The Hope Project

Appendix H - Drainage Strategy Report

January 2018 (Rev.02)

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1 Introduction

This Drainage Strategy Report has been prepared by Heyne Tillett Steel Ltd (HTS) to support a detailed planning application for The Hope Project which is in the London Borough of Camden. The proposals include the refurbishment of KOKO nightclub, The Hope & Anchor pub and the redevelopment of 1 Bayham Street and 65 Bayham Place.

The report will include analysis of the existing sites foul and surface water infrastructure and how development proposals will impact on the proposed foul and surface water drainage.

The proposed surface water management analysis has been prepared to the requirements of the National Planning Policy Framework, 2012 (NPPF), and the National Planning Practice Guidance (NPPG), which sets out the guidance for reducing flood risk in general by using Sustainable drainage systems (SuDS).

The surface water management strategy will demonstrate a scheme of SuDS which will be achieved as part of the development in accordance with the Defra – Non-statutory technical standards for sustainable drainage, March 2015 which sets out the government policy to SuDS schemes.

The main purpose of this report is to analyse the pre and post development surface water run-off rates and volumes, where post development surface run-off rates are not to exceed the pre development run-off rates, and are to be reduced as much as practical (to adhere to current guidance), in order to reduce the risk of flooding to areas within and in the vicinity of the site.

The London Plan Paragraph 5.13 states that the preferred surface water run-off is to greenfield levels where practical and the PPG, Paragraph 051 states the drainage is to be designed to control surface water run-off close to where it falls and mimic natural drainage as closely as possible, provide opportunities to reduce the causes and impacts of flooding, and remove pollutants from urban run-off at source.

Supplementary Planning Guidance (SPG) produced by the Greater London Authority offers recommendations for developers. Clauses 3.4.2, 3.4.12 and 3.4.14 set out the expectation of SuDS to be incorporated into the design of new developments to prevent increasing volumes of surface water runoff and reduce flood risk. Clauses 3.4.8 -3.4.9 stipulate that:

"Most developments referred to the Mayor have been able to achieve at least 50% attenuation of the site's (prior to re-development) surface water runoff at peak times. This is the minimum expectation from development proposals".

Based on the above guidance, the proposed surface water drainage system will aim to restrict the surface water to greenfield run-off rate if practical, and to reduce the post development run-off rates to 50% of the pre development rates as a minimum.

2 Existing and Proposed Site

Site Location

The existing site is located at Crowndale Road, Camden, NW1 7JE which is in the London Borough of Camden. The proposed site is approximately 1,617 m² (0.162 ha) in area and is irregular in shape.

The Grid Reference for the development is TQ292834.

Existing Site Description

The existing site is currently 100% hard standing and is occupied by the concert venue and former theatre KOKO, where the building footprint takes up the entirety of the site area.

For existing site plans refer to the Appendices of the main document 1444 - The Hope Project – Structural Methodology Statement & Basement Impact Assessment.

Site Areas

The overall development site / site boundary area is 1617 m² / 0.162 ha.

In terms of permeable and impermeable areas of the existing / pre development site, it is deemed that all of the site (1617 m²) is impermeable, as there is no evidence of landscaped / grassed / undeveloped areas.

It is worth noting that the redevelopment work is limited to a new roof catchment area of approximately **312 m²**.

Ground Conditions

A Ground Investigation was carried out by RSK Environment Ltd on the 7th of September 2016. Evaluation of the sites ground condition was achieved through multiple trial pits located around the site. The ground was identified as being underlain by a variable thickness of made ground over the London Clay, with Lambeth Group at depth.

Thames Water Assets

The Thames Water asset record (refer to the Appendices of the main document 1444 - The Hope Project – Structural Methodology Statement & Basement Impact Assessment) indicates that the local drainage network in the area is a combined water system. Located at the Northern boundary of the site is a 229mm diameter sewer in Bayham Place. Bayham Street to the east of the site also contains a 229 diameter combined water sewer which flows towards Crowndale Road to the south. The combined water sewer at the southern boundary of the site is 1448 x 991 mm and flows towards the east. The Thames Water Asset Plan shows very limited level information. At the junction of Bayham Place and Bayham Street the invert level of the sewer is identified as being 18.27 m. Using level information obtained from the topographical survey the depth of the sewer at this location is approximately 4.3 m.

A pre-development enquiry will be submitted in due course in order to understand the impact of the proposed development on the Thames Water sewerage network.

Existing Site Drainage

A CCTV drainage survey has been carried out for the site. The survey shows that there are existing combined drains throughout the site, both external to the face of the buildings and internal within the ground floor and basement

areas. Refer to Appendix H6 for a copy of the CCTV Drainage Survey and Report.

Proposed Development

The proposals include the extension of KOKO nightclub, the rebuild of The Hope & Anchor pub and the redevelopment of 1 Bayham Street and 65 Bayham Place.

The proposal retains the listed KOKO structure and redevelops the surrounding site to provide new entertainment facilities, linking to the existing venue. The existing buildings at 1 Bayham Street, 65 Bayham Place and The Hope & Anchor will be demolished and replaced by a new building with three storeys above ground and a roof terrace, housing a private members club, and dining rooms. A new elevator and stair core is proposed to extend below the ground floor to allow access to the existing KOKO basement and subbasement levels.

Various sections of existing façade are to be retained due to heritage significance, including the ground fl oor of The Hope & Anchor facade, the single storey KOKO façade along Bayham Place and a 4 m long section of façade on Bayham Street.

A new 'Sky Lobby' bar is to be constructed above the main roof of KOKO. The existing dome structure is to be converted to a bar and will be linked to the new 'Sky Lobby' via a glazed stairway.

In the proposed scheme the majority of the existing drainage will be retained with little, if any, alteration to existing roofs and catchment areas. The parts of the redevelopment described above as new construction sit within a new roof catchment area of approximately **312 m^2**. It is proposed that only this roof catchment area will be attenuated. This strategy has been initially discussed and agreed with Ana Lopez the LLFA officer at LB Camden and later with Gabriel Berry-Khan at LB Camden. Refer to Appendix H4 for correspondence with LB Camden.

The proposed attenuation is in the form of blue roofs. For proposed locations of new blue and green roofs refer to the architect's general arrangement drawings located in Appendix H5 where the blue and green roofs are clearly annotated. The proposals include a blue roof at 1st floor (with approximately 101 m^2 located at the southeast corner of the building), one blue roof at 3rd floor (with approximately 89 m^2) and one blue roof at 4th floor (with approximately 90 m^2). In addition, there will be a green roof (approximate area of 45 m^2) located at 4th floor which will drain into the blue roof at 1st floor and hence being also attenuated. The total of this attenuated areas is approximately 325 m^2.

The calculations have been based on a previous estimated area of 312m^2 but the proposed attenuation volume, refer to chapter 5, has been increased from the calculated value to provide a tolerance as the final area for attenuation may differ slightly when it is confirm at the detailed design stage. Therefore, the proposed attenuation volume can facilitate a catchment area of 325m^2.

3 Surface Water Run-Off and Volume Analysis

The post development surface water run-off is to be reduced to as low as possible, in order to reduce the risk of flooding, with the preferred being the greenfield run-off rate, and the minimum requirement being a 50% betterment of the pre development rates (as per London plan and Camden Planning Guidance 3 (CPG3)).

In order to establish the required reduction / restriction for the post development surface water run-off rates, the pre development greenfield run-off rate and pre development positively drained surface water run-off rates are to be calculated.

The post development surface water run-off rates are then to be calculated to establish the impact of the development in terms of flood risk. The pre and post development figures are to be used to analyse the required SuDS methods to control the surface water, and to calculate the attenuation volumes required to prevent flooding for the 1 in 100-year storm including climate change.

Greenfield Runoff Rates

The Greenfield runoff rates are based on the new build site area 312 m² / 0.0312 ha; results are as follows:

Return Period	Run-off Rate
Q_{bar}	0.05 l/s
Q_1	0.15 l/s
Q_{30}	0.31 l/s
Q_{100}	0.35 l/s

Pre-development Surface Water Run-off Rates

The pre development positively drained surface water run-off rates are based on the existing impermeable area of 312 m² / 0.0312 ha. In accordance with the Modified Rational Method, the peak existing run-off from the site is calculated from the formula:

Q = 3.61 x Cv x A x i

where Cv is the volumetric runoff coefficient, A is the catchment area in hectares and i is the peak rainfall intensity in mm/hr.

For the peak 1 in 1 year return period storm event this gives an existing discharge rate from the site of:

Q_1 = 3.61 x 0.75 x 0.0312 x 33.4 = **2.8 litres/sec**

and for the peak 1 in 100 year return period storm event this gives an existing discharge rate from the site of:

Q_{100} = 3.61 x 0.75 x 0.0312 x 106.5 = **9.0 litres/sec.**

Appendix H1 contains detailed run-off calculations, and the results are summarised below.

Return Period	Run-off Rate
$Q_{1\text{-}15}$	2.8 l/s
$Q_{30\text{-}15}$	6.9 l/s
$Q_{100\text{-}15}$	9.0 l/s

The pre-development surface water run-off rates from the remainder of the site has also been considered and the results are set out below. The area of site that is remaining unchanged by the proposed development works is 1,302 m^2 / 0.130 ha. In accordance with the Modified Rational Method, the peak existing run-off from the remainder of the existing site is calculated from the formula:

Q = 3.61 x Cv x A x i

where Cv is the volumetric runoff coefficient, A is the catchment area in hectares and i is the peak rainfall intensity in mm/hr.

For the peak 1 in 1 year return period storm event this gives an existing discharge rate from the site of:

Q_1 = 3.61 x 0.75 x 0.1302 x 33.4 = **11.8 litres/sec**

and for the peak 1 in 100 year return period storm event this gives an existing discharge rate from the site of:

Q_{100} = 3.61 x 0.75 x 0.1302 x 106.5 = **37.5 litres/sec.**

Appendix H1 contains detailed run-off calculations, and the results are summarised below.

Return Period	Run-off Rate
Q_{1-15}	11.8 l/s
Q_{30-15}	28.9 l/s
Q_{100-15}	37.5 l/s

Post Development Surface Water Run-Off Rates – No Restrictions

The post development surface water run-off rates are to be calculated to assess the impact of the development in terms of surface water management.

The post development positively drained surface water run-off rates are based on the existing impermeable area of 312 m^2 / 0.0312 ha. Again, using the Modified Rational Method, for the peak 1 in 1 year return period storm event this gives a proposed discharge rate from the site of:

Q_1 = 3.61 x 0.75 x 0.0312 x 33.4 = **2.8 litres/sec**

and for the peak 1 in 100 year return period storm event this gives a proposed discharge rate from the site of:

Q_{100} = 3.61 x 0.75 x 0.0312 x 106.5 = **9.0 litres/sec.**

A climate change allowance of 40% has been selected for use in the 100 year storm scenario. This in line with the guidance on climate change allowances set out in the Environment Agency's 'Flood risk assessments: climate change allowances'. Making an allowance for climate change of 40 % this would give an unattenuated design discharge of:

Q_1 (+40%) = **3.9 litres/sec** and Q_{100} (+40%) = **12.6 litres/sec**

Return Period	Run-off Rate
Q_{1-15}	2.8 l/s
Q_{30-15}	6.9 l/s
$Q_{100-15+40\% CC}$	12.6 l/s

It is worth emphasizing that these rates are unrestricted and the attenuation provided of this rates will be discussed in chapter 5.

Pre/Post-development Surface Water Volumes

As per the DEFRA Sustainable drainage technical standards the sites runoff volume pre and post – development need to be compared for the 1 in 100 year 6 hour storm event.

	Return Period	Discharge Volume
Pre-Development	$Q_{100\text{-}360}$	20.0 m³
Post-Development	$Q_{100\text{-}360 + 40\% CC}$	28.0 m³

Although the impermeable areas remain identical post and pre-development due to the increase in total flow created by the climate change allowances the post-development discharge volume has increased compared to the existing.

4 Surface Water SuDS Analysis

As the results from the calculations shown in chapter 3, the post development surface water run-off rates exceed the greenfield rates, and the positively drained rates for the 1 in 100-year storm event due to climate change. Therefore, in order to reduce the surface water run-off to the preferred rate of greenfield, or to 50% of the pre development rate as a minimum, further SuDS methods are to be introduced to the post development design.

HTS have considered a number of SuDS methods as per the Sustainable Drainage System (SuDS) hierarchy (NPPF Paragraph 080 and Camden Planning Guidance 3 (CPG3)).

The various SuDS methods, their description and feasible use on this development are described below: -

SuDS Methods	Description and Feasibility
Green Roofs	The roof layout of the proposed development includes an area of Green Roof. Green roofs are designed to intercept and retain precipitation, reducing the volume of runoff and attenuating peak flows.
Infiltration Devices	Infiltration devices drain water directly into the ground. They may be used at source or the runoff can be conveyed in a pipe or swale to the infiltration area. They include soakaways, infiltration trenches and infiltration basins as well as swales, filter drains and ponds. Infiltration devices can be integrated into and form part of the landscaped areas of a development site if required to maximise the developable area of a site. Infiltration devices cannot be built in made ground due to instability, and clay is not a porous material. Infiltration structures are also to be 5m from any structure and 2.5m from the development boundary, and won't be able to be built due to the nature of the site. Due to the ground conditions not being viable for infiltration and the nature of site not being suitable, infiltration devices are not a feasible SuDS method.
Basins and Ponds – Above Ground Storage	These systems can provide both storm water attenuation and treatment. They are designed to support emergent and submerged aquatic vegetation along their shoreline. Given the nature of the development, where the majority of the site will comprise of the proposed building the use of basins and ponds is not a feasible SuDS method.
Filter Strips and Swales	Similar to Basins and Ponds can provide both attenuation, treatment and infiltration. Given the nature of the development, where the majority of the site will comprise of the proposed building the use of filter strips and swales is not a

	feasible SuDS method.
Rainwater Harvesting Tanks	Rainwater from roofs and hard surfaces can be stored and used. If designed appropriately, the systems can also be used to reduce the rates and volumes of runoff. There is not sufficient space for rainwater harvesting tanks within the development.
Flow Control and Attenuation System	In order to ensure the surface water is restricted to the desired rate a flow control system can be incorporated into the proposed drainage network. There will also be a requirement to store the attenuated water which could be achieved by oversized pipes, oversized manholes or a cellular storage structure. In this case it is proposed to install a cellular blue roof system with orifices at outlets from the blue roof to limit discharge.
Discharge Rainwater directly to watercourse	There are no watercourses within the direct vicinity of the site for the network to connect / discharge to.
Discharge Rainwater to a surface water sewer	There are no surface water sewers within the direct vicinity of the site for the network to connect / discharge to.
Discharge Rainwater to a combined water sewer	As there are no watercourses or surface water sewers within the direct vicinity of the site the only alternative would be to connect / discharge the surface water to the combined sewer.

5 Proposed Surface Water Management Strategy

SuDS Summary

Based on the SuDS analysis the most viable SuDS features for the proposed development are:

- Flow control and Attenuation

Flow control and attenuation in the form of an orifice or similar and cellular blue roof storage can be designed to restrict the peak surface water runoff rate and prevent flooding on site.

Surface Water Run-Off Rate

As the volume for the post development in the 1 in 100 year 6 hour event exceeds the volume of the pre development for the same event, in line with the standards laid out in the DEFRA Sustainable drainage technical standards 'the runoff volume must be discharged at a rate that does not adversely affect flood risk'.

Being the referred scope of works a refurbishment, 50% of the rate based on 1 in 100 years return period event was considered being in line with the London Plan SPG:

''Most developments referred to the Mayor have been able to achieve at least 50% attenuation of the site's (prior to re-development) surface water runoff at peak times. This is the minimum expectation from development proposals".

Attenuation Design

During peak storm events; rainfall events which have a rate of rainfall higher than the rate at which the surface water can discharge away will result in water accumulation within the development site. If not correctly managed, this water can cause flooding.

This section aims to investigate the amount of surface water attenuation needed for the sites restricted peak discharge rate.

A drainage model was created in accordance with BRE Digest 365 to size the attenuation tank. A copy of the results can be found in Appendix H2.

The storage method used in the model was cellular storage, to reflect a blue roof. This provides a storage tank without the need for a concrete structure and is composed plastic storage cells with a void ratio of 95%.

Flow restriction from the surface water system will be handled by a HydroBrake, orifice or similar which can be installed at the outfall from the blue roof system. The table below shows the attenuation tank and betterment provided.

Storm Event	Pre development Run-off Rates	Post development Run-off rates with betterment	Tank / Blue roof size
Q_{1-15}	2.8 l/s	2.8 l/s (0%)	9 m^3
Q_{30-15}	6.9 l/s	4.5 l/s (35%)	
Q_{100-15}	9.0 l/s	4.5 l/s (50%)	

The attenuation has been sized taking into account the peak rainfall event for the 1 in 100 year return period + 40% climate change. It is worth noting that the required storage volume shown in the calculations in Appendix H2 is a minimum of 8.3m^3. A slightly greater storage volume is proposed due to restrictions with depths of available blue roof units and to give a slight tolerance for the final areas confirmed at the detailed design stage. Blue-roof design will be confirmed at further details design stages with relevant specialists

6 Preliminary Foul Water Strategy

The foul water flows from the proposed development site are likely to increase due to the introduction of new storeys.

The foul water generated from the site is proposed to be conveyed into the below ground drainage network and discharged into the public sewer by gravity where possible.

Flows generated at below ground level is proposed to benefit from a pumped device which will convey foul water via a rising main to the combined water outfall location for the site.

A pump size and specification is to be confirmed however the design is to be carried out to incorporate any Building Regulation Part H requirements.

7 Maintenance

To help with maintenance, best practice measures as recommended within the following documents has been incorporated into the drainage design:

- Building Regulations Part H,
- Sewers for Adoption 7th Edition

An upstream manhole has been designed within close proximity of the outfall to allow for adequate maintenance. Jetting or rodding from this point towards the outfall is anticipated to remove any blockage. This should be carried out in the event of low tide to ensure that the manual opening of the flap valve does not allow backflow of tidal water into the site.
The efficiency of the proposed drainage network together with the outfall is subject to a routine maintenance and inspection regime.
The table below sets out the tasks recommended to be carried out. These tasks are not exhaustive and should be in addition to manufacturers recommended maintenance schedule.
The maintenance should be carried out to safe working practice standards and a method statement by specialist and onsite staff.

Maintenance Schedule

Schedule	Task	By Whom
Immediately after construction		
Immediately after construction	• Carry out CCTV of new drainage network and as-built records	Specialist Contractor
Immediately after construction	• Check for leakage in the internal pipework at basement level.	Specialist Contractor and design engineers
Within the First Year After Construction		
Weekly	-	-
Monthly	-	-
Bi Annually	• Jet the pipework towards the outfall and clear any debris • Check joints around the outfall • Inspect pump	Specialist only and/or qualified personnel.
After the First Year After Construction		
6 Monthly	• Check outfall manhole for debris and silt build up • Carry out jetting where necessary	Maintenance staff and/or specialist

Costs associated with the maintenance schedule is subject to the specification of the different components used in the proposed drainage system. This is to be conformed at a later stage of the design.

8 Conclusion

The proposed / post development surface water drainage has aimed to meet the requirement of The London Plan Paragraph 5.13 that states that the preferred surface water run-off is to greenfield levels where practical.

All SuDS methods have been assessed to establish whether they are feasible for the development in order to reduce the surface water run-off to the preferred greenfield rate.

Due to the size and nature of the site, and as well as the ground conditions, the use of wetlands, ponds, detention basins or infiltration structures are not feasible SuDS options for the development site.

Therefore, the only alternative would be to formally restrict the surface water run-off via an orifice or similar prior to formal discharge into an existing sewer network.

The peak surface water discharge rate for the new portion of the building will be restricted to 4.5 l/s. Attenuation will be provided in the form of cellular storage / blue roof of 9 m^3 up to a 1 in 100 year + 40% Climate Change peak event. This attenuation will provide the 50% betterment for the new build portion of the site as per Camden Planning Guidance 3 (CPG3). Blue-roof design will be confirmed further at the detailed design stage with relevant specialists.

The Surface water drainage pro-forma for new developments required from Camden Planning Guidance 3 (CPG3) is attached in Appendix H3 with all the relevant information and rates.

A pre-development enquiry has yet to be submitted to Thames Water, it is assumed that due to the decrease in surface water flows this will offset the proposed increase in foul water flows.

The preliminary drainage strategy is subject to change at detail design stages once architectural plans are finalized and agreed. The strategy is based on preliminary information available at the time of writing this report.

SUDS devices should be maintained in line with the manufacturer's recommendations to ensure the system remains operational and effective throughout the intended design life of the network. A service and inspection agreement should remain in place for mechanical devices used to manage surface water.

