MERIDIAN

CIVIL ENGINEERING CONSULTANCY

LAND ADJ TO 218 NESTLES AVENUE
HAYES
UB3 4QG

SURFACE WATER
DRAINAGE STRATEGY

AUGUST 2025

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Ref: MC0138 Westways Nestles Ave SWDS

CONTENTS

APPENDICES

Client : Westways Properties

Rev	Date	Prepared by	Checked by	Approved by
P1	22/08/25	IW	BB	MN

1.0 INTRODUCTION

1.1 Meridian Civil Engineering Consultancy LTD (MCEC) has been instructed by Westways properties to prepare a Storm Drainage Strategy for the development at the land adjacent to 218 Nestle's Avenue, Hayes, UB3 4QG.

1.2 This drainage strategy has been produced to address planning condition 4 relating to Appeal Ref: APP/R5510/W/24/3351583 with the London Borough of Hillingdon Council. Condition 4 is as follows:

No development shall take place until a scheme for the provision of sustainable water management has be3en submitted to and approved in writing by the Local Planning Authority. The scheme shall demonstrate that sustainable urban drainage systems have been incorporated into the development. The details shall include:

- *Information about the design storm period and intensity, the method employed to delay and control the surface water discharged from the site and the measures taken to prevent pollution of the receiving groundwater and/or surface waters;*
- *An implementation programme;*
- *A management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime; and*
- *Methods to minimise the use of potable water, including water collection facilities to capture excess rainwater and the reuse and recycling of rain and grey water.*

Prior to first occupation the scheme shall be incorporated into the development in accordance with the approved details. Thereafter the completed scheme shall be maintained in accordance with the approved details.

1.3 It is understood the proposed development is for the construction of a new residential property adjoined to the existing property, with associated external works.

1.4 Given the BGS geology viewer shows the site to be underlaid by clay, infiltration may not be feasible. It is recommended that infiltration testing to BRE365 is conducted to confirm this assumption.

1.5 The Thames Water Asset Location Seach details an existing foul water sewer serving the surrounding properties and as such, a diversion would likely be necessary to facilitate development. The client previously contacted Thames Water regarding a sewer diversion and this should be finalised prior to commencement on site.

1.6 The Thames Water Asset Location search shows a public storm sewer to the north of the site. Given that infiltration may not be feasible due to site geology, discharge to this sewer via a new connection may be necessary. The Client should carry out a CCTV survey of the existing house storm water drainage to confirm if there is any existing storm drainage currently situated within the site boundary that could be re-used. Alternatively, a new offsite connection to the storm sewer may be necessary.

1.7 The Environment Agency (EA) mapping for Flood Risk, shows the site located within Flood Zone 1 (Low risk of fluvial or tidal flooding). This means that in any year land has less than a 0.1% chance of flooding from rivers or the sea.

1.8 In accordance with Local Sustainable Urban Drainage and Flood Risk Policies, developments are required to use SuDS to reduce both the volume and runoff rates to the drainage system. Current local Sustainable drainage guidance is to achieve as close as feasible to greenfield runoff rates for storm runoff from new developments.

1.9 The data published on the DEFRA database shows the site located within the London Management Catchment and for this development, an upper allowance of 40% should be applied to rainfall events as the climate change allowance within this region.

1.10 Proposals show the rooftop catchments of the proposed development (90m^2) and driveway (40m^2) are to drain via a surface water sewage run into the existing surface water network offsite. Storage is to be provided by a geocellular attenuation tank (6m^2).

1.11 Discharge from the network will be limited to a maximum of 0.9 l/s via a 50mm aperture hydrobrake flow control during the 1 in 100-year event + 40% climate change (1%AEP+CC) to an existing surface water sewer directly north of the site.

1.12 In accordance with the SuDS management train approach, the use of SuDS measures to reduce and control surface water flows have been considered in detail for the development. A proposed storm drainage strategy plan layout is included in Appendix II.

1.13 This report has been produced broadly in accordance with the National Planning Policy Framework (NPPF), Ciria SuDS Manual and National Standards for Sustainable Drainage Systems (SuDS).

2.0 POLICY COMPLIANCE

2.1 The purpose of this assessment is to demonstrate that the development proposal outlined above can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk of flooding, as per the:

- National Planning Policy Framework
- London Borough of Hillingdon Council & national SuDS Guidance
- National Standards for Sustainable Drainage Systems (SuDS)

3.0 SITE LOCATION

3.1 The site is located at the land adjacent to 218 Nestle's Avenue, Hayes, UB3 4QG. The site boundary is outlined in Figure 1 below.

Figure 1 - Site location within red line boundary

3.2 It is understood the proposed development is for the construction of a new residential property adjoined to the existing property, with associated external works. Architectural plans are included in Appendix I.

3.3 The proposed site plan is extracted below.

Figure 2: Proposed Site Plan extract

4.0 GEOLOGY AND INFILTRATION POTENTIAL

4.1 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is of London Clay Formation – Clay, Silt and Sand. Superficial deposits underlaying the site consist of Langley Silt Member – Clay and Silt.

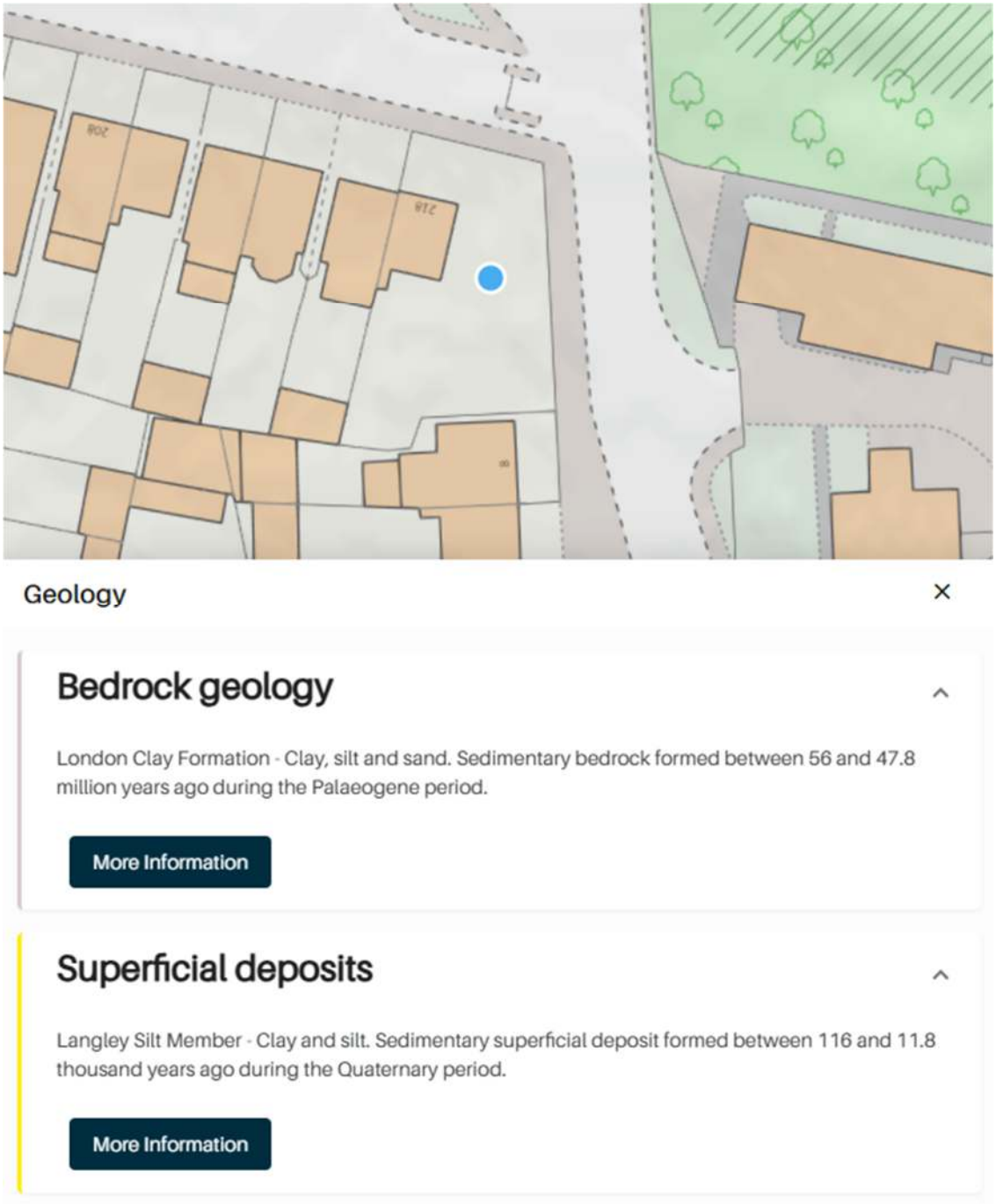

Figure 3: BGS Geology map extract

4.2 Given the BGS geology viewer shows the site to be underlaid by clay, infiltration may not be feasible. It is recommended that infiltration testing to BRE365 is conducted to confirm this assumption.

5.0 EXISTING SITE DRAINAGE

5.1 The Thames Water Asset Location Seach details an existing foul water sewer serving the surrounding properties and as such, a diversion would likely be necessary to facilitate development. The client previously contacted Thames Water regarding a sewer diversion and this should be finalised prior to commencement on site.

