81 Avenue Road, London, NW8 6JD

Drainage Strategy and SuDS Statement

Job number: 2150623

Revision:

Status: Preliminary

Date: Sep 2016

Document Control

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•	date:	20/09/16	signature:		date:	signature:	

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1.0 Introduction

Elliott Wood Partnership Ltd have been appointed to provide a drainage strategy report to support a detailed planning application for the development at No. 81 Avenue Road, London.

The purpose of this report is to explain the approach taken with regards to the below ground drainage strategy, it evaluates the selection of SuDS and highlights how the drainage disposal hierarchy has been followed.

2.0 Existing Site

The existing site includes a three storey detached residential property. The total area of the existing site is approximately 1450m². Approximately 710m² of the existing site is positively drained impermeable area. The remaining site area is either soft or is not positively connected to the onsite drainage network. The site consists of a shallow slope from southwest (approx. 46.90m AoD) to north east (approx. 46.00m AoD).

A site investigation consisting of three boreholes was undertaken by SAS in July 2016. These indicate that the underlying ground is London Clay overlaid by up to 1.2m of made ground. This is in line with geological records for the area. Water was not encountered in any of the three boreholes at the time of drilling.

Standpipe monitoring has subsequently been carried out after a period of 3-4 weeks and water was still not found in either BH1 or BH2. However, water was experienced at 2,30m below ground level in BH3. Given the ground conditions, SAS suggested that the water levels observed in BH3 are likely to be due to isolated pockets of groundwater that may be perched within less permeable material found at shallower depths, especially within any Made Ground.

3.0 Proposed Development

The proposed works involve the demolition of the existing building and the construction of a new 3 storey residential building in its place, which will include a new single storey basement

4.0 Existing Drainage

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Public sewer records have been obtained from Thames Water and are included in Appendix 1. Sewer records show that the offsite sewer network is combined (sewers carry both foul and surface water flows). Records show that a 1372x914mm combined water sewer is located in Avenue Road.

A CCTV survey of the existing below ground drainage network has been undertaken on the site, which demonstrates the existing property drains via a 150mm diameter combined water outfall, into the sewer in Avenue Road. Refer to Appendix 2 for a copy of the CCTV survey plan.

The surface water runoff rate associated with the existing building and hardstanding areas has been calculated as follows, based on a positively drained area of 710m², and a rainfall intensity of 50mm/hr.

 $Q = 2.78 \times 1 \times 50 \text{mm/hr} \times 0.071$

QTotal = 9.87 I/s

The size of the impermeable area associated with the new development is approx. 680m². This decrease in impermeable area will ensure that the peak surface water discharge from the site will be reduced post development.

5.0 Proposed Drainage Strategy

The surface water drainage system has been designed in accordance with the London Plan Policies 5.11 (Green Roofs), 5.12 (Flood Risk Management) and 5.13 (Sustainable Drainage). The following drainage hierarchy has therefore been considered:

- Store rainwater for later use
- Use infiltration techniques, such as porous surfaces in non-clay areas
- Attenuate rainwater in ponds or open water features for gradual release
- Attenuate rainwater by storing in tanks or sealed water features for gradual release
- Discharge rainwater direct to a watercourse
- Discharge rainwater to a surface water sewer/drain
- Discharge rainwater to the combined sewer.

The current proposals include a green roof as indicated on the architect's drawings. This will help to improve the thermal performance of the building, reduce the urban heat island effect, reduce both the total and peak surface water discharge and enhance biodiversity in the surrounding area. A rainwater butt for irrigation is proposed on the rear elevation. This will assist with reducing the surface water run off from the site and will reduce water usage.

Drainage via infiltration has been considered for the site, however following a review of the ground conditions it is considered that soakaways are not viable for this project

There are no nearby accessible water courses and the existing offsite Thames Water sewer network is combined use. Surface water generated by the development will therefore continue to discharge to the offsite combined water sewer, via the existing outfall pipe.