Appendix H1 - Pre and Post Development SW Run-Off Rates

IH 124 Mean Annual Flood

Input

Return Period (years) 1 SAAR (mm) 600 Urban 0.750
Area (ha) 50.000 Soil 0.300 Region Number Region 6

Results l/s

QBAR Rural 76.1
QBAR Urban 282.8

Q1 year 240.4

Q1 year 240.4
Q2 years 287.1
Q5 years 380.6
Q10 years 429.6
Q20 years 471.7
Q25 years 482.5
Q30 years 491.1
Q50 years 518.9
Q100 years 566.9
Q200 years 605.1
Q250 years 615.7
Q1000 years 685.4

Above flows prorated for site area of 0.0312 ha

Q_{BAR} Rural 0.05
Q_1 year 0.15
Q_2 years 0.18
Q_5 years 0.24
Q_{10} years 0.27
Q_{20} years 0.29
Q_{25} years 0.30
Q_{30} years 0.31
Q_{50} years 0.32
Q_{100} years 0.35
Q_{200} years 0.38
Q_{250} years 0.38
Q_{1000} years 0.43

Project:	**Koko**	**Project No:**	**1444**
Address:	**Camden, NW1**	**Date:**	**01/03/17**
		Calcs by:	**AGH**
		Page No:	**1**

Design Rainfall

Site Details

Existing Site Area	**A=**	*312*	**m²**
Existing Impermeable Area	**A_E =**	*312*	**m²**
Proposed Impermeable Area	**A_P =**	*312*	**m²**
Volumetric Runoff Coefficient	**C_v =**	*0.75*	

From Wallingford Procedure, Volume 3 - Maps

Rainfall Depths (M5-60 min)	***M5_60 =***	*21.0*	**mm**
Rainfall Ratio:	***r =***	*0.439*	
Standard Annual Average Rainfall	***SAAR =***	*600*	**mm**
Soil Class	**SOIL =**	3	
Hydrological growth curve		*6\7*	
Climate Change Allowance		*40*	**%**

Figure 1: UK Hydrological Growth Curve Regions

HEYNE TILLETT STEEL

Project: Koko
Address: Camden, NW1

Project No: 1444
Date: 01/03/17
Calcs by: AGH
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Pre-development Peak Rates

Q_1 = 3.61 x 0.75 x 312 x 33.4 = ***2.8*** **litres/sec** **Limit to a minimum 5 l/sec (DEFRA/EA Guidance)**

Q_{100} = 3.61 x 0.75 x 312 x 106.5 = ***9.0*** **litres/sec**

Post-development Peak Rates

Q_1 = 3.61 x 0.75 x 312 x 33.4 = ***2.8*** **litres/sec**

Q_{100} = 3.61 x 0.75 x 312 x 106.5 = ***9.0*** **litres/sec**

Post-development Peak Rates with Climate Change

$Q_{1+40\%}$ = ***3.9*** **litres/sec**

$Q_{100+40\%}$ = ***12.6*** **litres/sec**

Greenfield Rates

Q_{bar} = 0.00108 x $0.5^{0.89}$ x $600^{1.17}$ x $0.40^{2.17}$ = ***142.0*** **litres/sec (for 50ha)**

Q_{bar} = (142 x 0.0312) / 50 = ***0.09*** **litres/sec (for site)**

Growth factor for Region 6\7 - South East England = 3.146

Therefore, Q_{100} = ***0.28*** **litres/sec** **Limit to a minimum 5 l/sec (DEFRA/EA Guidance)**

Approximate Attenuation Volumes

Discharge Condition	Discharge Rate	Storage Volume Required
Mitigate climate change and hardstanding increase	***9.0*** **litres/sec**	***5*** **m^3**
50% reduction on existing (London Plan Essential Standard)	***4.5*** **litres/sec**	***9*** **m^3**
1-year Pre-development peak rate	***2.8*** **litres/sec**	***11*** **m^3**
Greenfield rate	***0.28*** **litres/sec**	***23*** **m^3**

Runoff Volumes

For the 1 in 100 year event with a 6 hour duration:

Pre-development runoff volume = ***20*** **m^3**

Post-development runoff volume **prior to mitigation** = ***28*** **m^3**

Additional volume post-development prior to mitigation = ***8*** **m^3**

Project:	Koko - Remainder of site	**Project No:**	1444
Address:	Camden, NW1	**Date:**	10/01/18
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Design Rainfall

Site Details

Existing Site Area	**A=**	*1,302*	**m^2**
Existing Impermeable Area	**A_E =**	*1,302*	**m^2**
Proposed Impermeable Area	**A_P =**	*1,302*	**m^2**
Volumetric Runoff Coefficient	**C_v =**	*0.75*	

From Wallingford Procedure, Volume 3 - Maps

Rainfall Depths (M5-60 min)	***M5_60 =***	*21.0*	**mm**
Rainfall Ratio:	***r =***	*0.439*	
Standard Annual Average Rainfall	***SAAR =***	*600*	**mm**
Soil Class	**SOIL =**	3	
Hydrological growth curve		*6\7*	
Climate Change Allowance		*40*	**%**

Figure 1: UK Hydrological Growth Curve Regions

Pre-development Peak Rates

Q_1 = 3.61 x 0.75 x 1,302 x 33.4 = ***11.8*** **litres/sec**

Q_{100} = 3.61 x 0.75 x 1,302 x 106.5 = ***37.5*** **litres/sec**

Post-development Peak Rates

Q_1 = 3.61 x 0.75 x 1,302 x 33.4 = ***11.8*** **litres/sec**

Q_{100} = 3.61 x 0.75 x 1,302 x 106.5 = ***37.5*** **litres/sec**

Post-development Peak Rates with Climate Change

$Q_{1+40\%}$ = ***16.5*** **litres/sec**

$Q_{100+40\%}$ = ***52.6*** **litres/sec**

Greenfield Rates

Q_{bar} = 0.00108 x $0.5^{0.89}$ x $600^{1.17}$ x $0.40^{2.17}$ = ***142.0*** **litres/sec (for 50ha)**

Q_{bar} = (142 x 0.1302) / 50 = ***0.37*** **litres/sec (for site)**

Growth factor for Region 6\7 - South East England = 3.146

Therefore, Q_{100} = ***1.16*** **litres/sec** **Limit to a minimum 5 l/sec (DEFRA/EA Guidance)**

Approximate Attenuation Volumes

Discharge Condition	Discharge Rate	Storage Volume Required
Mitigate climate change and hardstanding increase	***37.5*** **litres/sec**	***9*** **m^3**
50% reduction on existing (London Plan Essential Standard)	***18.8*** **litres/sec**	***9*** **m^3**
1-year Pre-development peak rate	***11.8*** **litres/sec**	***50*** **m^3**
Greenfield rate	***5.0*** **litres/sec**	***60*** **m^3**

Runoff Volumes

For the 1 in 100 year event with a 6 hour duration:

Pre-development runoff volume = ***82*** **m^3**

Post-development runoff volume **prior to mitigation** = ***115*** **m^3**

Additional volume post-development prior to mitigation = ***33*** **m^3**

Appendix H2 - SW Attenuation Volumes

HEYNE TILLETT STEEL

50% Reduction

Design Rainfall

CC Allowance = **40** %

From Wallingford Procedure, Volume 3 - Maps
Rainfall Depths (M5 - 60minutes) ***M5_60 =*** ***21.0 mm***

from BRE Digest 365, fig. 1 ***rainfall ratio r =*** ***0.439***

Design Storm Return Period, ***P =*** ***100 years***

D mins	M5_D	Z2	R = MP_D	Rainfall Intensity
5	8.2 mm	1.864	21.3 mm	256 mm/hr
10	11.5 mm	1.934	31.3 mm	188 mm/hr
15	13.6 mm	1.968	37.5 mm	150 mm/hr
30	17.3 mm	2.008	48.5 mm	97 mm/hr
60	21.0 mm	2.026	59.6 mm	60 mm/hr
120	25.0 mm	2.010	70.3 mm	35 mm/hr
240	29.4 mm	1.976	81.2 mm	20 mm/hr
360	32.2 mm	1.953	88.0 mm	15 mm/hr
600	36.0 mm	1.922	97.0 mm	10 mm/hr
1440	43.6 mm	1.861	113.7 mm	5 mm/hr
5000	57.1 mm	1.762	140.9 mm	2 mm/hr

Infiltration Rate	0.00E+00	m/s	(OR Outlet Flow Rate	4.50	l/s)
Impermeable Area	312	m^2	ie	16.2	m^3/hr
Width	1.00	m	Gravel Pit or Trench Soakaway		
Depth	1.00	m			
Min Length (optional)	0.00	m	Gravel free volume	95%	

D	Length req	Inflow	Outflow	Storage	t_{s50} (hrs)	Storage Prov
5	5.58	6.6	1.4	5.3	0.16	5.3
10	7.42	9.8	2.7	7.1	0.22	7.1
15	8.06	11.7	4.1	7.7	0.24	7.7
30	7.40	15.1	8.1	7.0	0.22	7.0
60	2.51	18.6	16.2	2.4	0.07	2.4
120	0.00	21.9	32.4	0.0	0.00	0.0
240	0.00	25.3	64.8	0.0	0.00	0.0
360	0.00	27.5	97.2	0.0	0.00	0.0
600	0.00	30.3	162.0	0.0	0.00	0.0
1440	0.00	35.5	388.8	0.0	0.00	0.0
5000	0.00	44.0	1350.0	0.0	0.00	0.0

Time until system can cope with additional influx of 50% design storage volume < 24 hrs ~ OK

Provide storage pit, 8.25 m x 1 m x 1 m deep

Minimum Free Volume = 95%

9 Rounded volume Actual Volume = 8.3m^3

(Note that the depth is measured below the inlet pipe invert)

Appendix H3 - SW Drainage Pro-forma for new developments

Advice Note on contents of a Surface Water Drainage Statement

London Borough of Camden

1. Introduction

1.1 The Government has strengthened planning policy on the provision of sustainable drainage and new consultation arrangements for 'major' planning applications will come into force from 6 April 2015 as defined in the Written Ministerial Statement (18th Dec 2014).

1.2 The new requirements make Lead Local Flood Authorises statutory consultees with respect to flood risk and SuDS for all major applications. Previously the Environment Agency had that statutory responsibility for sites above 1ha in flood zone 1.

1.3 Therefore all 'major' planning applications submitted from 6 April 2015 are required demonstrate compliance with this policy and we'd encourage this is shown in a **Surface Water Drainage Statement**.

1.4 The purpose of this advice note is to set out what information should be included in such statements.

2. Requirements

2.1 It is essential that the type of Sustainable Drainage System (SuDS) for a site, along with **details of its extent and position**, is identified within the planning application to clearly demonstrate that the proposed SuDS can be accommodated within the development.

2.2 It will now not be acceptable to leave the design of SuDs to a later stage to be dealt with by planning conditions.

2.3 The NPPF paragraph 103 requires that developments do not increase flood risk elsewhere, and gives priority to the use of SuDS. Major developments must include SuDS for the management of run-off, unless demonstrated to be inappropriate. The proposed minimum standards of operation must be appropriate and as such, a **maintenance plan** should be included within the Surface Water Drainage Statement,clearly demonstrating that the SuDS have been designed to ensure that the maintenance and operation requirements are economically proportionate Planning Practice Guidance suggests that this should be considered by reference to the costs that would be incurred by consumers for the use of an effective drainage system connecting directly to a public sewer.

2.4 Camden Council will use planning conditions or obligations to ensure that there are clear arrangements in place for ongoing maintenance over the lifetime of the development.

2.5 Within Camden, SuDS systems must be designed in accordance with London Plan policy 5.13. This requires that developments should utilise sustainable urban drainage systems (SUDS) unless there are practical reasons for not doing so, and should aim to achieve **greenfield run-off rates** and ensure that surface water run-off is managed as close to its source as possible in line with the following **drainage hierarchy**:

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

2.6 The hierarchy above seeks to ensure that surface water run-off is controlled as near to its source as possible to mimic natural drainage systems and retain water on or near to the site, in contrast to traditional drainage approaches, which tend to pipe water off-site as quickly as possible.

2.7 Before disposal of surface water to the public sewer is considered all other options set out in the drainage hierarchy should be exhausted. When no other practicable alternative exists to dispose of surface water other than the public sewer, the Water Company or its agents should confirm that there is adequate spare capacity in the existing system taking future development requirements into account.

2.8 Best practice guidance within the non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems will also need to be followed. Runoff volumes from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the **greenfield runoff volume** for the same event.

2.9 Camden Development Policy 23 (Water) requires developments to reduce pressure on combined sewer network and the risk of flooding by limiting the rate of run-off through sustainable urban drainage systems. This policy also requires that developments in areas known to be at risk of surface water flooding are designed to cope with being flooded. Camden's SFRA surface water flood maps, updated SFRA figures 6 (LFRZs), and 4e (increased susceptibility to elevated groundwater) , as well as the Environment Agency updated flood maps for surface water (ufmfsw), should be referred to when determining whether developments are in an area at risk of flooding.

2.10 Camden Planning Guidance 3 (CPG3) requires developments to achieve a greenfield run off rate once SuDS have been installed. Where it can be demonstrated that this is not feasible, a minimum 50% reduction in run off rate across the development is required. Further guidance on how to reduce the risk of flooding can be found in CPG3 paragraphs 11.4-11.8.

2.11 Where an application is part of a larger site which already has planning permission it is essential that the new proposal does not compromise the drainage scheme already approved.

3. Further information and guidance

3.1 Applicants are strongly advised to discuss their proposals with the Lead Local Flood Authority at the pre-application stage to ensure that an acceptable SuDS scheme is submitted.

3.2 For general clarification of these requirements please Camden's Local Planning Authority or Lead Local Flood Authority

Surface Water Drainage Pro-forma for new developments

This pro-forma accompanies our advice note on surface water drainage. Developers should complete this form and submit it to the Local Planning Authority, referencing from where in their submission documents this information is taken. The pro-forma is supported by the Defra/EA guidance on Rainfall Runoff Management and uses the storage calculator on www.UKsuds.com. This pro-forma is based on current industry best practice and focuses on ensuring surface water drainage proposals meet national and local policy requirements. The pro-forma should be considered alongside other supporting SuDS Guidance.

1. Site Details

Site	Koko Camden
Address & post code or LPA reference	1A Camden High St, Kings London Nw1 7JE
Grid reference	TQ 29235 834000
Is the existing site developed or Greenfield?	Developed
Is the development in a LFRZ or in an area known to be at risk of surface or ground water flooding? If yes, please demonstrate how this is managed, in line with DP23?	The development is not located in a Local Flood Risk Zone. Environment agency surface water flood maps identify areas of surface water flooding in Crowndale Road and Beyham St adjacent to the site.
Total Site Area served by drainage system (excluding open space) (Ha)*	0.0312 Ha

* The Greenfield runoff off rate from the development which is to be used for assessing the requirements for limiting discharge flow rates and attenuation storage from a site should be calculated for the area that forms the drainage network for the site whatever size of site and type of drainage technique. Please refer to the Rainfall Runoff Management document or CIRIA manual for detail on this.

2. Impermeable Area

	Existing	Proposed	Difference (Proposed-Existing)	Notes for developers
Impermeable area (ha)	0.0312	0.0312	0	If the proposed amount of impermeable surface is greater, then runoff rates and volumes will increase. Section 6 must be filled in. If proposed impermeability is equal or less than existing, then section 6 can be skipped and section 7 filled in.
Drainage Method (infiltration/sewer/watercourse)	Sewer	Sewer	N/A	If different from the existing, please fill in section 3. If existing drainage is by infiltration and the proposed is not, discharge volumes may increase. Fill in section 6.

3. Proposing to Discharge Surface Water via

	Yes	No	Evidence that this is possible	Notes for developers
Existing and proposed MicroDrainage calculations	X			Please provide MicroDrainage calculations of existing and proposed run-off rates and volumes in accordance with a recognised methodology or the results of a full infiltration test (see line below) if infiltration is proposed.
Infiltration		X	The entire site is occupied by a building and therefore there is no suitable location of a soakaway.	e.g. soakage tests. Section 6 (infiltration) must be filled in if infiltration is proposed.
To watercourse		X	There is no watercourse in the vicinity of the site.	e.g. Is there a watercourse nearby?
To surface water sewer	X			Confirmation from sewer provider that sufficient capacity exists for this connection.
Combination of above		X	As above	e.g. part infiltration part discharge to sewer or watercourse. Provide evidence above.
Has the drainage proposal had regard to the SuDS hierarchy?	X			Evidence must be provided to demonstrate that the proposed Sustainable Drainage strategy has had regard to the SuDS hierarchy as outlined in Section 2.5 above.
Layout plan showing where the sustainable drainage infrastructure will be located on site.	X		The locations of the green and blue roofs are shwon in the architects layout contrained in Appendix H5 of the Basement Impact Assessment.	Please provide plan reference numbers showing the details of the site layout showing where the sustainable drainage infrastructure will be located on the site. If the development is to be constructed in phases this should be shown on a separate plan and confirmation should be provided that the sustainable drainage proposal for each phase can be constructed and can operate independently and is not reliant on any later phase of development.

4. Peak Discharge Rates – This is the maximum flow rate at which storm water runoff leaves the site during a particular storm event.

	Existing Rates (l/s)	Proposed Rates (l/s)	Difference (l/s) (Proposed-Existing)	% Difference (difference /existing x 100)	Notes for developers
Greenfield QBAR	0.05	N/A	N/A	N/A	QBAR is approx. 1 in 2 storm event. Provide this if Section 6 (QBAR) is proposed.
1 in 1	2.8	2.8	0	0	Proposed discharge rates (with mitigation) should aim to be equivalent to greenfield rates for all corresponding storm events. As a minimum, peak discharge rates must be reduced by 50% from the existing sites for all corresponding rainfall events.
1 in 30	6.9	6.9	0	0	
1in 100	9.0	9	0	0	
1 in 100 plus climate change	N/A	12.6	0	0	The proposed 1 in 100 +CC peak discharge rate (with mitigation) should aim to be equivalent to greenfield rates. As a minimum, proposed 1 in 100 +CC peak discharge rate must be reduced by 50% from the existing 1 in 100 runoff rate sites.

5. Calculate additional volumes for storage –The total volume of water leaving the development site. New hard surfaces potentially restrict the amount of stormwater that can go to the ground, so this needs to be controlled so not to make flood risk worse to properties downstream.

	Greenfield runoff volume (m^3)	Existing Volume (m^3)	Proposed Volume (m^3)	Difference (m^3) (Proposed-Existing)	Notes for developers
1 in 1	1.2	3.0	3.0	0	Proposed discharge volumes (with mitigation) should be constrained to a value as close as is reasonably practicable to the greenfield runoff volume wherever practicable and as a minimum should be no greater than existing volumes for all corresponding storm events. Any increase in volume increases flood risk elsewhere. Where volumes are increased section 6 must be filled in.
1 in 30	2.9	6.0	6.0	0	
1in 100 6 hour	9.3	20.0	20.0	0	
1 in 100 6 hour plus climate change	N/A	N/A	28	8	The proposed 1 in 100 +CC discharge volume should be constrained to a value as close as is reasonably practicable to the greenfield runoff volume wherever practicable. As a minimum, to mitigate for climate change the proposed 1 in 100 +CC volume discharge from site must be no greater than the existing 1 in 100 storm event. If not, flood risk increases under climate change.

6. **Calculate attenuation storage** – Attenuation storage is provided to enable the rate of runoff from the site into the receiving watercourse to be limited to an acceptable rate to protect against erosion and flooding downstream. The attenuation storage volume is a function of the degree of development relative to the greenfield discharge rate.

		Notes for developers
Storage Attenuation volume (Flow rate control) required to meet greenfield run off rates (m^3)	23	Volume of water to attenuate on site if discharging at a greenfield run off rate. Can't be used where discharge volumes are increasing
Storage Attenuation volume (Flow rate control) required to reduce rates by 50% (m^3)	9	Volume of water to attenuate on site if discharging at a 50% reduction from existing rates. Can't be used where discharge volumes are increasing
Storage Attenuation volume (Flow rate control) required to meet [OTHER RUN OFF RATE (as close to greenfield rate as possible] (m^3)	$9m^3$ (4.5 l/s)	Volume of water to attenuate on site if discharging at a rate different from the above – please state in 1st column what rate this volume corresponds to. On previously developed sites, runoff rates should not be more than three times the calculated greenfield rate. Can't be used where discharge volumes are increasing
Storage Attenuation volume (Flow rate control) required to retain rates as existing (m^3)	5	Volume of water to attenuate on site if discharging at existing rates. Can't be used where discharge volumes are increasing
Percentage of attenuation volume stored above ground,	100% - green/blue roofs	Percentage of attenuation volume which will be held above ground in swales/ponds/basins/green roofs etc. If 0, please demonstrate why.

7. How is Storm Water stored on site?

Storage is required for the additional volume from site but also for holding back water to slow down the rate from the site. This is known as attenuation storage and long term storage. The idea is that the additional volume does not get into the watercourses, or if it does it is at an exceptionally low rate. You can either infiltrate the stored water back to ground, or if this isn't possible hold it back with on site storage. Firstly, can infiltration work on site?

