) following the hierarchical approach set out in the London Plan.
3. Drainage strategy – Prioritise SuDS measures that manage runoff as close to source as possible and contribute to the four main pillars of SuDS; amenity, biodiversity, water quality and water quantity.
4. Supporting information – Provide cross references to the page or section of the drainage strategy report where the detailed information to support each element can be found. This may be more than one reference for each

Policy

Drainage strategies for developments in the London Borough of Hillingdon need to comply with the following policies on SuDS:

1. London Borough of Hillingdon Local Plan policies EM 6 and DMEI 10
2. London Plan policy 5.13 and draft New London Plan policy SI13
3. The National Planning Policy Framework (NPPF)

Technical Guidance

- Post-development surface water discharge rate should be limited to greenfield runoff rates. Proposals for higher discharge rates should be agreed with the LLFA ahead of submission of the Planning Application. Clear evidence should be provided with the Planning Application to show why greenfield rates cannot be achieved.
- Greenfield runoff rate is the runoff rate from a site in its natural state, prior to any development. This should be calculated using one of the runoff estimation methods set out in Table 24.1 of CIRIA C753 The SuDS Manual.
- Attenuation storage volumes required to reduce post-development discharge rates to greenfield rates should be calculated using one of the runoff estimation methods set out in Table 24.1 of CIRIA C753 The SuDS Manual.
- 'CC' refers to climate change allowance from the current Environment Agency guidance.
- An operation and maintenance strategy for proposed SuDS measures should be submitted with the Planning Application and include the details set out in section 32.2 of CIRIA C753 The SuDS Manual. The manual should be site-specific and not directly reproduce parts of The SuDS Manual.
- Other useful sources of guidance are:
  - London Borough of Hillingdon sustainable drainage requirements
  - The London Plan Sustainable Design and Construction SPG
  - DEFRA non-statutory technical standards for sustainable drainage
  - Environment Agency climate change guidance
  - CIRIA C753 The SuDS Manual

HILLINGDON LONDON

GREATER LONDON AUTHORITY

LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	HDP Masterplan LON8
Address & post code	Hayes Bridge Retail Park, Hayes, UB4 0RH
OS Grid ref. (Easting, Northing)	E 511450 N 180376
LPA reference (if applicable)	
Brief description of proposed work	Construction of data centre
Total site Area	Area within site to be redeveloped 8800 m^2
Total existing impervious area	8800 m^2
Total proposed impervious area	8800 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No
Existing drainage connection type and location	Surface water outfall to Yeading Brook, to north east of development site
Designer Name	Chris Heath
Designer Position	Senior Technician
Designer Company	Arup

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	Langley Silt or Lynch Hill Gravels	
Bedrock geology classification	London Clay	
Site infiltration rate	N/A	m/s
Depth to groundwater level	Approx 3	m below ground level
Is infiltration feasible?	No	

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	Y	Y
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	Y	Y
6 discharge rainwater to a surface water sewer/drain	Y	N
7 discharge rainwater to the combined sewer.	Y	N

2c. Proposed Discharge Details

Proposed discharge location	Existing outfall to Yeading Brook, north east of site
Has the owner/regulator of the discharge location been consulted?	Outfall assumed owned by developer

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	3.67			
1 in 1	3.12	Not calculated		3.0*
1 in 30	8.43	Not calculated		3.0
1 in 100	11.69	Not calculated		3.0
1 in 100 + CC			649	3.6
Climate change allowance used		40%	* 1 in 2 year storm used to suit FEH rainfall	
3b. Principal Method of Flow Control		HydroBrake		

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^3)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	1571	1571	141
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	7229		508
Total	**0**	**0**	**0**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.1
Drainage hierarchy (2b)	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.1
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, Appendix C
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, Appendix E
Proposed SuDS measures & specifications (3b)	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.3.2
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Refer to Appendix A
Detailed drainage design drawings, including exceedance flow routes	Refer to Appendix F
Detailed landscaping plans	Refer to Appendix A
Maintenance strategy	All maintained by operator
Demonstration of how the proposed SuDS measures improve:	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.3.2
a) water quality of the runoff?	
b) biodiversity?	
c) amenity?	

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Introduction

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  - DEFRA non-statutory technical standards for sustainable drainage
  - Environment Agency climate change guidance
  - CIRIA C753 The SuDS Manual

HILLINGDON LONDON

GREATER LONDON AUTHORITY

LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	HDP Masterplan LONUX
Address & post code	Hayes Bridge Retail Park, Hayes, UB4 0RH
OS Grid ref. (Easting, Northing)	E 511546 N 180530
LPA reference (if applicable)	
Brief description of proposed work	Construction of data centre
Total site Area	Area within site to be redeveloped 28330 m^2
Total existing impervious area	28330 m^2
Total proposed impervious area	28330 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No
Existing drainage connection type and location	Surface water outfall to Yeading Brook, to south east of development site
Designer Name	Chris Heath
Designer Position	Senior Technician
Designer Company	Arup

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	Langley Silt or Lynch Hill Gravels	
Bedrock geology classification	London Clay	
Site infiltration rate	N/A	m/s
Depth to groundwater level	Approx 3	m below ground level
Is infiltration feasible?	No	

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	Y	Y
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	Y	Y
6 discharge rainwater to a surface water sewer/drain	Y	N
7 discharge rainwater to the combined sewer.	Y	N

2c. Proposed Discharge Details

Proposed discharge location	Existing outfall to Yeading Brook, south east of site
Has the owner/regulator of the discharge location been consulted?	Outfall assumed owned by developer

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	11.8			
1 in 1	10.03	Not calculated		10.6*
1 in 30	27.14	Not calculated		10.6
1 in 100	37.64	Not calculated		10.6
1 in 100 + CC			2364	11.7
Climate change allowance used		40%	* 1 in 2 year storm used to suit FEH rainfall	
3b. Principal Method of Flow Control		HydroBrake		

3c. Proposed SuDS Measures

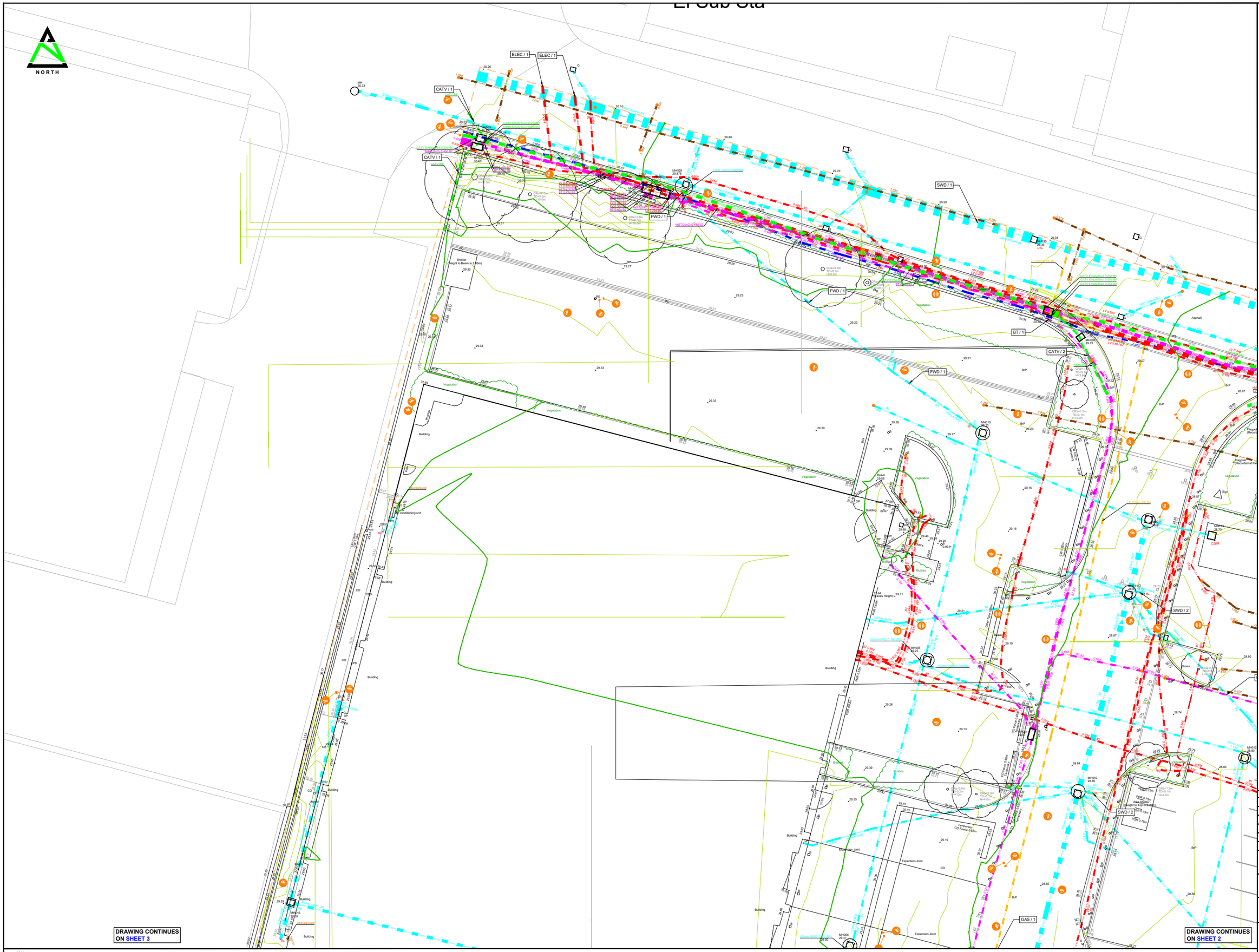
	Catchment area (m^2)	*Plan area (m^3)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	1380	1380	374
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	26950		1990
Total	**0**	**0**	**0**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.1
Drainage hierarchy (2b)	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.1
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, Appendix C
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, Appendix E
Proposed SuDS measures & specifications (3b)	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.3.2
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Refer to Appendix A
Detailed drainage design drawings, including exceedance flow routes	Refer to Appendix F
Detailed landscaping plans	Refer to Appendix A
Maintenance strategy	All maintained by operator
Demonstration of how the proposed SuDS measures improve:	Refer to report LONUX-ARUP-SW-LP-RP-C-52001, section 3.3.2
a) water quality of the runoff?	
b) biodiversity?	
c) amenity?	

Appendix B

Topographical/Ground Penetrating Radar Surveys



Model / Contents References List - Name, Version
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210420-OSL-XX-XX-M2-G-00001.dwg P01
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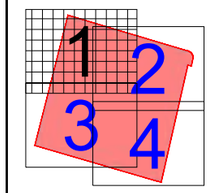
SHEET DIAGRAM



LEGEND

ELECTRICITY CABLE AND/OR PILOT CABLE
GAS PIPE
BRITISH TELECOM CABLE
VIRGIN MEDIA TELEVISION CABLE
WATER PIPE
DRAINAGE PIPE
COMMUNICATION CABLE
UNKNOWN UTILITY / STRUCTURE
EMPTY DUCT
SURVEY AREA
QUALITY LEVEL ACHIEVED (See PAS-128 Quality Levels table)
DEPTH BELOW SURFACE TO UTILITY IN METRES
Measurement generally to centre of utility. Drainage measured to invert. Depths at manholes indicate the measurements of manhole inspection. See survey report notes.
DIAMETER OF PIPE
END OF DETECTION
INLAND WATER
SURVEY REPORT REFERENCE
SITE PHOTOGRAPHS
UTILITY / MANHOLE NOT SHOWN ON UTILITY PROVIDER DRAWINGS
MAJOR CONTOURS 500mm
MINOR CONTOURS 100mm