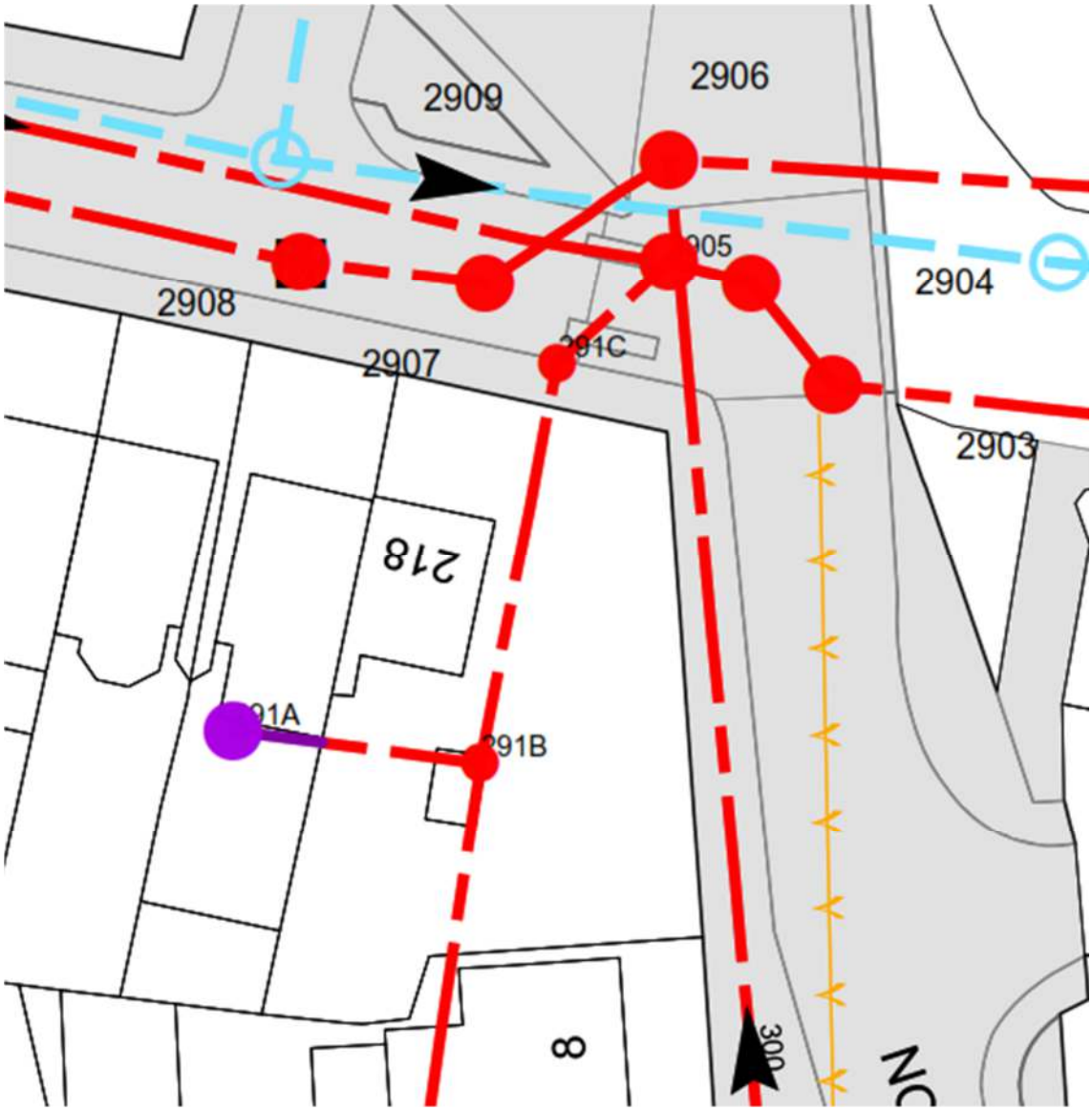

Figure 4: Thames Water Asset Search extract

5.2 The Thames Water Asset Location search shows a public storm sewer to the north of the site. Given that infiltration may not be feasible due to site geology, discharge to this sewer via a new connection may be necessary. The Client should carry out a CCTV survey of the existing house storm water drainage to confirm if there is any existing storm drainage currently situated within the site boundary that could be re-used. Alternatively, a new offsite connection to the storm sewer may be necessary.

6.0 SOURCES OF FLOODING

6.1 Tidal and Fluvial

The Environment Agency (EA) mapping for Flood Risk, shows the site located within Flood Zone 1 (Low risk of fluvial or tidal flooding). This means that in any year land has less than a 0.1% chance of flooding from rivers or the sea.

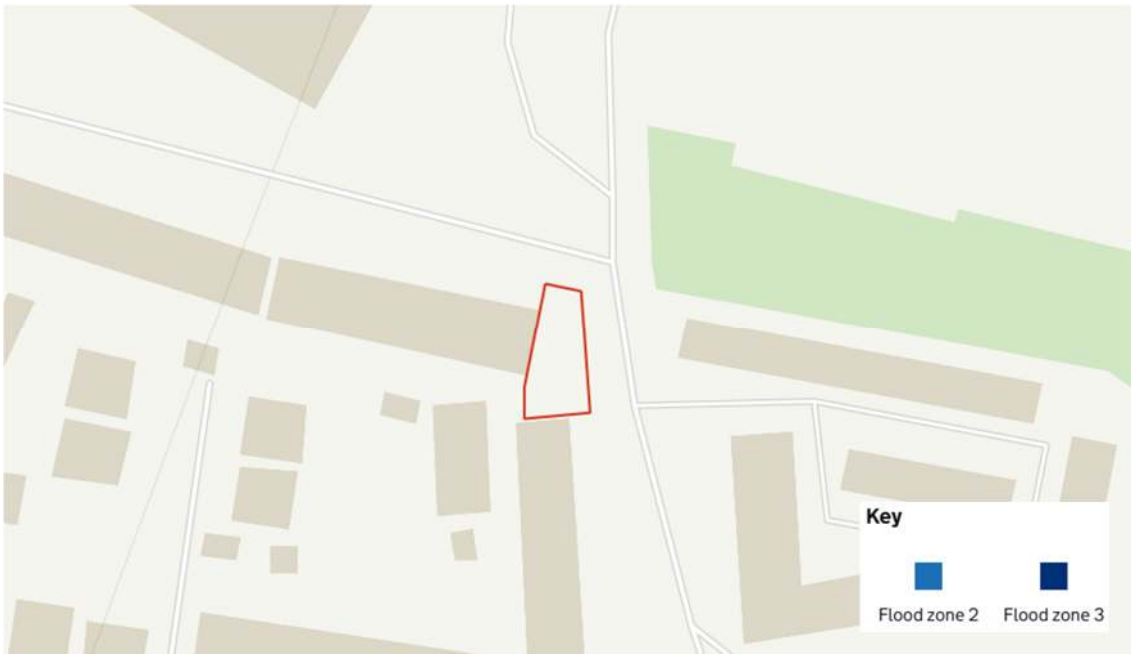

Figure 5: Flood map for planning extract

6.2 EA Long Term Flood Risk Map

According to the EA Long Term Flood Risk map, the site is at a very low risk of tidal and fluvial flooding, staying at very low risk between 2036 to 2069. Very Low risk means that each year this area has a chance of flooding less than 0.1%. It is understood that the EA Long Term Flood Risk map uses a 15m boundary to determine the flood risk to a development.

Figure 6: EA Long term risk of flooding map extract - Rivers and the Sea

6.3 Surface Water

According to the EA Long Term Flood Risk map, the site is shown to be at very low risk of surface water flooding, staying at very low risk between 2040 to 2060. Very Low risk means that each year this area has a chance of flooding less than 0.1%. The southwestern boundary of the site is shown to increase to low risk between 2040 to 2060 (between a 0.1% and 1% chance of flooding each year).

Figure 7: EA Long term risk of flooding map extract – Surface Water

7.0 CLIMATE CHANGE ALLOWANCES

7.1 Making an allowance for climate change in the design of surface water drainage systems will help to minimise vulnerability and provide resilience to flooding and coastal change in the future. Climate Change allowances vary across the UK subject to catchment conditions and are based on climate change projections and different scenarios of carbon dioxide (CO2) emissions to the atmosphere.

1% annual exceedance rainfall event

Epoch

	Central allowance	Upper end allowance
2050s	20%	40%
2070s	25%	40%

Figure 8: London Management Catchment peak rainfall allowances

7.2 The site is located in the London Management Catchment. On the basis of the climate change table above, the Peak rainfall allowance should therefore be 40% for residential development with a 100yr design life.

8.0 SUSTAINABLE URBAN DRAINAGE (SUDS) ASSESSMENT

8.1 In accordance with the SuDS management train approach, the use of various SuDS measures to reduce and control surface water flows have been considered in detail for the development.

8.2 The management of surface water has been considered in respect to the SuDS hierarchy below as detailed in the CIRIA 753 'The SUDS Manual', Section 3.2.3:

SUDS DRAINAGE HIERARCHY				
			Suitability	Comment
	1.	Store rainwater for later use	✓	Rainwater harvesting should be considered by the developer and could be used where feasible.
	2.	Use infiltration techniques, such as porous surfaces in non-clay areas	✓/x	Due to BGS data indicating the presence of Clay, infiltration has not been considered as a primary means of discharging surface water This assumption should be confirmed via infiltration on site to BRE365 compliance. Self-draining gravel surfacing has been proposed for the driveway to provide treatment.
	3.	Attenuate rainwater in ponds or open water features for gradual release	x	Open water features not considered to be appropriate for this site.
	4.	Attenuate rainwater by storing in tanks or sealed water features for gradual release	✓	Excess runoff will be stored in an attenuation tank.
	5.	Discharge rainwater direct to a watercourse	x	No watercourse in close proximity to the site.
	6.	Discharge rainwater to a surface water sewer/drain	✓	There are storm sewers local to the site available for connection.
	7.	Discharge rainwater to Combined Sewer	x	-

Table 1: SuDS Drainage Hierarchy

8.3 Following the SuDS drainage hierarchy it is proposed that surface water be attenuated and discharged through a Hydrobrake to the storm sewer north of the site. Outflow is proposed to be as close as feasible to greenfield runoff rates in accordance with LLFA policy and the Ciria SuDS manual C743.

8.4 The suitability of SuDS components has been assessed in order to provide a sustainable means of providing the required attenuation volumes. The following components have been assessed as follows in Table 3, below.

SUITABILITY OF SUDS COMPONENTS		
SuDS Component	Comment	Suitability
Infiltrating SuDS	Due to the presence of Clay, infiltration has not been considered as a primary means of discharging surface water at this time. Self-draining gravel surfacing has been proposed for the driveway to provide treatment.	✓/x
Permeable Pavement	Permeable pavement in the form of gravel surfacing is deemed suitable for treatment.	✓
Green / Blue Roofs	Not suitable for this development as the proposed rooftop is pitched.	x
Rainwater Harvesting	It is recommended that a water butt is installed on the rainwater downpipe to provide water for re-use in the garden.	✓
Swales	Due to the nature of the proposals, this has been discounted at this time.	x
Rills and Channels	Due to the nature of the proposals, this has been discounted at this time.	x
Bioretention Systems	Not deemed necessary for this site.	x
Retention Ponds and Wetlands	Unsuitable due to insufficient space on site to implement.	x
Detention Basins	Unsuitable due to insufficient space on site to implement.	x
Geocellular Systems	Geocellular systems can be configured to suit almost every site/development. They can be used in this development to provide necessary attenuation storage.	✓
Proprietary Treatment Systems	Not deemed necessary for this site.	x
Filter Drains and Filter Strips	Due to the nature of the proposals, this has been discounted at this time.	x

Table 2: Suitability of SuDS Components

8.5 Geocellular storage

8.5.1 Geocellular systems can be used to control and manage rainwater surface water runoff either as a soakaway or as a storage tank.

8.5.2 The modular/honeycomb nature of geocellular systems means that they can be tailored to suit the specific requirements of any site. The maintenance of Geocellular crates consists of regular inspection of silt traps, manholes, pipework and pre-treatment devices, with removal of sediment and debris as required.