The evaluation of SuDS is demonstrated in the table found overleaf

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SuDS technique	Y/N	Comment
Green Roofs	Y	A green roof will be incorporated within the scheme. Refer to the architects drawings for location and details.
Rainwater reuse	Υ	A rainwater butt for irrigation is proposed on the rear elevation of the dwelling. This will assist with reducing the surface water run off from the site and will reduce water usage
Basins and ponds	N	The site is very limited for space and is located within an urban area, as such there is no feasible location or space for a detention basin or pond.
Filter strips and swales	N	Filter strips and swales are not appropriate due to the spatial restrictions on site and unsuitable ground conditions.
Infiltration devices	N	Infiltration is not feasible for this site due to the existing ground conditions.
Permeable surfaces	N	Permeable paving is not deemed feasible for this project due to the extent of the proposed basement and the location of the tree root protection zones
Tanked systems	N	Tanked systems are not deemed feasible due to the extent of the proposed basement and the location of the tree root protection zones.

Table 1 - SuDs evaluation

It is proposed that the existing 150mm diameter connection to the public combined sewer in Avenue Road is retained. Due to the location the proposed basement, the final manhole (demarcation chamber) will need to removed and relocated downstream.

Drainage from ground floor level and above will designed to drain via gravity. Drainage from basement level will be pumped via a submersible packaged pumping station (with dual pumps) and will include a non-return valve and appropriate alarm/telemetry.

The existing surface water run-off rate from site has been calculated to be 9.87l/s. The impermeable area associated with the new development is approximately 680m². This decrease in impermeable area will ensure that the peak surface water run-off rate from the site will be reduced post development.

The inclusion of a green roof and rainwater butt will also help reduce the peak surface water run-off rate from site as well as providing additional benefits.

Refer to Appendix 3 for a copy of the proposed below ground drainage strategy.

6.0 Maintenance Requirements

All SuDS will be maintained by the property owner for the lifetime of the development in accordance with the SuDS Manual as summarised below:

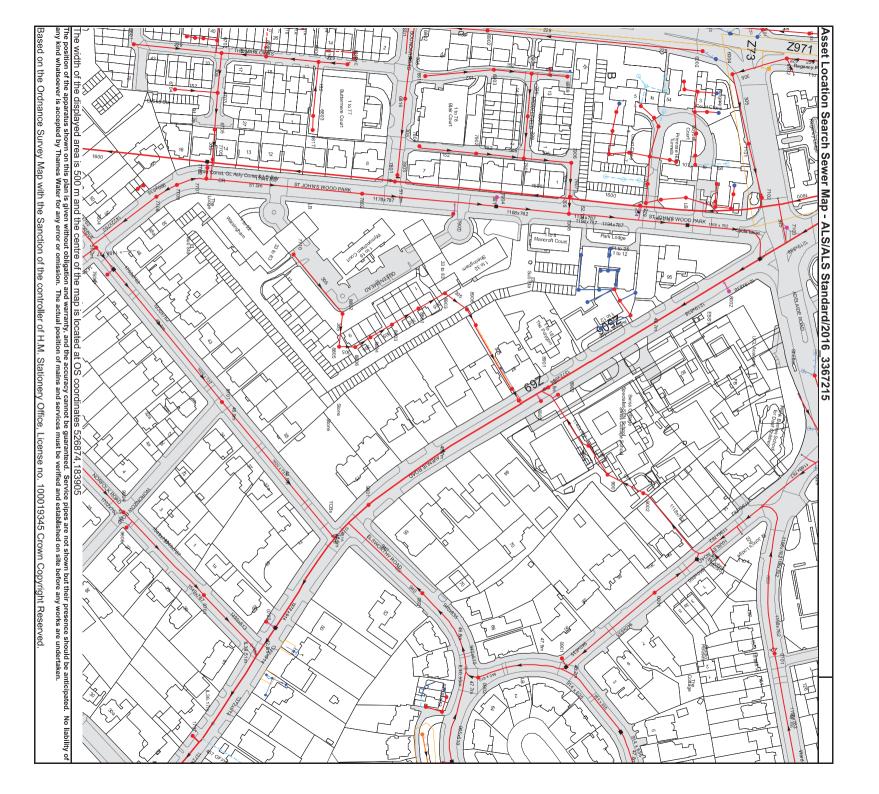
Green Roofs:

Maintenance Schedule	Required Action	Recommended Frequency
Regular Inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability.	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required
	During establishment (i.e. year one), replace dead plants as required.	Monthly (but usually the responsibility of manufacturer)
	Post establishment, replace dead plants as required (where >5% of coverage)	Annually (in Autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and allowed to accumulate	Six monthly or as required
Remedial actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled.	As required
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required