TOPOGRAPHICAL SURVEY KEY

BANKING
EDGE OF VEGETATION
EDGE OF HEDGE
GATE
SPOT HEIGHT
SURVEY STATION
TREES

BUILT STRUCTURES
BUILDING
OPEN SIDED BUILDING
WALL

LINETYPES
CHANGE IN SURFACE
FENCE/RAILINGS
KERB BOTTOM
KERB TOP
OVERHEAD CABLE
TRAFFIC CONTROL SYSTEM UNIT SENSOR

TOPOGRAPHICAL SURVEY ABBREVIATIONS

AIR VALVE	AV	IRON RAILING FENCE	IRF
ANCHOR POINT	AP	KERB OUTLET	KO
ARMCO BARRIER	ArB	KERB STONE	KS
BELISHA BEACON	BB	LAMP HOLE	LH
BOREHOLE	BH	LAMP POST	LP
BUS STOP	BuS	LANDMARK	LM
BYNCH PAVING	BrP	MANHOLE	Mh
BRICK WALL	BW	PANEL WOOD FENCE	PWF
BRITISH TELECOM	BT	PARKING METER	PM
BT INSPECTION COVER	BIC	PEDESTRIAN GUARD RAIL	PGR
CABLE	C	PERIMETER FENCE	PF
CABLE TELEVISION	CT	POST & RAIL FENCE	PRF
CABLE TELEVISION INSPECTION COVER	CTIC	PIPE RISE	PR
CABLE RISE	CR	PUSH BUTTON	PB
CAMERA	Cam	RECESSED LIGHT	RL
CAT'V' CABLE	CV	RISER	Ri
CLOSE BOARDED FENCE	CBF	ROAD MARKS ETE	RM
CHAIN LINK FENCE	CLF	RODDING EYE	RE
COMMUNICATION INSPECTION COVER	CIC	SLUICE VALVE	SLV
CONCRETE	CO	SLOT DRAIN	SD
CONCRETE FENCE	CF	STONE PAVING SLABS	SPS
CONCRETE WALL	CW	STONE WALL	SW
CONCRETE PAVING SLABS	CPS	STOP COCK	SC
DRAIN	D	STREET LIGHTING	SL
DRAINAGE CHANNEL	DC	TCSU INSPECTION COVER	TIC
DROP KERB	DK	TELEGRAPH POLE	TP
DOWN PIPE	DP	TELEPHONE CALL BOX	TCB
EARTH ROD	ER	TICKET MACHINE	TM
ELECTRICITY INSPECTION COVER	EIC	TRAFFIC LIGHT	TR
ELECTRICITY POLE	EP	TRIAL HOLE	TH
FIRE HYDRANT	FH	UNMADE SURFACE	Um
GRAVEL	Grv	VALVE	V
GAS VALVE	GV	VENT PIPE	VP
GAS GOVERNOR BOX	GG	WATER METER	WM
GULLY	G	WASH OUT	WO
ILLUMINATED INSPECTION COVER	I	WATER VALVE	WV
	IC	WIRE & POST FENCE	WPF

UTILITY SURVEY ABBREVIATIONS

ABANDONED	AB	INTERMEDIATE PRESSURE	IP
ASBESTOS CEMENT	AC	INSPECTION CHAMBER	IC
BACKDROP	BD	LOW VOLTAGE	LV
BLOCKED	BL	MEDIUM PRESSURE	MP
BRICK CHAMBER	BC	OVERHEAD ELECTRICITY	OE
BRITISH TELECOM	BT	OVERHEAD TELECOM	OT
CABLE	C	PIPE	P
CAST IRON	CI	PLASTIC CHAMBER	PC
CHAMBER DEPTH	CHD	POLYETHYLENE	PE
CONCRETE CHAMBER	CC	RISING MAIN	RM
COMMUNICATIONS	COMMS	SERVICE (ELECTRICITY)	SER
CONCRETE PIPE DRAINAGE	CP	SHAFT DEPTH	SHD
DISCONNECTED UTILITY	Cut	SILTED	SIL
DUCTILE IRON	DI	SOFFIT LEVEL	SoL
END OF DETECTION	EoD	STEEL PIPE	SP
END OF SCAR	EoS	STEEL	ST
EMPTY DUCT	ED	STREET LIGHT	SL
EXTRA HIGH VOLTAGE	EHV	SURFACE WATER DRAINAGE	SWD
FLOODED	F	TRAFFIC CONTROL SIGNAL UNIT	TCSU
FOUL WATER DRAINAGE	FWD	TRENCH	TR
GROUND PENETRATING RADAR	GPR	UNIDENTIFIED CONNECTION	UC
HIGH PRESSURE	HP	UNKNOWN	UKN
HIGH VOLTAGE	HV	WATER LEVEL	WL
INVERT LEVEL	IL	WATER	WTR

This survey was carried out in line with HSG47 (Avoiding danger from underground services), NJUG (National joint utilities group publications) and PAS128:2014 (Specification for underground utility detection, verification and location). All data is presented in Ordnance Survey National Grid OSGB36 by GPS OSTN15 transformation. All levels relate to Ordnance Survey datum Newlyn using GPS geoid model OSGM15).

The information provided on this drawing about the existing utility infrastructure is based on historic records provided by the statutory undertakers and therefore should be used for guidance only. Where possible, utility diameter and depth measurements have been recorded on site using Electromagnetic and/or GPR equipment. The position, depth and status of any mains and services should be verified on site using cable detection equipment prior to any excavation work.
This drawing should be read in conjunction with the survey report.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated. Do not scale from this drawing, work to site dimensions.

SHEET No: 01 of 04 | SCALE: 1:100 | SIZE: A0

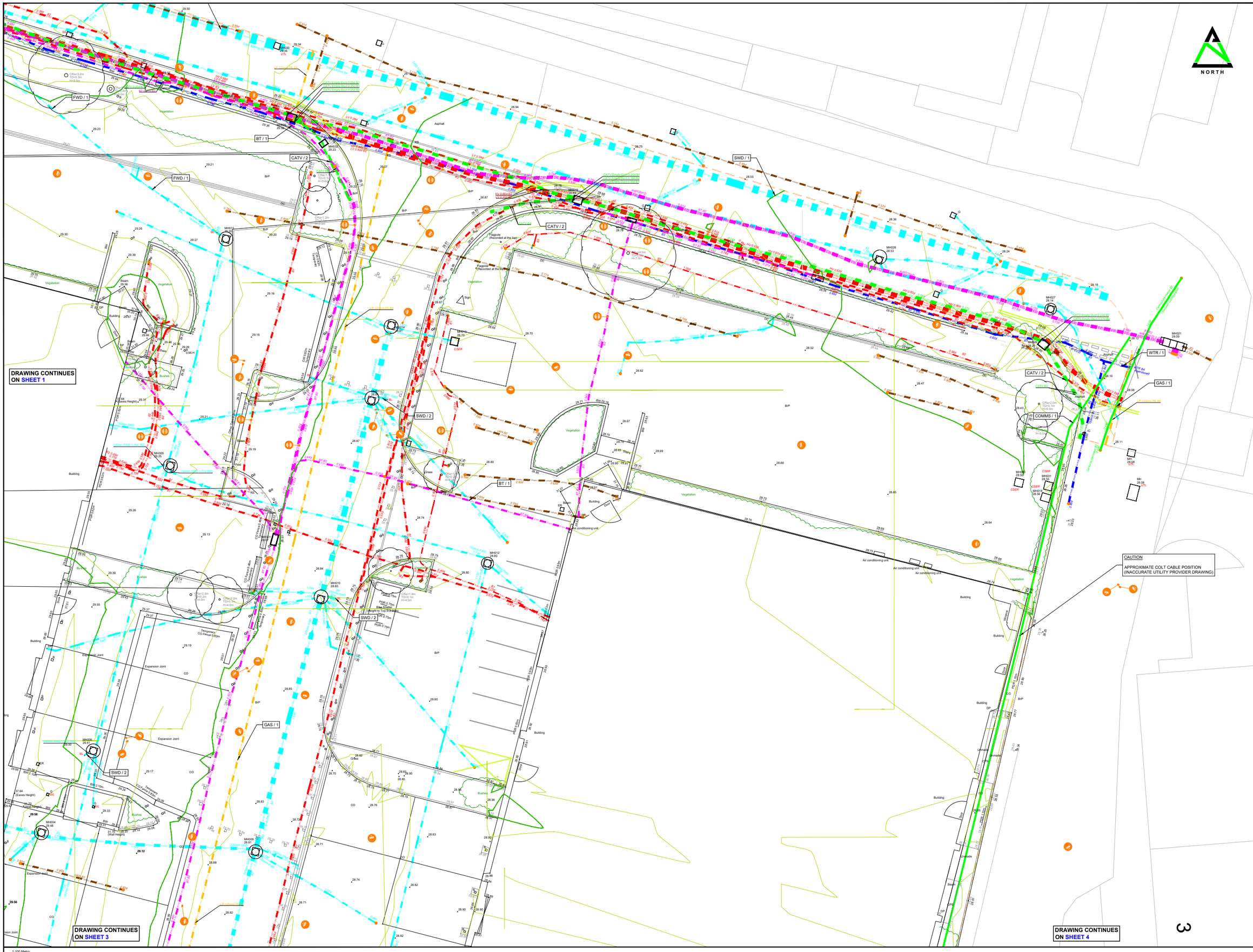
VER	DATE	DESCRIPTION	DR WN	CH KD	AP PD
P01	02.02.22	Project Handover	RB	KD	IK

CLIENT: NWA

PROJECT: BROOK INDUSTRIAL ESTATE

TITLE: UNDERGROUND UTILITY DETECTION AND TOPOGRAPHICAL SURVEY

DRAWING No: 210420-CAT-XX-XX-DR-Z-00001



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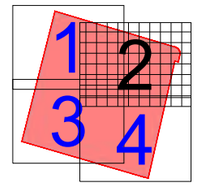
SHEET DIAGRAM



LEGEND

ELECTRICITY CABLE AND/OR PILOT CABLE
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WATER PIPE
DRAINAGE PIPE
COMMUNICATION CABLE
UNKNOWN UTILITY / STRUCTURE
EMPTY DUCT
SURVEY AREA
QUALITY LEVEL ACHIEVED (See PAS-128 Quality Levels table)
DEPTH BELOW SURFACE TO UTILITY IN METRES
Measurement generally to centre of utility. Drainage measured to invert. Depths at manholes indicate the measurements of manhole inspection. See survey report notes.
DIAMETER OF PIPE
END OF DETECTION
INLAND WATER
SURVEY REPORT REFERENCE
SITE PHOTOGRAPHS
UTILITY / MANHOLE NOT SHOWN ON UTILITY PROVIDER DRAWINGS
MAJOR CONTOURS 500mm
MINOR CONTOURS 100mm

TOPOGRAPHICAL SURVEY KEY

BANKING
EDGE OF VEGETATION
EDGE OF HEDGE
GATE
SPOT HEIGHT
SURVEY STATION
TREES
BUILT STRUCTURES
BUILDING
OPEN SIDED BUILDING
WALL
LINETYPES
CHANGE IN SURFACE
FENCE/RAILINGS
KERB BOTTOM
KERB TOP
OVERHEAD CABLE
TRAFFIC CONTROL SYSTEM UNIT SENSOR

TOPOGRAPHICAL SURVEY ABBREVIATIONS

AIR VALVE	AV	IRON RAILING FENCE	IRF
ANCHOR POINT	AP	KERB OUTLET	KO
BELL TRANSFORMER	BT	LAMP COLUMN	LC
BELISHA BEACON	BB	LAMP HOLE	LH
BOREHOLE	BH	LAMP POST	LP
BOLLARD	B	MANHOLE	MH
BRICK PAVING	BrP	MARKER	Mkr
BRICK WALL	BW	PANEL WOOD FENCE	PWF
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CABLE TELEVISION INSPECTION COVER	CTIC	POST & RAIL FENCE	PRF
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CLOSE BOARDED FENCE	CBF	ROAD MARKS ATE	RM
CHAIN LINK FENCE	CLF	RODDING EYE	RE
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CONCRETE	CO	SLOT DRAIN	SD
CONCRETE FENCE	CF	STONE PAVING SLABS	SPS
CONCRETE WALL	CW	STONE WALL	SW
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CROSSING	X	STREET LIGHTING	SL
DRAINAGE CHANNEL	DC	TCSU INSPECTION COVER	TIC
DROP KERB	DK	TELEGRAPH POLE	TP
DOWN PIPE	DP	TELEPHONE CALL BOX	TCB
EARTH ROD	ER	TICKET MACHINE	TM
ELECTRICITY INSPECTION COVER	EIC	TRAFFIC LIGHT	TL
ELECTRICITY POLE	EP	TRIAL HOLE	TH
FIRE HYDRANT	FH	UNMADE SURFACE	Um
GRAVEL	Grv	VALVE	V
GAS VALVE	GV	VENT PIPE	VP
GAS VALVE BOX	GVB	WATER METER	WM
GULLY	G	WASH OUT	WO
ILLUMINATED INSPECTION COVER	I	WATER VALVE	WV
	IC	WIRE & POST FENCE	WPF