8.6 Guidance about proper use, installation and maintenance of any proprietary system should be provided by the supplier and incorporated into the site proposals at detailed design stage.

9.0 SURFACE WATER DRAINAGE STRATEGY

9.1 In accordance with local LLFA Policy for the Management of Surface Water, developments are required to use SuDS to reduce runoff rates to as close as feasible to pre development greenfield rate.

9.2 Due to site geology consisting of Clay, Meridian has not considered infiltration as an effective primary means of surface water discharge.

9.3 Proposals show the rooftop catchments of the proposed development (90m^2) and driveway (40m^2) are to drain via a surface water sewage run into the existing surface water network offsite. Storage is to be provided by a geocellular attenuation tank (6m^2).

9.4 Greenfield Surface water discharge rates have been calculated below and supporting calculations are included in Appendix III.

SURFACE WATER DISCHARGE RATES SUMMARY						
	Area (ha)	Discharge Rates (l/s)				
		1 year	2 year/Q_{BAR}	30 year	100 year	100 year +40% CC
Greenfield Rates	0.028	0.04	0.04	0.01	0.1	-
Proposed Runoff Rates	0.013	-	0.9	0.9	0.9	0.9

Table 4: Calculated Runoff rates

9.5 Discharge from the network will be limited to a maximum of 0.9 l/s via a 50mm aperture hydrobrake flow control during the 1 in 100-year event + 40% climate change (1%AEP+CC) to an existing surface water sewer directly north of the site.

9.6 A proposed storm drainage strategy plan layout is included in Appendix II.

10.0 WATER QUALITY

10.1 The primary risk to water quality is from the trafficked areas (i.e. residential parking). The plan included in Appendix II shows a Polypipe Permatreat-S drain is proposed for the driveway. Positioned at the boundary, this shall offer the necessary treatment for trafficked areas onsite. The datasheet for this product is included in Appendix III.

10.2 Runoff from the rooftop is considered to be largely uncontaminated for residential properties based on information contained within the Ciria SuDS Manual.

11.0 SCHEDULE OF MAINTENANCE

11.1 All onsite SuDS and drainage systems will be privately maintained. A long-term maintenance regime should be agreed with the site owners before adoption.

11.2 In addition to a long-term maintenance regime, it is recommended that all drainage elements implemented on site should be inspected following the first rainfall event post-construction and monthly for the first quarter following construction.

11.3 The site owner will be responsible for the management and maintenance of SuDS devices.

11.4 Typical key suds components operation and maintenance activities are provided below.

TYPICAL KEY SUDS COMPONENTS OPERATION AND MAINTENANCE ACITIVIES													
Operation and Maintenance Activity	SuDS Component												
	Pond	Wetlands	Detention Basin	Infiltration Basin	Soakaway	Infiltration Trench	Filter Drain	Modular Storage	Pervious pavement	Swale/Bioretention	Filter Strip	Green Roofs	Proprietary Treatment
Regular Maintenance													
Inspection		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Litter/debris removal	✓	✓	✓	✓	-	✓	✓	-	✓	✓	✓	x	-
Grass cutting	✓	✓	✓	✓	-	✓	✓	-	-	✓	✓	x	x
Weed/invasive plant control	-	-	-	-	x	-	-	x	-	x	-	✓	x
Shrub management	-	-	-	-	x	x	x	x	-	-	-	x	x
Shoreline vegetation management	✓	✓	-	x	x	x	x	x	x	x	x	x	x
Aquatic vegetation management	✓	✓	-	x	x	x	x	x	x	x	x	x	x
Occasional Maintenance													
Sediment management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vegetation replacement	-	-	-	-	x	x	x	x	x	-	-	✓	x
Vacuum sweeping and brushing	x	x	x	x	x	x	x	x	✓	x	x	x	x
Remedial Maintenance													
Structure rehabilitation/repair	-	-	-	-	-	-	-	-	-	-	-	-	x
Infiltration surface reconditioning	x	x	x	-	-	-	-	x	-	-	-	x	x
Key:													
Will be Required		May be Required						Not Normally Required					

Table 4: General Maintenance Requirements (Source: CIRIA SuDS Manual C753)

11.5 General maintenance of key SuDS components are provided below.

PROPOSED SCHEDULE OF MAINTENANCE FOR BELOW GROUND DRAINAGE				
Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Comments
Surface Water Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried as necessary
Gullies/Channels	1 year	1 year	N/A	Cleansing to be carried as necessary
Hydrobrake	6 months	As required		Cleansing to be carried as necessary
Attenuation Tank	See Comments	See Comments	See Comments	Maintained in accordance with manufacturers recommendations

Table 5: Maintenance for Below Ground Drainage (Source: CIRIA SuDS Manual C753)

12.0 CONCLUSION

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APPENDIX I Architects plans

NOTES

1. LEVELS ARE RELATED TO ORDNANCE SURVEY BY GPS OBSERVATION.
2. SURVEY ORIENTATED NORTH BY GPS OBSERVATION.
3. GIRTH, SPREADS, HEIGHTS AND SPECIES OF TRESS ARE INDICATIVE ONLY.
4. SURVEY HAS BEEN CARRIED OUT TO AN ACCURACY COMMENSURATE WITH A 1:100 SCALE DRAWING.
5. DETAILS IN ADJACENT PROPERTIES ARE APPROXIMATE WHERE WE HAVE NO ACCESS.
6. LEVELS SHOWN ON KERB LINES ARE ROAD (CHANNEL) LEVELS.
7. ALL CRITICAL DIMENSIONS AND LEVELS SHOULD BE CHECKED PRIOR TO DESIGN AND/OR CONSTRUCTION.

ABBREVIATION LIST

AV	AIR VALVE
B	BOLLARD
CL	COVER LEVEL
DK	DROP KERB
DPC	DAMP PROOF COURSE
ECB	ELECTRIC CABLE CABINET
ECP	ELECTRIC CABLE PIT
EP	ELECTICITY POLE
ER	EARTH ROD
FAI	FRESH AIR INLET
FH	FIRE HYDRANT
GC	GAS COCK
GU	GULLY
GUS	GULLY SURROUND
IC	INSPECTION COVER
IL	INVERT LEVEL
LC	LAMP COLUMN
M	SERVICE MARKER
MH	MANHOLE COVER
NPV	NO PIPES VISIBLE
OHC	OVERHEAD CABLES
RS	ROAD SIGN
RWP	RAIN WATER PIPE
SC	STOP COCK
SV	STOP VALVE
SVP	SOIL AND VENT PIPE
TBM	TEMPORARY BENCH MARK
TCB	TELEPHONE CABLE CABINET
TC	TELEPHONE CABLE PIT
TP	TELEPHONE POLE
TOS	TOP OF SILT
TOP	TOP OF PILLAR
TOW	TOP OF WALL
TV	CABLE TV PIT
UTL	UNABLE TO LIFT
VP	VENT PIPE
WL	WATER LEVEL
WM	WATER METER
WO	WASH OUT

STATION CO-ORDINATES

NO.	EASTING	NORTHING	LEVEL
1	510277.873	178964.295	28.237
2	510291.110	178960.946	28.147
3	510293.779	178941.626	28.276
4	510273.973	178939.135	28.457
5	510282.707	178939.576	28.516
6	510295.304	178930.545	28.369

2 122.11 SURVEY STATION

STATIONS IN HARD SURFACES ARE CROSS HEAD GALVANISED BOLTS.

STATIONS IN SOFT GROUND ARE PEGS AT GROUND LEVEL WITH CROSS HEAD GALVANIZED SCREWS.

NO.	DATE	DETAILS

REVISIONS

KND SURVEYS LTD
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HIGH WYCOMBE
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Tel: 01494 718453
Fax: 01494 717576
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CLIENT

WESTWAYS PROPERTIES LTD
2 LAKE END COURT
TAPLOW
S6 0JQ

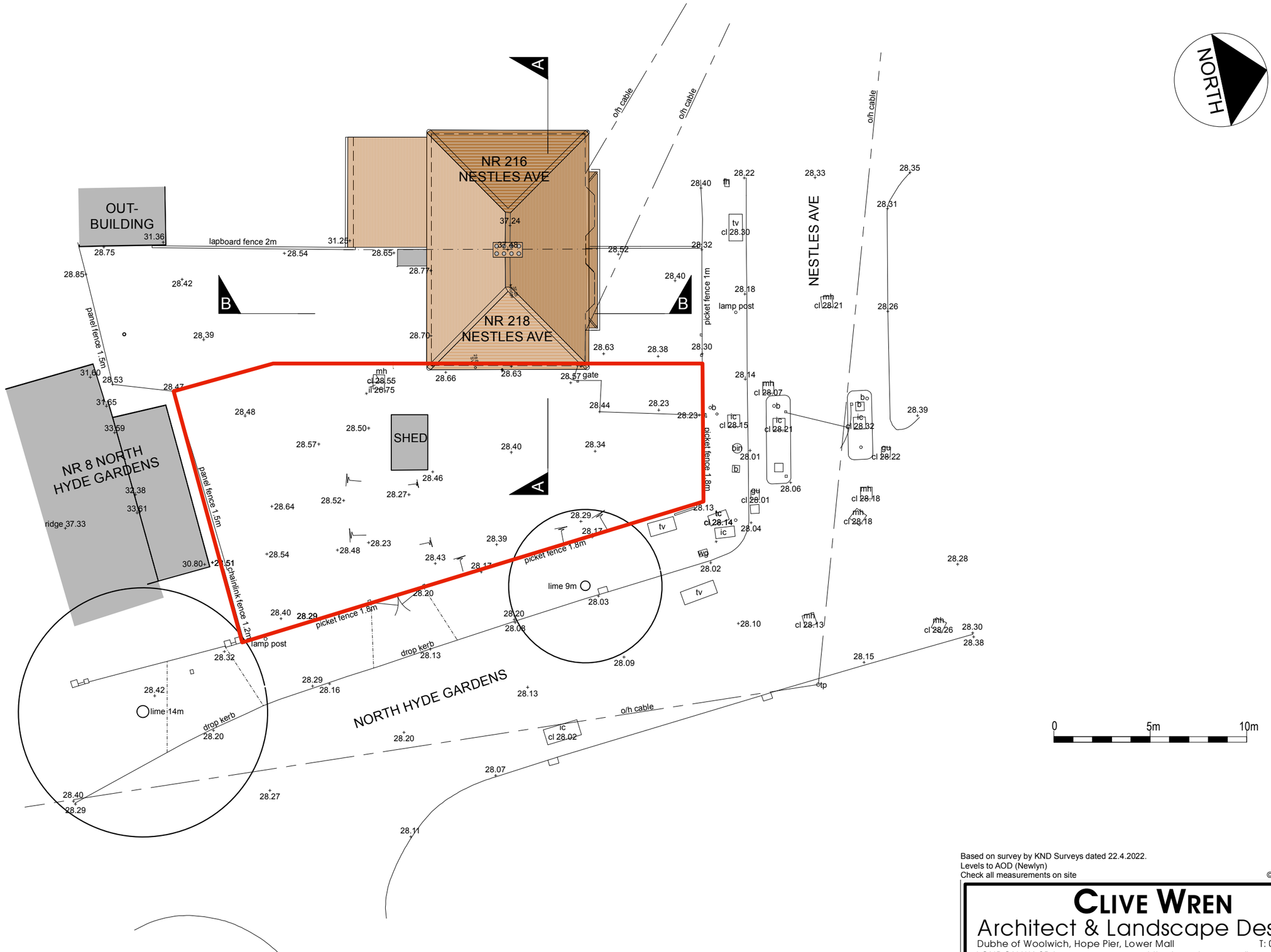
JOB TITLE

218 NESTLES AVENUE
HAYES
UB3 4QG

DRAWING TITLE

SITE SURVEY

DRAWING No.	DRAWN BY	DATE
D0322 - T	MTP	6 APR 2022
SURVEYED BY		SCALE
MTP / JC		1:100 A1 Sheet



Based on survey by KND Surveys dated 22.4.2022.
Levels to AOD (Newlyn)
Check all measurements on site