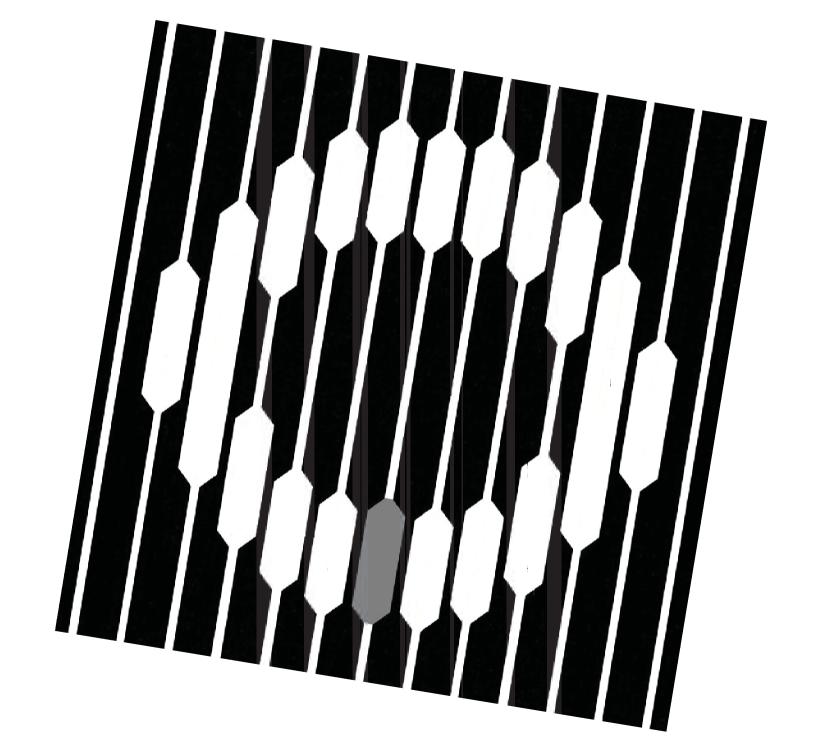
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Appendix 1 – Thames Water Sewer Records



Appendix 2 - CCTV Survey Plan







53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

CCTV SURVEY HEADER SHEET

CLIENT.

ELLIOTTWOOD PARTNERSHIP LLP CONSULTING STRUCTURAL AND CIVIL ENGINEERS 241 THE BROADWAY LONDON

SW19 1SD

LOCATION.

81 AVENUE ROAD LONDON NW8 6JD

JOB NO. CV.1098

SEWER USE. COMBINED DRAINAGE

WEATHER. DRY

DATE. 02/08/16

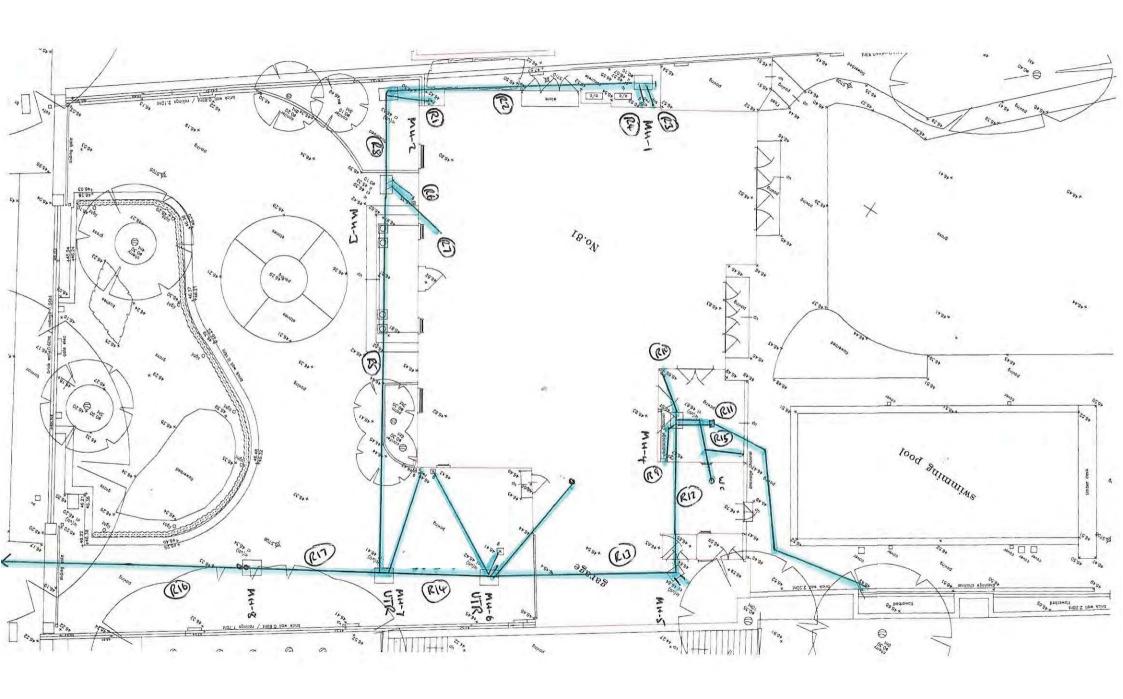
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ORDER NO. E-MAIL TIM KENNING