UTILITY SURVEY ABBREVIATIONS

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BACKDROP	BD	LOW VOLTAGE	LV
BLOCKED	BL	MEDIUM PRESSURE	MP
BRICK CHAMBER	BC	OVERHEAD ELECTRICITY	OE
BRITISH TELECOM	BT	OVERHEAD TELECOM	OT
CABLE	C	PIPE	P
CAST IRON	CI	PLASTIC CHAMBER	PC
CHAMBER DEPTH	CHD	POLYETHYLENE	PE
CONCRETE CHAMBER	CC	RISING MAIN	RM
COMMUNICATIONS	COMMS	SERVICE (ELECTRICITY)	S
CONCRETE SURFACE DRAINAGE	CSER	SERVICE DEPTH	SHD
DISCONNECTED UTILITY	Cut	SILTED	SIL
DUCTILE IRON	DI	SOFFIT LEVEL	SoL
END OF DETECTION	EoD	STATION	ST
END OF SCAR	EoS	STEEL	ST
EMPTY DUCT	ED	STREET LIGHT	SL
EXTRA HIGH VOLTAGE	EHV	SURFACE WATER DRAINAGE	SWD
FLOODED	F	TRAFFIC CONTROL SIGNAL UNIT	TCSU
FOUL WATER DRAINAGE	FWD	TRIAL HOLE	TH
GROUND PENETRATING RADAR	GPR	UNIDENTIFIED CONNECTION	UC
HIGH PRESSURE	HP	UNKNOWN	UKN
HIGH VOLTAGE	HV	WATER LEVEL	WL
INVERT LEVEL	IL	WATER	WTR

This survey was carried out in line with HSG47 (Avoiding danger from underground services), NJUG (National joint utilities group publications) and PAS128:2014 (Specification for underground utility detection, verification and location). All data is presented in Ordnance Survey National Grid OSGB36 by GPS OSTN15 transformation. All levels relate to Ordnance Survey datum Newlyn using GPS geoid model OSGM15).

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The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated. Do not scale from this drawing, work to site dimensions.

SHEET No: 02 of 04 | SCALE: 1:100 | SIZE: A0

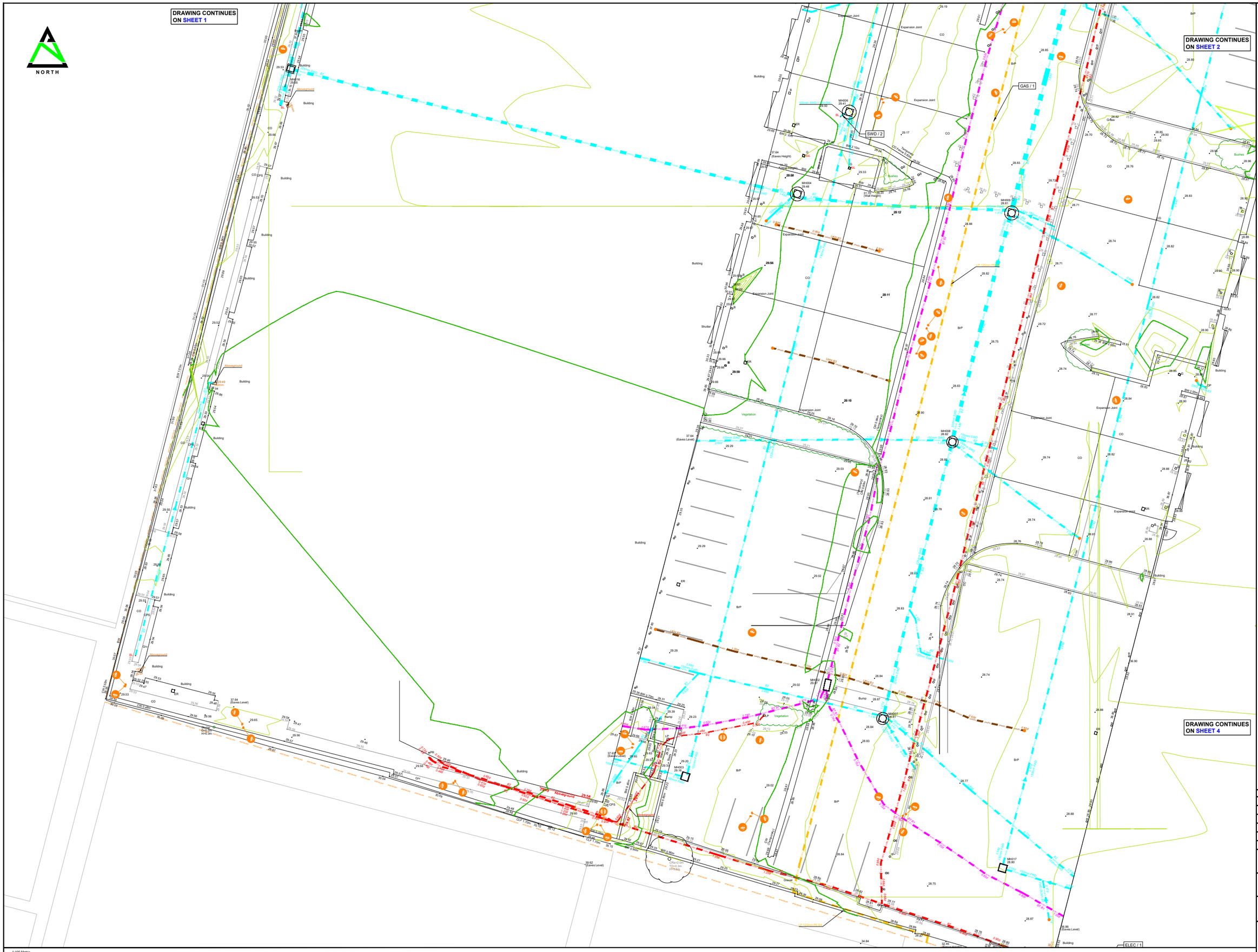
VER	DATE	DESCRIPTION	DR WN	CH KD	AP PD
P01	02.02.22	Project Handover	RB	KD	IK

CLIENT: NWA

PROJECT: BROOK INDUSTRIAL ESTATE

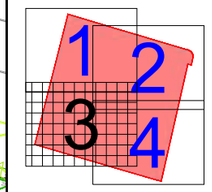
TITLE: UNDERGROUND UTILITY DETECTION AND TOPOGRAPHICAL SURVEY

DRAWING No: 210420-CAT-XX-XX-DR-Z-00002



Model / Contents References List - Name, Version
210420-CAT-XX-XX-M2-U-00001.dwg P01
210420-CAT-XX-XX-M3-G-00001.dwg P01
210420-OSL-XX-XX-M2-G-00001.dwg P01
210420-CAT-XX-XX-RP-SR-00001.pdf P01

SHEET DIAGRAM



LEGEND

ELECTRICITY CABLE AND/OR PILOT CABLE	ERI/HV/LV/SLR("QL")
GAS PIPE	AP/IP/MP/LP("QL")
BRITISH TELECOM CABLE	BT("QL")
VIRGIN MEDIA TELEVISION CABLE	CATV("QL")
WATER PIPE	ST/TC("QL")
DRAINAGE PIPE	SWD/FW/COMB/FM("QL")
COMMUNICATION CABLE	COMMS("QL")
UNKNOWN UTILITY / STRUCTURE	UNK("QL")
EMPTY DUCT	EDU("QL")
SURVEY AREA	
QUALITY LEVEL ACHIEVED (See PAS-128 Quality Levels table)	"QL"
DEPTH BELOW SURFACE TO UTILITY IN METRES Measurement generally to centre of utility. Drainage measured to invert. Depths at manholes indicate the measurements of manhole inspection. See survey report notes.	0.50d
DIAMETER OF PIPE	4" OR 100mm
END OF DETECTION	
INLAND WATER	
SURVEY REPORT REFERENCE	UTILITY / ID
SITE PHOTOGRAPHS	
UTILITY / MANHOLE NOT SHOWN ON UTILITY PROVIDER DRAWINGS	
MAJOR CONTOURS 500mm	
MINOR CONTOURS 100mm	

TOPOGRAPHICAL SURVEY KEY

BANKING (TOP / BOTTOM)
EDGE OF VEGETATION
EDGE OF HEDGE
GATE
SPOT HEIGHT 54.55
SURVEY STATION
TREES

BUILT STRUCTURES
BUILDING
OPEN SIDED BUILDING
WALL

LINETYPES
CHANGE IN SURFACE
FENCE/RAILINGS
KERBS BOTTOM 54.55
KERB TOP 53.70
OVERHEAD CABLE (Electricity / Telecom)
TRAFFIC CONTROL SYSTEM UNIT SENSOR

TOPOGRAPHICAL SURVEY ABBREVIATIONS

AIR VALVE	AV	IRON RAILING FENCE	IRF
ANCHOR POINT	AP	KERB OUTLET	KO
ARCHAEOLOGY	ARC	KERB TRANSITION	KT
BELISHA BEACON	BB	LAMP HOLE	LH
BOREHOLE	BH	LAMP POST	LP
BOLLARD	B	MANHOLE	MH
BRICK PAVING	BrP	MARKER	Mkr
BRICK WALL	BrW	METAL WOOD FENCE	MWF
BRITISH TELECOM	BT	PARKING METER	PM
BT INSPECTION COVER	BIC	PEDESTRIAN GUARD RAIL	PGR
CABLE	C	POST & RAIL FENCE	PRF
CABLE TELEVISION	CT	POST & WIRE FENCE	PWF
CABLE TELEVISION INSPECTION COVER	CTIC	PIPE RISE	PR
CABLE RISE	CR	PUSH BUTTON	PB
CAMERA	Cam	RECESSED LIGHT	RL
CAT'S EYE	CE	RISING MAIN	RM
CLOSE BOARDED FENCE	CBF	ROAD MARKER/LATE	RM
CHAIN LINK FENCE	CLF	RODDING EYE	RE
COMMUNICATION INSPECTION COVER	CIC	SLUICE VALVE	SLV
CONCRETE	CO	SLOT DRAIN	SD
CONCRETE FENCE	CF	SLOT DRAINING SLABS	SDS
CONCRETE WALL	CW	STONE WALL	SW
CONCRETE PAVING SLABS	CPS	STOP COCK	SC
CORE HOLE	CH	TACTILE PAVING	TaP
DRAINAGE CHANNEL	DC	TCSU INSPECTION COVER	TIC
DOUBLE KERB	DK	TELEGRAPH POLE	TP
DOWN PIPE	DP	TELEPHONE CALL BOX	TCB
EARTH ROD	ER	TICKET MACHINE	TM
ELECTRICITY INSPECTION COVER	EIC	TRAFFIC LIGHT	TL
ELECTRICITY POLE	EP	TRIAL HOLE	TH
FIRE HYDRANT	FH	UNMADE SURFACE	Um
GRAVEL	Grv	VALVE	V
GAS VALVE	GV	VENT PIPE	VP
GAS GOVERNOR BOX	GB	WATER METER	WM
GULLY	G	WASH OUT	WO
ILLUMINATED INSPECTION COVER	I	WATER VALVE	WV
	IC	WIRE & POST FENCE	WPF

UTILITY SURVEY ABBREVIATIONS

ABANDONED	AB	INTERMEDIATE PRESSURE	IP
ASBESTOS CEMENT	AC	LOW PRESSURE	LP
ASSESSED	ASD	LOW VOLTAGE	LV
BLOCKED	BL	MEDIUM PRESSURE	MP
BRICK CHAMBER	BC	OVERHEAD ELECTRICITY	OE
BRITISH TELECOM	BT	OVERHEAD TELECOM	OT
CABLE	C	PIPE	P
CAST IRON	CI	PLASTIC CHAMBER	PC
CHAMBER DEPTH	CHD	POLYETHYLENE	PE
CONCRETE CHAMBER	CC	RISING MAIN	RM
COMMUNICATIONS	COMMS	SERVICE (ELECTRICITY)	S
DISCONNECTED DRAINAGE	DD	SERVICE DEPTH	SD
DISCONNECTED UTILITY	CAT	SILTED	SIL
DUCTILE IRON	DI	SOFFIT LEVEL	SoL
END OF DETECTION	EoD	SPUN IRON	SI
END OF SCAN	EoS	STEEL	ST
EXTRA HIGH VOLTAGE	EHV	STREET LIGHT	SL
FLOODED	FL	SURFACE WATER DRAINAGE	SWD
FOUL WATER DRAINAGE	FD	TRAFFIC CONTROL SIGNAL UNIT	TCSU
GROUND PENETRATING RADAR	GPR	UNABLE TO LIFT	UTL
HIGH PRESSURE	HP	UNKNOWN FIXED CONNECTION	UFC
HIGH VOLTAGE	HV	UNKNOWN	UKN
INVERT LEVEL	IL	WATER LEVEL	WL
		WATER	WTR

This survey was carried out in line with HSG47 (Avoiding danger from underground services), NJUG (National joint utilities group publications) and PAS128:2014 (Specification for underground utility detection, verification and location). All data is presented in Ordnance Survey National Grid OSGB36 by GPS OSTN15 transformation. All levels relate to Ordnance Survey datum Newlyn using GPS geoid model OSGM15).