CLIVE WREN
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www.wrenarchitect.co.uk
e: clivewren@aol.com

Job: **Land to the side of 218 Nestle's Avenue, Hayes UB3 4QG**

Client: RURI Properties Ltd

Drawing: Existing Site Plan

Scale: 1:200 @ A3

Drawn: CW 11/2023

Dwg No: **198P.L2A**

SCHEDULE

Site Area 283.6m2

New Building Footprint 82.1m2

Accommodation:
4 Bed/7 Person House GIA 136.9m2

Private Outdoor Amenity Space 152m2
Front: 49m2, Back: 103m2

Road Frontage 32.2m
Soft Landscape Frontage 21.1m (65.5%)

Car Parking: 1nr

Based on survey by KND Surveys dated 22.4.2022.
Levels to AOD (Newlyn)
Check all measurements on site

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e: clivewren@aol.com

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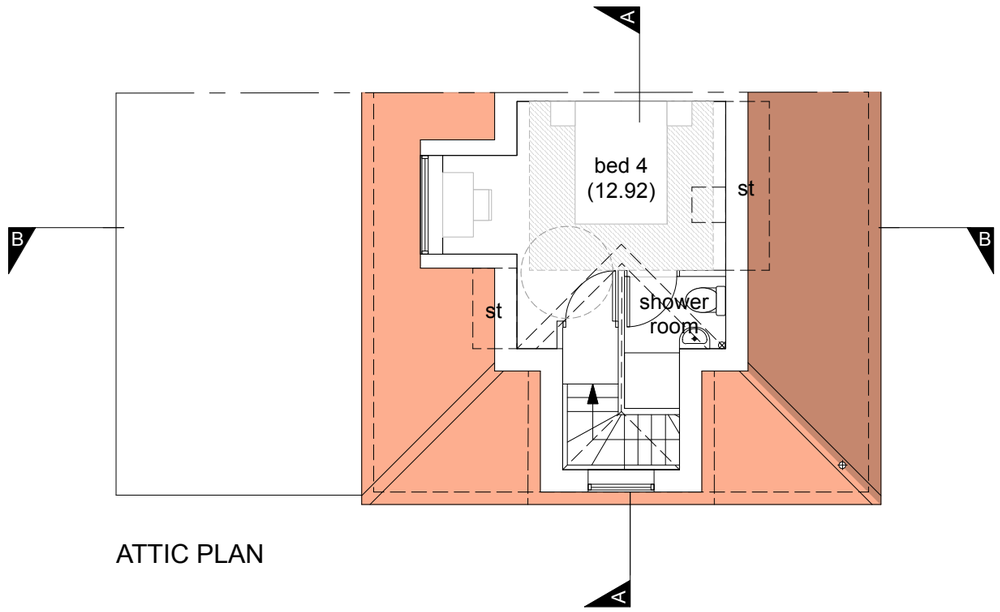
Client: RURI Properties Ltd

Drawing: Proposed Site Plan

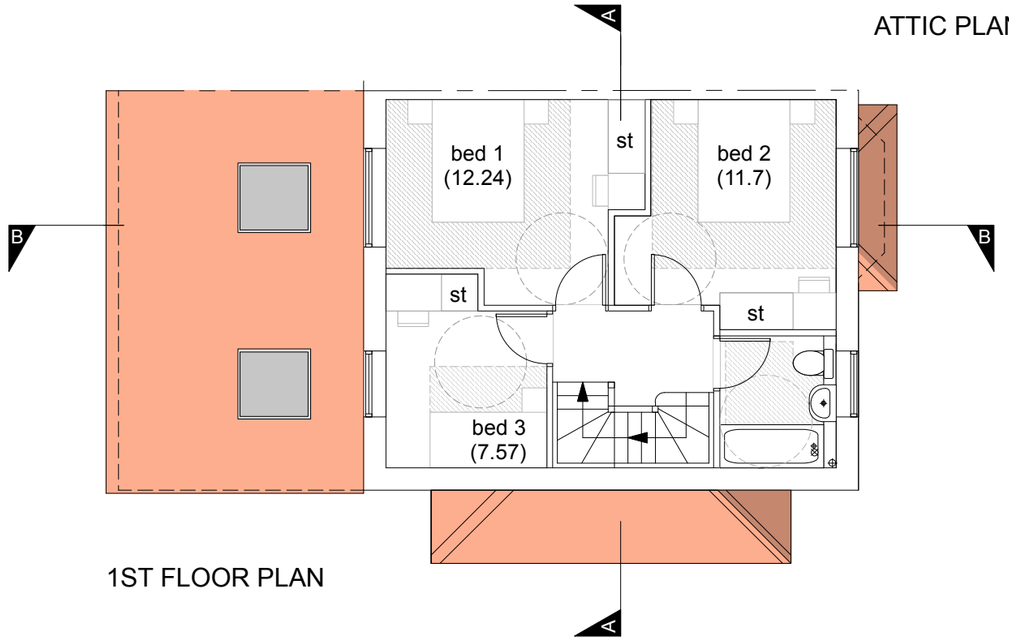
Scale: 1:200 @ A3

Drawn: CW 11/2023

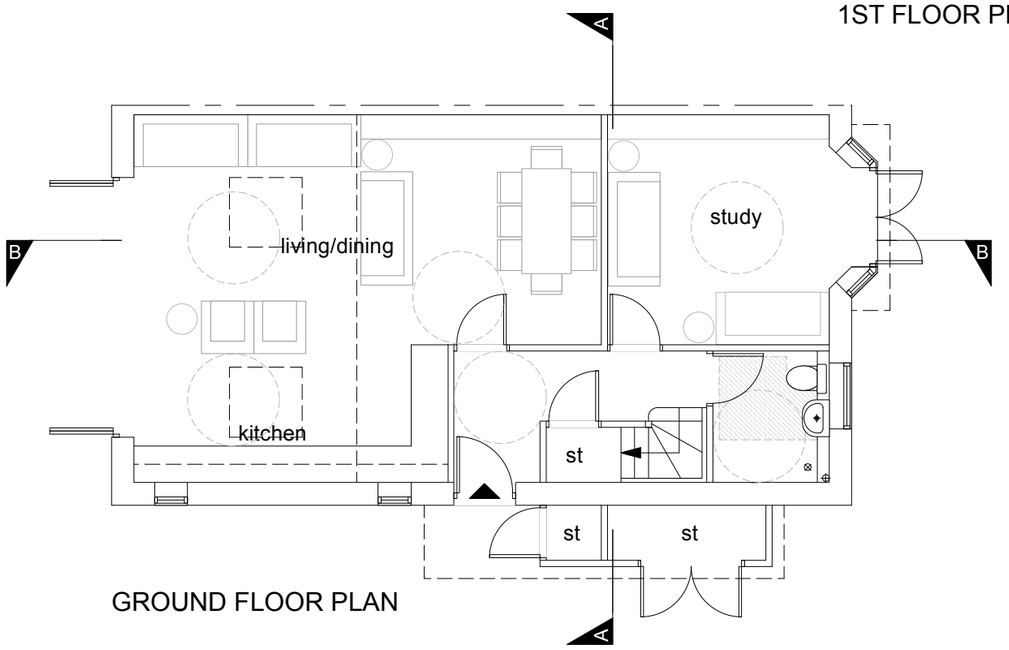
Dwg No: **198P.L3A**



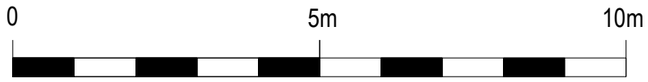
ATTIC PLAN



1ST FLOOR PLAN



GROUND FLOOR PLAN



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Check all measurements on site

CLIVE WREN
Architect & Landscape Designer
Dubhe of Woolwich, Hope Pier, Lower Mall
LONDON W6 9DJ
T: 07766 708317
www.wrenarchitect.co.uk
e: clivewren@aol.com