			Notes for developers
Infiltration	**State the Site's Geology and known Source Protection Zones (SPZ)**	N/A	Avoid infiltrating in made ground. Infiltration rates are highly variable and refer to Environment Agency website to identify and source protection zones (SPZ)
	Are infiltration rates suitable?	N/A	Infiltration rates should be no lower than $1x10^{-6}$ m/s.

	State the distance between a proposed infiltration device base and the ground water (GW) level	N/A	Need 1m (min) between the base of the infiltration device & the water table to protect Groundwater quality & ensure GW doesn't enter infiltration devices. Avoid infiltration where this isn't possible.
	Were infiltration rates obtained by desk study or infiltration test?	N/A	Infiltration rates can be estimated from desk studies at most stages of the planning system if a back up attenuation scheme is provided..
	Is the site contaminated? If yes, consider advice from others on whether infiltration can happen.	N/A	Advice on contaminated Land in Camden can be found on our supporting documents webpage Water should not be infiltrated through land that is contaminated. The Environment Agency may provide bespoke advice in planning consultations for contaminated sites that should be considered.
In light of the above, is infiltration feasible?	**Yes/No? If the answer is No, please identify how the storm water will be stored prior to release**	N/A	If infiltration is not feasible how will the additional volume be stored?. The applicant should then consider the following options in the next section.

Storage requirements

The developer must confirm that either of the two methods for dealing with the amount of water that needs to be stored on site.

Option 1 Simple – Store both the additional volume and attenuation volume in order to make a final discharge from site at the greenfield run off rate. This is preferred if no infiltration can be made on site. This very simply satisfies the runoff rates and volume criteria.

Option 2 Complex – If some of the additional volume of water can be infiltrated back into the ground, the remainder can be discharged at a very low rate of 2 l/sec/hectare. A combined storage calculation using the partial permissible rate of 2 l/sec/hectare and the attenuation rate used to slow the runoff from site.

		Notes for developers
Please confirm what option has been chosen and how much storage is required on site.	Option 1	The developer at this stage should have an idea of the site characteristics and be able to explain what the storage requirements are on site and how it will be achieved.

8. Please confirm

		Notes for developers
Which Drainage Systems measures have been used, including green roofs?	Green roof & above ground attenuation tanks (blue roofs)	SUDS can be adapted for most situations even where infiltration isn't feasible e.g. impermeable liners beneath some SUDS devices allows treatment but not infiltration. See CIRIA SUDS Manual C697.
Drainage system can contain in the 1 in 30 storm event without flooding	Yes	This a requirement for sewers for adoption & is good practice even where drainage system is not adopted.
Will the drainage system contain the 1 in 100 +CC storm event? If no please demonstrate how buildings and utility plants will be protected.	Yes	National standards require that the drainage system is designed so that flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development.
Any flooding between the 1 in 30 & 1 in 100 plus climate change storm events will be safely contained on site.	Yes	**Safely:** not causing property flooding or posing a hazard to site users i.e. no deeper than 300mm on roads/footpaths. Flood waters must drain away at section 6 rates. Existing rates can be used where runoff volumes are not increased.
How will exceedance events be catered on site without increasing flood risks (both on site and outside the development)?	Rainfall Events exceeding the 1 in 100 year event plus climate change cannot be dealt with due to site constraints. The building occupies the entire development site therefore implementing measures such as pathways to convey the water away from the development is not possible.	**Safely:** not causing property flooding or posing a hazard to site users i.e. no deeper than 300mm on roads/footpaths. Flood waters must drain away at section 6 rates. Existing rates can be used where runoff volumes are not increased. Exceedance events are defined as those larger than the 1 in 100 +CC event.
How are rates being restricted (vortex control, orifice etc)	Orifices at outlets from blue roofs	Detail of how the flow control systems have been designed to avoid pipe blockages and ease of maintenance should be provided.
Please confirm the owners/adopters of the entire drainage systems throughout the development. Please list all the owners.	TBC	If these are multiple owners then a drawing illustrating exactly what features will be within each owner's remit must be submitted with this Proforma.

How is the entire drainage system to be maintained?	The system will be maintained in line with current best practice and in accordance with manufacturuers guidance for each element	If the features are to be maintained directly by the owners as stated in answer to the above question please answer yes to this question and submit the relevant maintenance schedule for each feature. If it is to be maintained by others than above please give details of each feature and the maintenance schedule. Clear details of the maintenance proposals of all elements of the proposed drainage system must be provided. Details must demonstrate that maintenance and operation requirements are economically proportionate. Poorly maintained drainage can lead to increased flooding problems in the future.

9. Evidence Please identify where the details quoted in the sections above were taken from. i.e. Plans, reports etc. Please also provide relevant drawings that need to accompany your proforma, in particular exceedance routes and ownership and location of SuDS (maintenance access strips etc

Pro-forma Section	Document reference where details quoted above are taken from	Page Number
Section 2	All information is described in further detail in the Drainage Strategy Report	
Section 3	All information is described in further detail in the Drainage Strategy Report	
Section 4	All information is described in further detail in the Drainage Strategy Report	
Section 5	All information is described in further detail in the Drainage Strategy Report	
Section 6	All information is described in further detail in the Drainage Strategy Report	
Section 7	All information is described in further detail in the Drainage Strategy Report	
Section 8	All information is described in further detail in the Drainage Strategy Report	

The above form should be completed using evidence from the Flood Risk Assessment and site plans. It should serve as a summary sheet of the drainage proposals and should clearly show that the proposed rate and volume as a result of development will not be increasing. If there is an increase in rate or volume, the rate or volume section should be completed to set out how the additional rate/volume is being dealt with.

This form is completed using factual information from the Flood Risk Assessment and Site Plans and can be used as a summary of the surface water drainage strategy on this site.

Form Completed By: Carmel Lennon
Qualification of person responsible for signing off this pro-forma .....

Company.....
On behalf of (Client's details) .....
Date:.....

Appendix H4 - Correspondence with LB Camden

Alex Herman

From: Lopez, Ana <Ana.Lopez@camden.gov.uk>
Sent: 20 February 2017 14:26
To: Alex Herman
Cc: Sophie Reay; Martin Smith (martin.smith@burkehunteradams.com); Nick Belsten; Matthew Turner; James Morgan
Subject: RE: 2016/6959/P - Koko [Filed 20 Feb 2017 17:42]

Hi Alex,

Yes this is fine.

Thanks,

Ana Lopez
Sustainability Officer

Telephone: 020 7974 5011

From: Alex Herman [mailto:AHerman@hts.uk.com]
Sent: 20 February 2017 13:36
To: Lopez, Ana
Cc: Sophie Reay; Martin Smith (martin.smith@burkehunteradams.com); Nick Belsten; Matthew Turner; James Morgan
Subject: RE: 2016/6959/P - Koko

Hi Ana,

Thank you for your prompt response. Yes as you say, we intend to produce calculations for the isolated new build part of the site and will present these in an updated Drainage Strategy Report, which will also cover the points raised in David Peres Da Costa's original email below. I trust this is acceptable.

Kind Regards,

Alex

From: Lopez, Ana [mailto:Ana.Lopez@camden.gov.uk]
Sent: 20 February 2017 10:30
To: Alex Herman <AHerman@hts.uk.com>
Cc: Sophie Reay <sophie.reay@indigoplanning.com>; Martin Smith (martin.smith@burkehunteradams.com) <martin.smith@burkehunteradams.com>; Nick Belsten <nick.belsten@indigoplanning.com>; Matthew Turner <MTurner@hts.uk.com>; James Morgan <JMorgan@hts.uk.com>
Subject: RE: 2016/6959/P - Koko

Hi Alex,

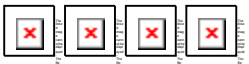
Yes this approach would be accepted. I understand there will be green roof proposed in some parts of the new build extension also.

When undertaking your modelling and run-off calculations, will you be isolating the new build parts from the existing parts of the site and only presenting the new build parts in the report?

Thanks,

Ana Lopez
Sustainability Officer

Telephone: 020 7974 5011



From: Alex Herman [mailto:AHerman@hts.uk.com]
Sent: 20 February 2017 10:26
To: Lopez, Ana
Cc: Sophie Reay; Martin Smith (martin.smith@burkehunteradams.com); Nick Belsten; Matthew Turner; James Morgan
Subject: RE: 2016/6959/P - Koko

Dear Ana,

Following our recent discussion regarding The Hope Project, we understand you had a meeting with our colleagues Neil Cartwright (RTKA – M&E engineer) and Edwina Hunt (Archer Humphryes Architects) to discuss sustainability items including surface water attenuation. Since receiving your comments on the planning application, we have reviewed our surface water attenuation proposals and have the following comments. We understand that these were discussed during last week's meeting:

- The attenuation calculations submitted previously were undertaken for the whole site – design development has confirmed this is not practical as we cannot re-route above ground surface water drainage through the Grade II listed building and areas we are not refurbishing.
- Surface water attenuation tanks are currently proposed to be located at basement level – design development and a review of Thames Water sewer levels has confirmed this approach is not sustainable. The attenuated surface water would have to be pumped from below basement level to basement high level before being discharged via gravity to the public sewer.
- We have explored options for repositioning attenuation tanks at ground floor level – this approach would make the scheme unviable.
- Blue roof – we understand that a 'blue roof' was discussed as a viable alternative during your meeting with the design team. We have since explored this option and could provide a 50mm thick blue roof over the new build (non listed) areas of the site. This would equate to 295m^2 surface area as indicated on the attached drawing. By adopting this blue roof approach, we could attenuate the surface water across this roof area, discharge at a reduced rate of 5l/s and provide sufficient attenuation to cope with storms up to the critical 1 in 100 year + 40% climate change event.

Please could you confirm if this revised approach of a blue roof would be accepted by Camden and how we should proceed in response to your previous comments.

Kind Regards,

Alex Herman
HEYNE TILLETT STEEL
4 Pear Tree Court, T: 020 7870 8050
London, EC1R 0DS M: 07957 463 183
hts.uk.com

From: Sophie Reay [mailto:sophie.reay@indigoplanning.com]
Sent: 27 January 2017 15:04
To: Matthew Turner <MTurner@hts.uk.com>; James Morgan <JMorgan@hts.uk.com>
Cc: Martin Smith (martin.smith@burkehunteradams.com) <martin.smith@burkehunteradams.com>; Nick Belsten <nick.belsten@indigoplanning.com>
Subject: FW: 2016/6959/P - Koko

Dear Matt/James,

Please see below response on drainage. I would be grateful if you can please response on this.

Many thanks

Sophie

Sophie Reay | Senior Planner

T 020 7269 6300
M 07469 156 842
sophie.reay@indigoplanning.com

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From: Peres Da Costa, David [mailto:David.PeresDaCosta@Camden.gov.uk]
Sent: 27 January 2017 15:02
To: Sophie Reay <sophie.reay@indigoplanning.com>
Subject: 2016/6959/P - Koko

Dear Sophie,

The LLFA has provided comments re drainage

Major developments to achieve greenfield run-off rates wherever feasible and as a minimum 50% reduction in run off rates.
Comment: The applicant is targeting 50% reduction in run-off for the peak 1:100 year storm event meaning flows will be controlled to a maximum of 60.9 l/s. This means that the SuDS system will not have any impact on reducing flows in less intense storms. The applicant should confirm if it is

possible to reduce flows further. The applicant should also provide details of exceedance flow routes.

Action for applicant: The applicant should confirm if it is possible to reduce flows further. The applicant should also provide details of exceedance flow routes.

Comment: Rainwater harvesting not considered feasible due to space constraints. The drainage statement says that green roofs are not proposed however plans include green roofs. The drainage statement should be updated to reflect this. Opportunities to expand the provision of green roofs to other flat roof space should be explored. No plans have been provided showing attenuation tank location etc.

Action for applicant: The applicant should update the drainage statement to reflect the fact that green roofs are proposed. The applicant should confirm whether it is possible to expand the provision of green roofs to other flat roof spaces. The applicant should provide plans indicating the location and size of the attenuation tank and how this connects to the drainage network.

Please provide the further information requested.

Kind regards

David

David Peres da Costa
Senior Planning Officer
Regeneration and planning
Supporting Communities
London Borough of Camden
2nd floor, 5 Pancras Square, London N1C 4AG

Tel.: 020 7974 5262
Visit camden.gov.uk for the latest council information and news

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- by signing up to planning e-alerts
- in the planning section of the Camden Account
- through adverts in the Camden New Journal and Ham & High

You can sign up to our new and improved planning e-alerts to let you know about new planning applications, decisions and appeals.

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Carmel Lennon

From: Alex Herman
Sent: 05 January 2018 16:19
To: 'Berry-Khan, Gabriel'
Cc: Peres Da Costa, David; Sophie Reay; jamie.bryant@indigoplanning.com; James Morgan
Subject: RE: 2017/6058/P Koko - LLFA & SuDS (rev)

Hi Gabriel,

Thanks for the call just now. As discussed we will update the report and re-issue with some further clarification in the report;

- Update the text and drawing if necessary in the report to clarify the splits between the different blue and green roof areas.
- Provide further calcs for the existing/remainder of the site's discharge.
- Clarify the 40% allowance for climate change in the calcs.
- Re-issue the proforma which appeared to be a corrupted file.

Kind Regards,

Alex

Alex Herman
Associate & Civils Team Leader
HEYNE TILLETT STEEL
4 Pear Tree Court, T: 020 7870 8050
London, EC1R 0DS M: 07957 463 183
hts.uk.com

From: Berry-Khan, Gabriel [mailto:Gabriel.Berry-Khan@camden.gov.uk]
Sent: 05 January 2018 15:34
To: Alex Herman <AHerman@hts.uk.com>
Cc: Peres Da Costa, David <David.PeresDaCosta@Camden.gov.uk>; Sophie Reay <sophie.reay@indigoplanning.com>; jamie.bryant@indigoplanning.com; James Morgan <JMorgan@hts.uk.com>
Subject: RE: 2017/6058/P Koko - LLFA & SuDS (rev)

Dear Alex
Thanks for your contact.
I am happy to advise and will try to call you now
Regards,

Gabriel Berry-Khan
Senior Sustainability Officer (Planning)

Telephone: 020 7974 4550

From: Alex Herman [mailto:AHerman@hts.uk.com]
Sent: 05 January 2018 15:30
To: Berry-Khan, Gabriel <Gabriel.Berry-Khan@camden.gov.uk>

Cc: Peres Da Costa, David <David.PeresDaCosta@Camden.gov.uk>; Sophie Reay <sophie.reay@indigoplanning.com>; jamie.bryant@indigoplanning.com; James Morgan <JMorgan@hts.uk.com>
Subject: 2017/6058/P Koko - LLFA & SuDS (rev)

Dear Gabriel,

I left you a voicemail message a short while ago. We are looking to provide a response to your below comments by Wednesday next week, and I was hoping we could have a brief discussion over the phone to ensure that the updated information we are providing covers the points you raise in the below email. I am available to discuss anytime the rest of today or Monday. I look forward to speaking to you.

Kind Regards,

Alex

Alex Herman
Associate & Civils Team Leader
HEYNE TILLETT STEEL
4 Pear Tree Court, T: 020 7870 8050
London, EC1R 0DS M: 07957 463 183
hts.uk.com

From: Berry-Khan, Gabriel
Sent: 14 December 2017 08:42
To: Peres Da Costa, David <David.PeresDaCosta@Camden.gov.uk>
Subject: 2017/6058/P Koko - LLFA & SuDS (rev)
Importance: High

Hi David

See my revised comments below, in light of the SuDS strategy report. Note further information required. Happy to coordinate by phone with the applicant's team today.

Documents reviewed:

Application form
BIA vols. 1, 2 & 3
SuDS Strategy Report

Ground water flood risk

Comments: Having reviewed the above BIA, I note that "No potential impacts were identified as part of the subterranean (groundwater) screening stage.". However I also note that no BIA Audit has been produced by Campbell Reith for this scheme. All my comments are therefore provisional and subject to the results of any BIA Audit.
Recommendation: No recommendation is made in advance of any BIA audit.

Surface water flood risk

Comments: The Basement Impact Assessment has also screened out a site-specific surface water flood risk assessment, as there are no recorded historical flood events nor is the site in a LFR Zone.
However, Fig. 3ii in Appendix B of Camden's updated Strategic Flood risk Assessment (2014) identifies the surrounding streets location as having both 1 in 30 year and 1 in 100 year flood risk according to modelling.

Recommendation: While not requiring a site specific FRA I would recommend the above be borne in mind by the applicant and their design team. With special regard to mitigating the impacts of potential storm surface water flows into and out of the site.

Sustainable drainage

Comments: Policy requirements (CC3, London Plan) requires

> developments to utilise Sustainable Drainage Systems (SuDS), to achieve greenfield run-off rates, unless demonstrated that this is not feasible. Surface water should be managed as close to its source as possible, in line with the drainage hierarchy in the London Plan. Where it is not possible to achieve greenfield run-off rates it should be as close to this as possible (a greenfield run-off rate is one that reflects the natural rate of water run-off from a site before it was developed). Major developments will be required to constrain runoff volumes for a 1 in 100 year, 6 hour rainfall event, where feasible..

In addition

> **8.67** A drainage report should be submitted with all major applications, basement developments and other vulnerable development in areas identified at risk of flooding. This should include:
>
> • identification of flood risk;
> • assessment of existing run-off rates;
> • calculation of greenfield run-off rates;
> • identification of measures, in line with the drainage hierarchy, to reduce runoff rates; and
> • calculation of proposed run-off rates.

Notwithstanding no increase in impermeable area in this application, the above policy applies and in this case the greenfield target would apply to the new-build portion whilst "existing or better" would be appropriate for the existing buildings.

In general the drainage report appears to be taking the right approach, but there is a degree of missing, conflicting and unclear information.

SuDS such as green roofs etc. would be expected to unless demonstrated to be unfeasible. The SuDS hierarchy has been commented on although no reasons given for not providing a green roof.

From the drainage report a blue roof is proposed providing 8 m3 volume attenuation. As I understand it this is in respect of the new-build extension and reducing rates from that roof to 4.5 l/s. However the table entitled Approximate Attenuation Volumes appears to show 9 m3 required for 50% runoff reduction and 23 m3 for "greenfield rate". It is not absolutely clear as presented how 1) peak discharge rate is being limited and 2) which attenuation volumes and runoff rates apply to which parts of the proposal and therefore how the respective targets are being met.

The report text states that this provision has (correctly) taken into account 100 year 6-hour event + 40% climate change. The calculations show 30% allowance for climate change.

The SuDS proforma as presented is mostly illegible due to PDF formatting issues.

Further information required: I would appreciate brief clarification of the following points:-

- Rooftop potential for more sustainable SuDS e.g. green or living roofs, in combination with or in place of blue roofs.
- I would appreciate calculations and results being separated out for a. the existing building b. the new extension and c. combined site-wide results, and clearly shown against the targets so I can understand:
    - What if any are the targets being applied for peak discharge rates?
    - Which need is the 8 m3 attenuation addressing?
- 30% or 40% uplift used?

- Please could the Proforma be resent separately.
-

Recommendation: I will be able to review the above documents at short notice if supplied.