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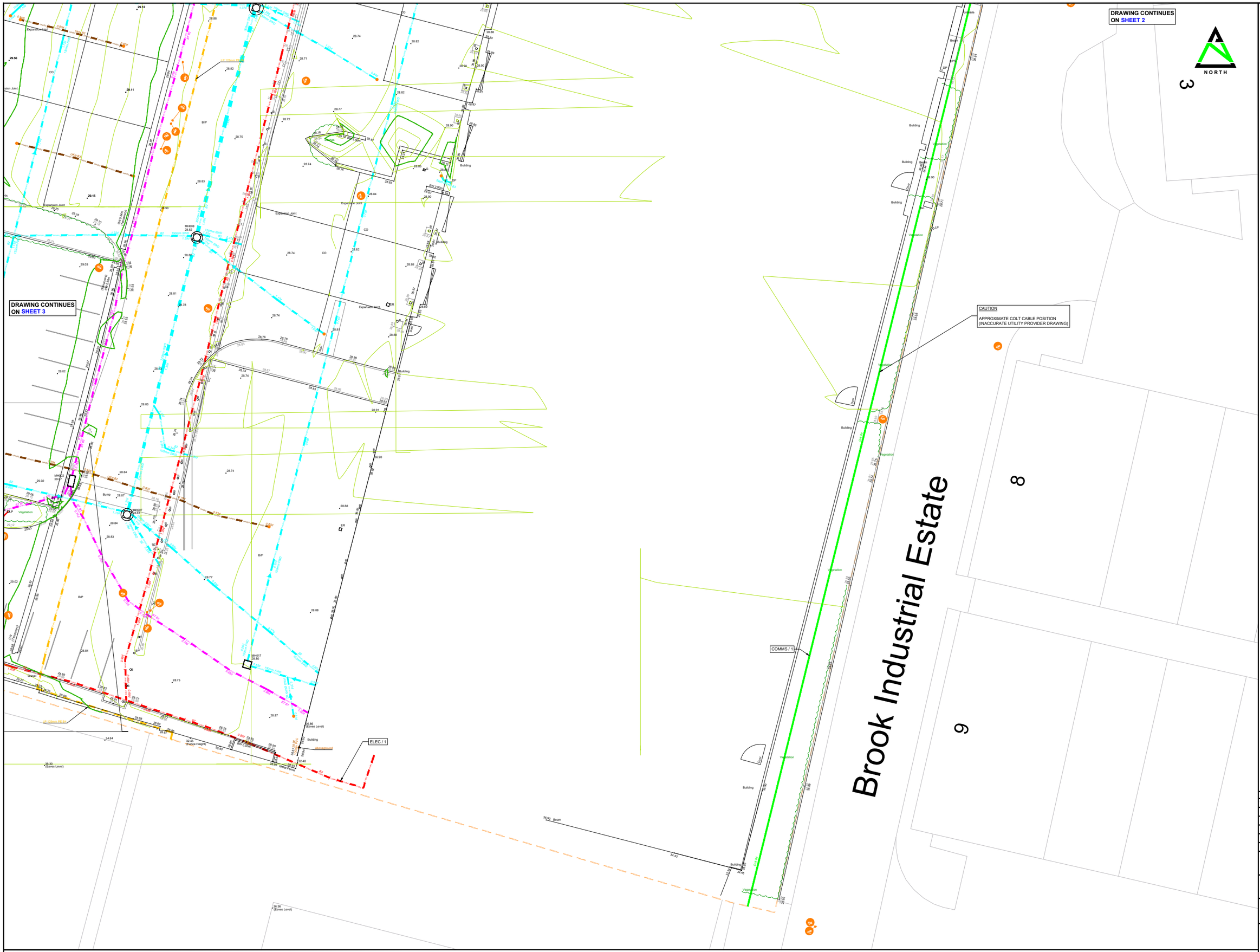
SHEET No. 03 of 04	SCALE: 1:100	SIZE: A0				
VER	DATE	DESCRIPTION	DR WN	CH KD	AP PD	
P01	02.02.22	Project Handover	RB	KD	IK	

CLIENT: NWA

PROJECT: BROOK INDUSTRIAL ESTATE

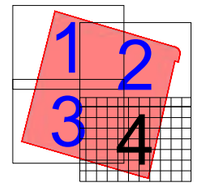
TITLE: UNDERGROUND UTILITY DETECTION AND TOPOGRAPHICAL SURVEY

DRAWING No: 210420-CAT-XX-XX-DR-Z-00003



Model / Contents References List - Name, Version
210420-CAT-XX-XX-M2-U-00001.dwg P01
210420-CAT-XX-XX-M3-G-00001.dwg P01
210420-OSL-XX-XX-M2-G-00001.dwg P01
210420-CAT-XX-XX-RP-SR-00001.pdf P01

SHEET DIAGRAM



LEGEND

ELECTRICITY CABLE AND/OR PILOT CABLE	EHV/HV/LV/SL/R*(QL)
GAS PIPE	HP/IP/MP/LP/*(QL)
BRITISH TELECOM CABLE	BT(QL)
VIRGIN MEDIA TELEVISION CABLE	CATV(QL)
WATER PIPE	W/TR(QL)
DRAINAGE PIPE	S/W/SP/FW/CW/ACW/RM(QL)
COMMUNICATION CABLE	COMMS(QL)
UNKNOWN UTILITY / STRUCTURE	UNK(QL)
EMPTY DUCT	EDU(QL)
SURVEY AREA	
QUALITY LEVEL ACHIEVED (See PAS-128 Quality Levels table)	*QL
DEPTH BELOW SURFACE TO UTILITY IN METRES Measurement generally to centre of utility. Drainage measured to invert. Depths at manholes indicate the measurements of manhole inspection. See survey report notes.	0.50d
DIAMETER OF PIPE	4" OR 100mm
END OF DETECTION	
INLAND WATER	
SURVEY REPORT REFERENCE	UTILITY / ID
SITE PHOTOGRAPHS	256
UTILITY / MANHOLE NOT SHOWN ON UTILITY PROVIDER DRAWINGS	
MAJOR CONTOURS 500mm	
MINOR CONTOURS 100mm	

TOPOGRAPHICAL SURVEY KEY

BANKING (TOP / BOTTOM)
EDGE OF VEGETATION
EDGE OF HEDGE
GATE
SPOT HEIGHT 54.55
SURVEY STATION
TREES

BUILT STRUCTURES
BUILDING
OPEN SIDED BUILDING
WALL

LINETYPES
CHANGE IN SURFACE
FENCE/RAILINGS
KERB BOTTOM 54.55
KERB TOP 55.05
OVERHEAD CABLE
TRAFFIC CONTROL SYSTEM UNIT SENSOR

TOPOGRAPHICAL SURVEY ABBREVIATIONS

AIR VALVE	AV	IRON RAILING FENCE	IRF
ANCHOR POINT	AP	KERB OUTLET	KO
ARMCO BARRIER	ArB	KERB STONE	KS
BACON TOP BEACON	BT	LAMP COLUMN	LC
BOLLARD	B	LAMP POST	LP
BRICK PAVING	BrP	MANHOLE	MH
BRICK WALL	BW	MARKER	Mkr
BT INSPECTION COVER	BT	PANEL WOOD FENCE	PWF
BT INSPECTION COVER	BC	PEDESTRIAN GUARD RAIL	PGR
BUS STOP	BS	PERIMETER FENCE	PF
CABLE TELEVISION	CT	POST & RAIL FENCE	PRF
CABLE TELEVISION INSPECTION COVER	CTIC	PIPE RISE	PR
CAMERA	Cam	PRIVET HEDGE	PH
CAMERA	Cam	RECESSED LIGHT	RL
CAT'S EYE	CE	ROAD SIGN	RS
CHAIN LINK FENCED FENCE	CLF	ROADSIDE PLATE	RP
CHAIN LINK FENCE	CLF	RODDING EYE	RE
COMMUNICATION INSPECTION COVER	CIC	SLUICE VALVE	SLV
CONCRETE	CO	SLOT DRAIN	SD
CONCRETE FENCE	CF	STONE PAVING SLABS	SPS
CONCRETE KERB	CK	STOP VALVE	SV
CONCRETE PAVING SLABS	CPS	STOP COCK	SC
CORE HOLE	CH	TACTILE PAVING	TaP
DRAINAGE CHANNEL	DC	TCSU INSPECTION COVER	TIC
DROP KERB	DK	TELEGRAPH POLE	TP
EARTH POINT	EP	TELEPHONE KIOSK	TK
EARTH ROD	ER	TICKET MACHINE	TM
ELECTRICITY INSPECTION COVER	EIC	TRAFFIC LIGHT	TL
ELECTRICITY POLE	EP	TRAFFIC POLE	TP
FIRE HYDRANT	FH	UNMARKED SURFACE	UN
GRAVEL	Gra	VALVE	V
GAS VALVE	GV	VENT PIPE	VP
GAS METER BOX	GM	WATER METER	WM
GULLY	G	WATER TAP	WT
ILLUMINATED INSPECTION COVER	IC	WAGER VALVE	WV
		WIRE & POST FENCE	WPF

UTILITY SURVEY ABBREVIATIONS

ABANDONED	AB	INTERMEDIATE PRESSURE	IP
ASBESTOS CEMENT	AC	LOW PRESSURE	LP
BACKDROP	BD	LOW VOLTAGE	LV
BLOCKED	BL	MEDIUM PRESSURE	MP
BRICK CHAMBER	BC	OVERHEAD ELECTRICITY	OE
BRITISH TELECOM	BT	OVERHEAD TELECOM	OT
CAPPED	CPD	PILOT	P
CHAMBER	CH	POLYMER CHAMBER	PC
CHAMBER DEPTH	CHD	POLYETHYLENE	PE
CONCRETE CHAMBER	CC	RISING MAIN	RM
COMMUNICATIONS	COMMS	SERVICE (ELECTRICITY)	S
COMBINED WATER DRAINAGE	CWD	SHAFT DEPTH	SHD
DISCONTINUED UTILITY	D	SOLID	SD
DUCTILE IRON	DI	SOFFIT LEVEL	SoL
END OF DETECTION	EoD	SPUN IRON	SI
END OF SCAR	EoS	STEEL	ST
EMPTY DUCT	ED	STREET LIGHT	SL
EXTRA HIGH VOLTAGE	EHV	SURFACE WATER DRAINAGE	SWD
FLUCDSS	FL	TRAFFIC CONTROL SIGNAL UNIT	TCSU
FOUL WATER DRAINAGE	FWD	UNABLE TO LIFT	UTL
GROUND PENETRATING RADAR	GPR	UNIDENTIFIED CONNECTION	UNK
HIGH PRESSURE	HP	UNDERGROUND	UGN
HIGH VOLTAGE	HV	WATER LEVEL	WL
INVERT LEVEL	IL	WATER	WTR

This survey was carried out in line with HSG47 (Avoiding danger from underground services), NJUG (National joint utilities group publications) and PAS128:2014 (Specification for underground utility detection, verification and location). All data is presented in Ordnance Survey National Grid OSGB36 by GPS OSTN15 transformation. All levels relate to Ordnance Survey datum Newlyn using GPS geoid model OSGM(15).