Job: **Land to the side of 218 Nestle's Avenue, Hayes UB3 4QG**

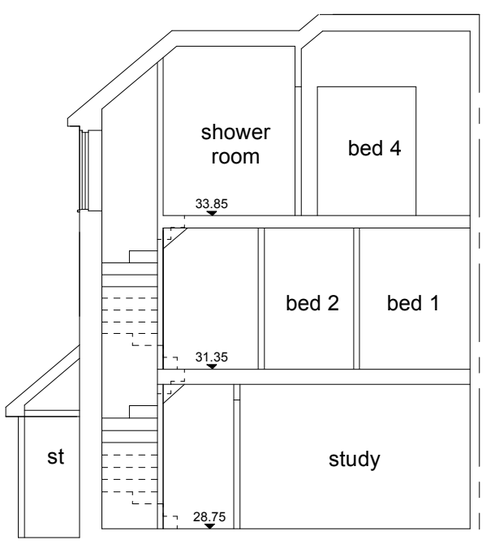
Client: RURI Properties Ltd

Drawing: Proposed Floor Plans

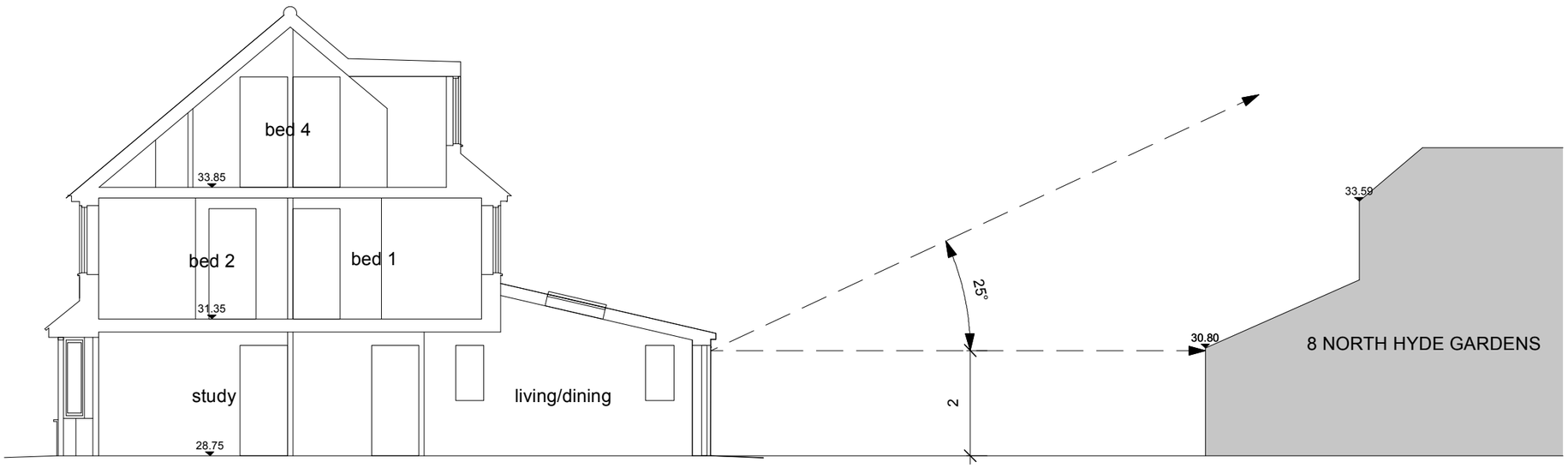
Scale: 1:100 @ A3

Drawn: CW 11/2023

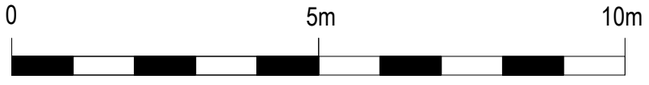
Dwg No: **198P.L4A**



SECTION A-A



SECTION B-B



Based on survey by KND Surveys dated 22.4.2022.
Levels to AOD (Newlyn)
Check all measurements on site

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Job: **Land to the side of 218 Nestle's Avenue, Hayes UB3 4QG**

Client: RURI Properties Ltd

Drawing: Proposed Sections

Scale: 1:100 @ A3

Drawn: CW 11/2023

Dwg No: **198P.L5A**

FRONT (NORTH) ELEVATION

SIDE (EAST) ELEVATION

REAR (SOUTH) ELEVATION

0 5m 10m

Based on survey by KND Surveys dated 22.4.2022.
Levels to AOD (Newlyn)
Check all measurements on site

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LONDON W6 9DJ www.wrenarchitect.co.uk e: clivewren@aol.com

Job: **Land to the side of 218 Nestle's Avenue, Hayes UB3 4QG**

Client: RURI Properties Ltd

Drawing: Proposed Sections

Scale: 1:100 @ A3

Drawn: CW 11/2023

Dwg No: **198P.L6A**

APPENDIX II Proposed Drainage Layout

DESIGN PHILOSOPHY

SITE GEOLOGY SHOWS THAT INFILTRATION SUDS WOULD NOT BE VIABLE TO SUPPORT GRAVITATIONAL DISCHARGE FOR THE PROPOSED DEVELOPMENT. AS SUCH, MCEC HAVE PROPOSED ON SITE ATTENUATION OF SURFACE WATER AND DISCHARGE TO AN EXISTING SURFACE WATER SEWER IN CLOSE PROXIMITY TO THE SITE. LOCAL GUIDANCE STATES THAT POST DEVELOPMENT RUNOFF RATES SHOULD BE AS CLOSE AS FEASIBLE TO GREENFIELD RATES.

ALL WATER COLLECTED WITHIN THE THE ROOFTOP AND DRIVEWAY CATCHMENTS ARE PROPOSED TO DRAIN VIA A SURFACE WATER SEWAGE RUN TO A HYDROBRAKE MANHOLE LOCATED BENEATH THE FRONT GARDEN OF THE PROPERTY. ADDITIONAL ON SITE STORAGE IS TO BE PROVIDED BY AN ATTENUATION TANK (6m2), WITH THE DRIVEWAY RUNOFF TO BE MANAGED BY AN ACO DRAIN AT THE SITE BOUNDARY.

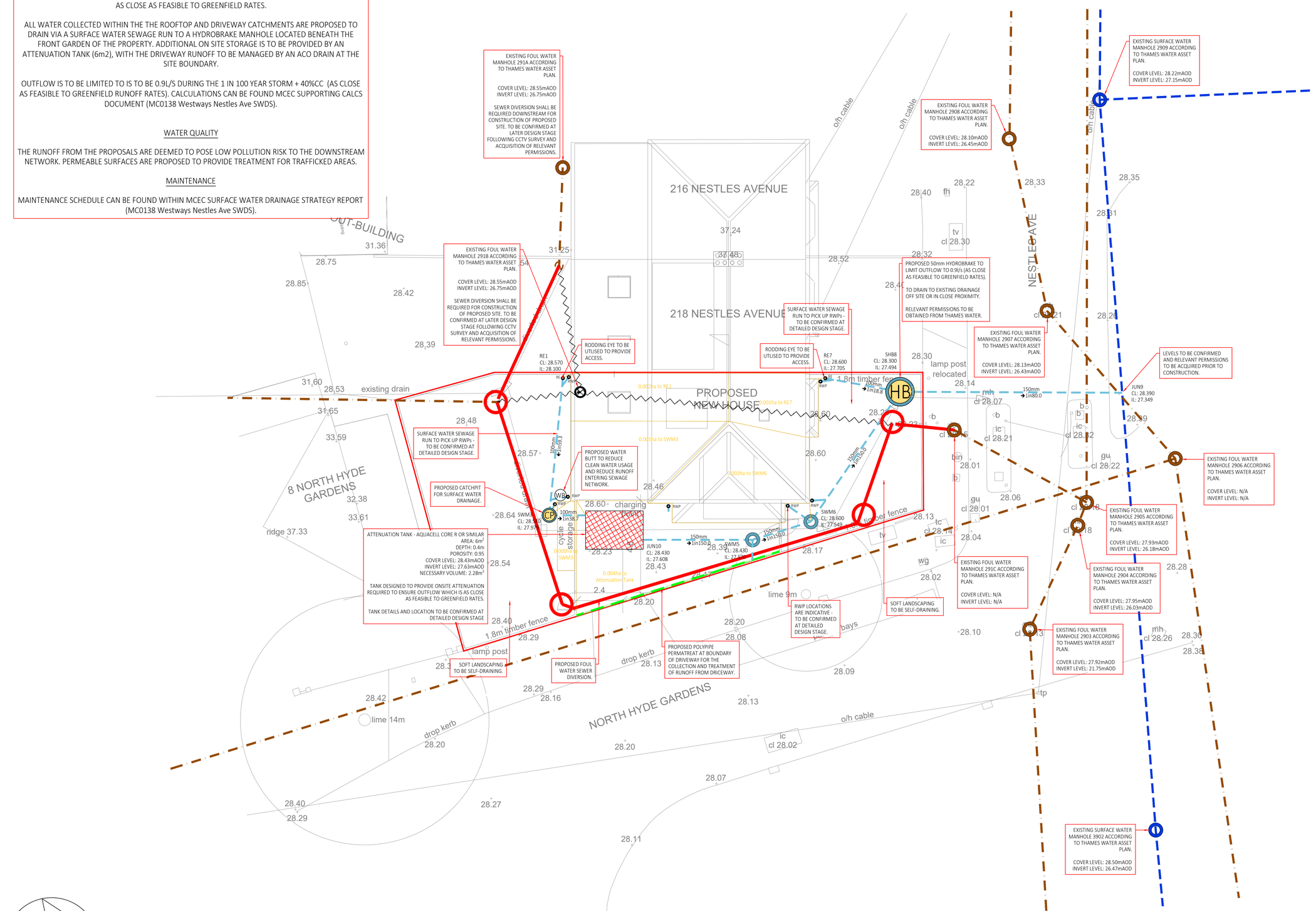
OUTFLOW IS TO BE LIMITED TO IS TO BE 0.9l/S DURING THE 1 IN 100 YEAR STORM + 40%CC (AS CLOSE AS FEASIBLE TO GREENFIELD RUNOFF RATES). CALCULATIONS CAN BE FOUND MCEC SUPPORTING CALCS DOCUMENT (MC0138 Westways Nestles Ave SWDS).

WATER QUALITY

THE RUNOFF FROM THE PROPOSALS ARE DEEMED TO POSE LOW POLLUTION RISK TO THE DOWNSTREAM NETWORK. PERMEABLE SURFACES ARE PROPOSED TO PROVIDE TREATMENT FOR TRAFFICKED AREAS.

MAINTENANCE

MAINTENANCE SCHEDULE CAN BE FOUND WITHIN MCEC SURFACE WATER DRAINAGE STRATEGY REPORT (MC0138 Westways Nestles Ave SWDS).



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c. ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
d. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
e. CDM REGULATIONS 2015. ALL CURRENT DRAWINGS AND SPECIFICATIONS MUST BE READ IN CONJUNCTION WITH THE DESIGNER'S HAZARD RISK AND ENVIRONMENT ASSESSMENT RECORD. DESIGN HAS BEEN PRODUCED BASED ON INFORMATION PROVIDED BY THE CLIENT/PRINCIPLE DESIGNER AVAILABLE AT TIME OF ISSUE. CONTRACTOR TO REVIEW DRAWING AND SPECIFICATION IN CONTEXT WITH THE WIDER SITE AND SPECIFIC SITE INVESTIGATION, CONTAMINATION ASSESSMENT, ASBESTOS SURVEY, ENVIRONMENTAL SURVEY, UXO SURVEY AND ANY OTHER RELEVANT INFORMATION AND MANAGE RISKS RELATING TO THE WORKS OUTLINED IN THE DRAWINGS AND SPECIFICATION. PRINCIPLE CONTRACTOR TO MAKE DESIGNER AND CLIENT AWARE OF SITE SPECIFIC RISKS THAT MAY AFFECT THE DRAWING AND SPECIFICATION.
f. CDM REGULATIONS 2015 FOR GENERIC MAINTENANCE AND MANAGEMENT RISKS REFER TO CHAPTER 36 OF CIRIA 752 SUDS MANUAL. FOR PROPRIETARY SYSTEMS SEE MANUFACTURER'S MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.