- Gabriel

Gabriel Berry-Khan PIEMA MInstP
Senior Sustainability Officer (Planning)
Sustainability and Green Space
Supporting Communities
London Borough of Camden

Telephone: 020 7974 4550
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5 Pancras Square
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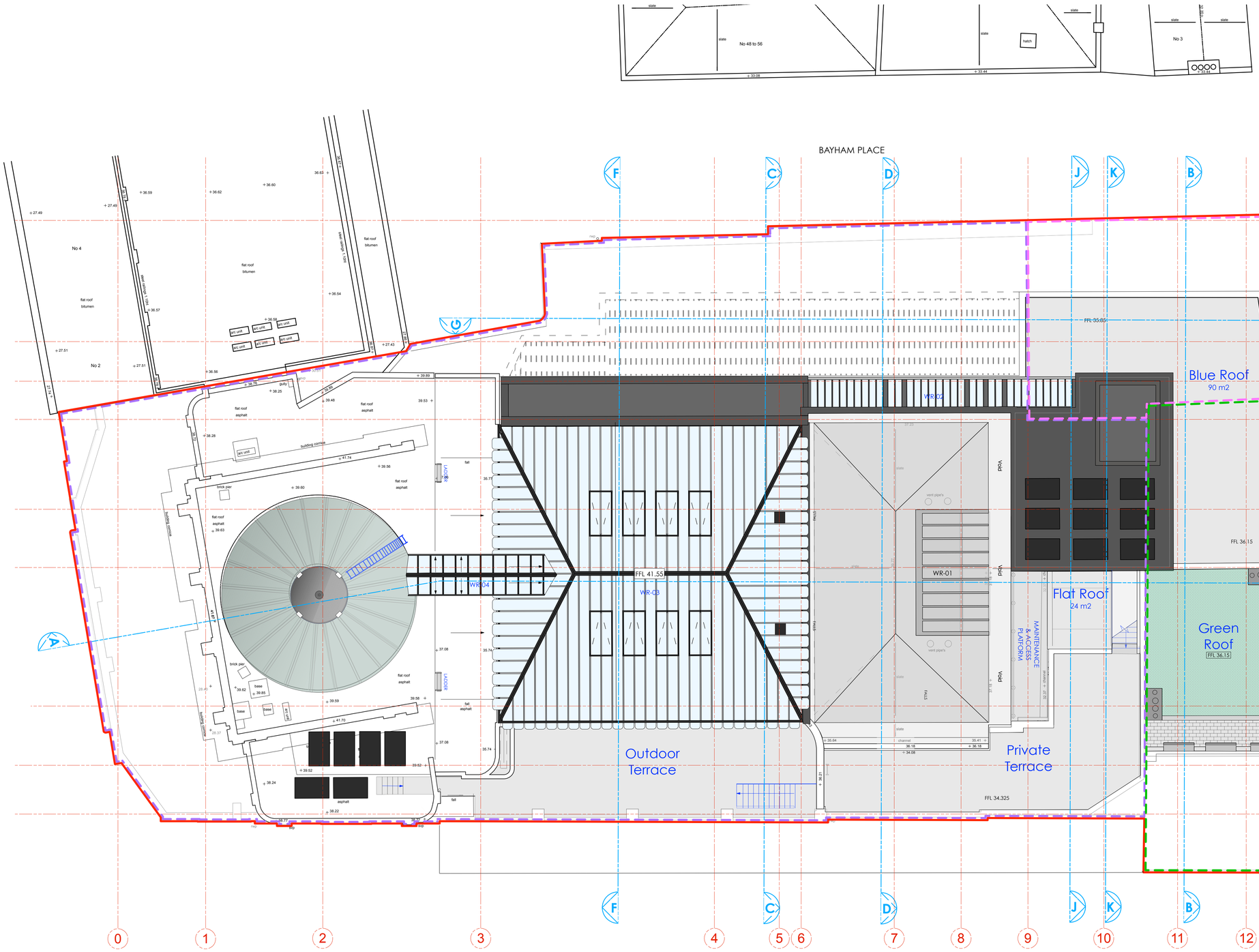
Appendix H5 - Architect's Proposed Site Plans

revision / date / amendments

A / 24/10/17 / -Window numbers updated
B / 06/12/17 / - PVC units updated
C / 03/01/18 / - Amendment to wall adjacent to Sky Lobby



LEGEND

- Proposed Works
- Existing Building Fabric KOKO née Camden Palace Theatre (1900)
- Existing Building Fabric Hope & Anchor (approx. 1850)
- Existing Building Fabric Bayham Place (from 1875)
- Existing Modern Building Fabric Bayham Place (from 2006)
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- Proposed Excavation
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- Retain and protect existing
- Retain, make good, ease and adjusted
- Means of escape Route
- Private Members Route
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- Artist Route
- Proposed Riser
- Proposed Risers Above
- RM.4-06 Room Number
- D4-02 Door Number
- W4-05 Window Number
- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise
- Blue Roof

03.01.18

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed Roof Plan	scale: 1:100 @ A1	date: 26.05.17
	drawn: FR/PC	checked: DA
drawing number: AHA/ KKC /GA/105	revision: C	

revision / date / amendments	
- / 24/10/17 /	- First Issue
A /03/01/18 /	- Amendment to wall adjacent to Sky Lobby

4.2m

CAMDEN HIGH STREET

BAYHAM PLACE

65 BAYHAM PLACE

1 BAYHAM STREET

BAYHAM STREET

CROWNDALE ROAD

EVERSHOLT STREET

HOPE & ANCHOR

RICHARD COBDEN STATUE

KOKO

TCB

Works

Blue Roof
90 m2

Flat Roof
14 m2

Green Roof
100 m2

Private Terrace

Outdoor Terrace

CGI VIEW 1

CGI VIEW 5

CGI VIEW 6

CGI VIEW 7

03.01.18

PLANNING

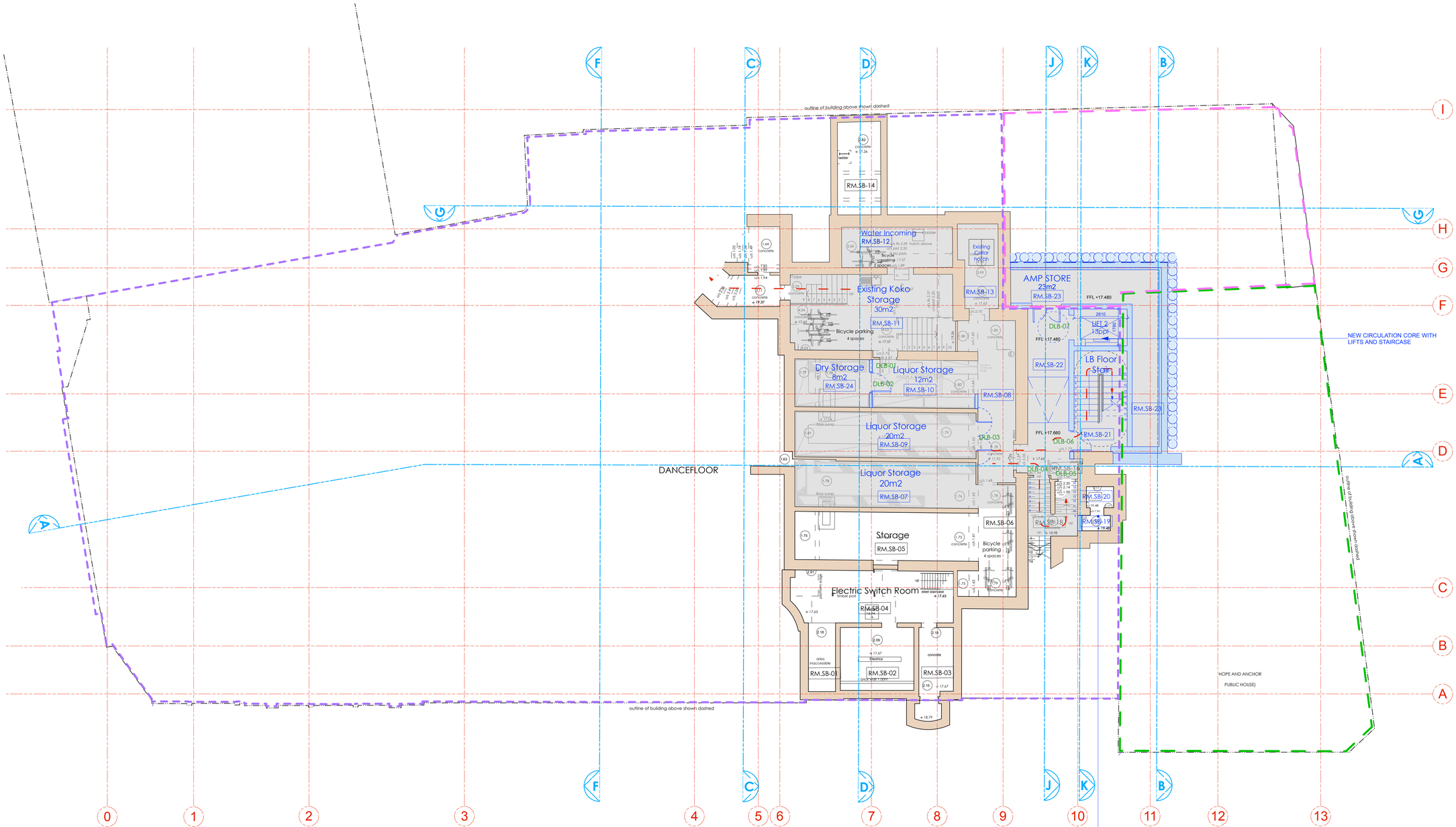
Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T: +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed Site Plan	scale: 1:200 @ A1	date: 25.05.17
	drawn: FR/PO	checked: DA
drawing number: AHA/ KKC /GA/001	revision: A	

revision / date / amendments

A / 24/10/17 / Room numbers updated.
B / 06/12/17 / Existing cellar hatch reinstated with bicycle store relocated.



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- Artist Route
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- Proposed Risers Above
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- D4-02 Door Number
- W4-05 Window Number
- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise

06.12.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London	
drawing title: Proposed Sub Basement Plan	scale: 1:100 @ A1 / date: 13.04.17 / drawn: FR/PO / checked: DA
drawing number: AHA/KKC/GA/098	revision: B

revision / date / amendments	
A / 24/10/17 /	Room numbers updated.
B / 06/12/17 /	Existing cellar hatch reinstated.

GENT'S WC TO BE READ INCONJUNCTION WITH MEP CONSULTANT DETAILS.

NEW STRUCTURAL COLUMN LOCATIONS CHASED INTO EXISTING STRUCTURE FOR GLAZED PAVILION ABOVE . REFER TO ENGINEERS DRAWINGS

EXISTING PLANT ROOM LOCATION RETAINED WITH NEW EQUIPMENT

ELECTRICAL ROOM WITH NEW DOOR FOR MAINTENANCE WITH LOW LEVEL ACCESS

BAYHAM PLACE

BAYHAM STREET

CROWNDALE ROAD

No 4

No 2

No 48 to 56

No 3

OVERLAY

CROSS

LIGHTWELL

RM.BP-30

RM.BP-31

21.6m2

Gents WC

RM.B-29

RM.B-24

RM.B-27

RM.B-28

RM.B-32

LADIES TOILETS

RM.B-17

RM.B-16

BAR

RM.B-15

RM.B-25

RM.B-23

GENTS TOILETS

RM.B-24

RM.B-22

RM.BP-21

RM.B-21

Catering Kitchen RM.BP-20 22m2

RM.B-37

RM.B-39

RM.B-36

RM.B-34

RM.B-33

RM.B-35

RM.B-40

RM.B-38

RM.B-41

RM.B-42

FFL +21.780

RM.B-43

RM.B-12

FFL +21.800

RM.B-13

RM.B-18

Bar

DB-11

11m2

Stage

45 people

RM.B-11

FFL +21.240

Theatre Curtain

District Heating

Electrical Incoming

RM.B-46

Accessible Toilet

RM.B-47

Mains Water Incoming

RM.B-48

RM.B-26

Reduced Head Height

Void

Electric Access Room

RM.B-44

Void

Existing Cellar hatch

DB-13

Store

DB-12 6m2

RM.B-52

FFL +20.080

LIFT 1 SERVICE PITT

LIFT 2 13ppl

Void

DB-10

FFL -20.030

Basement Floor Stair

RM.B-51

FFL +20.360

FFL 20.36 (New slab below current floor level TBC)

RM.B-54

DB-09

DB-03

DB-08

RM.B-53

KOKO STAIR

Shower

WC

DB-15

DB-14

RM.B-07

Dressing Room

DB-01

RM.B-06

RM.B-10

RM.B-09

DB-04

DB-16

Green Room

FFL +20.340

RM.B-08

DB-07

DB-06

Media Control Room 8m2

RM.B-08A

Dis WC

RM.B-57

DB-07

FFL +20.660

RM.B-56

DB-04

DB-05

DB-06

Ladies WC

RM.B-58

Mens WC

RM.B-59

RM.B-60

FFL +20.660

Cellar Hatch

Staff Change

DB-03

DB-01

RM.B-61

FFL +20.660

DB-02

FFL +20.660

Store

31.51m2 (approx)

RM.B-63

Safe

Storage

Area for safe / cash store

14.19m2

RM.B-62

NEW CIRCULATION CORE WITH LIFTS AND STAIRCASE

NEW STRUCTURAL COLUMN LOCATIONS CHASED INTO EXISTING STRUCTURE FOR GLAZED PAVILION ABOVE . REFER TO ENGINEERS DRAWINGS

NEW STAIR ACCESS TO SIDE OF STAGE AND STAGE FROM GREEN ROOM

NEW LAYOUT TO BASEMENT INLINE WITH STRUCTURAL DRAWINGS

LEGEND

- Proposed Works
- Existing Building Fabric KOKO née Camden Palace Theatre (1900)
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- Koko Customer Route
- Public Route
- Artist Route
- Proposed Riser
- Proposed Risers Above
- RM.4-06 Room Number
- D4-02 Door Number
- W4-05 Window Number
- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise

06.12.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed Basement Plan	scale: 1:100 @ A1	date: 13.04.17
	drawn: FR/PC	checked: DA
drawing number: AHA/KKC/GA/099	revision: B	

revision / date / amendments

A	24/10/17 /	Room numbers updated.
B	25/10/17 /	Wall removed in Hope and Anchor under structural grounds
C	06/12/17 /	Addition of substation, relocation of Bin store and new cellar hatch connection.

NEW STRUCTURAL COLUMN LOCATIONS CHASED INTO EXISTING STRUCTURE FOR GLAZED PAVILION ABOVE. REFER TO ENGINEERS DRAWINGS

NEW STRUCTURAL COLUMN LOCATIONS CHASED INTO EXISTING STRUCTURE FOR GLAZED PAVILION ABOVE. REFER TO ENGINEERS DRAWINGS

MAIN Entrance

Service Entrance

F & B Entrance

DDA Entrance

PUB Entrance

Members Entrance

Stage Access
Double height doors

Substation 22m2 FFL +22.600 RM.G-26

Bin Store 18.7m2

Kitchen (with servery) 31.4m2

F & B 49m2 FFL +22.600 RM.G-54

Dining/ Drinking 58m2 FFL +22.600 RM.G-55

Pub 75.3m2 RM.G-56

Stage 45 people RM.B-11 FFL +21.240

Bar 11m2 FFL 21.79

AV/IT 7.4m2 RM.G-06

Koko Office 8m2 RM.G-03

Box Office (existing) RM.G-04

Safe RM.G-03A

KOKO STAIR

MEMBERS STAIR

Ground Floor Stair

Members Corridor

Glass / Dish Wash 4.5m2

Pot Wash 6m2

Disabled WC RM.B-28

Existing service void RM.B-48

New Cellar hatch

Services Corridor

Cardboard Compactor

Glass Crusher

Sorting desk area

Firefighting Shaft

Dry riser inlet

Firefighting Lobby Unit

RM.G-58 RM.G-59 RM.G-44 RM.G-60 RM.G-52 RM.G-51 RM.G-50 RM.G-53 RM.G-57

RM.B-42 FFL 21.78 RM.B-43 RM.B-12 FFL 21.78 RM.B-13 RM.B-09 RM.B-07

RM.G-23 RM.G-24 RM.G-25 RM.G-22 RM.G-20 RM.G-19 RM.G-18 RM.G-17 RM.G-13 RM.G-12 RM.G-21 RM.G-10 RM.G-11 RM.G-15 RM.G-16 RM.B-22 RM.G-14 RM.G-09 RM.G-08

OFFICE LIGHTWELL

EXISTING HOPE & ANCHOR WALL RETAINED

CELLAR HATCH TO KEG STORE AT BASEMENT LEVEL

Theatre Curtain

Street Access

OVERLAY CROSS

LEGEND

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- Proposed Risers Above
- RM.4-06 Room Number
- D4-02 Door Number
- W4-05 Window Number
- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise
- Original brickwork exposed
- New brickwork exposed

06.12.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title
KOKO + Hope & Anchor + Bayham Place, Camden, London

drawing title: Proposed Ground Floor Plan	scale: 1:100 @ A1	date: 13.04.17
	drawn: FR/PC	checked: DA
drawing number: AHA/ KKC /GA/100	revision: C	

revision / date / amendments	
A / 24/10/17 /	- Room numbers updated - Window numbers updated
B / 25/10/17 /	Wall removed in Hope and Anchor under structural grounds.
C / 06/12/17 /	Infill window omitted for new doorway. Grid 10 + C-D.

No 48 to 56

No 3

No 4

No 2

NEW STRUCTURAL COLUMN LOCATIONS CHASED INTO EXISTING STRUCTURE FOR GLAZED PAVILION ABOVE. REFER TO ENGINEERS DRAWINGS

Royal Box
FFL 26.80
RM.1-18

Theatre Curtain

STAGE

RM.B-11
Stage

RM.B-42

RM.B-12

Artist's Box
RM.1-07

Artist's Gallery
40m2
FFL +24.800
RM.1-25

Kitchen
79m2
RM.1-29
FFL +26.350

Cold Store
RM.1-30

Plant Room
RM.1-40

FIRE CURTAIN

Charcole Grill

Pass Counter/ Bar
RM.1-28
FFL +26.350

Dining
99m2
RM.1-27

Dining
50m2
FFL +26.550

Function Room
RM.1-26
62m2
FFL +26.550

Function Room
25m2
RM.1-24
FFL +25.770

KOKO STAIR

First Floor Stair

WC
RM.1-23
FFL +26.550

Glass Wash
2.5m2

Dry Riser

LIFT 1
13ppl

LIFT 2
13ppl

Blue Roof
101 m2

RM.1-21

RM.1-22

RM.1-03

RM.1-16

RM.1-17

RM.1-15

RM.1-12

RM.1-14

RM.1-11

RM.1-10

RM.1-09

RM.1-08

RM.1-07

RM.1-06

RM.1-29A

RM.1-41

RM.1-20

RM.1-23

RM.1-03

LIGHTWELL
area inaccessible

BAR

FACADE SET BACK 200mm FROM ADJACENT HOPE & ANCHOR FACADE

NEW STRUCTURAL COLUMN LOCATIONS CHASED INTO EXISTING STRUCTURE FOR GLAZED PAVILION ABOVE. REFER TO ENGINEERS DRAWINGS

NEW OPENING TO NEW ARTISTS GALLERY FOR ACCESS TO ADJACENT FUNCTION ROOM

GLAZED CANOPY FOR PRIVATE MEMBER ENTRANCE

HOPE AND ANCHOR FACADE AND FENESTRATIONS TO BE RETAINED. FENESTRATION TO BE EASE AND ADJUSTED.

LEGEND

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- Artist Route
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- Proposed Risers Above
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- D4-02 Door Number
- W4-05 Window Number
- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise
- Blue Roof
- Original brickwork exposed
- New brickwork exposed

06.12.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed First Floor Plan	scale: 1:100 @ A1	date: 13.04.17
	drawn: FR/PC	checked: DA
drawing number: AHA/KKC/GA/101	revision: C	

revision / date / amendments	
A / 24/10/17 /	Room numbers updated.
B / 25/10/17 /	Wall removed in Hope and Anchor under structural grounds.
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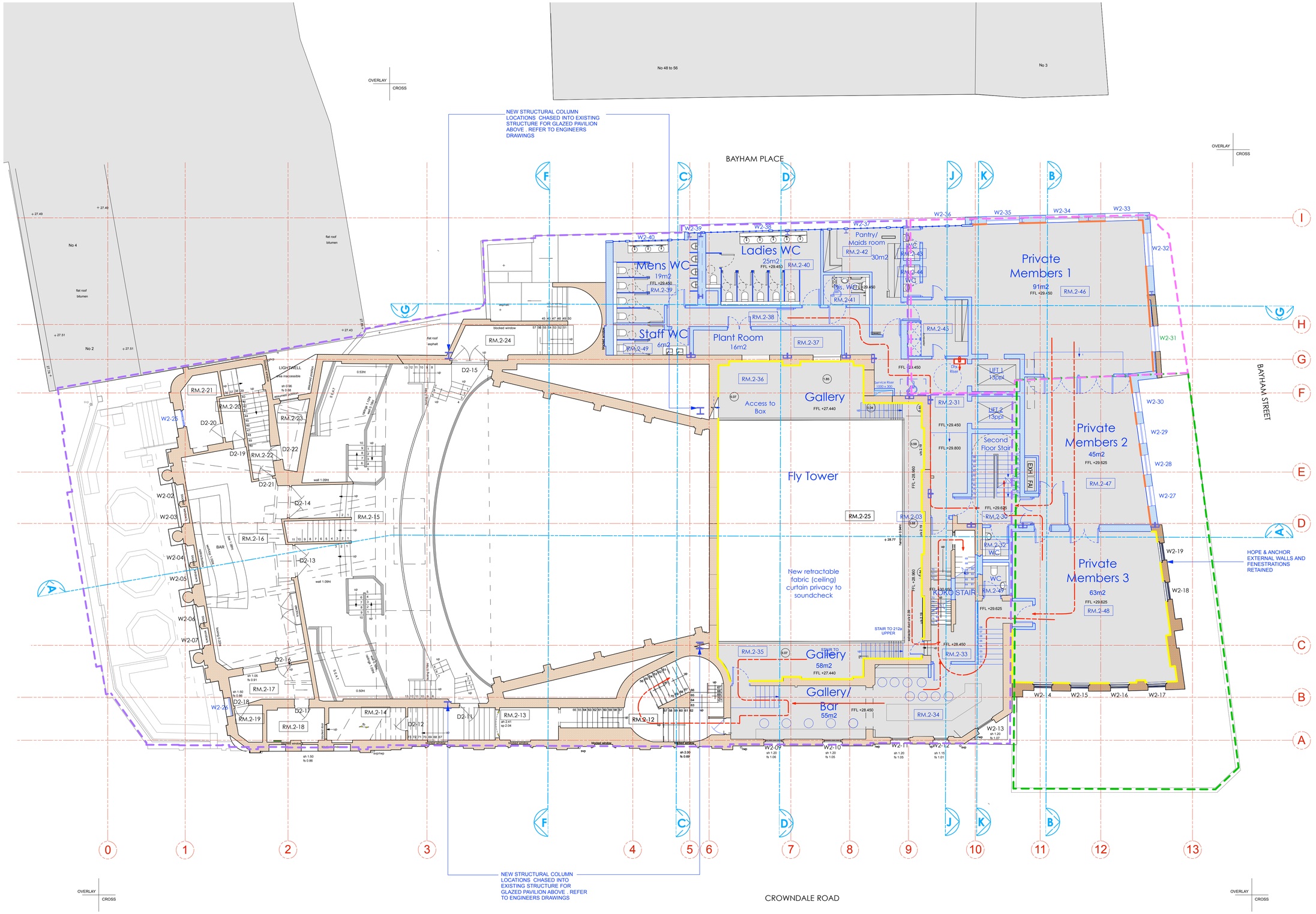

LEGEND

- Proposed Works
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- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise
- Blue Roof
- Original brickwork exposed
- New brickwork exposed

06.12.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title	KOKO + Hope & Anchor + Bayham Place Camden, London	
drawing title	Proposed Second Floor Plan	scale 1:100 @ A1 / date 13.04.17
		drawn FR/PO / checked DA
drawing number	AHA/KKC/GA/102	revision C

revision / date / amendments

A / 24/10/17 / - Room numbers updated
- Window numbers updated

LEGEND

- Proposed Works
- Existing Building Fabric KOKO née Camden Palace Theatre (1900)
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- D4-02 Door Number
- W4-05 Window Number
- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise
- Blue Roof

24.10.17

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed Third Floor Plan	scale: 1:100 @ A1	date: 13.04.17
	drawn: FR/PC	checked: DA
drawing number: AHA/ KKC /GA/103	revision: A	

revision / date / amendments	
A / 24/10/17 /	- Room numbers updated
	- Window numbers updated
B / 03/01/18 /	- Amendment to external wall adjacent to Sky Lobby.