TOTAL LENGTH SURVEYED.

79.5 metres







53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

MANHOLE SURVEY

CLIENT. DATE 02/08/16 ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 1SD JOB. CV.1098 81 AVENUE ROAD LONDON NW8 6JD

CHAMBER 900X450mm

MANHOLE NO.01

COVER 770X670mm

C100 VC DEPTH 410mm

C100 VC DEPTH 410mm

C100 VC DEPTH 500mm

MANHOLE NO.02

COVER 810X650mm

CHAMBER 80X750mm

C100 VC DEPTH 840mm C100 VC DEPTH 780mm C100 VC DEPTH 860mm





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MANHOLE SURVEY

CLIENT. DATE 02/08/16 ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 1SD LOCATION. JOB. CV.1098 81 AVENUE ROAD LONDON NW8 6JD

MANHOLE NO.03 COVER 680X530mm

C100 VC

CHAMBER 600X450mm

C100 VC DEPTH 1070mm DEPTH 960mm C100 VC DEPTH 960mm DEPTH 1080mm C100 CI C100 VC DEPTH mm

ROOTS IN CHAMBER

MANHOLE NO.04

COVER 810X510mm

C100 VC DEPTH 480mm

CHAMBER 750X450mm

C100 VC DEPTH 580mm

C100 VC DEPTH 570mm

C100 VC DEPTH 510mm

C100 VC DEPTH 510mm





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MANHOLE SURVEY

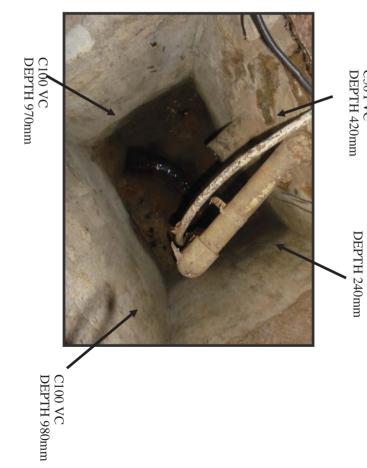
CLIENT. DATE 02/08/16 ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 ISD 81 AVENUE ROAD LONDON NW8 6JD

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MANHOLE NO.05 COVER 650X510mm

CHAMBER 600X450mm

C50 PVC DEPTH 420mm C50 PVC DEPTH 240mm



MANHOLE NO.06

COVER 800X650mm

UTR







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MANHOLE SURVEY

CLIENT. DATE 02/08/16 ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 ISD

81 AVENUE ROAD LONDON NW8 6JD

JOB. CV.1098

MANHOLE NO.07 UTR COVER 800X650mm



MANHOLE NO.08

COVER 800X650mm

CHAMBER 900X800mm







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MH-07





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53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

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53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

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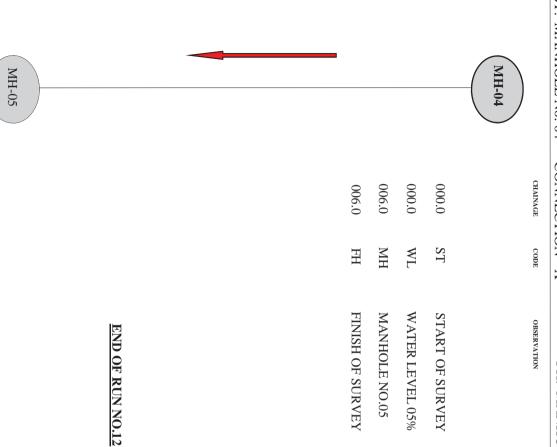
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53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