2. CONSTRUCTION NOTE
a. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
b. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
c. ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN IN GOOD FAITH AFTER CONSULTATION WITH THE RELEVANT AUTHORITY, HOWEVER ACCURACY IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION WHILST UNDERTAKING THE WORKS.
d. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
e. ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON ANY MERIDIAN DRAWINGS, THE MANUFACTURERS INSTRUCTIONS MUST BE USED

3. BELOW GROUND DRAINAGE
a. UPVC-U PIPES TO BS 4660 : 2000 AND PLASTIC INSPECTION CHAMBERS AND FITTINGS TO BS EN 13598-1:2020. CLAY PIPES TO BS EN 295-1:2013. CONCRETE MANHOLE AND INSPECTION CHAMBERS TO BS EN 1917:2002
b. ALL ADOPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE App C - DESIGN AND CONSTRUCTION GUIDANCE AND THE RELEVANT COUNCIL DESIGN GUIDE.
c. ALL PRIVATE FOUL WATER SEWERS TO BE LAID AT 1 IN 40 AT THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
d. ALL PRIVATE FOUL SEWER PIPES TO BE 100mm DIAMETER FROM SOIL STACKS UNLESS OTHERWISE STATED ON THE DRAWING AND 150mm WHERE SERVING MORE THAN 9 PROPERTIES.
c. ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
d. ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100mm DIAMETER FROM DOWNPIPES AND 150mm DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
e. ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES OR SOIL STACKS DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER.
f. EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
g. CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
h. ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.

4. MANHOLE COVERS AND FRAMES
a. MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
b. MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

LEGEND

- EXISTING SW PUBLIC INSPECTION CHAMBER / MANHOLE - RETAINED
- EXISTING FW PUBLIC INSPECTION CHAMBER / MANHOLE - RETAINED
- EXISTING FW PUBLIC INSPECTION CHAMBER / MANHOLE - ABONDONED / DIVERTED
- EXISTING PUBLIC SW RUN - RETAINED
- EXISTING PUBLIC FW RUN - RETAINED
- EXISTING PUBLIC RUN - ABONDONED / DIVERTED
- PROPOSED TYPE D SW INSPECTION CHAMBER
- CP — CATCHPIT CHAMBER/MANHOLE
- HB — PROPOSED HYDROBRAKE MANHOLE
- PROPOSED SW PIPE RUN
- RE — PROPOSED SW RODDING EYE
- RWP — PROPOSED SW RAINWATER PIPE
- PROPOSED SLOT/CHANNEL DRAIN
- GEOCELLULAR ATTENUATION - TANKED
- SITE BOUNDARY
- WB — RWP ROUTED THROUGH WATER BUTT
- PROPOSED FOUL WATER SEWER DIVERSION

REV:	DESCRIPTION:	BY:	DATE:
-	-	-	-

STATUS: Preliminary

MERIDIAN
CIVIL ENGINEERING CONSULTANCY

CLIENT: Westways Properties

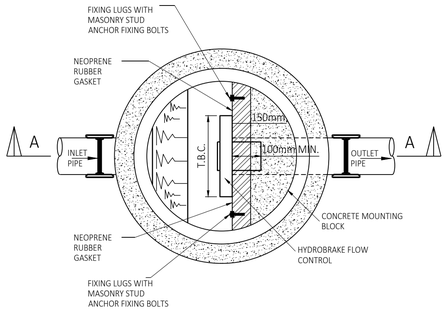
SITE: 218 Nestle's Avenue, Hayes, UB3 4QG

TITLE: Surface Water Drainage Strategy - Proposed Layout

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1:100	22/08/25	IW	MN

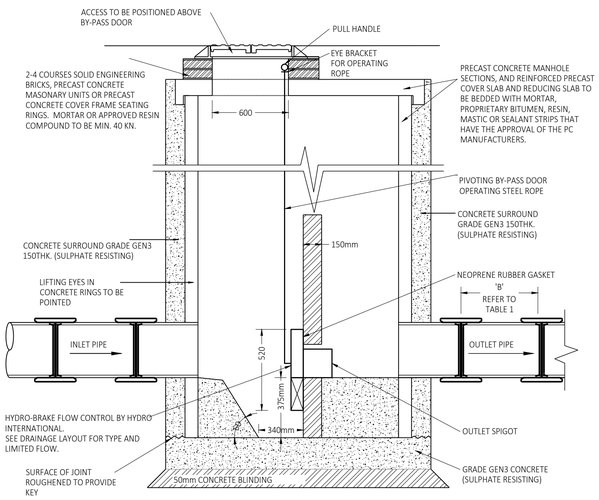
PROJECT NO:	DRAWING NO:	REVISION:
MC0138	CIV01	P1

1:100 @ A1
0 1m 2m 3m 4m 5m



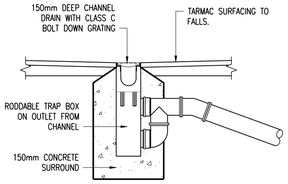
MANHOLE WITH HYDROBRAKE FLOW CONTROL PLAN

N.T.S.



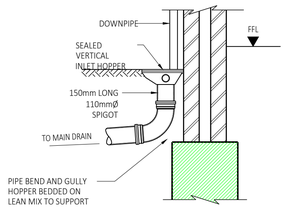
MANHOLE CONTROL (HYDRODBRAKE) SECTION

N.T.S.



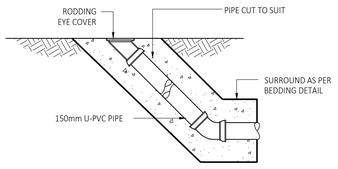
CHANNEL DRAIN

(1:20)



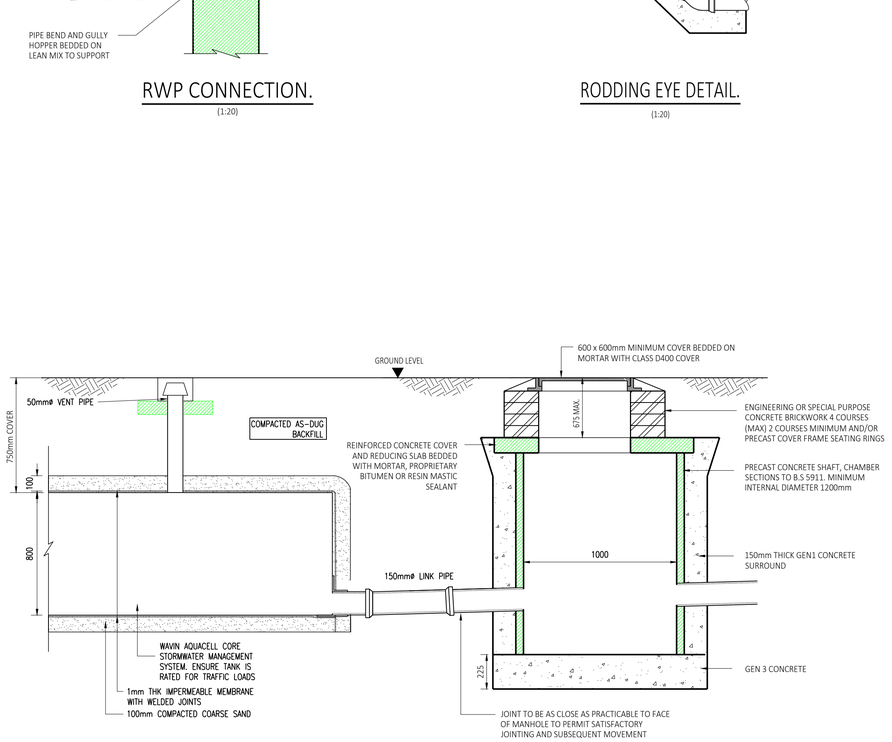
RWP CONNECTION.

(1:20)



RODDING EYE DETAIL.

(1:20)

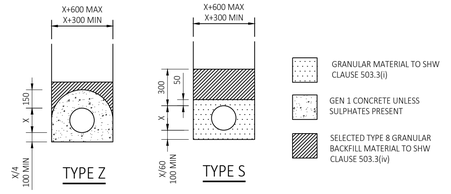


ATTENUATION TANK DETAIL.

(1:20)

CATCHPIT TO INVERT 0.9m TO 2.7m.

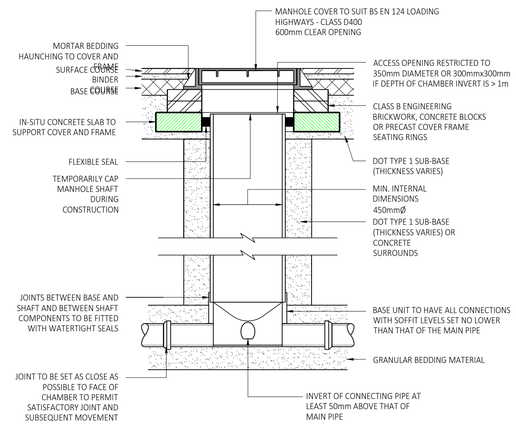
(1:20)



TRENCH AND BEDDING DETAILS

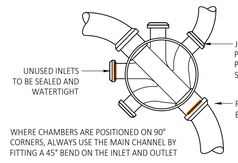
IN TRAFFICKED AREAS:
TYPE S WHERE COVER >900mm
TYPE Z WHERE COVER <900mm

IN NON-TRAFFICKED AREAS:
TYPE S WHERE COVER >600mm
TYPE Z WHERE COVER <600mm



ALTERNATIVE BASE INVERT LAYOUTS
ALL CONNECTIONS TO BE MIN. SOFFIT TO SOFFIT

TABLE 1	
NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH OF ROCKER PIPE (m)
150 TO 600	0.6
>600 TO 750	1.0
>750	1.2



TYPE D ACCESS CHAMBER - FLEXIBLE MATERIAL.