NEW PLANT DECK WITH RELOCATED PLANT EQUIPMENT FOR AUDITORIUM VENTILATION.

BAYHAM PLACE

BAYHAM STREET

CROWNDALE ROAD

Louvered Plant Enclosure Roof

Kitchen/ Bar
29 m2
RM.4-05
RM.4-04

Flat Roof
54 m2

Dome
62 m2
FFL +39.950
60 Persons
RM.4-02

Bar

SKY LOBBY
183 m2
150 Persons
FFL +36.660
RM.4-03

Fireplace (wood burning)

RM.4-01

Outdoor Terrace
65 m2
FFL +36.200

Private Terrace
66 m2
FFL +34.320

Blue Roof
90 m2

Flat Roof
11.31 m2
RM.3-29

Green Roof
45 m2
FFL +34.320

Mens WC RM.4-07
Ladies WC RM.4-08
Dis. WC RM.4-09
RM.4-10
Fourth Floor Stair
LIFT 1 13ppl
LIFT 2 13ppl
RM.4-06
FFL +36.660
FFL +36.405
FFL +36.150
FFL +36.150
FFL +36.150
FFL +36.150
Recording Studio M&E Zone (BOXED)
MAINTENANCE & ACCESS PLATFORM
VOID
No 1
No 2
No 3
No 4
No 48 to 56
D4-01
D4-02
D4-03
D4-04
D4-05
D4-06
D4-07
D4-08
D4-09
D4-10
D4-11
D4-12
D4-14
D4-15
D4-16
D4-17
D4-18
D4-19
D4-20
D4-21
D4-22
W4-05
STAIR FROM ROOF TERRACE TO 3RD FLOOR FIRE STAIR
PARAPET WALL BETWEEN BLUE ROOF & GREEN ROOF
EXISTING STRUCTURE TO BE RETAINED & DISPLAYED WITHIN DOME
CHILLERS LOCATED EXTERNALLY BEHIND PARAPET WALL
6NO PVC UNITS ON FLAT ROOF AREA.
GLAZED ENCLOSED STAIR IN TO DOME
DOOR LEADING TO FIRE ESCAPE
NEW PARAPET WALL BUILT UP ASIDE OF GREEN ROOF
ACCESS FROM EXTENDED STAIR TO PRIVATE TERRACE
NEW PARAPET WALL BUILT UP OVER EXISTING WALLS

LEGEND

- Proposed Works
- Existing Building Fabric KOKO née Camden Palace Theatre (1900)
- Existing Building Fabric Hope & Anchor (approx. 1850)
- Existing Building Fabric Bayham Place (from 1875)
- Existing Modern Building Fabric Bayham Place (from 2006)
- Building Fabric to be demolished
- Demolition of Flooring / Elevation / Wall
- Proposed Excavation
- Remove and retain in alternate location
- Retain and protect existing
- Retain, make good, ease and adjusted
- Means of escape Route
- Private Members Route
- Koko Customer Route
- Public Route
- Artist Route
- Proposed Riser
- Proposed Risers Above
- RM.4-06 Room Number
- D4-02 Door Number
- W4-05 Window Number
- Hope & Anchor Demise
- Koko Demise
- 1 Bayham Street & 65 Bayham Place Demise
- Blue Roof

03.01.18

0 1 2 3 4 5 8m

PLANNING

Archer Humphryes Architects

Basement
Central House
142 Central Street
London, United Kingdom
EC1V 8AR
T : +44 (0) 20 7251 8555

project title: KOKO + Hope & Anchor + Bayham Place Camden, London		
drawing title: Proposed Fourth Floor Plan	scale: 1:100 @ A1	date: 13.04.17
	drawn: FR/PC	checked: DA
drawing number: AHA/ KKC /GA/104	revision: B	

Appendix H6 - CCTV Drainage Survey

UKDN Waterflow (LG) Ltd

45059
45059
06/07/2016 10:03:05

Site Details
THE HOPE PROJECT
CAMDEN HIGH STREET
LONDON
NW1 7JE

CCTV SURVEY REPORT

UKDN Waterflow (LG) Ltd, Technical Services
Block A-The Courtyard • 12 Waterside Drive • Langley Business Park • Slough • SL3 6EZ
Tel 01753 810 999 Fax 01753 681 442
www.ukdnwaterflow.co.uk

Place :

UKDN Waterflow (LG) Ltd
Slough
Berkshire
Tel: 03333 449099
Fax:
Email: ts.sales@ukdnwaterflow.co.uk

Project-information

Project name :	Project Number :	Contact :	Date :
45059			**06/07/2016**

Client:	**HEYNE TILLETT STEEL LIMITED**
Contact Name:	**MATT TURNER**
Department:	
Road:	**4 PEAR TREE COURT**
Town:	**LONDON**
County:	**EC1R 0DS**
Telephone:	**07762 036486**
Fax:	
Mobile:	
E-mail:	**mturner@hts.uk.com**

Site:	**THE HOPE PROJECT**
Contact Name:	
Department:	
Road:	**CAMDEN HIGH STREET**
Town:	**LONDON**
County:	**NW1 7JE**
Telephone:	
Fax:	
Mobile:	
E-mail:	

Contractor	**UKDN Waterflow (LG) Ltd**
Contact Name:	**686 Stirling Road**
Department:	**Slough Trading Estate**
Road:	**Slough**
Town:	**Berkshire**
County:	**SL1 4ST**
Telephone:	**03333 449099**
Fax:	
Mobile:	
E-mail:	**ts.sales@ukdnwaterflow.co.uk**

NOTES

1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

LEGEND

BL	Base Level
CI	Cast Iron
CL	Cover Level
G	Gully
IL	Invert Level
MH	Manhole
PF	Pitch Fibre
RG	Road Gully
RWP	Rain Water Pipe
SA	Survey Abandoned
SVP	Soil Vent pipe
uPVC	Polyvinyl Chloride
UTL	Unable To Locate
UTR	Unable To Raise
UTT	Unable To Trace
VC	Vitrified Clay
———	Foul Water
———	Combined Water
———	Surface water
— — —	Assumed Runs

Revision	By	Date	Ch/App	Description
02	NM	Nov 16		REVISION 02
01	NM	Sep 16		FIRST ISSUE

UKDN WATERFLOW (LG) Ltd

Block A, The Courtyard, Langley Business Park, Waterside Drive, Slough, SL3 6EZ
t: 01753 810999 esolutions@ukdnwaterflow.co.uk www.ukdnwaterflow.co.uk

Client:

HEYNE TILLETT STEEL LIMITED
4 PEAR TREE COURT
LONDON EC1R 0DS

Project Title:

THE HOPE PROJECT
CAMDEN HIGH STREET
LONDON NW1 7JE

Drawing Title:

UNDERGROUND DRAINAGE LAYOUT DRAWING
BASEMENT PLAN

Drawing Scale;	1:200	
Surveyed By:	DDC Ltd	Date: Jul 2016
Drawn By:	NM	Date: Sep 2016
Checked By:	RA	Date: Sep 2016
Approved By:	DSW	Date: Sep 2016

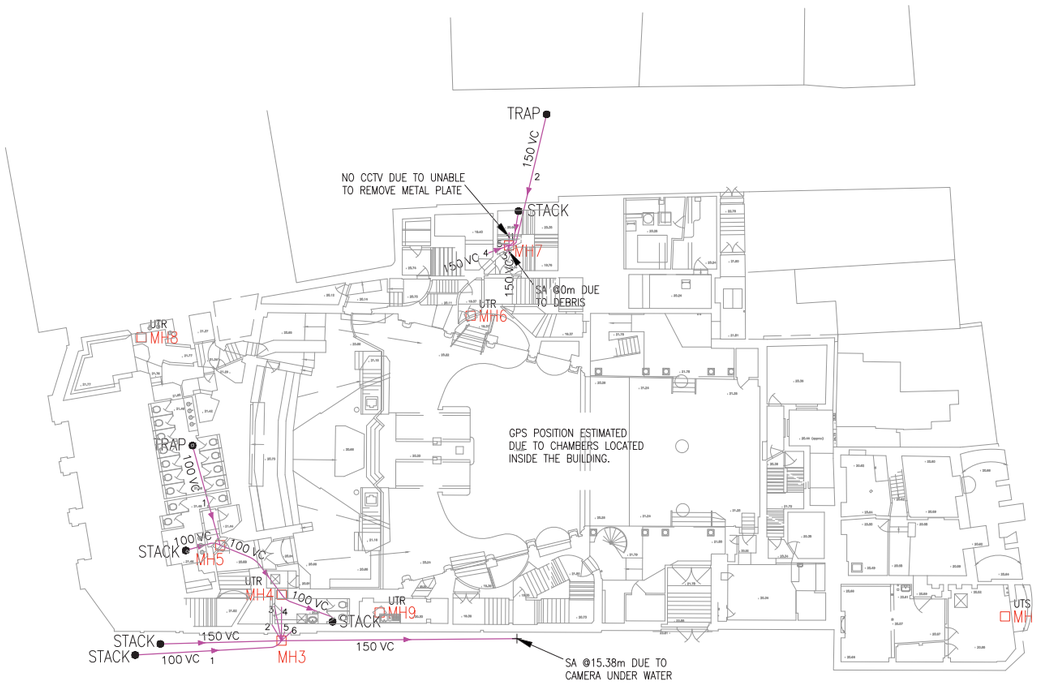
Drawing Number: 45059

Revision: 02

NOTES
1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

LEGEND

BL	Base Level
CI	Cast Iron
CL	Cover Level
G	Gully
IL	Invert Level
MH	Manhole
PF	Pitch Fibre
RG	Road Gully
RWP	Rain Water Pipe
SA	Survey Abandoned
SVP	Soil Vent pipe
uPVC	Polyvinyl Chloride
UTL	Unable To Locate
UTR	Unable To Raise
UTT	Unable To Trace
VC	Vitrified Clay
———	Foul Water
———	Combined Water
———	Surface water
— — —	Assumed Runs



Revision	By	Date	Ch/App	Description
02	NM	Nov 16		REVISION 02
01	NM	Sep 16		FIRST ISSUE

UKDN WATERFLOW (LG) Ltd
Block A, The Courtyard, Langley Business Park, Waterside Drive, Slough, SL3 6EZ
t. 01753 810999 esolutions@ukdnwaterflow.co.uk www.ukdnwaterflow.co.uk

Client:

HEYNE TILLETT STEEL LIMITED
4 PEAR TREE COURT
LONDON EC1R 0DS

Project Title:

THE HOPE PROJECT
CAMDEN HIGH STREET
LONDON NW1 7JE

Drawing Title:

UNDERGROUND DRAINAGE LAYOUT DRAWING
LOWER GROUND FLOOR

Drawing Scale;	1:200	
Surveyed By:	DDC Ltd	Date: Jul 2016
Drawn By:	NM	Date: Sep 2016
Checked By:	RA	Date: Sep 2016
Approved By:	DSW	Date: Sep 2016

Drawing Number: 45059

Revision 02

NOTES

1. DO NOT SCALE FROM THIS DRAWING
2. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

LEGEND

BL	Base Level
CI	Cast Iron
CL	Cover Level
G	Gully
IL	Invert Level
MH	Manhole
PF	Pitch Fibre
RG	Road Gully
RWP	Rain Water Pipe
SA	Survey Abandoned
SVP	Soil Vent pipe
uPVC	Polyvinyl Chloride
UTL	Unable To Locate
UTR	Unable To Raise
UTT	Unable To Trace
VC	Vitrified Clay
	Foul Water
	Combined Water
	Surface water
	Assumed Runs

Revision	By	Date	Ch/App	Description
02	NM	Nov 16		REVISION 02
01	NM	Sep 16		FIRST ISSUE

UKDN WATERFLOW (LG) Ltd
Block A, The Courtyard, Langley Business Park, Waterside Drive, Slough, SL3 6EZ
t: 01753 810999 esolutions@ukdnwaterflow.co.uk www.ukdnwaterflow.co.uk

Client:

HEYNE TILLETT STEEL LIMITED
4 PEAR TREE COURT
LONDON EC1R 0DS

Project Title:

THE HOPE PROJECT
CAMDEN HIGH STREET
LONDON NW1 7JE

Drawing Title:

UNDERGROUND DRAINAGE LAYOUT DRAWING
GROUND FLOOR

Drawing Scale;	1:200	
Surveyed By:	DDC Ltd	Date: Jul 2016
Drawn By:	NM	Date: Sep 2016
Checked By:	RA	Date: Sep 2016
Approved By:	DSW	Date: Sep 2016

Drawing Number: 45059

Revision 02

Place :

UKDN Waterflow (LG) Ltd
Slough
Berkshire
Tel: 03333 449099
Fax:
Email: ts.sales@ukdnwaterflow.co.uk

∑Ø / Main sections

Project name :	Project number :	Contact :	Date :
45059			**06/07/2016**

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
1	BR1	MH1	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	1.20	1.20
2	BR2	MH1	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	1.31	1.31
3	MAIN RUN	MH1	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	9.66	9.66
4	MAIN RUN	MH2	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	2.52	2.52
5	MH1	MAIN RUN	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	0.11	0.11
6	BR1	MH3	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	9.77	9.77
7	BR2	MH3	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	1.20	1.20
8	BR3	MH3	06/07/2016	CAMDEN HIGH STREET		Cast iron	2.30	2.30
9	BR4	MH3	06/07/2016	CAMDEN HIGH STREET		Cast iron	2.19	2.19
10	BR5	MH3	06/07/2016	CAMDEN HIGH STREET		Cast iron	0.00	0.00
11	BR6	MH3	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	1.09	1.09
14	BR1	MH5	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	6.26	6.26
15	MAIN RUN	MH5	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	3.73	3.73
16	MH5	MAIN RUN	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	4.61	4.61
17	MH4	MAIN RUN	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	3.95	3.95
20	BR3	MH7	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	0.10	0.10
22	BR5	MH7	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	0.21	0.21
24	BR1	MH11	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	1.42	1.42
25	BR2	MH11	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	5.93	5.93
26	MAIN RUN	MH11	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	2.30	2.30
27	MH11	MH13	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	3.18	3.18
28	BR1	MH13	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	0.00	0.00
29	BR2	MH13	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	0.65	0.65
30	BR3	MH13	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	3.62	3.62
31	BR5	MH13	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	3.18	3.18
32	MH13	MAIN RUN	08/07/2016	CAMDEN HIGH STREET		Vitrified clay	7.69	7.69
33	BR4	MH13	08/07/2016	CAMDEN HIGH STREET		Cast iron	2.41	2.41
Pipe size: CIRCULAR 100 = 80.59 m (80.59 m)								

Nr.	US MH	DS MH	Date	Road	Tape No.	Material	m	(m)
12	MAIN RUN	MH3	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	7.91	7.91
13	MH3	MAIN RUN	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	15.38	15.38
18	BR1	MH7	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	2.41	2.41
19	BR2	MH7	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	9.12	9.12
21	BR4	MH7	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	1.42	1.42
23	MAIN RUN	MH7	06/07/2016	CAMDEN HIGH STREET		Vitrified clay	0.00	0.00
Pipe size: CIRCULAR 150 = 36.24 m (36.24 m)								

All sections = 116.83 m (116.83 m)

GRADE 3,4 & 5 Summary

STRUCTURAL DEFECTS

Structural defects			
Section	PLR	Grade	Fault description
13	MH3 X	4	Broken pipe at joint, from 1 to 3 o'clock
19	BR2 X	4	Broken pipe, from 10 to 12 o'clock

Grade 3; Best practice suggests consideration be given to repair in the medium term
Grade 4; Best practice suggests consideration be given to a repair to avoid potential collapse
Grade 5; Best practice suggests this pipe is at risk of collapse at any time; urgent consideration should be given to a repair to avoid collapse

SERVICE / OPERATIONAL DEFECTS

Service defects			
Section	PLR	Grade	Fault description
1	BR1 X	5	Multiple defects at 1.2m
5	MH1 X	5	Multiple defects at 0.1m
7	BR2 X	3	Multiple defects at 0.8m
8	BR3 X	5	Multiple defects at 2.3m
10	BR5 X	4	Multiple defects at 0.0m
11	BR6 X	5	Multiple defects at 1.0m
12	MAIN RUN X	4	Multiple defects at 7.9m
18	BR1 X	3	Settled deposits, coarse, 10% cross-sectional area loss
20	BR3 X	5	Multiple defects at 0.1m
21	BR4 X	5	Multiple defects at 1.4m
22	BR5 X	5	Multiple defects at 0.2m
23	MAIN RUN X	4	Multiple defects at 0.0m
26	MAIN RUN X	3	Settled deposits, coarse, 10% cross-sectional area loss
27	MH11 X	3	Settled deposits, coarse, 10% cross-sectional area loss
28	BR1 X	3	Multiple defects at 0.0m
30	BR3 X	3	Multiple defects at 3.6m
32	MH13 X	4	Attached deposits, encrustation, from 4 to 6 o'clock, 20% cross-se

Grade 3; Best practice suggests consideration be given to maintenance activities in the medium term
Grade 4; Best practice suggests consideration be given to maintenance activity to avoid potential blockage
Grade 5; Best practice suggests this pipe is at immediate risk of backing up / causing flooding

Abandoned Surveys

Camera no access		
Section	PLR	Fault description
1	BR1 X	Settled deposits, fine, 80% cross-sectional area loss
5	MH1 X	Settled deposits, fine, 80% cross-sectional area loss
8	BR3 X	Settled deposits, coarse, 80% cross-sectional area loss
10	BR5 X	Attached deposits, encrustation, from 3 to 8 o'clock, 30% cross-se
11	BR6 X	Settled deposits, coarse, 60% cross-sectional area loss

13	MH3 X	Loss of vision, camera under water
20	BR3 X	Attached deposits, encrustation at joint, from 3 to 6 o'clock, 20% cross-s
21	BR4 X	Settled deposits, coarse, 20% cross-sectional area loss, End
22	BR5 X	Attached deposits, encrustation at joint, from 4 to 7 o'clock, 20% cross-s
23	MAIN RUN X	Settled deposits, coarse, 60% cross-sectional area loss
30	BR3 X	Settled deposits, coarse, 10% cross-sectional area loss

Information

These summaries are based on the SRM grading from the WRC

UKDN Waterflow (LG) Ltd, Slough, Berkshire, Tel: 03333 449099, Fax:

45059		No.
	1	1
	2	6
	3	11

OC
JDM
JDM
JDM

Place :

UKDN Waterflow (LG) Ltd
Slough
Berkshire
Tel: 03333 449099
Fax:
Email: ts.sales@ukdnwaterflow.co.uk

Service / Operational Defects (SRM 4)