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SHEET No: 04 of 04 | SCALE: 1:100 | SIZE: A0

VER	DATE	DESCRIPTION	DR/WN	CH/KD	AP/PD
P01	02.02.22	Project Handover	RB	KD	IK

catsurveys

CLIENT: NWA

PROJECT: BROOK INDUSTRIAL ESTATE

TITLE: UNDERGROUND UTILITY DETECTION AND TOPOGRAPHICAL SURVEY

DRAWING No: 210420-CAT-XX-XX-DR-Z-00004

N

Station Information:

Station	Easting (m)	Northing (m)	Level (m)
GH1	511545.051	180404.489	29.305
GH2	511559.052	180440.337	29.293
GH3	511540.027	180504.795	29.562
GH3	511540.027	180504.795	29.562
GH5	511551.944	180651.887	30.132
GH6	511579.823	180634.188	30.202
GH7	511631.133	180631.268	29.916
GH10	511559.896	180392.387	28.075
GH11	511487.056	180406.941	29.119
GH12	511432.397	180422.375	30.288
GH13	511435.867	180446.653	30.010
GH14	511461.178	180503.603	29.311
GH15	511478.584	180438.221	29.233
GH16	511467.401	180570.002	29.365
GH17	511532.099	180648.275	29.357
GH18	511578.642	180585.224	29.378
GH19	511489.690	180658.966	29.372

OS Note:

Some services may have been omitted due to parked vehicles. The Ordnance Survey tile is to be used as a guide only.

OS Buildings *Surveyed Buildings*

This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigation Satellite Systems (GNSS) and the O.S. Active Network (OS Net).

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.

The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.

Please refer to Survey Station Table to enable establishment of the on-site grid and datum.

Legend:

Rev	Date	Description	Drawn	G. Ref.
1	07.12.21	Yeading Brook Survey	LB	GH12324

greenhatch group

Topographical Surveys
Site Engineering
Utility / CCTV Surveys
Measured Building Surveys
3D Laser Scanning
Revit & BIM Models

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St Albans: Unit B, The Courtyard, Alban Park, St Albans, Hertfordshire, AL4 0LA, t. (01727) 854481
Newcastle: 24 Riverside Studios, Amethyst Road, Newcastle Bus. Park, Newcastle-U-Tyne, NE4 7YL, t. (01912) 736391
London: 27, Cornwall Terrace Mews, Regents Park, London, NW1 5LL, t. (02072) 241806

CLIENT
Burrows Graham

PROJECT
Hayes Bridge Retail Park, Uxbridge Road, Hayes UB4 0RH

TITLE
Topographical Survey

SCALE	DATE
A1@1: 500	08.11.21
DRAWN	QUALITY REF
LB	GH12132

Level datum	See note
Grid orientation	See note
Job number	42047

Drawing No. **42047_T** Rev. **1**

Comments

This plan should only be used for its original purpose. Greenhatch Group accepts no responsibility for this plan if supplied to any party other than the original client.

All dimensions should be checked on site prior to design and construction.

Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.

Notes:

N

Station Information:

Station	Easting (m)	Northing (m)	Level (m)
GH1	511545.051	180404.489	29.305
GH2	511559.052	180440.337	29.293
GH3	511540.027	180504.795	29.562
GH3	511540.027	180504.795	29.562
GH5	511551.944	180651.887	30.132
GH6	511579.823	180634.188	30.202
GH7	511631.133	180631.268	29.916
GH10	511559.896	180392.387	28.075
GH11	511487.056	180406.941	29.119
GH12	511432.397	180422.375	30.288
GH13	511435.867	180446.653	30.010
GH14	511461.178	180503.603	29.311
GH15	511478.584	180438.221	29.233
GH16	511467.401	180570.002	29.365
GH17	511532.099	180648.275	29.357
GH18	511578.642	180585.224	29.378
GH19	511489.690	180658.966	29.372

OS Note:

Some services may have been omitted due to parked vehicles. The Ordnance Survey tile is to be used as a guide only.

OS Buildings ▨ *Surveyed Buildings* 🟨

This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigation Satellite Systems (GNSS) and the O.S. Active Network (OS Net).

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.

The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.

Please refer to Survey Station Table to enable establishment of the on-site grid and datum.

Legend:

Buildings	Overhead Cable	IC	Inspection chamber	Bo	Bollard
Wall	Concrete edge	PInv	Pipe invert	IB	Illuminated bollard
Kerb line	Tarmac edge	Gy	Gully	Bin	Rubbish bin
Line marking	Grass verge	Bg	Back gully	Vp	Vent pipe
Drop kerb	Canopy/Overhang	Dp	Down pipe	Grl	Ground light
Centre line	Verge	Pipe	Pipe above ground	Lbox	Letter box
Top of bank	Bottom of bank	MH	Manhole	Stmp	Tree Stump
△ 1	Station and Name	WL	Water level	Sty	Stile
100.000	Station Level	Fl	Flood light	IFL	Internal floor level
		Lp	Lamp post	THL	Threshold level
Bush Sap	Tree / Bush / Sapling	Tp	Telegraph post	Sp	Sign post
	Area of Undergrowth	Ep	Electricity post	TH	Trialhole
	Woodland	Tl	Traffic light	BH	Borehole
R:	Ridge Level	Bus	Bus stop	ELC	Electric
E:	Eaves Level	Sv	Stop valve	BT	British Telecom
F:	Flat Roof Level	St	Stop tap	C'box	Control box
	Gate	Er	Earth rod	TT	Tactile
Fence types:		Wm	Water meter	BP	Brick paved
I\W	Interwoven	Gas	Gas valve	CPS	Concrete paving slabs
I\R	Iron Railings	Av	Air valve	CVR	Cover
W\M	Wire Mesh	ICU	Unidentified inspection	R/wall	Retaining wall
P\R	Post & Rail	Wo	Wash out	TWL	Top of Wall Level
P\W	Post & Wire	Re	Rodding eye	TCL	Tree canopy level
C\L	Chain Link	BB	Belisha beacon	G:	Girth
W\P	Wooden Panels	CTV	Cable tv	MG	Multi girth
C\B	Close Boarded	Mkr	Marker post	IC	Inspection chamber
S\P	Steel Palisade	Gmkr	Gas marker post	CL:	Cover level
		So	Soffit	IL:	Invert level
		Fh	Fire hydrant	UTR	Unable to raise

Rev	Date	Description	Drawn	Q. Ref.
1	07.12.21	Yeading Brook Survey	LB	GH12324

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☐ Topographical Surveys
☐ Site Engineering
☐ Utility / CCTV Surveys
☐ Measured Building Surveys
☐ 3D Laser Scanning
☐ Revit & BIM Models

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www.greenhatch-group.co.uk

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Newcastle
24 Riverside Studios
Amethyst Road
Newcastle Bus. Park
Newcastle-U-Tyne
NE4 7YL
t. (01912) 736391

London
27, Cornwall Terrace Mews
Regents Park
London
NW1 5LL
t. (02072) 241806

CLIENT
Burrows Graham

PROJECT
**Hayes Bridge Retail Park,
Uxbridge Road,
Hayes UB4 0RH**

TITLE
**Topographical
Survey**

SCALE	DATE
A1@ 1: 500	08.11.21

DRAWN	QUALITY REF
LB	GH12132

Level datum	See note
Grid orientation	See note
Job number	42047

Drawing No.	Rev.
42047_T	1

Comments
This plan should only be used for its original purpose. Greenhatch Group accepts no responsibility for this plan if supplied to any party other than the original client.

All dimensions should be checked on site prior to design and construction.

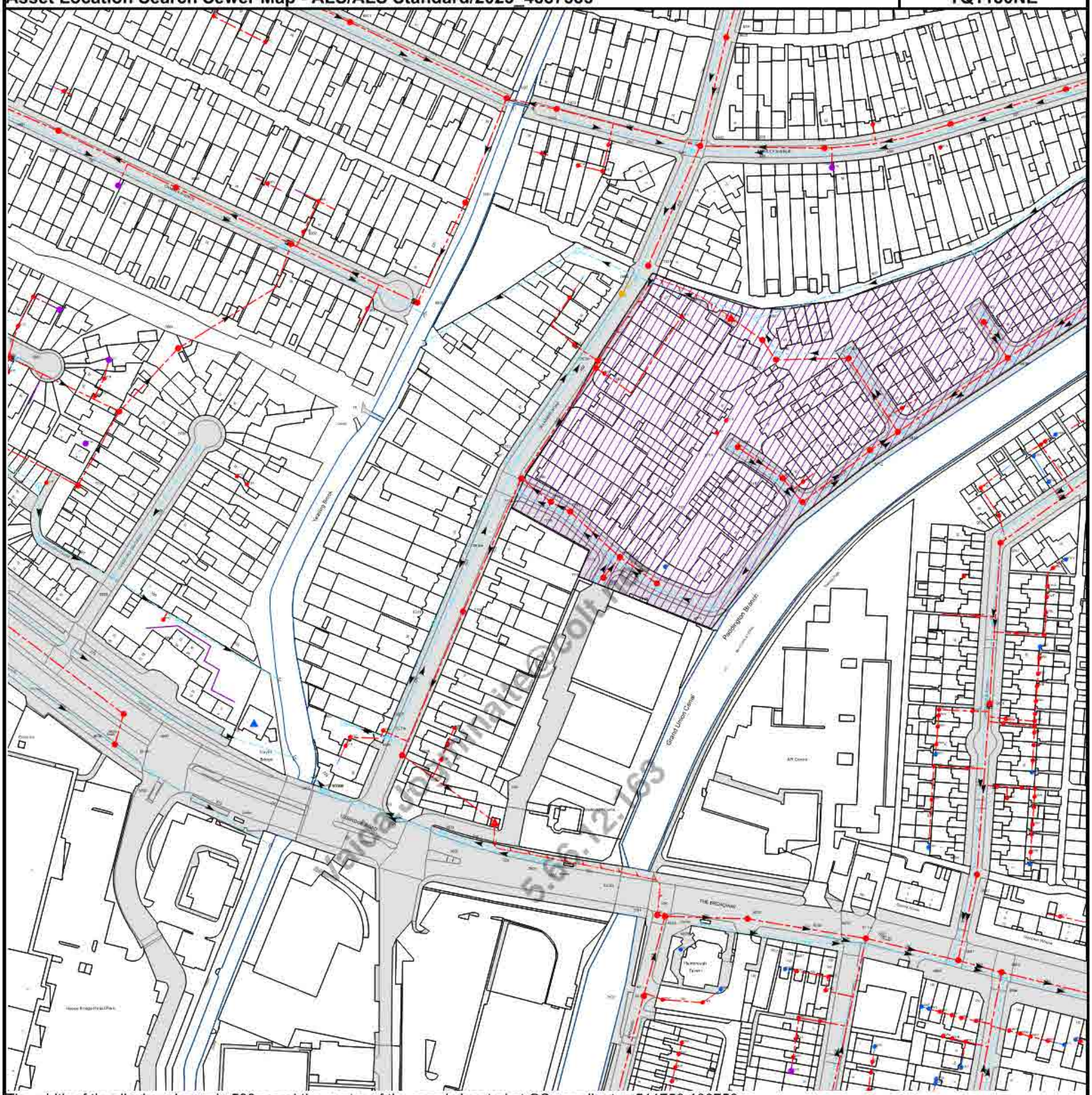
Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.