(SUBJECT TO VEHICLE LOADING, MAX. DEPTH 3m, NON-ENTRY)

(1:20)

1:20 @ A1
0 200 400 600 800 1000mm

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REV:	DESCRIPTION:	BY:	DATE:
-	-	-	-

STATUS: Preliminary

MERIDIAN
CIVIL ENGINEERING CONSULTANCY

CLIENT: Westways Properties

SITE: 218 Nestle's Avenue, Hayes, UB3 4QG

TITLE: Standard Details Sheet

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1:20	22/08/25	IW	MN

PROJECT NO:	DRAWING NO:	REVISION:
MC0138	CIV02	P1

APPENDIX III Calculations

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	11/08/2025
Calculated by	IW
Reference	MC0138
Model version	2.1.2

Location

Site name	
Site location	

Site easting (British National Grid)	510287
Site northing (British National Grid)	178947

Site details

Total site area (ha)	0.0284 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	611 mm		611
How should SPR be derived?	WRAP soil type		
WRAP soil type	2		2
SPR	0.3		
QBar (IH124) (l/s)	0.04 l/s		

Growth curve factors

	My value		Map value
Hydrological region	6		6
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	IH124	
Flow rate 1 year (l/s)	0.04	l/s
Flow rate 2 year (l/s)	0.04	l/s
Flow rate 10 years (l/s)	0.1	l/s
Flow rate 30 years (l/s)	0.1	l/s
Flow rate 100 years (l/s)	0.1	l/s
Flow rate 200 years (l/s)	0.2	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	✓
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	4.00	Minimum Backdrop Height (m)	0.200		

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	1	0.002	4.00	28.570	Manhole	SW_RE	100	103.051	-41.698	0.470
✓	3	0.003	4.00	28.540	Manhole	SW_Standard	250	102.338	-48.840	0.561
✓	5			28.430	Manhole	SW_Standard	450	112.939	-50.118	0.860
✓	6	0.003	4.00	28.600	Manhole	SW_Standard	450	115.972	-49.177	1.051
✓	7	0.001	4.00	28.600	Manhole	SW_RE	100	116.721	-41.699	0.895
✓	8			28.300	Manhole	SW_HB	1200	120.615	-42.406	0.806
✓	9			28.390	Junction			132.188	-42.458	1.041
✓	Attenuation Tank	0.004	4.00	28.430	Junction			104.234	-48.846	0.800
✓	10			28.430	Junction			107.234	-50.118	0.822

Pipeline Schedule

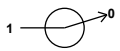
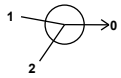
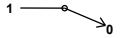
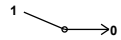
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	7.178	59.3	100	SW_Standard	28.570	28.100	0.370	28.540	27.979	0.461
1.001	1.896	38.7	100	SW_Standard	28.540	27.979	0.461	28.430	27.930	0.400
1.002	3.259	150.0	150	SW_Dummy	28.430	27.630	0.650	28.430	27.608	0.672
1.003	5.705	150.0	150	SW_Standard	28.430	27.608	0.672	28.430	27.570	0.710
1.004	3.176	150.0	150	SW_Standard	28.430	27.570	0.710	28.600	27.549	0.901
1.005	8.210	150.0	150	SW_Standard	28.600	27.549	0.901	28.300	27.494	0.656
2.000	3.958	18.8	100	SW_Standard	28.600	27.705	0.795	28.300	27.494	0.706
1.006	11.573	80.0	150	SW_Standard	28.300	27.494	0.656	28.390	27.349	0.891

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	100	Manhole	SW_RE	3	250	Manhole	SW_Standard
1.001	3	250	Manhole	SW_Standard	Attenuation Tank		Junction	
1.002	Attenuation Tank		Junction		10		Junction	
1.003	10		Junction		5	450	Manhole	SW_Standard
1.004	5	450	Manhole	SW_Standard	6	450	Manhole	SW_Standard
1.005	6	450	Manhole	SW_Standard	8	1200	Manhole	SW_HB
2.000	7	100	Manhole	SW_RE	8	1200	Manhole	SW_HB
1.006	8	1200	Manhole	SW_HB	9		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
1	103.051	-41.698	28.570	0.470	100	Manhole	SW_RE	 0	1.000	28.100	100	SW_Standard
3	102.338	-48.840	28.540	0.561	250	Manhole	SW_Standard	 1	1.000	27.979	100	SW_Standard
								0	1.001	27.979	100	SW_Standard

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
5	112.939	-50.118	28.430	0.860	450	Manhole	SW_Standard	1	1.003	27.570	150	SW_Standard
												
								0	1.004	27.570	150	SW_Standard
6	115.972	-49.177	28.600	1.051	450	Manhole	SW_Standard	1	1.004	27.549	150	SW_Standard
												
								0	1.005	27.549	150	SW_Standard
7	116.721	-41.699	28.600	0.895	100	Manhole	SW_RE					
								0	2.000	27.705	100	SW_Standard
8	120.615	-42.406	28.300	0.806	1200	Manhole	SW_HB	1	2.000	27.494	100	SW_Standard
												
								2	1.005	27.494	150	SW_Standard
								0	1.006	27.494	150	SW_Standard
9	132.188	-42.458	28.390	1.041		Junction		1	1.006	27.349	150	SW_Standard
Attenuation Tank	104.234	-48.846	28.430	0.800		Junction		1	1.001	27.930	100	SW_Standard
												
								0	1.002	27.630	150	SW_Dummy
10	107.234	-50.118	28.430	0.822		Junction		1	1.002	27.608	150	SW_Dummy
												
								0	1.003	27.608	150	SW_Standard

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	0	0	0
30	0	0	0	100	40	0	0

Node 8 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.006	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0050-9000-0600-9000
Invert Level (m)	27.494	Min Outlet Diameter (m)	0.075
Design Depth (m)	0.600	Min Node Diameter (mm)	1200
Design Flow (l/s)	0.9		

Node Attenuation Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	27.630
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	96

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	6.0	0.0	0.400	6.0	0.0	0.401	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	28.115	0.015	0.4	0.0001	0.0000	OK
15 minute summer	3	10	28.000	0.021	0.9	0.0010	0.0000	OK
30 minute summer	5	23	27.630	0.060	1.3	0.0096	0.0000	OK
30 minute summer	6	23	27.631	0.082	1.7	0.0130	0.0000	OK
15 minute summer	7	10	27.715	0.010	0.3	0.0001	0.0000	OK
30 minute summer	8	23	27.631	0.137	1.6	0.1546	0.0000	OK
15 minute summer	9	1	27.349	0.000	0.9	0.0000	0.0000	OK
15 minute summer	Attenuation Tank	11	27.663	0.033	1.7	0.1856	0.0000	OK
15 minute summer	10	11	27.641	0.033	1.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	3	0.4	0.405	0.050	0.0071	
15 minute summer	3	1.001	Attenuation Tank	0.9	0.753	0.091	0.0022	
30 minute summer	5	1.004	6	1.2	0.396	0.084	0.0261	
30 minute summer	6	1.005	8	1.4	0.326	0.097	0.1095	
15 minute summer	7	2.000	8	0.3	0.341	0.021	0.0162	
30 minute summer	8	Hydro-Brake®	9	0.9				1.3
15 minute summer	Attenuation Tank	1.002	10	1.5	0.525	0.104	0.0093	
15 minute summer	10	1.003	5	1.5	0.496	0.103	0.0212	

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	28.125	0.025	1.1	0.0002	0.0000	OK
15 minute summer	3	10	28.018	0.039	2.7	0.0019	0.0000	OK
30 minute winter	5	29	27.800	0.230	2.1	0.0365	0.0000	SURCHARGED
30 minute winter	6	29	27.800	0.251	2.7	0.0399	0.0000	SURCHARGED
30 minute winter	7	29	27.800	0.095	1.1	0.0008	0.0000	OK
30 minute winter	8	29	27.800	0.306	2.0	0.3456	0.0000	SURCHARGED
15 minute summer	9	1	27.349	0.000	0.9	0.0000	0.0000	OK
30 minute winter	Attenuation Tank	28	27.800	0.170	3.3	0.9681	0.0000	SURCHARGED
30 minute winter	10	28	27.800	0.192	2.4	0.0000	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	3	1.1	0.511	0.140	0.0156	
15 minute summer	3	1.001	Attenuation Tank	2.7	1.014	0.276	0.0050	
30 minute winter	5	1.004	6	1.7	0.384	0.116	0.0559	
30 minute winter	6	1.005	8	1.8	0.360	0.122	0.1445	
30 minute winter	7	2.000	8	-0.7	0.272	-0.047	0.0307	
30 minute winter	8	Hydro-Brake®	9	0.9				3.7
30 minute winter	Attenuation Tank	1.002	10	2.4	0.609	0.168	0.0574	
30 minute winter	10	1.003	5	2.1	0.492	0.142	0.1004	

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	28.129	0.029	1.4	0.0002	0.0000	OK
15 minute summer	3	10	28.023	0.044	3.4	0.0022	0.0000	OK
60 minute winter	5	57	27.899	0.329	1.8	0.0524	0.0000	SURCHARGED
60 minute winter	6	57	27.899	0.350	1.9	0.0557	0.0000	SURCHARGED
60 minute winter	7	57	27.899	0.194	0.6	0.0016	0.0000	SURCHARGED
60 minute winter	8	57	27.899	0.405	1.5	0.4582	0.0000	SURCHARGED
15 minute summer	9	1	27.349	0.000	0.9	0.0000	0.0000	OK
60 minute winter	Attenuation Tank	57	27.899	0.269	2.7	1.5352	0.0000	SURCHARGED
60 minute winter	10	57	27.899	0.291	2.1	0.0000	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	3	1.4	0.545	0.178	0.0185	
15 minute summer	3	1.001	Attenuation Tank	3.4	1.075	0.348	0.0060	
60 minute winter	5	1.004	6	1.1	0.353	0.075	0.0559	
60 minute winter	6	1.005	8	1.4	0.323	0.100	0.1445	
60 minute winter	7	2.000	8	0.4	0.358	0.028	0.0310	
60 minute winter	8	Hydro-Brake®	9	0.9				6.0
60 minute winter	Attenuation Tank	1.002	10	2.1	0.547	0.145	0.0574	
60 minute winter	10	1.003	5	1.8	0.453	0.128	0.1004	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	28.134	0.034	2.0	0.0003	0.0000	OK
120 minute summer	3	88	28.103	0.124	2.0	0.0061	0.0000	SURCHARGED
120 minute summer	5	86	28.103	0.533	1.1	0.0848	0.0000	SURCHARGED
120 minute summer	6	88	28.103	0.554	1.9	0.0881	0.0000	SURCHARGED
120 minute summer	7	88	28.103	0.398	0.6	0.0032	0.0000	SURCHARGED
120 minute summer	8	88	28.103	0.609	1.6	0.6886	0.0000	FLOOD RISK
15 minute summer	9	1	27.349	0.000	0.9	0.0000	0.0000	OK
120 minute summer	Attenuation Tank	88	28.103	0.473	3.6	2.2829	0.0000	SURCHARGED
120 minute summer	10	86	28.103	0.495	1.3	0.0000	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	3	2.0	0.590	0.254	0.0244	
120 minute summer	3	1.001	Attenuation Tank	2.3	0.937	0.237	0.0148	
120 minute summer	5	1.004	6	0.9	0.355	0.059	0.0559	
120 minute summer	6	1.005	8	1.6	0.327	0.108	0.1445	
120 minute summer	7	2.000	8	0.5	0.154	0.034	0.0310	
120 minute summer	8	Hydro-Brake®	9	0.9				10.5
120 minute summer	Attenuation Tank	1.002	10	1.3	0.498	0.093	0.0574	
120 minute summer	10	1.003	5	1.1	0.445	0.078	0.1004	

Permatreat-S

Data Sheet

PRODUCT INFORMATION **P1** **ISSUE 1 - JULY 2020**

Product code: PVTS

Permatreat-S is a versatile, linear treatment system that can provide source control and pollution treatment in a wide variety of locations and applications.