Project name :	Project Number :	Contact :	Date :
45059			**06/07/2016**

No.	PLR	Dir.	Use	Shape / Size	Date	Mat.	Total Length	Insp. Length	Peak HWG	Peak Score	Grade	Mean Score	Total Score
1	BR1X	U	C	C 100	06/07/2016	VC	1.20	1.20	3	10	5	8.33	10
2	BR2X	U	C	C 100	06/07/2016	VC	1.31	1.31	-	0	1	0	0
3	MAIN RUNX	U	C	C 100	06/07/2016	VC	9.66	9.66	-	0	1	0	0
4	MAIN RUNX	U	C	C 100	06/07/2016	VC	2.52	2.52	-	0	1	0	0
5	MH1X	D	C	C 100	06/07/2016	VC	0.11	0.11	3	10	5	90.91	10
6	BR1X	U	C	C 100	06/07/2016	VC	9.77	9.77	1	0	1	0	0
7	BR2X	U	C	C 100	06/07/2016	VC	1.20	1.20	2	1.6	3	1.33	1.6
8	BR3X	U	C	C 100	06/07/2016	CI	2.30	2.30	3	10	5	5.22	12
9	BR4X	U	C	C 100	06/07/2016	CI	2.19	2.19	-	0	1	0	0
10	BR5X	U	C	C 100	06/07/2016	CI	0.00	0.00	2	5	4	0	5
11	BR6X	U	C	C 100	06/07/2016	VC	1.09	1.09	3	8	5	7.34	8
12	MAIN RUNX	U	C	C 150	06/07/2016	VC	7.91	7.91	3	8	4	1.26	10
13	MH3X	D	C	C 150	06/07/2016	VC	15.38	15.38	-	0	1	0	0
14	BR1X	U	C	C 100	06/07/2016	VC	6.26	6.26	-	0	1	0	0
15	MAIN RUNX	U	C	C 100	06/07/2016	VC	3.73	3.73	-	0	1	0	0
16	MH5X	D	C	C 100	06/07/2016	VC	4.61	4.61	-	0	1	0	0
17	MH4X	D	C	C 100	06/07/2016	VC	3.95	3.95	-	0	1	0	0
18	BR1X	U	C	C 150	06/07/2016	VC	2.41	2.41	3	2	3	1.66	4
19	BR2X	U	C	C 150	06/07/2016	VC	9.12	9.12	-	0	1	0	0
20	BR3X	U	C	C 100	06/07/2016	VC	0.10	0.10	2	5	5	50	5
21	BR4X	U	C	C 150	06/07/2016	VC	1.42	1.42	3	10	5	8.1	11.5
22	BR5X	U	C	C 100	06/07/2016	VC	0.21	0.21	2	5	5	23.81	5
23	MAIN RUNX	U	C	C 150	06/07/2016	VC	0.00	0.00	3	8	4	0	8
24	BR1X	U	C	C 100	08/07/2016	VC	1.42	1.42	-	0	1	0	0
25	BR2X	U	C	C 100	08/07/2016	VC	5.93	5.93	-	0	1	0	0
26	MAIN RUNX	U	C	C 100	08/07/2016	VC	2.30	2.30	3	2	3	0.87	2
27	MH11X	D	C	C 100	08/07/2016	VC	3.18	3.18	3	2	3	0.63	2
28	BR1X	U	C	C 100	08/07/2016	VC	0.00	0.00	2	2	3	0	2
29	BR2X	U	C	C 100	08/07/2016	VC	0.65	0.65	-	0	1	0	0
30	BR3X	U	C	C 100	08/07/2016	VC	3.62	3.62	3	2	3	0.55	2
31	BR5X	U	C	C 100	08/07/2016	VC	3.18	3.18	2	0	1	0	0
32	MH13X	D	C	C 100	08/07/2016	VC	7.69	7.69	2	7	4	2.5	19.2
33	BR4X	U	C	C 100	08/07/2016	CI	2.41	2.41	-	0	1	0	0

Place :

UKDN Waterflow (LG) Ltd
Slough
Berkshire
Tel: 03333 449099
Fax:
Email: ts.sales@ukdnwaterflow.co.uk

Structural Defects (SRM 4)

Project name :	Project Number :	Contact :	Date :
45059			**06/07/2016**

No.	PLR	Dir.	Use	Shape / Size	Date	Mat.	Total Length	Insp. Length	Peak HWG	Peak Score	Grade	Mean Score	Total Score
1	BR1X	U	C	C 100	06/07/2016	VC	1.20	1.20	1	1	1	0.83	1
2	BR2X	U	C	C 100	06/07/2016	VC	1.31	1.31	-	0	1	0	0
3	MAIN RUNX	U	C	C 100	06/07/2016	VC	9.66	9.66	-	0	1	0	0
4	MAIN RUNX	U	C	C 100	06/07/2016	VC	2.52	2.52	-	0	1	0	0
5	MH1X	D	C	C 100	06/07/2016	VC	0.11	0.11	-	0	1	0	0
6	BR1X	U	C	C 100	06/07/2016	VC	9.77	9.77	1	1	1	0.1	1
7	BR2X	U	C	C 100	06/07/2016	VC	1.20	1.20	-	0	1	0	0
8	BR3X	U	C	C 100	06/07/2016	CI	2.30	2.30	-	0	1	0	0
9	BR4X	U	C	C 100	06/07/2016	CI	2.19	2.19	-	0	1	0	0
10	BR5X	U	C	C 100	06/07/2016	CI	0.00	0.00	-	0	1	0	0
11	BR6X	U	C	C 100	06/07/2016	VC	1.09	1.09	1	1	1	0.92	1
12	MAIN RUNX	U	C	C 150	06/07/2016	VC	7.91	7.91	2	20	2	5.06	40
13	MH3X	D	C	C 150	06/07/2016	VC	15.38	15.38	4	80	4	5.2	80
14	BR1X	U	C	C 100	06/07/2016	VC	6.26	6.26	-	0	1	0	0
15	MAIN RUNX	U	C	C 100	06/07/2016	VC	3.73	3.73	-	0	1	0	0
16	MH5X	D	C	C 100	06/07/2016	VC	4.61	4.61	2	10	2	2.17	10
17	MH4X	D	C	C 100	06/07/2016	VC	3.95	3.95	-	0	1	0	0
18	BR1X	U	C	C 150	06/07/2016	VC	2.41	2.41	-	0	1	0	0
19	BR2X	U	C	C 150	06/07/2016	VC	9.12	9.12	4	80	4	9.87	90
20	BR3X	U	C	C 100	06/07/2016	VC	0.10	0.10	-	0	1	0	0
21	BR4X	U	C	C 150	06/07/2016	VC	1.42	1.42	-	0	1	0	0
22	BR5X	U	C	C 100	06/07/2016	VC	0.21	0.21	-	0	1	0	0
23	MAIN RUNX	U	C	C 150	06/07/2016	VC	0.00	0.00	-	0	1	0	0
24	BR1X	U	C	C 100	08/07/2016	VC	1.42	1.42	2	10	2	7.04	10
25	BR2X	U	C	C 100	08/07/2016	VC	5.93	5.93	2	10	2	6.75	40
26	MAIN RUNX	U	C	C 100	08/07/2016	VC	2.30	2.30	-	0	1	0	0
27	MH11X	D	C	C 100	08/07/2016	VC	3.18	3.18	-	0	1	0	0
28	BR1X	U	C	C 100	08/07/2016	VC	0.00	0.00	-	0	1	0	0
29	BR2X	U	C	C 100	08/07/2016	VC	0.65	0.65	-	0	1	0	0
30	BR3X	U	C	C 100	08/07/2016	VC	3.62	3.62	-	0	1	0	0
31	BR5X	U	C	C 100	08/07/2016	VC	3.18	3.18	2	10	2	3.14	10
32	MH13X	D	C	C 100	08/07/2016	VC	7.69	7.69	2	20	2	2.6	20
33	BR4X	U	C	C 100	08/07/2016	CI	2.41	2.41	-	0	1	0	0

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Inspection report

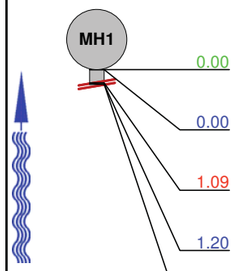
Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**1**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR1**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH1**
Inspection Direction	**MH1 (U/S) BR1**	Pipe Length	1.00 m	D/S Depth :	**1.32**

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**1.20 m**	Lining :	

Comment : **TEXT SHOULD READ 100MM**

1:500 **Depth: 1.32**



Position	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : MH1	(Constr) 0
0.00	WL	Water level, 0% of the vertical dimension	(Serv) 0
1.09	JDM	Joint displaced, medium Remarks: 1.09	(Struct) 1
1.20	DES	Settled deposits, fine, 80% cross-sectional area loss	(Serv) 5
1.20	SA	Survey abandoned Remarks: DUE TO DEBRIS	(Misc) 0

1.2 m // 00:01:09

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**1**	**0.83**	**1**	**1**	**1**	**10**	**8.33**	**10**	**5**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**1**	**X**

Photo: 1_1_5_A.JPG
1.2m, Settled deposits, fine, 80% cross-sectional area loss

Place :

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**2**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR2**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH1**
Inspection Direction	**MH1 (U/S) BR2**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**1.31 m**	Lining :	

Comment : **TEXT SHOULD READ 100MM**

1:500	Position	Code	Observation	Grade
MH1	0.00	MH	Start node type, manhole, reference number : MH1	(Constr) 0
BR2	0.00	WL	Water level, 0% of the vertical dimension	(Serv) 0
	1.31	REM	General remark Remarks: REAR OF GULLY TRAP	(Misc) 0
	1.31	OCF	Finish node type, other special chamber reference number: BR2 Remarks: GULLY TRAP REACHED	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**3**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MAIN RUN**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH1**
Inspection Direction	**MH1 (U/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**9.66 m**	Lining :	

Comment : **TEXT SHOULD READ 100MM**

1:500	Position	Code	Observation	Grade
MH1	0.00	MH	Start node type, manhole, reference number : MH1	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	9.66	MHF	Finish node type, manhole reference number: MAIN RUN Remarks: MH2	(Constr) 0
MAIN RUN				

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**4**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MAIN RUN**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH2**
Inspection Direction	**MH2 (U/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**2.52 m**	Lining :	

Comment : **TEXT SHOULD READ 100MM**

1:500	Position	Code	Observation	Grade
MH2	0.00	MH	Start node type, manhole, reference number : MH2	(Constr) 0
MAIN RUN	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	2.08	LU	Line deviates up Remarks: SHARP	(Serv) 0
	2.52	OCF	Finish node type, other special chamber reference number: MAIN RUN Remarks: BASE OF STACK	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**5**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MH1**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MAIN RUN**
Inspection Direction	**MH1 (D/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**0.11 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH1	0.00	MH	Start node type, manhole, reference number : MH1	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	REM	General remark Remarks: REAR OF TRAP	(Misc) 0
	0.11	DES	Settled deposits, fine, 80% cross-sectional area loss	(Serv) 5
	0.11	SA	Survey abandoned Remarks: DUE TO DEBRIS	(Misc) 0

0.11 m // 00:03:31

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**10**	**90.91**	**10**	**5**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**5**	**X**

Photo: 6_6_21_A.JPG
0.11m, Settled deposits, fine, 80% cross-sectional area loss

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Inspection report

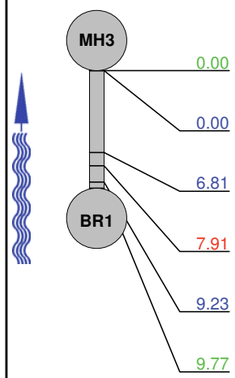
Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**6**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR1**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH3**
Inspection Direction	**MH3 (U/S) BR1**	Pipe Length	1.00 m	D/S Depth :	**1.46**

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**9.77 m**	Lining :	

Comment :

1:500 Depth: 1.46



Position	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : MH3	(Constr) 0
0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
6.81	LD	Line deviates down Remarks: SLIGHT	(Serv) 0
7.91	JDM	Joint displaced, medium	(Struct) 1
9.23	LU	Line deviates up Remarks: SHARP	(Serv) 0
9.77	OCF	Finish node type, other special chamber reference number: BR1 Remarks: BASE OF STACK	(Constr) 0

Structural Defects | **Constructional Features**
Service Defects | **Miscellaneous Features**

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**1**	**0.1**	**1**	**1**	**0**	**0**	**0**	**0**	**1**

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**7**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR2**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH3**
Inspection Direction	**MH3 (U/S) BR2**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**1.20 m**	Lining :	

Comment :

1:500	Position		Code	Observation	Grade
MH3					
BR2					
	0.00		MH	Start node type, manhole, reference number : MH3	(Constr) 0
	0.00		WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	**S01**	DEE	Attached deposits, encrustation, from 7 to 5 o'clock, 5% cross-sectional area loss, Start	(Serv) 3
	0.87	**F01**	DEE	Attached deposits, encrustation, from 7 to 5 o'clock, 5% cross-sectional area loss, End	(Serv) 3
	0.87		LU	Line deviates up Remarks: SHARP	(Serv) 0
	1.20		OCF	Finish node type, other special chamber reference number: BR2 Remarks: BASE OF STACK	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**1.6**	**1.33**	**1.6**	**3**

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**8**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR3**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH3**
Inspection Direction	**MH3 (U/S) BR3**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Cast iron**
Total length :	**2.30 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH3				
	0.00	MH	Start node type, manhole, reference number : MH3	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	1.86	DER	Settled deposits, coarse, 10% cross-sectional area loss	(Serv) 3
	1.86	LU	Line deviates up Remarks: SHARP	(Serv) 0
	2.30	DER	Settled deposits, coarse, 80% cross-sectional area loss	(Serv) 5
	2.30	SA	Survey abandoned Remarks: DUE TO DEBRIS	(Misc) 0

2.3 m // 00:01:38

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**2**	**10**	**5.22**	**12**	**5**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**8**	**X**

Photo: 9_9_44_A.JPG
2.3m, Settled deposits, coarse, 80% cross-sectional area loss

Place :

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**9**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR4**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH3**
Inspection Direction	**MH3 (U/S) BR4**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Cast iron**
Total length :	**2.19 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH3	0.00	MH	Start node type, manhole, reference number : MH3	(Constr) 0
BR4	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	1.75	LU	Line deviates up Remarks: SHARP	(Serv) 0
	2.19	OCF	Finish node type, other special chamber reference number: BR4 Remarks: BASE OF STACK	(Constr) 0

Structural Defects | **Constructional Features**

Service Defects | **Miscellaneous Features**

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**10**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR5**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH3**
Inspection Direction	**MH3 (U/S) BR5**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Cast iron**
Total length :	**0.00 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH3				
	0.00	MH	Start node type, manhole, reference number : MH3	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	DEE	Attached deposits, encrustation, from 3 to 8 o'clock, 30% cross-sectional area loss	(Serv) 4
	0.00	SA	Survey abandoned Remarks: DUE TO SCALE	(Misc) 0

0 m // 00:00:39

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**5**	**0**	**5**	**4**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**10**	**X**

Photo: 11_11_52_A.JPG
0m, Attached deposits, encrustation, from 3 to 8 o'clock, 30% cross-sectional area loss

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**11**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR6**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH3**
Inspection Direction	**MH3 (U/S) BR6**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**1.09 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH3				
	0.00	MH	Start node type, manhole, reference number : MH3	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LL	Line deviates left Remarks: SHARP	(Serv) 0
	0.87	LR	Line deviates right Remarks: SHARP	(Serv) 0
	0.98	JDM	Joint displaced, medium	(Struct) 1
	1.09	DER	Settled deposits, coarse, 60% cross-sectional area loss	(Serv) 4
	1.09	SA	Survey abandoned Remarks: DUE TO DEBRIS	(Misc) 0

0.98 m // 00:01:14

1.09 m // 00:01:42

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**1**	**0.92**	**1**	**1**	**1**	**8**	**7.34**	**8**	**5**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**11**	**X**

Photo: 11_1_5_18072016_124455_A.jpg
0.98m, Joint displaced, medium

Photo: 12_12_59_A.JPG
1.09m, Settled deposits, coarse, 60% cross-sectional area loss

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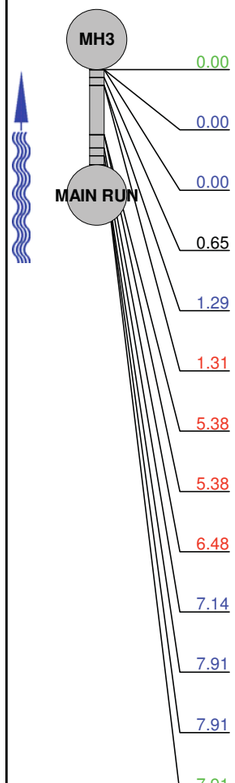
Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**12**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MAIN RUN**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH3**
Inspection Direction	**MH3 (U/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**7.91 m**	Lining :	

Comment :



1:500	Position	Code	Observation	Grade
	0.00	MH	Start node type, manhole, reference number : MH3	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LU	Line deviates up Remarks: SLIGHT	(Serv) 0
	0.65	REM	General remark Remarks: LINE LEVELS OUT	(Misc) 0
	1.29	LU	Line deviates up Remarks: SLIGHT	(Serv) 0
	1.31	CCJ	Crack, circumferential at joint, from 1 to 4 o'clock	(Struct) 2
	5.38	CLJ	Crack, longitudinal at joint, at 1 o'clock	(Struct) 2
	5.38	CL	Crack, longitudinal, at 2 o'clock	(Struct) 2
	6.48	CLJ	Crack, longitudinal at joint, at 2 o'clock	(Struct) 2
	7.14	DER	Settled deposits, coarse, 10% cross-sectional area loss	(Serv) 3
	7.91	DER	Settled deposits, coarse, 50% cross-sectional area loss	(Serv) 4
	7.91	LU	Line deviates up Remarks: SHARP	(Serv) 0
	7.91	OCF	Finish node type, other special chamber reference number: MAIN RUN Remarks: BASE OF STACK IN VIEW	(Constr) 0

1.31 m // 00:01:04

5.38 m // 00:01:48

6.48 m // 00:02:32

7.14 m // 00:03:01

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
4	**20**	**5.06**	**40**	**2**	**2**	**8**	**1.26**	**10**	**4**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**12**	**X**

Photo: 12_1_6_18072016_124539_A.jpg
1.31m, Crack, circumferential at joint, from 1 to 4 o'clock

Photo: 12_1_7_18072016_124600_A.jpg
5.38m, Crack, longitudinal at joint, at 1 o'clock

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**12**	**X**

Photo: 12_1_9_18072016_124627_A.jpg
6.48m, Crack, longitudinal at joint, at 2 o'clock

Photo: 13_13_70_A.JPG
7.14m, Settled deposits, coarse, 10% cross-sectional area loss

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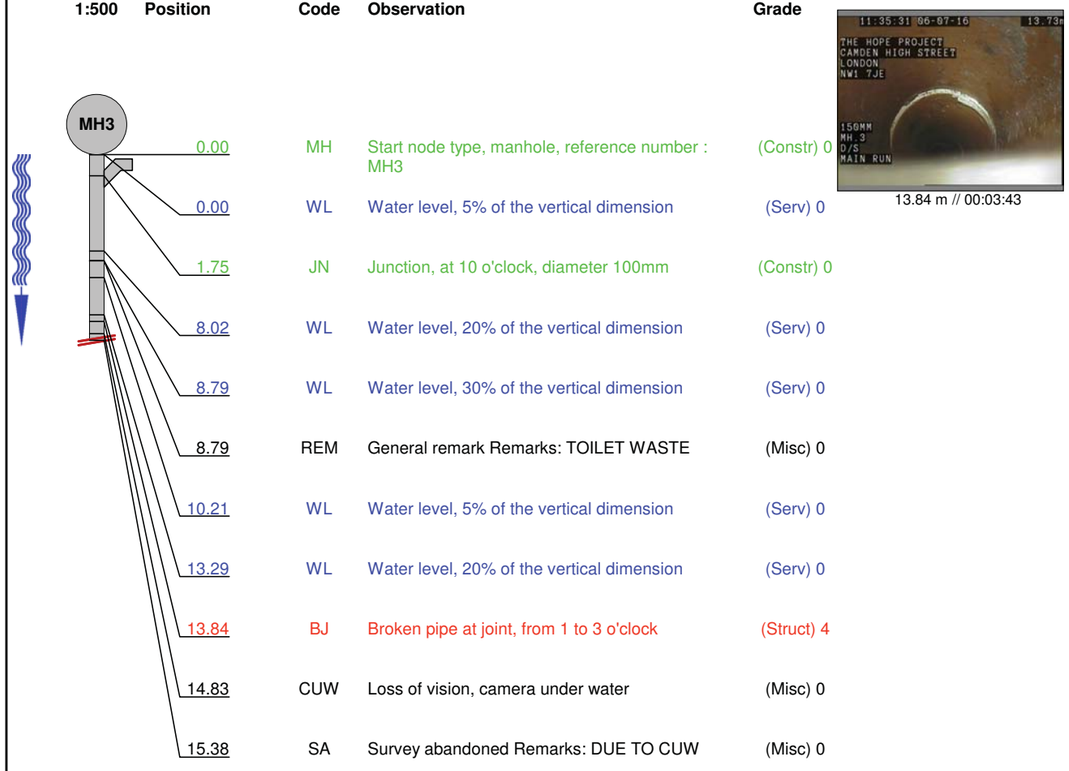
Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**13**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MH3**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MAIN RUN**
Inspection Direction	**MH3 (D/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**15.38 m**	Lining :	