		ST. M.	START	CV.1098 12	JOB NO.	CLIENT.	
		ANHOLE N		12	RUN NUMBER	ELLIOTTWOO	
/		Vo. 04		02/08/16	DATE	D 241 THE 1	
	CHAINAGE	ST. MANHOLE No. 04 CONNECTION- X		02/08/16 COMBINED 580mm	SEWER USE	ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 ISD	
	CODE)N- X			DEPTH	NDON SW19	INSPE
	OBSERVATION			DOWNSTREAM 100mm	DIRECTION		INSPECTION REPORT
	ION	FH. M.	FINISH	TREAM	ION	OCATION. 81	REPC
		FH. MANHOLE NO.05		$100 \mathrm{mm}$	PIPE SIZE	AVENUE I)RT
		NO.05		V/CLAY	MATERIAL	LOCATION. 81 AVENUE ROAD LONDON NW8 6JI	
				DRY	WEATHER	W8 6JD	
				DRY NO GO	WEATHER CLEANED OPERATOR		
				GO			
				_	PAGE		







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					MH-05		ST. MANHOLE No. 05	START	JOB NO. RUN NUMBER DATE CV.1098 13 02/08/16	CLIENT. ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 ISD		53 PREMIER AVENUE
	006.3	006.3	0.000	0.000		CHAINAGE	CONNECTION-		SEWER USE COMBINED	BROADWAY LC		GRAYS RM16
	FH	МН	WL	ST		CODE	ON- X		рертн) 980mm	NDON SW19 1	INSPE	2SJ TEL:0
END OF RUN NO.13	FINISH OF SURVEY	MANHOLE NO.06	WATER LEVEL 05%	START OF SURVEY		OBSERVATION	FH. MANHOLE NO.06	FINISH	DOWNSTREAM 100mm V/CLAY DRY NO GO 1	9 ISD LOCATION. 81 AVENUE ROAD LONDON NW8 6JD	NSPECTION REPORT	53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

MH-06





53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

					MH-06		ST. MANHOLE No. 06	START	CV.1098 14 02/08/16	ELLIOTTWOOD 2		
	003.9	003.9	0.000	0.000		CHAINAGE	CONNECTION- X		SEWER USE COMBINED	3ROADWAY LO		SKAYU KMI6
	FH	HM	WL	ST		CODE	ON- X) N/A	NDON SW19 1	INSPE(727 FT:0
END OF RUN NO.14	FINISH OF SURVEY	MANHOLE NO.07	WATER LEVEL 05%	START OF SURVEY		OBSERVATION	FH. MANHOLE NO.07	FINISH	DOWNSTREAM 100mm V/CLAY DRY NO GO 1	LOCATION. 81 AVENUE ROAD LONDON NW8 6JD	NSPECTION REPORT	53 PREMIER AVENUE GRAYS RM 16 253 TEL:013/5 3/3302 MOB:0//92 8159// E-MAIL: godrainage@aoi.com

MH-07





53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com	GRAYS RM16	2SJ TEL:C	SJ TEL:01375 373302 MOB:077	B:07792 81	5977 E-MAIL	godraina	ige@ao	.com	
CLENT: ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 1SD	BROADWAY LON	UDON SW19	LOCATION.	1 AVENUE RO	81 AVENUE ROAD LONDON NW8 6JD	W8 6JD			
JOB NO. RUN NUMBER DATE CV.1098 15 02/08/16	SEWER USE COMBINED	DEPTH 480mm	DIRECTION UPSTREAM	PIPESIZE 100mm	MATERIAL V/CLAY	WEATHER DRY	CLEANED	OPERATOR GO	PAGE 1
START			FINISH						
ST. MANHOLE No. 04	CONNECTION-4)N-4	FH. GI	GULLY					
MH-04	CHAINAGE	CODE	OBSERVATION						
	0.000	ST	START OF SURVEY	VEY					
	0.000	WL	WATER LEVEL 05%	05%					
	002.3	LD	LINE OF DRAIN DEVIATES DOWN (SHARP)	DEVIATES	DOWN (SH.	ARP)			
	002.3	FH	FINISH OF SURVEY (GULLY)	VEY (GUL	(X7				
			END OF RUN NO.15	NO.15					
GULLY									