The Permatreat-S functions as a combined run-off collection, silt and oil interceptor and treatment system. It is designed to be laid with zero gradient to prevent the development of lateral velocities, 'stilling' sheet run-off from each sub-catchment and encouraging silt deposition within each channel. The treated stormwater outlets discharge from the side of the treatment device, having passed through the Permatreat-S weir and baffle arrangement, which separates oil and silt, preventing it from progressing further into the drainage system.

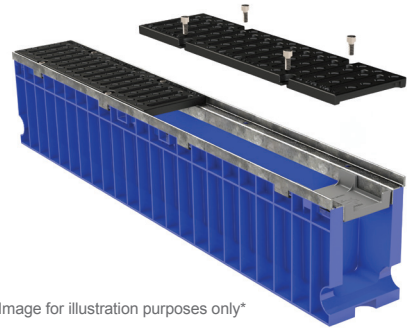


Image for illustration purposes only*

Applications

Permatreat-S is used for stormwater collection, interception and the treatment of associated pollutants. The system comprises of single or multiple interconnected units appropriately located to collect surface water run-off from sub-catchments of predominantly impervious or pervious pavements. Permatreat-S is suitable for use in a range of applications including residential, industrial estates and car parks.

Key Benefits

- Gravity separation of oils and silts at source
- Trapped effluent naturally treated by aerobic digestion
- Can enhance water quality and eliminate the need for end of line petrol/oil interceptors
- The system complies with the regulations of the treatment train criteria in a SuDS scheme as defined in PPG3
- 100% recyclable

Performance

Permatreat-S is a type M channel rated to C250 loading in accordance with BS EN 1433:2002 when installed with concrete bed and haunch in accordance with site specific construction details. If a loading capacity is required to D400, please use Permatreat-HD.

Installation

Permatreat-S must be installed on a load bearing concrete bed and haunch in accordance with site specific construction details and the Permatreat Installation Guide.

Technical Support

Detailed guidance and assistance is available.
For further information, please contact our Technical Team on **+44 (0) 1509 615100** or email **civils@polypipe.com** or visit **www.polypipe.com/civils/tech-hub**

ELEMENT	VALUE
PHYSICAL PROPERTIES	
Weight per unit	10.9kg
Length	1000mm
Width	139mm
Depth	201mm
Material	Polypropylene
Grating	Ductile iron
Catchment area	30m^2
Loading	Rated to C250
Chemical Resistance	Polypropylene has good resistance to the most common chemicals found within stormwater run-off (i.e. petrol, oils and acids)
Effluent concentrations are below PPG3 Class I requirements	

Note: Ancillary Universal Connector 40mm diameter

*Over time the grating will develop a naturally occurring iron oxide protective coating often referred to as a patina. The colour of the patina is typically a deep reddish-brown and dependent on local conditions might take a year to reach its final colour. During early stages of this process it is normal for the grating colour to appear rust-orange.

Polypipe Civils & Green Urbanisation,
Charnwood Business Park, Loughborough, Leicestershire LE11 1LE
Tel: +44 (0) 1509 615100 Fax: +44 (0) 1509 610215 Email: civils@polypipe.com
www.polypipe.com/wms

Polypipe

Permatreat-S

Data Sheet

Permatreat-S can be utilised in these SuDS techniques

TECHNIQUES													
Blue-Green roofs	Podium Decks	Trees	Sports Pitches	Cycle Paths	Permeable Paving (sub base & podium)	Bioretention & Rain Gardens	Attenuation Storage Tanks	Infiltration	Swales	Filter Drains	Detention Basins	Ponds & Wetlands	Filter Strips
	✓					✓	✓	✓					

Visit **www.polypipe.com/civils/gi**

Polypipe Civils & Green Urbanisation,
Charnwood Business Park, Loughborough, Leicestershire LE11 1LE
Tel: +44 (0) 1509 615100 Fax: +44 (0) 1509 610215 Email: civils@polypipe.com
www.polypipe.com/wms

Polypipe

APPENDIX IV Thames Water Asset Location Search

Asset location search

Property Searches

D Dhillon
Westways Properties
218Nestles Avenue
HAYES
UB3 4QG

Search address supplied 218
Nestles Avenue
Hayes
UB3 4QG

Your reference N\A

Our reference ALS/ALS Standard/2022_4621195

Search date 7 April 2022

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Asset location search

Property Searches

Search address supplied: 218 , Nestles Avenue, Hayes, UB3 4QG

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Asset location search

Thames Water Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd
Tamblin Way
Hatfield
AL10 9EZ
Tel: 0345 3572401

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

Thank you for your payment covering the cost of this enquiry. We have enclosed a VAT Receipt for your records.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

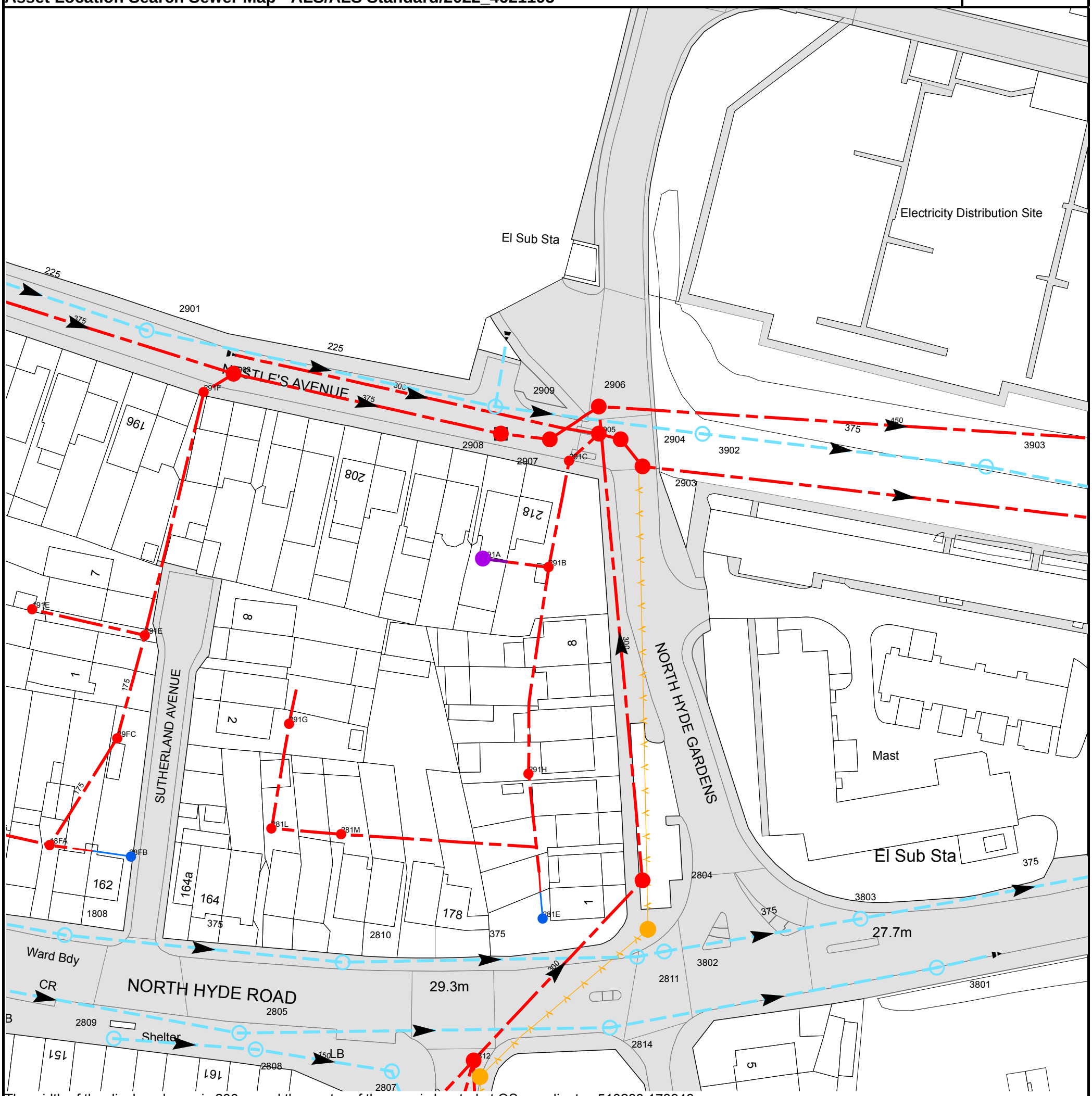
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2022_4621195



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 510280,178948

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
291H	n/a	n/a
281E	n/a	n/a
291B	n/a	n/a
2907	28.13	26.43
291C	n/a	n/a
2905	27.93	26.18
2906	n/a	n/a
2814	n/a	n/a
2904	27.95	26.03
2811	28.28	26.9
2903	27.92	21.75
2804	28.15	22.15
3802	28.23	26.66
3902	28.5	26.47
3803	27.76	26.3
3801	n/a	n/a
3903	26.39	25.22
2807	29.34	28.03
2812	28.46	22.31
2808	30.01	28.69
2805	n/a	n/a
2810	29.37	27.71
281M	n/a	n/a
281L	n/a	n/a
291G	n/a	n/a
291A	n/a	n/a
2908	28.1	26.45
2909	28.22	27.15
291F	n/a	n/a
2902	29	26.62
18FA	n/a	n/a
1808	30.02	28.38
2809	30.33	29.35
28FB	n/a	n/a
29FC	n/a	n/a
291E	n/a	n/a
191E	n/a	n/a
2901	29.19	27.99

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.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0800 009 4540** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

INVOICE

D Dhillon
Westways Properties
218
Nestles Avenue
Hayes
UB3 4QG

Thames Water Utilities Ltd.
PO Box 3189
Slough
SL1 4WW

Customer Reference: N\A
Customer Number: ADS135722
Purchase Order No:

Invoice No: ADS22409410
Our Ref: ALS/ALS Standard/2022_4621195
Posting Date: 07-04-2022
Due Date: 21-04-2022

Search Address Supplied: 218 , Nestles Avenue, Hayes, UB3 4QG

Description of Charges	Qty	Unit Price	VAT (20%)	Amount (Inc VAT)
Asset Location Search	1	£49.80	£9.96	£59.76

Thank you for your payment of 000000,111111 £59.76

OUTSTANDING AMOUNT (Inc. VAT) £0.00

Please send any outstanding amount to Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.

For queries please contact the Property Searches Customer Support Team on Tel: 0800 009 4540.

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