Notes:

Appendix C

Thames Water Records

Asset Location Search Sewer Map - ALS/ALS Standard/2023_4887585 | **TQ1180NE**



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 511750,180750

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
981D	n/a	n/a
891B	n/a	n/a
871A	n/a	n/a
871H	n/a	n/a
881C	n/a	n/a
871B	n/a	n/a
881D	n/a	n/a
881E	n/a	n/a
871C	n/a	n/a
871L	n/a	n/a
881A	n/a	n/a
881B	n/a	n/a
871G	n/a	n/a
871E	n/a	n/a
981F	n/a	n/a
981H	n/a	n/a
981C	n/a	n/a
981A	n/a	n/a
981E	n/a	n/a
981B	n/a	n/a
761B	n/a	n/a
761A	n/a	n/a
761C	n/a	n/a
771E	n/a	n/a
771G	n/a	n/a
771A	n/a	n/a
7710	n/a	n/a
771F	n/a	n/a
771H	n/a	n/a
771C	n/a	n/a
771D	n/a	n/a
7707	n/a	n/a
771B	n/a	n/a
871I	n/a	n/a
871D	n/a	n/a
871J	n/a	n/a
871F	n/a	n/a
5802	30.36	28.71
9905	27.99	26.48
98WD	n/a	n/a
96WD	n/a	n/a
96WB	n/a	n/a
96WG	n/a	n/a
96WJ	n/a	n/a
96WA	n/a	n/a
9601	30.39	28.13
962F	n/a	n/a
962G	n/a	n/a
96WM	n/a	n/a
96WQ	n/a	n/a
96WS	n/a	n/a
96WP	n/a	n/a
96WX	n/a	n/a
96WW	n/a	n/a
960WO	n/a	n/a
96WN	n/a	n/a
96WL	n/a	n/a
951C	n/a	n/a
05WE	n/a	n/a
05WB	n/a	n/a
05WF	n/a	n/a
951T	n/a	n/a
95WZ	n/a	n/a
5904	30.9	29.46
5903	30.66	25.32
591A	n/a	n/a
7706	n/a	n/a
881F	n/a	n/a
881G	n/a	n/a
781F	n/a	n/a
7806	n/a	n/a
781A	28.32	26.97
781B	n/a	n/a
8801	28.63	26.4
881H	n/a	n/a
781E	n/a	n/a
7803	28.6	n/a
7801	28.34	26.67
7807	28.71	n/a
791B	n/a	n/a
791A	n/a	n/a
8901	n/a	n/a
8902	28.5	26.27
791C	n/a	n/a
7905	n/a	n/a
7903	n/a	n/a
8903	n/a	n/a
571A	n/a	n/a
581C	n/a	n/a
581B	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
581A	n/a	n/a
591B	n/a	n/a
5801	n/a	n/a
5901	30.03	28.51
5902	30.03	25.43
5804	n/a	n/a
5706	29.68	28.75
591C	n/a	n/a
671B	n/a	n/a
671A	n/a	n/a
691C	n/a	n/a
691A	n/a	n/a
6801	29.32	28
6802	29.27	25.67
681B	n/a	n/a
691B	n/a	n/a
6901	39.53	37.53
681A	n/a	n/a
681C	n/a	n/a
6803	n/a	n/a
7901	n/a	n/a
7701	n/a	n/a
7902	28.98	26.03
7702	n/a	n/a
8905	28.36	26.48
8906	28.36	27.09
891A	n/a	n/a
991A	n/a	n/a
9902	28.2	26.6
9901	28.19	27.18
9801	31.55	28.82
971Q	n/a	n/a
97WN	n/a	n/a
971U	n/a	n/a
971T	n/a	n/a
97WM	n/a	n/a
07WB	n/a	n/a
9904	28.31	26.74
9903	28.3	27.31
871K	n/a	n/a
971S	n/a	n/a
971B	n/a	n/a
971R	n/a	n/a
9701	30.17	n/a
9703	30.14	28.78
97WE	n/a	n/a
97WF	n/a	n/a
97WG	n/a	n/a
97WH	n/a	n/a
97WD	n/a	n/a
581D	n/a	n/a
5803	30.31	29.34
581G	n/a	n/a
581F	n/a	n/a
5704	n/a	n/a
5703	29.47	28.25
571B	n/a	n/a
581E	n/a	n/a
5705	n/a	n/a
96WV	n/a	n/a
96WI	n/a	n/a
96WT	n/a	n/a
96WU	n/a	n/a
96WY	n/a	n/a
96WZ	n/a	n/a
96WH	n/a	n/a
9605	n/a	n/a
96WF	n/a	n/a
96WE	n/a	n/a
96AA	n/a	n/a
9603	30.386	28.706
96AB	n/a	n/a
96AC	n/a	n/a
96AE	n/a	n/a
97WA	n/a	n/a
97WC	n/a	n/a
97WB	n/a	n/a
5702	29.37	27.97
5604	n/a	n/a
5603	n/a	n/a
5602	n/a	n/a
571C	n/a	n/a
5601	n/a	n/a
5701	n/a	n/a
6609	n/a	n/a
6601B	29.77	27.93
6607	n/a	n/a
661B	n/a	n/a
661C	n/a	n/a
661A	n/a	n/a
6605	n/a	n/a
6604	n/a	n/a
6606	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6701	n/a	n/a
7603	30.69	28.51
7704	n/a	n/a
7605	n/a	n/a
7705	n/a	n/a
7703	n/a	n/a
05WG	n/a	n/a
05WH	n/a	n/a
951X	n/a	n/a
95WC	n/a	n/a
95HE	n/a	n/a
95WF	n/a	n/a
95WG	n/a	n/a
95WE	n/a	n/a
9506	31.32	28.39
9502	31.34	27.74
9505	31.2	28.42
9501	31.23	27.78
8505	31.15	28.49
8501	31.18	27.85
951U	n/a	n/a
951V	n/a	n/a
9602	30.68	27.96
9604	30.65	28.64
96WK	n/a	n/a
96WR	n/a	n/a
96WC	n/a	n/a
85HD	n/a	n/a
83WZ	n/a	n/a
85HE	n/a	n/a
85AB	n/a	n/a
85WF	n/a	n/a
85WA	n/a	n/a
85AA	n/a	n/a
83WX	n/a	n/a
83WY	n/a	n/a
85WN	n/a	n/a
85WZ	n/a	n/a
7502	n/a	n/a
85WD	n/a	n/a
85WB	n/a	n/a
85WG	n/a	n/a
85XF	n/a	n/a
85WE	n/a	n/a
851V	n/a	n/a
8507	31.325	29.705
8506	31.11	n/a
8508	32.66	31.35
8502	31.77	28.92
8503	33.06	29.01
7501	33.18	31.12
7602	32.5	29.82
7604	n/a	n/a
85XE	n/a	n/a
85WI	n/a	n/a
85ZF	n/a	n/a
85WC	n/a	n/a
95WW	n/a	n/a
95WS	n/a	n/a
95WA	n/a	n/a
95WB	n/a	n/a
95WX	n/a	n/a
95WY	n/a	n/a

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Asset Location Search Sewer Map - ALS/ALS Standard/2023_4887585 | **TQ1180SE**

The width of the displayed area is 500m and the centre of the map is located at OS coordinates 511750,180250

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9101	30.61	28.52
9202	30.51	28.31
90BK	n/a	n/a
91LK	n/a	n/a
91LM	n/a	n/a
91LJ	n/a	n/a
91LC	n/a	n/a
91LN	n/a	n/a
91LH	n/a	n/a
9102	30.62	29.12
91LG	n/a	n/a
91LF	n/a	n/a
91LT	n/a	n/a
912O	n/a	n/a
91LV	n/a	n/a
91LE	n/a	n/a
91LD	n/a	n/a
91LW	n/a	n/a
911B	n/a	n/a
911A	n/a	n/a
91LY	n/a	n/a
91WD	n/a	n/a
91LS	n/a	n/a
94WL	n/a	n/a
94WH	n/a	n/a
942K	n/a	n/a
941B	n/a	n/a
94WP	n/a	n/a
94WD	n/a	n/a
94WE	n/a	n/a
941A	n/a	n/a
94CC	n/a	n/a
94WN	n/a	n/a
94DD	n/a	n/a
94W9	n/a	n/a
93WE	n/a	n/a
93WC	n/a	n/a
93WB	n/a	n/a
93BJ	n/a	n/a
92WA	n/a	n/a
93WL	n/a	n/a
93BK	n/a	n/a
93WI	n/a	n/a
93HN	n/a	n/a
93WA	n/a	n/a
92WD	n/a	n/a
93WK	n/a	n/a
9302	30.45	28.15
9303	30.43	28.76
03WK	n/a	n/a
93HA	n/a	n/a
8301	30.98	28.5
8303	30.99	29.04
83WS	n/a	n/a
7301	30.56	28.85
83WW	n/a	n/a
83WV	n/a	n/a
83QR	n/a	n/a
83WK	n/a	n/a
83WP	n/a	n/a
83HQ	n/a	n/a
83WO	n/a	n/a
83QQ	n/a	n/a
73HN	n/a	n/a
8304	31.09	28.93
73WJ	n/a	n/a
73WY	n/a	n/a
8302	31.09	28.42
831R	n/a	n/a
831Q	n/a	n/a
831S	n/a	n/a
831T	n/a	n/a
8305	n/a	n/a
84WC	n/a	n/a
84WA	n/a	n/a
84WD	n/a	n/a
74WG	n/a	n/a
74WL	n/a	n/a
8201	n/a	n/a
8202	n/a	n/a
831P	n/a	n/a
83WQ	n/a	n/a
83BS	n/a	n/a
83WT	n/a	n/a
83WU	n/a	n/a
83WR	n/a	n/a
93WN	n/a	n/a
93WP	n/a	n/a
9201	30.8	28.91
9204	30.79	29.15

Manhole Reference	Manhole Cover Level	Manhole Invert Level
93DA	n/a	n/a
93DC	n/a	n/a
93DE	n/a	n/a
93DD	n/a	n/a
92AH	n/a	n/a
92AF	n/a	n/a
922F	n/a	n/a
92WB	n/a	n/a
92WR	n/a	n/a
92WJ	n/a	n/a
92WI	n/a	n/a
92WH	n/a	n/a
93WG	n/a	n/a
93WF	n/a	n/a
93WD	n/a	n/a
5302	n/a	n/a
6201	29.52	27.67
7302	30.15	n/a
7401	29.88	28.44
73WA	n/a	n/a
73WD	n/a	n/a
73WB	n/a	n/a
73WV	n/a	n/a
731W	n/a	n/a
73WF	n/a	n/a
73WG	n/a	n/a
73WH	n/a	n/a
73WI	n/a	n/a
73WL	n/a	n/a
73WE	n/a	n/a
74WH	n/a	n/a
73WM	n/a	n/a
73WC	n/a	n/a
74WI	n/a	n/a
73HF	n/a	n/a
74WE	n/a	n/a
73WQ	n/a	n/a
74WD	n/a	n/a
74WK	n/a	n/a
91WE	n/a	n/a
9104	n/a	n/a
9103	n/a	n/a
92WC	n/a	n/a
92WP	n/a	n/a
92WO	n/a	n/a
92WQ	n/a	n/a
922E	n/a	n/a
92WJ	n/a	n/a
91LZ	n/a	n/a
92BB	n/a	n/a
92AA	n/a	n/a
92AB	n/a	n/a
92WN	n/a	n/a
92WM	n/a	n/a
92AD	n/a	n/a
9203	30.49	28.93
92WL	n/a	n/a
92AE	n/a	n/a
92WK	n/a	n/a
92AC	n/a	n/a
82WZ	n/a	n/a
82WF	n/a	n/a
82WI	n/a	n/a
82WH	n/a	n/a
82WG	n/a	n/a
92WZ	n/a	n/a
82WC	n/a	n/a
81WA	n/a	n/a
82WE	n/a	n/a
82WD	n/a	n/a
8102	30.88	29.22
82WB	n/a	n/a
8105	30.848	29.368
81DG	n/a	n/a
91DE	n/a	n/a
91DX	n/a	n/a
91DZ	n/a	n/a
91DH	n/a	n/a
92BA	n/a	n/a
912P	n/a	n/a
912R	n/a	n/a
912Q	n/a	n/a
91BP	n/a	n/a
92BC	n/a	n/a
92BH	n/a	n/a
92BQ	n/a	n/a
92BD	n/a	n/a
81WM	n/a	n/a
811B	n/a	n/a
81WO	n/a	n/a
811A	n/a	n/a
8103	29.76	27.96
8104	29.78	28.23