53 PREMIER AVENUE GRAYS RM16 2SJ TEL:01375 373302 MOB:07792 815977 E-MAIL: godrainage@aol.com

DIRECTION DIRECTION DIRECTION DIRECTION PRESIZE MATERIAL FILL MAIN SEWER FH. MAIN SEWER FH. MAIN SEWER TART OF SURVEY ATTER LEVEL 0.5% INCTION AT 0.6 O'CLOCK, DIAMETER 150mm TRAP IMENSION OF DRAIN CHANGES TO 150mm OOTS FINE OOTS						-						ı					MH-08		ST. MANHOLE No. 08	START	JOB NO. RUN NUMBER DATE CV.1098 16 02/08/	CLIENT. ELLIOTTWOOD 241 TH		
DIRECTION DIRECTION DIRECTION DIRECTION PRESIZE MATERIAL FILL MAIN SEWER FH. MAIN SEWER FH. MAIN SEWER TART OF SURVEY ATTER LEVEL 0.5% INCTION AT 0.6 O'CLOCK, DIAMETER 150mm TRAP IMENSION OF DRAIN CHANGES TO 150mm OOTS FINE OOTS	012.5	012.5	012.6	011.6	010.6	009.6	009.1	007.3	004.6	002.9	002.9	000.4	000.4	0.000	0.000			CHAINAGE	CONNECTIO			IE BROADWAY LON		
DIRECTION DIRECTION DIRECTION DIRECTION PRESIZE MATERIAL FILL MAIN SEWER FH. MAIN SEWER FH. MAIN SEWER TART OF SURVEY ATTER LEVEL 0.5% INCTION AT 0.6 O'CLOCK, DIAMETER 150mm TRAP IMENSION OF DRAIN CHANGES TO 150mm OOTS FINE OOTS	FH	FC	R	R	R	R	R	R	DEE	R	R	SC	N	WL	ST	ACCE		CODE	X -NC			NDON SW19	INSPE	
	FINISH OF SURVEY (MAIN SEWER)	FRACTURE, CIRCUMFERENTIAL FROM 12 TO 05 O'CLOCK	ROOTS FINE	ROOTS FINE	ROOTS FINE	ROOTS FINE	ROOTS FINE	ROOTS FINE	ATTACHED DEPOSITS,ENCRUSTATION FROM 05 TO 07 O'CLOCK 10%	ROOTS FINE	ROOTS FINE	DIMENSION OF DRAIN CHANGES TO 150mm	JUNCTION AT 06 O'CLOCK, DIAMETER 150mm TRAP	WATER LEVEL 05%	START OF SURVEY	CESS 100mm RODDING EYE		OBSERVATION		FINISH	DOWNSTREAM 100mm V/CLAY DRY NO GO	LOCATION.	PECTION REPORT	
		FH	FC FRACTURE, CIRCUMFERENTIAL FROM 12 TO FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TC FH FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TC FH FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE R ROOTS FINE R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TC FH FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE R ROOTS FINE R ROOTS FINE R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TC FH FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TO FH FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TO FH FINISH OF SURVEY (MAIN SEWER)	DEE ATTACHED DEPOSITS,ENCRUSTATION FROM 05 TO 07 O'CLOCK 10% R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TO FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE DEE ATTACHED DEPOSITS,ENCRUSTATION FROM 05 TO 07 O'CLOCK 10% R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TO FINISH OF SURVEY (MAIN SEWER)	R ROOTS FINE R ROOTS FINE ATTACHED DEPOSITS,ENCRUSTATION FROM 05 TO 07 O'CLOCK 10% R ROOTS FINE FC FRACTURE, CIRCUMFERENTIAL FROM 12 TC FINISH OF SURVEY (MAIN SEWER)	SC DIMENSION OF DRAIN CHANGES TO 150mm R ROOTS FINE R ROOTS FINE DEE ATTACHED DEPOSITS,ENCRUSTATION FROM 05 TO 07 O'CLOCK 10% R ROOTS FINE R ROOTS FINE R ROOTS FINE R ROOTS FINE FO FRACTURE, CIRCUMFERENTIAL FROM 12 TO FINISH OF SURVEY (MAIN SEWER)	JN JUNCTION AT 06 O'CLOCK,DIAMETER 150mm SC DIMENSION OF DRAIN CHANGES TO 150mm R ROOTS FINE RESOTS FINE R ROOTS FINE	WL WATER LEVEL 05% JUNCTION AT 06 O'CLOCK,DIAMETER 150mm SC DIMENSION OF DRAIN CHANGES TO 150mm R ROOTS FINE R ROOTS FINE RE ROOTS FINE R ROOTS FINE FROOTS FINE FROOTS FINE FROOTS FINE FROOTS FINE FROOTS FINE FROOTS FINE FRACTURE, CIRCUMFERENTIAL FROM 12 TC FRACTURE, CIRCUMFERENTIAL FROM 12 TC	ST START OF SURVEY WL WATER LEVEL 05% JUNCTION AT 06 O'CLOCK,DIAMETER 150mm SC DIMENSION OF DRAIN CHANGES TO 150mm R ROOTS FINE ROOTS FINE	ACCESS 100mm RODDING EYE 000.0 ST START OF SURVEY 000.0 WL WATER LEVEL 05% 000.4 JUNCTION AT 06 O'CLOCK,DIAMETER 150mm 000.4 SC DIMENSION OF DRAIN CHANGES TO 150mm 002.9 R ROOTS FINE 004.6 DEE ATTACHED DEPOSITS,ENCRUSTATION FRON 05 TO 07 O'CLOCK 10% 007.3 R ROOTS FINE 009.1 R ROOTS FINE 010.6 R ROOTS FINE 011.6 R ROOTS FINE 012.6 R ROOTS FINE 012.6 R ROOTS FINE 012.6 R ROOTS FINE 012.6 R ROOTS FINE 012.5 FC FRACTURE, CIRCUMFERENTIAL FROM 12 TC 012.5 FH FINISH OF SURVEY (MAIN SEWER)	ACCESS 100mm RODDING EYE ST START OF SURVEY WL WATER LEVEL 05% JUNCTION AT 06 O'CLOCK,DIAMETER 150mm SC DIMENSION OF DRAIN CHANGES TO 150mm R ROOTS FINE ROOTS FINE R ROOTS FINE ROOTS FINE R ROOTS FINE ROOTS FINE ROOTS FINE ROOTS FINE ROOTS FINE	ACCESS 100mm RODDING EYE	MANHOLE No. 08 CONNECTION: X FH. MAIN SEWER	FINISH MANHOLE No. 08 CONNECTION: X FHI. MAIN SEWER F	RONNOME Subset Subset Debet Debet Debet Person No. Person No. No.	ELLIOTITWOOD 241 THE BROADWAY LONDON SWIJ 15D ROUNG TOWN TOWN	BLILOTIWOOD 24 THE BROADWAY LONDON SWIJ 15D