Comment :



1:500 Position	Code	Observation	Grade
0.00	MH	Start node type, manhole, reference number : MH3	(Constr) 0
0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
1.75	JN	Junction, at 10 o'clock, diameter 100mm	(Constr) 0
8.02	WL	Water level, 20% of the vertical dimension	(Serv) 0
8.79	WL	Water level, 30% of the vertical dimension	(Serv) 0
8.79	REM	General remark Remarks: TOILET WASTE	(Misc) 0
10.21	WL	Water level, 5% of the vertical dimension	(Serv) 0
13.29	WL	Water level, 20% of the vertical dimension	(Serv) 0
13.84	BJ	Broken pipe at joint, from 1 to 3 o'clock	(Struct) 4
14.83	CUW	Loss of vision, camera under water	(Misc) 0
15.38	SA	Survey abandoned Remarks: DUE TO CUW	(Misc) 0

13.84 m // 00:03:43

Structural Defects | **Constructional Features**
Service Defects | **Miscellaneous Features**

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**80**	**5.2**	**80**	**4**	**0**	**0**	**0**	**0**	**1**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**13**	**X**

Photo: 14_14_82_A.JPG
13.84m, Broken pipe at joint, from 1 to 3 o'clock

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**14**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

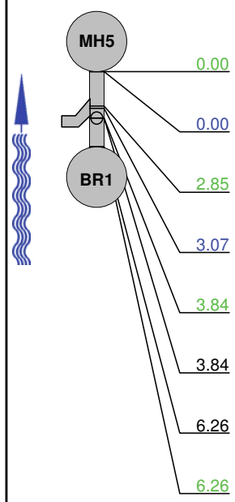
Place :	**LONDON**	Location details:		U/S MH :	**BR1**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH5**
Inspection Direction	**MH5 (U/S) BR1**	Pipe Length	1.00 m	D/S Depth :	**0.21**

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**6.26 m**	Lining :	

Comment :

1:500 Position **Code** **Observation** **Grade**

Depth: 0.21



0.00	MH	Start node type, manhole, reference number : MH5	(Constr) 0
0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
2.85	JN	Junction, at 3 o'clock, diameter 100mm	(Constr) 0
3.07	LU	Line deviates up Remarks: SHARP	(Serv) 0
3.84	JN	Junction, at 12 o'clock, diameter 100mm	(Constr) 0
3.84	REM	General remark Remarks: LINE LEVELS OUT	(Misc) 0
6.26	REM	General remark Remarks: REAR OF TRAP	(Misc) 0
6.26	OCF	Finish node type, other special chamber reference number: BR1 Remarks: REAR OF TRAP	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

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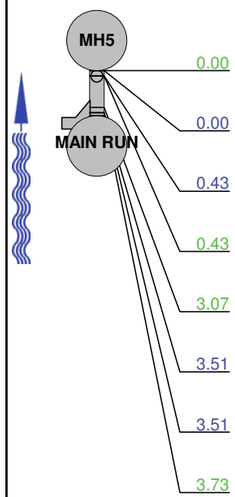
Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**15**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MAIN RUN**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH5**
Inspection Direction	**MH5 (U/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**3.73 m**	Lining :	

Comment :



1:500	Position	Code	Observation	Grade
	0.00	MH	Start node type, manhole, reference number : MH5	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.43	LL	Line deviates left Remarks: SLIGHT	(Serv) 0
	0.43	JN	Junction, at 12 o'clock, diameter 100mm	(Constr) 0
	3.07	JN	Junction, at 2 o'clock, diameter 100mm	(Constr) 0
	3.51	LU	Line deviates up Remarks: SHARP	(Serv) 0
	3.51	LL	Line deviates left Remarks: SLIGHT	(Serv) 0
	3.73	OCF	Finish node type, other special chamber reference number: MAIN RUN Remarks: BASE OF STACK IN VIEW	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**16**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MH5**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MAIN RUN**
Inspection Direction	**MH5 (D/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**4.61 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
	0.00	MH	Start node type, manhole, reference number : MH5	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.21	WL	Water level, 15% of the vertical dimension	(Serv) 0
	1.97	WL	Water level, 5% of the vertical dimension	(Serv) 0
	2.30	CN	Connection other than junction, at 9 o'clock, diameter 80mm	(Constr) 0
	2.63	LR	Line deviates right Remarks: SHARP	(Serv) 0
	3.73	CC	Crack, circumferential, from 7 to 4 o'clock	(Struct) 2
	4.61	MHF	Finish node type, manhole reference number: MAIN RUN Remarks: MH4 UTR	(Constr) 0

3.73 m // 00:02:21

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**10**	**2.17**	**10**	**2**	**0**	**0**	**0**	**0**	**1**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**16**	**X**

Photo: 17_17_107_A.JPG
3.73m, Crack, circumferential, from 7 to 4 o'clock

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**17**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MH4**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MAIN RUN**
Inspection Direction	**MH4 (D/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**3.95 m**	Lining :	

Comment : **UTR**

1:500	Position	Code	Observation	Grade
	0.00	MH	Start node type, manhole, reference number : MH4	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LL	Line deviates left Remarks: SHARP	(Serv) 0
	3.51	LD	Line deviates down Remarks: SLIGHT	(Serv) 0
	3.51	LR	Line deviates right Remarks: SHARP	(Serv) 0
	3.95	LD	Line deviates down Remarks: SHARP	(Serv) 0
	3.95	OCF	Finish node type, other special chamber reference number: MAIN RUN Remarks: STACK REACHED	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**18**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

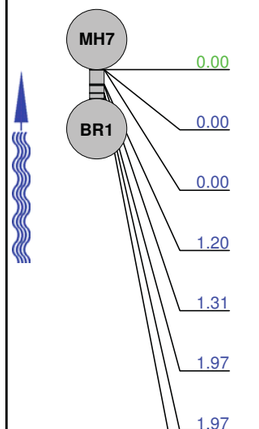
Place :	**LONDON**	Location details:		U/S MH :	**BR1**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH7**
Inspection Direction	**MH7 (U/S) BR1**	Pipe Length	1.00 m	D/S Depth :	**0.52**

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**2.41 m**	Lining :	

Comment :

1:500 Position Code Observation Grade

Depth: 0.52



0.00	MH	Start node type, manhole, reference number : MH7	(Constr) 0
0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
0.00	LL	Line deviates left Remarks: SHARP	(Serv) 0
1.20	DER	Settled deposits, coarse, 10% cross-sectional area loss	(Serv) 3
1.31	DER	Settled deposits, coarse, 10% cross-sectional area loss	(Serv) 3
1.97	LU	Line deviates up Remarks: SHARP	(Serv) 0
1.97	LR	Line deviates right Remarks: SLIGHT	(Serv) 0
2.41	OCF	Finish node type, other special chamber reference number: BR1 Remarks: BASE OF STACK	(Constr) 0

1.2 m // 00:00:43

1.31 m // 00:01:56

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**2**	**2**	**1.66**	**4**	**3**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**18**	**X**

Photo: 19_19_120_A.JPG
1.2m, Settled deposits, coarse, 10% cross-sectional area loss

Photo: 19_19_121_A.JPG
1.31m, Settled deposits, coarse, 10% cross-sectional area loss

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**19**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR2**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH7**
Inspection Direction	**MH7 (U/S) BR2**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**9.12 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH7	0.00	MH	Start node type, manhole, reference number : MH7	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
BR2	0.00	LL	Line deviates left Remarks: SHARP	(Serv) 0
	7.03	LR	Line deviates right Remarks: SLIGHT	(Serv) 0
	7.03	CC	Crack, circumferential, from 7 to 11 o'clock	(Struct) 2
	7.69	CN	Connection other than junction, at 2 o'clock, diameter 100mm	(Constr) 0
	8.13	B	Broken pipe, from 10 to 12 o'clock	(Struct) 4
	9.12	REM	General remark Remarks: REAR OF TRAP	(Misc) 0
	9.12	OCF	Finish node type, other special chamber reference number: BR2 Remarks: REAR OF TRAP REACHED	(Constr) 0

7.03 m // 00:01:19

8.13 m // 00:02:38

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**80**	**9.87**	**90**	**4**	**0**	**0**	**0**	**0**	**1**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**19**	**X**

Photo: 20_20_129_A.JPG
7.03m, Crack, circumferential, from 7 to 11 o'clock

Photo: 20_20_131_A.JPG
8.13m, Broken pipe, from 10 to 12 o'clock

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**20**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR3**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH7**
Inspection Direction	**MH7 (U/S) BR3**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**0.10 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH7	0.00	MH	Start node type, manhole, reference number : MH7	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.10	DEEJ	Attached deposits, encrustation at joint, from 3 to 6 o'clock, 20% cross-sectional area loss	(Serv) 4
	0.10	SA	Survey abandoned Remarks: DUE TO DEE	(Misc) 0

0.1 m // 00:00:56

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**5**	**50**	**5**	**5**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**20**	**X**

Photo: 21_21_136_A.JPG
0.1m, Attached deposits, encrustation at joint, from 3 to 6 o'clock, 20% cross-sectional area loss

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**21**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR4**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH7**
Inspection Direction	**MH7 (U/S) BR4**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**1.42 m**	Lining :	

Comment :

1:500	Position		Code	Observation	Grade
MH7					
	0.00		MH	Start node type, manhole, reference number : MH7	(Constr) 0
	0.00		WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.10	**S01**	DER	Settled deposits, coarse, 20% cross-sectional area loss, Start	(Serv) 4
	1.42		DER	Settled deposits, coarse, 40% cross-sectional area loss	(Serv) 4
	1.42	**F01**	DER	Settled deposits, coarse, 20% cross-sectional area loss, End	(Serv) 4
	1.42		SA	Survey abandoned Remarks: DUE TO DEBRIS	(Misc) 0

1.42 m // 00:01:14

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**2**	**10**	**8.1**	**11.5**	**5**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**21**	**X**

Photo: 22_22_141_A.JPG
1.42m, Settled deposits, coarse, 40% cross-sectional area loss

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**22**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR5**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH7**
Inspection Direction	**MH7 (U/S) BR5**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**0.21 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH7	0.00	MH	Start node type, manhole, reference number : MH7	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LR	Line deviates right Remarks: SHARP	(Serv) 0
	0.21	DEEJ	Attached deposits, encrustation at joint, from 4 to 7 o'clock, 20% cross-sectional area loss	(Serv) 4
	0.21	SA	Survey abandoned Remarks: DUE TO DEE	(Misc) 0

0.21 m // 00:01:46

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**5**	**23.81**	**5**	**5**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**22**	**X**

Photo: 23_23_147_A.JPG
0.21m, Attached deposits, encrustation at joint, from 4 to 7 o'clock, 20% cross-sectional area loss

Place :

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
06/07/2016	**45059**	**no rain or snow**	**SP12**	**23**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MAIN RUN**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH7**
Inspection Direction	**MH7 (U/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**150 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**0.00 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH7	0.00	MH	Start node type, manhole, reference number : MH7	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	DER	Settled deposits, coarse, 60% cross-sectional area loss	(Serv) 4
	0.00	SA	Survey abandoned Remarks: DUE TO DEBRIS	(Misc) 0

0 m // 00:00:18

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**8**	**0**	**8**	**4**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**06/07/2016**	**23**	**X**

Photo: 24_24_151_A.JPG
0m, Settled deposits, coarse, 60% cross-sectional area loss

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**24**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR1**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH11**
Inspection Direction	**MH11 (U/S) BR1**	Pipe Length	1.00 m	D/S Depth :	**1**

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**1.42 m**	Lining :	

Comment :

1:500 Depth: 1	Position	Code	Observation	Grade
MH11	0.00	MH	Start node type, manhole, reference number : MH11	(Constr) 0
BR1	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	CC	Crack, circumferential, from 10 to 2 o'clock	(Struct) 2
	0.98	LL	Line deviates left Remarks: SHARP	(Serv) 0
	1.42	REM	General remark Remarks: REAR OF TRAP	(Misc) 0
	1.42	OCF	Finish node type, other special chamber reference number: BR1 Remarks: REAR OF GULLY TRAP REACHED	(Constr) 0

0 m // 00:00:23

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**10**	**7.04**	**10**	**2**	**0**	**0**	**0**	**0**	**1**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**24**	**X**

Photo: 25_25_155_A.JPG
0m, Crack, circumferential, from 10 to 2 o'clock

Place :

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**25**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR2**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH11**
Inspection Direction	**MH11 (U/S) BR2**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**5.93 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade	
MH11	0.00	MH	Start node type, manhole, reference number : MH11	(Constr) 0	 0 m // 00:00:35
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0	
BR2	0.00	CC	Crack, circumferential, from 7 to 4 o'clock	(Struct) 2	
	0.10	CC	Crack, circumferential, from 7 to 12 o'clock	(Struct) 2	 0.1 m // 00:01:16
	1.42	CC	Crack, circumferential, from 7 to 5 o'clock	(Struct) 2	
	1.75	CCJ	Crack, circumferential at joint, from 7 to 3 o'clock	(Struct) 2	 1.42 m // 00:01:51
	1.97	LL	Line deviates left Remarks: SHARP	(Serv) 0	
	3.62	LR	Line deviates right Remarks: SLIGHT	(Serv) 0	
	5.38	MC	Material changes, polyvinyl chloride	(Misc) 0	 1.75 m // 00:02:43
	5.38	JN	Junction, at 2 o'clock, diameter 100mm	(Constr) 0	
	5.71	LU	Line deviates up Remarks: SHARP	(Serv) 0	
	5.93	OCF	Finish node type, other special chamber reference number: BR2 Remarks: REAR OF SHOWER GULLY	(Constr) 0	

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
4	**10**	**6.75**	**40**	**2**	**0**	**0**	**0**	**0**	**1**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**25**	**X**

Photo: 26_26_161_A.JPG
0m, Crack, circumferential, from 7 to 4 o'clock

Photo: 26_26_162_A.JPG
0.1m, Crack, circumferential, from 7 to 12 o'clock

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**25**	**X**

Photo: 26_26_163_A.JPG
1.42m, Crack, circumferential, from 7 to 5 o'clock

Photo: 26_26_164_A.JPG
1.75m, Crack, circumferential at joint, from 7 to 3 o'clock

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**26**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MAIN RUN**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH11**
Inspection Direction	**MH11 (U/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**2.30 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH11				
	0.00	MH	Start node type, manhole, reference number : MH11	(Constr) 0
MAIN RUN	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LL	Line deviates left Remarks: SHARP	(Serv) 0
	0.43	DER	Settled deposits, coarse, 10% cross-sectional area loss	(Serv) 3
	1.31	LU	Line deviates up Remarks: SLIGHT	(Serv) 0
	1.75	LR	Line deviates right Remarks: SHARP	(Serv) 0
	1.97	LU	Line deviates up Remarks: SHARP	(Serv) 0
	2.30	OCF	Finish node type, other special chamber reference number: MAIN RUN Remarks: BASE OF STACK	(Constr) 0

0.43 m // 00:00:31

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**2**	**0.87**	**2**	**3**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**26**	**X**

Photo: 27_27_178_A.JPG
0.43m, Settled deposits, coarse, 10% cross-sectional area loss

Place :

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**27**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MH11**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH13**
Inspection Direction	**MH11 (D/S) MH13**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**3.18 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH11				
	0.00	MH	Start node type, manhole, reference number : MH11	(Constr) 0
MH13				
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.98	DER	Settled deposits, coarse, 10% cross-sectional area loss	(Serv) 3
	1.75	WL	Water level, 10% of the vertical dimension	(Serv) 0
	1.75	REM	General remark Remarks: TOILET WASTE	(Misc) 0
	3.18	MHF	Finish node type, manhole reference number: MH13	(Constr) 0

0.98 m // 00:00:28

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**2**	**0.63**	**2**	**3**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**27**	**X**

Photo: 28_28_187_A.JPG
0.98m, Settled deposits, coarse, 10% cross-sectional area loss

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**28**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR1**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH13**
Inspection Direction	**MH13 (U/S) BR1**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**0.00 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH13				
BR1	0.00	MH	Start node type, manhole, reference number : MH13	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	DEE	Attached deposits, encrustation, from 9 to 2 o'clock, 10% cross-sectional area loss	(Serv) 3
	0.00	LU	Line deviates up Remarks: SHARP	(Serv) 0
	0.00	OCF	Finish node type, other special chamber reference number: BR1 Remarks: BASE OF STACK	(Constr) 0

0 m // 00:00:32

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**2**	**3**

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**28**	**X**

Photo: 29_29_193_A.JPG
0m, Attached deposits, encrustation, from 9 to 2 o'clock, 10% cross-sectional area loss

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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**29**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR2**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH13**
Inspection Direction	**MH13 (U/S) BR2**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**0.65 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH13	0.00	MH	Start node type, manhole, reference number : MH13	(Constr) 0
BR2	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LU	Line deviates up Remarks: SHARP	(Serv) 0
	0.65	OCF	Finish node type, other special chamber reference number: BR2 Remarks: BASE OF STACK	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

Place :

UKDN Waterflow (LG) Ltd
Slough
Street : Berkshire
Tel: 03333 449099
Fax:
Email: ts.sales@ukdnwaterflow.co.uk

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**30**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR3**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH13**
Inspection Direction	**MH13 (U/S) BR3**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**3.62 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH13				
	0.00	MH	Start node type, manhole, reference number : MH13	(Constr) 0
	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LL	Line deviates left Remarks: SHARP	(Serv) 0
	1.31	LU	Line deviates up Remarks: SLIGHT	(Serv) 0
	1.97	LR	Line deviates right Remarks: SLIGHT	(Serv) 0
	3.62	DER	Settled deposits, coarse, 10% cross-sectional area loss	(Serv) 3
	3.62	SA	Survey abandoned Remarks: DUE TO DEE	(Misc) 0

3.62 m // 00:01:27

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**1**	**2**	**0.55**	**2**	**3**

Place :

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**30**	**X**

Photo: 31_31_205_A.JPG
3.62m, Settled deposits, coarse, 10% cross-sectional area loss

Place :

UKDN Waterflow (LG) Ltd
Slough
Street : Berkshire
Tel: 03333 449099
Fax:
Email: ts.sales@ukdnwaterflow.co.uk

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**31**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR5**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH13**
Inspection Direction	**MH13 (U/S) BR5**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**3.18 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH13	0.00	MH	Start node type, manhole, reference number : MH13	(Constr) 0
BR5	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	0.00	LL	Line deviates left Remarks: SLIGHT	(Serv) 0
	0.00	LU	Line deviates up Remarks: SLIGHT	(Serv) 0
	2.85	CC	Crack, circumferential, from 9 to 3 o'clock	(Struct) 2
	3.18	LU	Line deviates up Remarks: SHARP	(Serv) 0
	3.18	OCF	Finish node type, other special chamber reference number: BR5 Remarks: BASE OF STACK	(Constr) 0

2.85 m // 00:01:29

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
1	**10**	**3.14**	**10**	**2**	**0**	**0**	**0**	**0**	**1**

Place :

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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**31**	**X**

Photo: 32_32_211_A.JPG
2.85m, Crack, circumferential, from 9 to 3 o'clock

Place :

UKDN Waterflow (LG) Ltd
Slough
Street : Berkshire
Tel: 03333 449099
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Email: ts.sales@ukdnwaterflow.co.uk

Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**32**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**MH13**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MAIN RUN**
Inspection Direction	**MH13 (D/S) MAIN RUN**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Vitrified clay**
Total length :	**7.69 m**	Lining :	

Comment :

1:500	Position		Code	Observation	Grade
MH13	0.00		MH	Start node type, manhole, reference number : MH13	(Constr) 0
	0.00		WL	Water level, 5% of the vertical dimension	(Serv) 0
MAIN RUN	0.00		REM	General remark Remarks: REAR OF TRAP	(Misc) 0
	0.54	**S01**	DEE	Attached deposits, encrustation, from 4 to 7 o'clock, 10% cross-sectional area loss, Start	(Serv) 3
	0.87		CC	Crack, circumferential, from 2 to 5 o'clock	(Struct) 2
	0.87		CC	Crack, circumferential, from 7 to 10 o'clock	(Struct) 2
	5.71		LR	Line deviates right Remarks: SLIGHT	(Serv) 0
	5.71		LD	Line deviates down Remarks: SHARP	(Serv) 0
	6.26		DEE	Attached deposits, encrustation, from 4 to 6 o'clock, 20% cross-sectional area loss	(Serv) 4
	7.25		LL	Line deviates left Remarks: SHARP	(Serv) 0
	7.69	**F01**	DEE	Attached deposits, encrustation, from 4 to 7 o'clock, 10% cross-sectional area loss, End	(Serv) 3
	7.69		BRF	Finish node type, major connection without manhole reference number: MAIN RUN Remarks: JOINS MAIN SEWER	(Constr) 0

0.87 m // 00:00:57

6.26 m // 00:02:31

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
2	**20**	**2.6**	**20**	**2**	**2**	**7**	**2.5**	**19.2**	**4**

Place :