Manhole Reference	Manhole Cover Level	Manhole Invert Level
711D	n/a	n/a
81WN	n/a	n/a
711C	n/a	n/a
81WL	n/a	n/a
81WK	n/a	n/a
81WJ	n/a	n/a
81WB	n/a	n/a
81WC	n/a	n/a
81ED	n/a	n/a
821N	n/a	n/a
821P	n/a	n/a
821O	n/a	n/a
8201	30.05	28.56
8202	30.05	28.55
821A	n/a	n/a
73WK	n/a	n/a
73WP	n/a	n/a
83WI	n/a	n/a
73WO	n/a	n/a
73WN	n/a	n/a
83WJ	n/a	n/a
8003	30.46	27.34
8008	30.51	29.34
6101	29.04	19.15
7001	30.13	27.52
80AJ	n/a	n/a
7002	30.1	28.01
701C	n/a	n/a
7003	29.62	27.62
7004	29.51	27.46
711A	n/a	n/a
6103	30.33	19.95
8101	30.9	29.6
6102	29.16	27.64
81XG	n/a	n/a
711B	n/a	n/a
5103	n/a	n/a
81XH	n/a	n/a
81XE	n/a	n/a
711E	n/a	n/a
81XD	n/a	n/a
81XC	n/a	n/a
81XF	n/a	n/a
81XA	n/a	n/a
90BP	n/a	n/a
80ZC	n/a	n/a
80HD	n/a	n/a
90BN	n/a	n/a
90BV	n/a	n/a
90BO	n/a	n/a
90BY	n/a	n/a
90BT	n/a	n/a
80BM	n/a	n/a
80ZB	n/a	n/a
8002	30.87	29.12
8007	30.858	29.258
902B	n/a	n/a
90ZB	n/a	n/a
90ZA	n/a	n/a
80ZA	n/a	n/a
80ZD	n/a	n/a
9006	n/a	n/a
91BC	n/a	n/a
91HC	n/a	n/a
81DL	n/a	n/a
90LA	n/a	n/a
91DO	n/a	n/a
91DD	n/a	n/a
91LP	n/a	n/a
91DM	n/a	n/a
81DK	n/a	n/a
91LR	n/a	n/a
91LQ	n/a	n/a
90BS	n/a	n/a
902C	n/a	n/a
902D	n/a	n/a
90BR	n/a	n/a
9007	n/a	n/a
9001	30.88	29.03
9004	30.89	29.21
90BC	n/a	n/a
901E	n/a	n/a
90BF	n/a	n/a
90BE	n/a	n/a
90BD	n/a	n/a
901A	n/a	n/a
9002	30.82	29.02
9005	30.82	29.15
90YB	n/a	n/a
90BG	n/a	n/a
90BA	n/a	n/a
91LL	n/a	n/a
91L2	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
91L1	n/a	n/a
90BI	n/a	n/a
90BJ	n/a	n/a
90ZK	n/a	n/a
90BB	n/a	n/a
80ZE	n/a	n/a
80ZF	n/a	n/a
80ZG	n/a	n/a
80ZH	n/a	n/a
80ZI	n/a	n/a
80ZK	n/a	n/a
80ZL	n/a	n/a
80ZM	n/a	n/a
801A	n/a	n/a
80ZJ	n/a	n/a
701A	n/a	n/a
7005	29.66	27.34
801B	n/a	n/a
8006	30.87	29.4
8001	30.51	29.26
701B	n/a	n/a
84WY	n/a	n/a
84HL	n/a	n/a
84WJ	n/a	n/a
84WQ	n/a	n/a
84WB	n/a	n/a
94WO	n/a	n/a
94WM	n/a	n/a
94WT	n/a	n/a
94WU	n/a	n/a
94XV	n/a	n/a
94WW	n/a	n/a
9401	30.58	28.17
9404	30.575	28.67
94W7	n/a	n/a
94FF	n/a	n/a
94W8	n/a	n/a
94AA	n/a	n/a
94BB	n/a	n/a
7402	29.87	28.29
74WQ	n/a	n/a
84WL	n/a	n/a
84WI	n/a	n/a
84WK	n/a	n/a
74WN	n/a	n/a
84WH	n/a	n/a
74WO	n/a	n/a
84WZ	n/a	n/a
74WP	n/a	n/a
84WE	n/a	n/a
74WR	n/a	n/a
74WS	n/a	n/a
84HK	n/a	n/a
74WM	n/a	n/a
8401	31.07	28.19
74WU	n/a	n/a
8403	31.087	28.597
74WX	n/a	n/a
841C	n/a	n/a
74WW	n/a	n/a
841B	n/a	n/a
84WV	n/a	n/a
84WT	n/a	n/a
841A	n/a	n/a
7403	29.94	28.15
84HC	n/a	n/a
9304	30.62	28.93
9301	30.67	28.55
93WO	n/a	n/a
93XO	n/a	n/a
932F	n/a	n/a
93W4	n/a	n/a
93W5	n/a	n/a
93WM	n/a	n/a
93JY	n/a	n/a
8306	n/a	n/a
93JX	n/a	n/a
94XD	n/a	n/a
94XE	n/a	n/a
93WX	n/a	n/a
94WC	n/a	n/a
94W6	n/a	n/a
94WV	n/a	n/a
94WF	n/a	n/a

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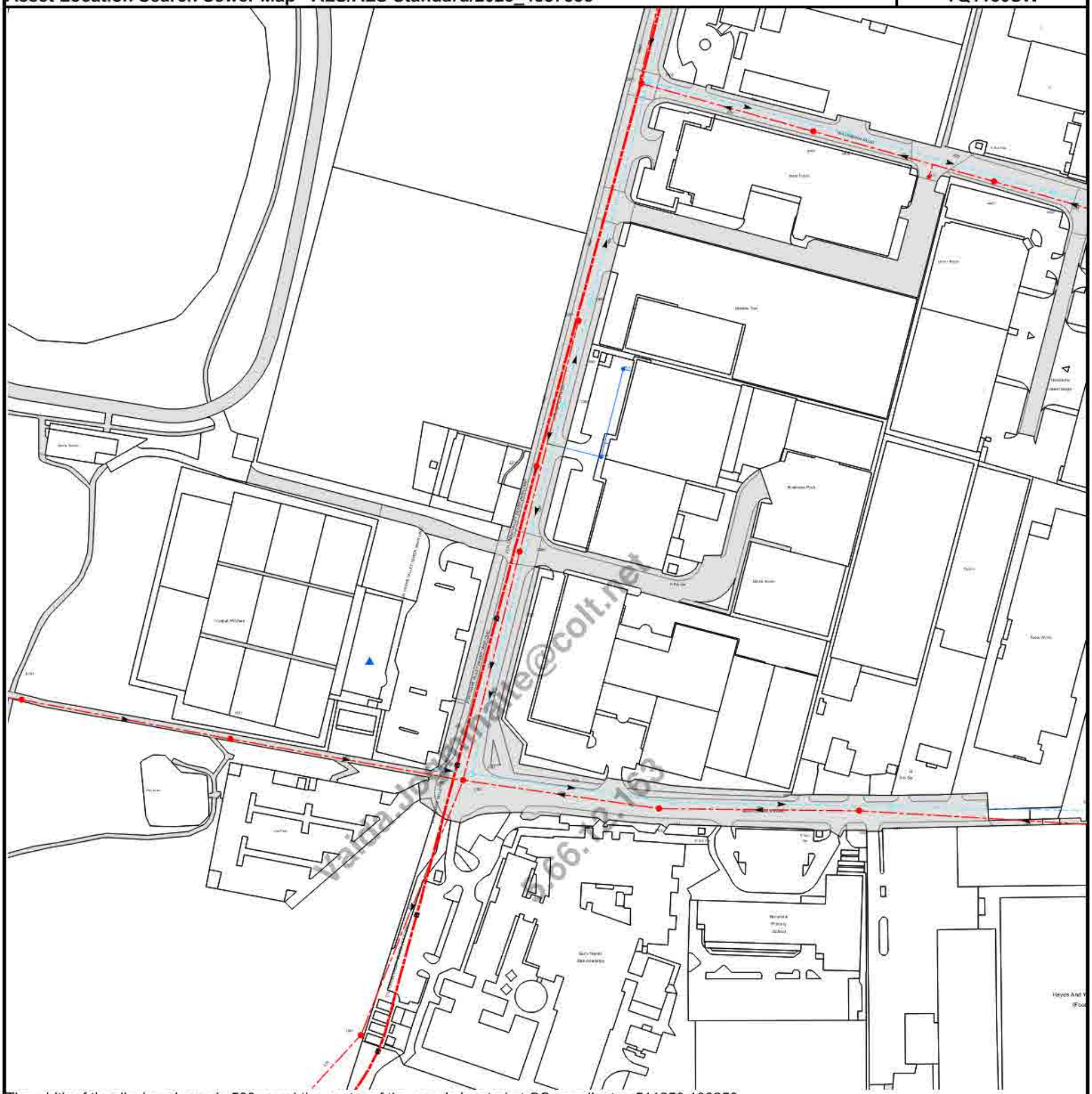
Asset Location Search Sewer Map - ALS/ALS Standard/2023_4887585 | **TQ1180SW**



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 511250,180250

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
441A	30.4	29.42
4401	39.78	36.81
4402	29.31	27.51
3102	30.17	26.14
3105	30.69	25.77
4101	30.11	27.45
3101	30.71	28.08
3402	30.48	28.07
3401	30.5	26.5
2401	n/a	n/a
2402	30.9	28.36
0101	n/a	n/a
1101	n/a	n/a
2101	30.15	25.35
2102	30.14	28.46
2205	30.38	28.84
2203	30.48	27.28
2201	30.67	18.26
2302	n/a	n/a
2301	n/a	n/a
2303	n/a	n/a
221A	n/a	n/a
231A	n/a	n/a
1001	n/a	n/a

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Inlet
- Outfall
- Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement — Ducts may contain high voltage cables. Please check with Thames Water.
- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement.

If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Appendix D

Correspondence

ARUP

Minutes

Project title	Hayes Digital Park
Job number	304472
Meeting name & number	Hayes Digital Park Drainage
File ref	06-02-01
Time and date	10:00 24 October 2024
Location	Teams
Purpose of meeting	Drainage approach and Flood Risk
Present	Michael Briginshaw (LBH) Katie Crosbie (LBH) Natalie Seeger (Metis) Nick Heard (Savills) Jamie Temple (Arup) Chris Heath (Arup)
Apologies	
Circulation	Those present

Topic **Action**

Meeting to discuss drainage approach and flood risk for Hayes Digiatal Park.

Drainage Approach

Drainage approach technical notes had been circulated prior to the meeting, and had been reviewed by Metis.

CH outlined drainage approach for 2 separate planning applications as follows:

Sub-station

Drainage hierarchy – GI suggests that infiltration will not be feasible. As such, existing storm water outfall to Yeading Brook will be used.

As the application boundary is less than 1ha, not in a Critical Drainage Area, and not in an area at risk of surface water flooding, this is not classed as a major development in accordance with LBH criteria. As such, existing drained areas and runoff rates have been used when considering storm water restrictions.

The potential for SuDS is limited. A permeable surface is proposed to the car park. Rainwater recovery has been discounted as there is no water demand in the development.

ARUP

Project title	Hayes Digital Park
Job number	304472
Date of Meeting	24 October 2024

Topic	Action

There is potentially an existing separator prior to the outfall, but we have provided a full retention separator as part of the new drainage system to safeguard water quality for runoff from the new development.

Permebale area will increase for the new development over the existing scenario.

Wider master plan

Drainage hierarchy – GI suggests that infiltration will not be feasible. As such, existing storm water outfall to Yeading Brook will be used.

The existing Metro Bank is unaffected by the development, but uses the same outfall. The existing drainage routes from the Metro Bank to the outfall will be maintained.