MAIN SEWER





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ST. M	START	CV.1098	JOB NO.	CLIENT.	
ANHOLE N		17	RUN NUMBER	ELLIOTTWOO	
Vo. 08 C		02/08/16	DATE	D 241 THE B	
ST. MANHOLE No. 08 CONNECTION- 1		02/08/16 COMBINED 3120mm UPSTREAM	SEWER USE	ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 ISD	
N- 1		3120mm	DEPTH	DON SW19 1	INSPECTION REPORT
		UPSTRE	DIRECTION		CTION
FH.	FINISH	AM	ION	OCATION.	RE
FH. MANHOLE NO.07		150mm	PIPE SIZE	81 AVENUE R	ORT
NO.07		V/CLAY	MATERIAL	LOCATION. 81 AVENUE ROAD LONDON NW8 6JD	
		DRY	WEATHER	NW8 6JD	
		NO	CLEANED		
		NO GO	WEATHER CLEANED OPERATOR		
		1	PAGE		

MH-07 MH-08 CHAINAGE 004.8 004.8 0.000 0.000 МH MLST CODE FINISH OF SURVEY MANHOLE NO.07 WATER LEVEL 05% START OF SURVEY OBSERVATION END OF RUN NO.17





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SUMMARY AND RECOMMENDATIONS

CLIENT.	ELL TOLLANDON 341 THE BROWN AND LONDON 88/10 16D	LOCATION 81 AVENUE BOAD I ONDON NIWS 6ID
	ELLIOTTWOOD 241 THE BROADWAY LONDON SW19 ISD	81 AVENUE ROAD LONDON NW8 6JD
DATE	02/08/16	JOB. CV.1098