The site development area is greater than 1ha, therefore the aim is to reduce runoff to greenfield rates where possible.

The site is very constrained, with extensive below ground utilities to external areas. It is likely that space for below ground surface water storage will be squeezed, reducing the likelihood of being able to reduce flows to greenfield rates.

The GLA consultation response stated that rates could be increased to 3 times greenfield, subject to justification. CH queried what justification would need to be provided. NS confirmed that constraints plans highlighting that storage had been maximised would be required.

The potential for SuDS is again limited. Proposals have developed since the technical note was produced, and areas of green roof are now included. Permeable surfaces are provided to car parking areas. There may be the potential to include a small pond and/or swale, but this will be subject to space constraints and below ground infrastructure. A full retention separator has been provided to the new drainage network prior to the outfall.

NS asked that additional SuDS, such as rain gardens, be provided if possible.

CH explained that reports would be submitted in support of the planning applications, and that drainage layouts and calculations (InfoDraiange) would be appended to the reports.

No significant concerns or issues were raised by Metis/LBH.

Flood Risk

Flood risk vulnerability classifications were discussed. It was agreed that the vulnerability classification for the development should be “Essential Infrastructure”. A sequential and exception test will not be required.

JT noted that the FRA will be based on the most current EA modelling available. Currently, the latest model originates from the 2008 River Crane study, which Arup

ARUP

Project title	Hayes Digital Park
Job number	304472
Date of Meeting	24 October 2024

Topic	Action
accessed when conducting the FRA for the adjacent Lon4/Lon5 plots. During that prior planning application, Arup was informed that the EA was in the process of updating flood risk studies for the area. Despite numerous follow-up requests, Arup has been advised that the new flood modelling remains pending with no specified release date. JT checked with NS to determine if any preliminary findings or anticipated impacts from the updated modelling were available but confirmed that the FRA will proceed using the 2008 model.	

Chris Heath

From: Natalie Seeger <natalie.seeger@metisconsultants.co.uk>
Sent: 04 November 2024 16:36
To: Chris Heath; mbriginshaw1@hillingdon.gov.uk
Cc: NHeard; Jamie Temple; Alex Murray
Subject: RE: HDP Drainage and Flood Risk Meeting - 24/10/24 - Minutes

Hi Chris,

Thank you for sending round the meeting notes.

I can confirm that from my end everything has been captured as per what was discussed in the meeting.

Best wishes,
Natalie

Natalie Seeger
BSc Geography
Consultant

0208 948 0249 | [07496 386813]
natalie.seeger@metisconsultants.co.uk
metisconsultants.co.uk
2 Sheen Road, Richmond, TW9 1AE

From: Chris Heath <Chris.Heath@arup.com>
Sent: 29 October 2024 15:10
To: mbriginshaw1@hillingdon.gov.uk; Natalie Seeger <natalie.seeger@metisconsultants.co.uk>
Cc: NHeard@savills.com; Jamie Temple <Jamie.Temple@arup.com>; Alex Murray <alexmurray@ridge.co.uk>
Subject: HDP Drainage and Flood Risk Meeting - 24/10/24 - Minutes

Hi Michael and Natalie,

Thanks for taking the time to meet with us last week to discuss drainage and flood risk for the HDP project.

Please see attached minutes for your review and comment. Please let me know if we have correctly captured everything discussed at our meeting.

Regards,

Chris

Chris Heath
Senior Technician – Energy, Water and Resources North
EngTech MICE

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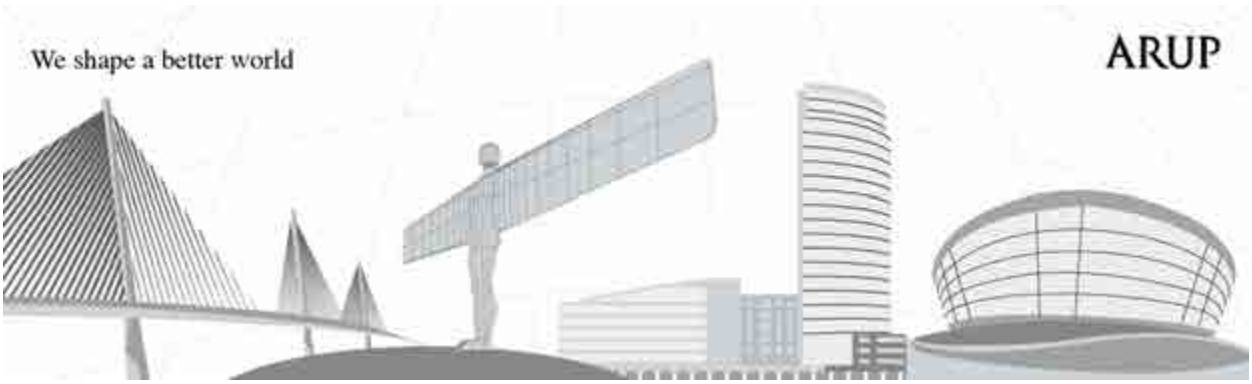
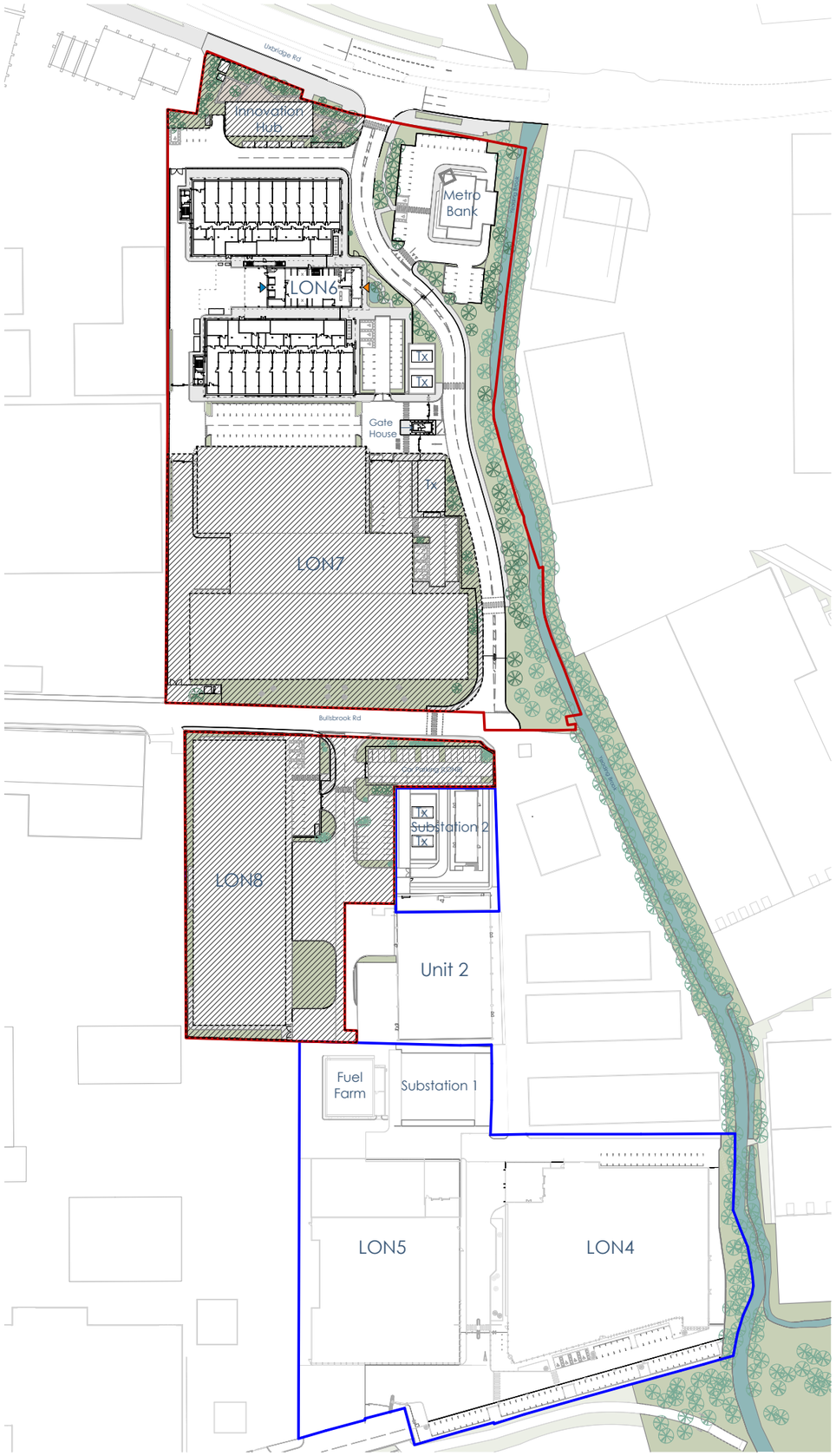


Appendix E

Proposed Development Plans



KEY:

- Site Boundary
- Site Ownership
- Tx — Transformer
- Loading Bay Access
- Building Entrance
- Outline Application

Refer to drawings LONUX-NWA-PL-ZZ-DR-A-12801 to LONUX-NWA-PL-ZZ-DR-A-12810 for extent of outline application plots.

KEY PLAN:

7500 0 7500 15000 22500 30000
SCALE: 1:750

GENERAL NOTES:

1. MEASUREMENTS TO BE VERIFIED ON SITE
2. DO NOT SCALE FROM THIS DRAWING. ALL DIMENSIONS INDICATED ARE IN MILLIMETRES UNLESS OTHERWISE STATED
3. THIS DRAWING IS NOT AN INSTALLATION DRAWING. IT IS THE CONSTRACTORS RESPONISIBILITY TO PRODUCE FINAL COORDINATED INSTALLATION SHOP DRAWINGS / ISSUED FOR CONSTRUCTION DRAWINGS
4. THESE ARE PRELIMINARY DRAWINGS AND ARE SUITABLE FOR USE AS PER THE STATUS CODE AND DESCRIPTION.
5. THE CONTENTS OF THIS DRAWING SHALL BE READ IN CONJUCTION WITH THE LATEST ASSOCIATED ARCHITECTURAL STRUCTURAL, CIVILS, MECHANICALM ELECTRICAL, TELECOMS & ANY RELATED ASSOCIATED SPECIALTY PACKAGES.
6. THE CONTENTS OF THIS DRAWING SHALL ALSO BE READ IN CONJUCTION WITH ALL RELEVANT DETAIL DRAWINGS, SECTIONS, ELEVATIONS AND ANY ASSOCIATED SPECIFICATIONS
7. ANY DISCREPANCIES BETWEEN THE DRAWING(S) AND OTHER DOCUMENTS ARE TO BE BROUGHT TO THE ATTENTION OF THE DRAWING(S) AUTHOR(S) / ENGINEER / AUTHORING ORGANISATION
8. HEIGHT IN ELEVATION, SECTION AND IDENTIFIED ELEVATIONS ON PLAN LAYOUTS ARE BASED OFF THE SURVEYED GROUND LEVEL AS OUTLINED IN THE PROJECT BIM EXECUTION PLAN (BEP).

Not issued for planning

REV.	DATE	DESCRIPTION	ISSUED BY	ISSUED TO
P01	21/03/25	FOR PLANNING	NWA	PL

REVISIONS

LEAD CONSULTANT / ARCHITECT:
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AL3 7QA, United Kingdom
www.nwarchitects.co.uk

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Newcastle Upon Tyne
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www.arup.com

MEP DESIGNER:
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United Kingdom
www.cundall.com

PROJECT MANAGEMENT CONSULTANT:
RIDGE
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https://ridge.co.uk

CLIENT:
colt Data Centre Services
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20 Great Eastern Street
London, EC2A 3EH,
United Kingdom
www.coltdatacentres.net

PROJECT NAME: HDP Masterplan

DRAWING TITLE: Site Plan - Ground Floor Level

STATUS: S3 - For Planning

DESIGNED:	DRAWN:	CHECKED:	SCALE:	SIZE:	STATUS:
NWA	SS	CM	1 : 750	A0	S3

DRAWING NUMBER: LONUX-NWA-PL-00-DR-A-12200
REVISION: P01