RUN NO.01 ROOTS

RUN NO.02 FRACTURES

RUN NO.03 NO WORK NEEDED

RUN NO.04 NO WORK NEEDED

RUN NO.05 ROOTS FRACTURE

RUN NO.06 NO WORK NEEDED

RUN NO.07

NO WORK NEEDED

RUN NO.08 ROOTS

RUN NO.09 NO WORK NEEDED

RUN NO.10 NO WORK NEEDED

RUN NO.11 NO WORK NEEDED

RUN NO.12 NO WORK NEEDED

RUN NO.13 NO WORK NEEDED

RUN NO.14 NO WORK NEEDED

RUN NO.15 NO WORK NEEDED

RUN NO.16 FRACTURES AND ROOTS

RUN NO.17

NO WORK NEEDED

DRAIN & PIPEWORK CCTV SURVEYS

DRAINS PIPEWORK CULVERTS

DUCTS
CHUTES
CHIMNEY FLUES
TANKS

HIGH PRESSURE
WATER JETTING

SEWER & DRAIN BLOCKAGES

DESCALING

SILT REMOVAL

ROOT CUTTING

GREASE REMOVAL

REMEDIAL WORKS

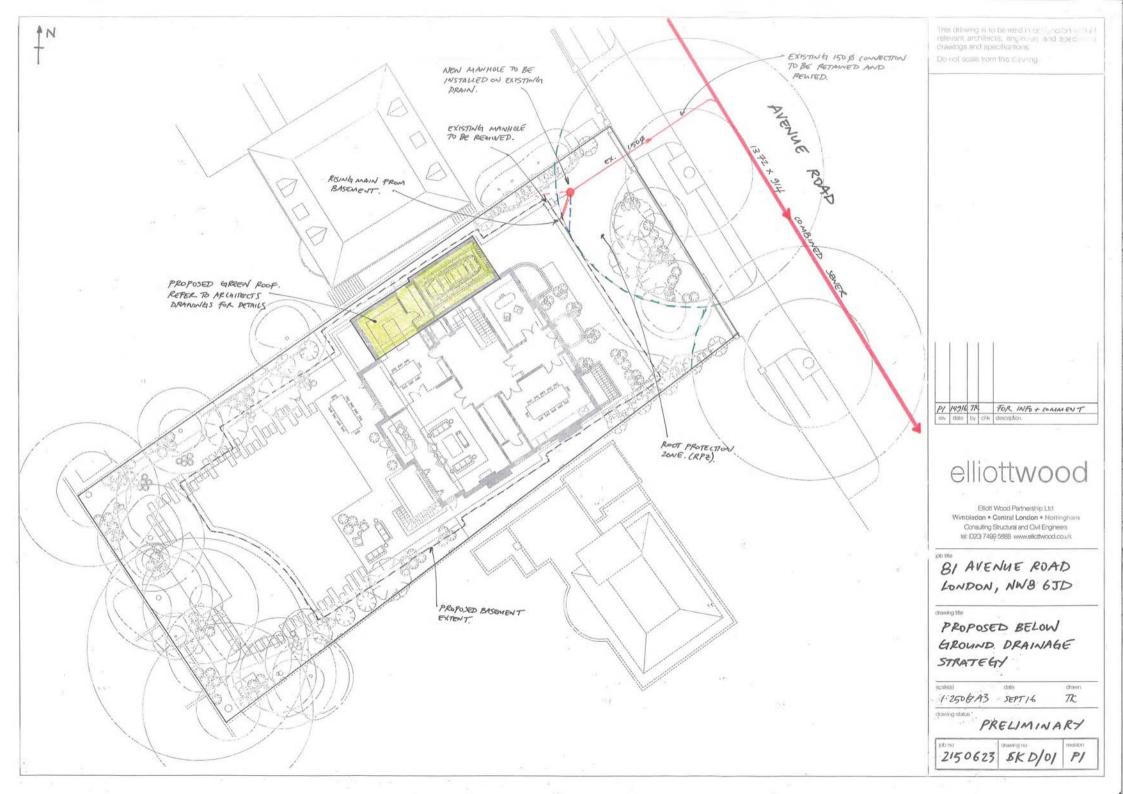
POLYESTER RESIN LINING
DRAINAGE EXCAVATIONS & REPAIRS







Appendix 3 – Proposed Below Ground Drainage Drawings



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