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Berkshire
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Inspection pictures

Place :	Road :	Date :	Section number :	PLR Suffix :
LONDON	**CAMDEN HIGH STREET**	**08/07/2016**	**32**	**X**

Photo: 33_33_218_A.JPG
0.87m, Crack, circumferential, from 7 to 10 o'clock

Photo: 33_33_227_A.jpg
6.26m, Attached deposits, encrustation, from 4 to 6 o'clock, 20% cross-sectional area loss

Place :

UKDN Waterflow (LG) Ltd
Slough
Street : Berkshire
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Inspection report

Date :	Job number :	Weather :	Operator :	Section number :	PLR SUFFIX:
08/07/2016	**45059**	**no rain or snow**	**SP12**	**33**	**X**
Weather	Vehicle :	Camera :	Preset :	Cleaned :	Operator :
no rain or snow	**HV62OKS**	**P330**		**no**	**SP12**

Place :	**LONDON**	Location details:		U/S MH :	**BR4**
Road :	**CAMDEN HIGH STREET**	Catchment:		U/S Depth :	
Location	**Difficult access**	Tape number :	**1**	D/S MH :	**MH13**
Inspection Direction	**MH13 (U/S) BR4**	Pipe Length	1.00 m	D/S Depth :	

Use:	**Combined**	Pipe shape :	**Circular**
Year laid :	**Z**	Pipe size :	**100 mm**
Purpose :	**Sample survey to determine asset condition**	Pipe material :	**Cast iron**
Total length :	**2.41 m**	Lining :	

Comment :

1:500	Position	Code	Observation	Grade
MH13	0.00	MH	Start node type, manhole, reference number : MH13	(Constr) 0
BR4	0.00	WL	Water level, 5% of the vertical dimension	(Serv) 0
	2.41	MHF	Finish node type, manhole reference number: BR4 Remarks: MH14 UTL	(Constr) 0

Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**

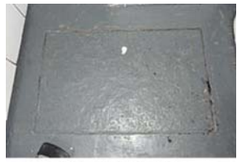

MH 4 UTR.JPG


MH 6 UTR.JPG


MH 7.JPG


MH 8 UTR.JPG


MH 9 UTR.JPG


MH 10 UTR.JPG


MH 12 NO ACCESS.JPG


MH 14 UTL.JPG


PLATE OVER RODDING EYE


ACCESS PANEL TO MH 3.JPG


DSCF1074.JPG


LOCATION MH 2 UTL (2).JPG


LOCATION MH 2 UTL.JPG


MH 3.JPG

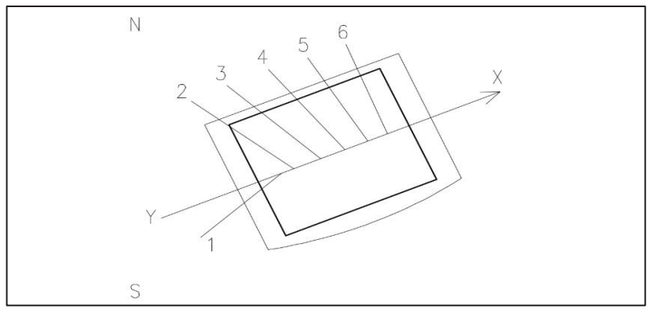
Location	*Gents underground toilets*	Date	*6-Jul-2016*
Manhole number	*MH3*		
Type	*MH*		
Cover shape	*RE*	Material *CI*	
Cover Duty	*M*		
Cover Size	*660x700*	Clear opening	*610x650*
Cover Condition	*Good*		
Shaft type	*NA*	Size of Shaft	
Access	*No step irons*	Access ok	*Y*
Entry type	*Manhole*	Chamber size	*770x1500*
Chamber material	*BR*	Other material	
Chamber condition	*2*		
Silt *Y*	Surcharged *N*	Infiltration *N*	Toxic *N* Rats *N*
Benching Condition	*2*		
Channel Condition	*2*		
Step irons/ladder	*N/A*	Cover Level	
Sewer type	*CO*		

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1		*1.260*	*100*	*VC*		CI
Pipe 2		*1.360*	*100*	*VC*		CI
Pipe 3		*1.360*	*100*	*VC*		CI
Pipe 4		*1.350*	*100*	*VC*		CI
Pipe 5		*1.350*	*100*	*VC*		CI
Pipe 6		*1.34*	*100*	*VC*		CI
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y		*1.45*	*150*	*VC*		CI
Outgoing Pipe					Downstream node	
Pipe X		*1.46*	*150*	*VC*		CI

Photos
Internal
Cover

Comments

Drawing



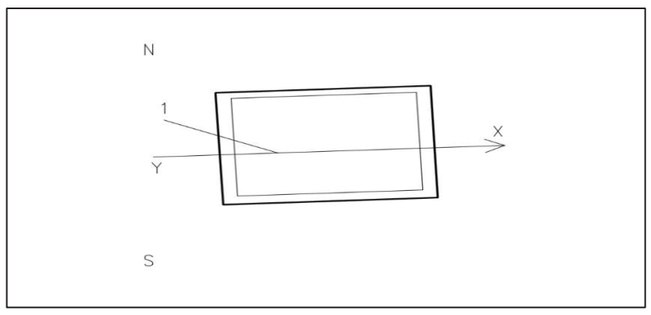
Location	Other Gents underground toilets	Date	6-Jul-2016
Manhole number	MH5		
Type	MH		
Cover shape	RE	Material	CI
Cover Duty	M		
Cover Size	590x750	Clear opening	460x660
Cover Condition	Good		
Shaft type	NA	Size of Shaft	
Access	No step irons	Access ok	Y
Entry type	Manhole	Chamber size	460x660
Chamber material	PC	Other material	
Chamber condition	2		
Silt N	Surcharged N	Infiltration N	Toxic N	Rats N
Benching Condition	2		
Channel Condition	2		
Step irons/ladder	N/A	Cover Level	
Sewer type	CO		

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1		0.130	100	VC		CI
Pipe 2						
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y		0.21	100	VC		CI
Outgoing Pipe					Downstream node	
Pipe X		0.21	100	VC	MH4	CI

Photos
Internal
Cover

Comments

Drawing



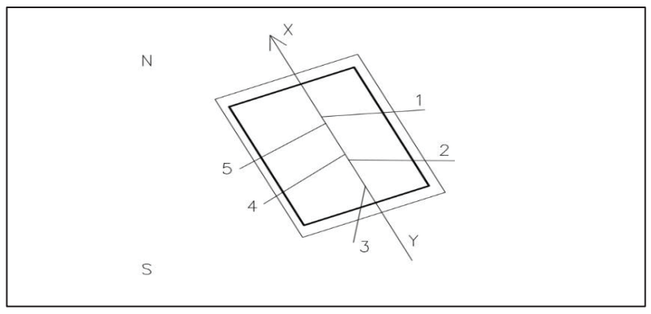
Location	Cleaners Cubord underground			Date	6-Jul-2016
Manhole number	MH7				
Type	MH				
Cover shape	RE			Material	CI
Cover Duty	M				
Cover Size	650x790			Clear opening	640x780
Cover Condition	Good				
Shaft type	BR			Size of Shaft	640x780
Access	No step irons			Access ok	Y
Entry type	Manhole			Chamber size	650x800
Chamber material	BR			Other material	
Chamber condition	2				
Silt N	Surcharged N	Infiltration N	Toxic N	Rats N	
Benching Condition	2				
Channel Condition	2				
Step irons/ladder	N/A			Cover Level	
Sewer type	CO				

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1		1.260	150	VC		CI
Pipe 2		1.260	150	VC		CI
Pipe 3		1.260	100	VC		CI
Pipe 4		1.260	150	VC		CI
Pipe 5		1.260	150	VC		CI
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y		1.52	150	VC		CI
Outgoing Pipe					Downstream node	
Pipe X		1.52	150	VC		CI

Photos
Internal
Cover

Comments

Drawing



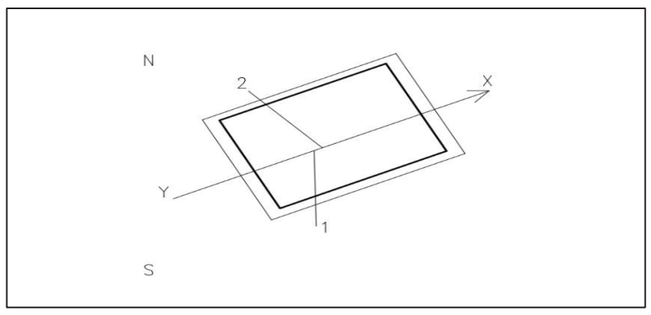
Location	Public path	Date	6-Jul-2016
Manhole number	MH1		
Type	MH		
Cover shape	RE	Material	CI
Cover Duty	M		
Cover Size	500x660	Clear opening	460x600
Cover Condition	Poor/broken		
Shaft type	Concrete	Size of Shaft	460x600
Access	No step irons	Access ok	Y
Entry type	Manhole	Chamber size	460x710
Chamber material	PC	Other material	
Chamber condition	2		
Silt N	Surcharged N	Infiltration N	Toxic N	Rats N
Benching Condition	2		
Channel Condition	2		
Step irons/ladder	N/A	Cover Level	22.551
Sewer type	CO		

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1	22.211	0.340	100	VC		CI
Pipe 2	22.211	0.340	100	VC		CI
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y	21.261	1.29	100	VC	MH2	CI
Outgoing Pipe					Downstream node	
Pipe X	21.231	1.32	100	VC		CI

Photos
Internal
Cover

Comments

Drawing



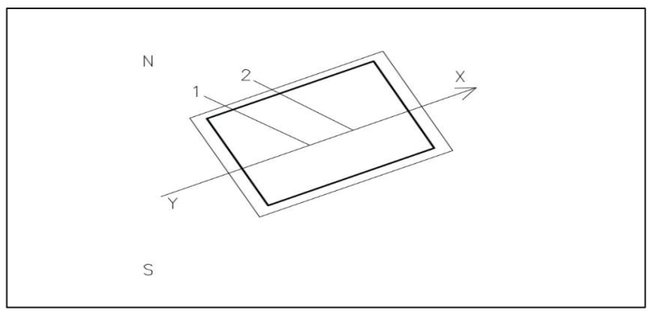
Location	Pub area	Date	8-Jul-2016
Manhole number	MH1 1		
Type	MH		
Cover shape	RE	Material	CI
Cover Duty	M		
Cover Size	500x640	Clear opening	460x600
Cover Condition	Good		
Shaft type	CO	Size of Shaft	462X602
Access	No step irons	Access ok	Y
Entry type	Manhole	Chamber size	630x620
Chamber material	PC	Other material	
Chamber condition	2		
Silt N	Surcharged N	Infiltration N	Toxic N	Rats N
Benching Condition	2		
Channel Condition	2		
Step irons/ladder	N/A	Cover Level	
Sewer type	CO		

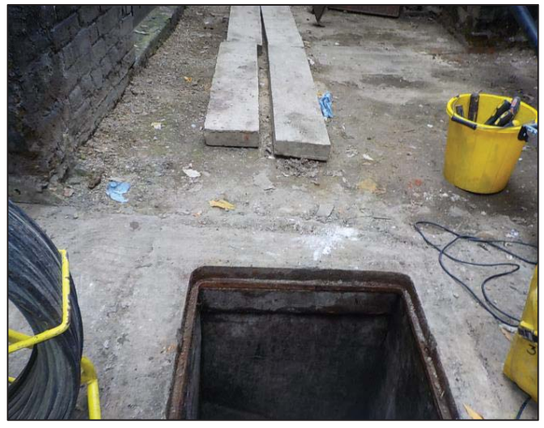
	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1		0.940	100	VC		CI
Pipe 2		0.940	100	VC		CI
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y		1.00	100	VC		CI
Outgoing Pipe					Downstream node	
Pipe X		1.00	100	VC	MH13	CI

Photos
Internal
Cover

Comments

Drawing





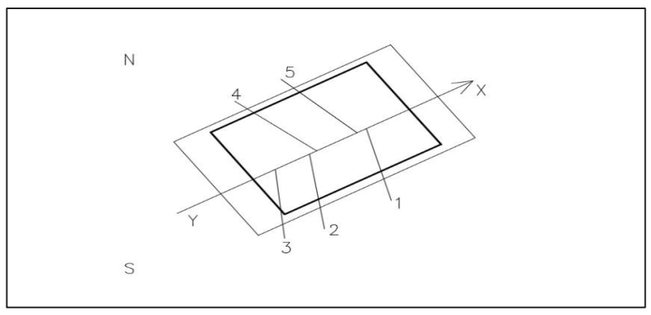
Location	*Pub area*				Date	*8-Jul-2016*
Manhole number	*MH13*					
Type	*MH*					
Cover shape	*RE*			Material	*CI*	
Cover Duty	*M*					
Cover Size	*520x650*			Clear opening	*460x600*	
Cover Condition	*Good*					
Shaft type	*Concrete*			Size of Shaft	*480x630*	
Access	*No step irons*			Access ok	*Y*	
Entry type	*Manhole*			Chamber size	*500x1200*	
Chamber material	*PC*			Other material		
Chamber condition	*4*					
Silt *N*	Surcharged *N*	Infiltration *N*	Toxic *N*	Rats *N*		
Benching Condition	*3*					
Channel Condition	*3*					
Step irons/ladder	*N/A*			Cover Level		
Sewer type	*CO*					

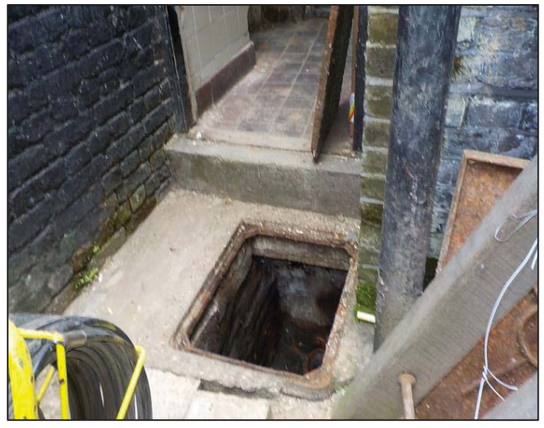
	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1		*1.150*	*100*	*VC*		CI
Pipe 2		*1.180*	*100*	*VC*		CI
Pipe 3		*1.170*	*100*	*VC*		CI
Pipe 4		*0.420*	*100*	*VC*	*MH14*	CI
Pipe 5		*1.180*	*100*	*VC*		CI
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y		*1.32*	*100*	*VC*	*MH11*	CI
Outgoing Pipe					Downstream node	
Pipe X		*1.32*	*100*	*VC*	*MAIN SEWER*	CI

Photos
Internal
Cover

Comments

Drawing





Location	Gents underground toilets	Date	6-Jul-2016
Manhole number	MH4		
Type	OC		
Cover shape	RE	Material	Ceramic
Cover Duty	H		
Cover Size	550x690	Clear opening	
Cover Condition	Good		
Shaft type		Size of Shaft	
Access		Access ok	N
Entry type		Chamber size	
Chamber material		Other material	
Chamber condition	9		
Silt N	Surcharged N	Infiltration N	Toxic N	Rats N
Benching Condition	9		
Channel Condition	9		
Step irons/ladder	9	Cover Level	
Sewer type	CO		

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1						
Pipe 2						
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y						
Outgoing Pipe					Downstream node	
Pipe X						

Photos
Internal
Cover

Comments Unable to raise

Drawing

Location	Stair way	Date	6-Jul-2016
Manhole number	MH6		
Type	OC		
Cover shape	RE	Material	CI
Cover Duty	M		
Cover Size	540x690	Clear opening	
Cover Condition	Warn		
Shaft type		Size of Shaft	
Access	N/A	Access ok	N
Entry type		Chamber size	
Chamber material		Other material	
Chamber condition	9		
Silt N	Surcharged N	Infiltration N	Toxic N	Rats N
Benching Condition	9		
Channel Condition	9		
Step irons/ladder	9	Cover Level	
Sewer type			

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1						
Pipe 2						
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y						
Outgoing Pipe					Downstream node	
Pipe X						

Photos
Internal
Cover

Comments	Unable to raise
Drawing	

Location	*Ladies Underground toilets*	Date	*6-Jul-2016*
Manhole number	*MH8*		
Type	*OC*		
Cover shape	*RE*	Material	*CI*
Cover Duty	*M*		
Cover Size	*530x690*	Clear opening	
Cover Condition	*Poor*		
Shaft type		Size of Shaft	
Access	*N/A*	Access ok	*N*
Entry type		Chamber size	
Chamber material		Other material	
Chamber condition	*9*		
Silt *N*	Surcharged *N*	Infiltration *N*	Toxic *N* Rats *N*
Benching Condition	*9*		
Channel Condition	*9*		
Step irons/ladder	*9*	Cover Level	
Sewer type	*CO*		

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1						
Pipe 2						
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y						
Outgoing Pipe					Downstream node	
Pipe X						

Photos
Internal
Cover

Comments *Unable to raise*

Drawing

Location	*Workshop Underground toilets*	Date	*7-Jul-2016*
Manhole number	*MH9*		
Type	*OC*		
Cover shape	*RE*	Material	*CI*
Cover Duty	*M*		
Cover Size	*570x740*	Clear opening	
Cover Condition	*Good*		
Shaft type		Size of Shaft	
Access	*N/A*	Access ok	*N*
Entry type		Chamber size	
Chamber material		Other material	
Chamber condition	*9*		
Silt *N*	Surcharged *N*	Infiltration *N*	Toxic *N*	Rats *N*
Benching Condition	*9*		
Channel Condition	*9*		
Step irons/ladder	*9*	Cover Level	
Sewer type	*CO*		

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1						
Pipe 2						
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y						
Outgoing Pipe					Downstream node	
Pipe X						

Photos
Internal
Cover

Comments *Unable to raise*

Drawing

Location	*Toilet Stairway*	Date	*7-Jul-2016*
Manhole number	*MH10*		
Type	*OC*		
Cover shape	*RE*	Material	*CO*
Cover Duty	*H*		
Cover Size	*380x610*	Clear opening	
Cover Condition	*Poor*		
Shaft type		Size of Shaft	
Access	*N/A*	Access ok	*N*
Entry type		Chamber size	
Chamber material		Other material	
Chamber condition	*9*		

Silt	*N*	Surcharged	*N*	Infiltration	*N*	Toxic	*N*	Rats	*N*

Benching Condition	*9*					
Channel Condition	*9*					
Step irons/ladder	*9*	Cover Level				
Sewer type	*CO*					

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1						
Pipe 2						
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y						
Outgoing Pipe					Downstream node	
Pipe X						

Photos
Internal
Cover

Comments *Unable to raise*

Drawing

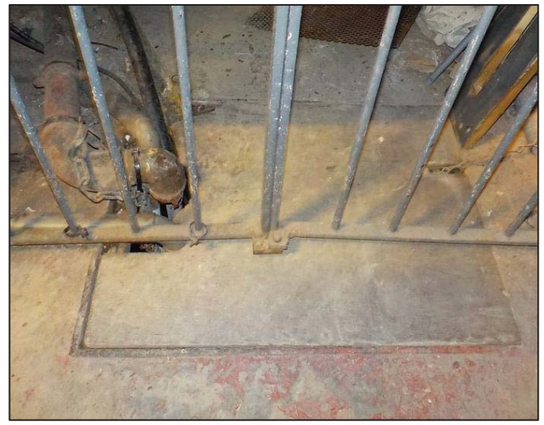
Location	*Underground*	Date	*8-Jul-2016*
Manhole number	*MH12*		
Type	*OC*		
Cover shape	*RE*	Material	*CI*
Cover Duty	*M*		
Cover Size	*550x770*	Clear opening	
Cover Condition	*Good*		
Shaft type		Size of Shaft	
Access		Access ok	*N*
Entry type		Chamber size	
Chamber material		Other material	
Chamber condition	*9*		
Silt *N*	Surcharged *N*	Infiltration *N*	Toxic *N* Rats *N*
Benching Condition	*9*		
Channel Condition	*9*		
Step irons/ladder	*9*	Cover Level	
Sewer type			

	Invert level	Depth	Size	Material	Upstream node	Shape
Pipe 1						
Pipe 2						
Pipe 3						
Pipe 4						
Pipe 5						
Pipe 6						
Pipe 7						
Pipe 8						
Pipe 9						
Main Incoming Pipe						
Pipe Y						
Outgoing Pipe					Downstream node	
Pipe X						

Photos
Internal
Cover

Comments *Unable to raise*

Drawing



TERMS AND CONDITIONS

1 **DEFINITIONS AND INTERPRETATION**
The following definitions apply in these terms and conditions:
"Conditions" these terms and conditions.**"Confirmation"** our confirmation of your order attached to these Conditions.
"Contract" the Confirmation together with the Conditions.**"Customer"** the person, firm or company who purchases Work from the Supplier.
"Supplier" UKDN Limited. **"Work"** the work and services to be provided by the Supplier under the Contract as set out in the Supplier's Confirmation or, (where a Confirmation has not been provided)the quotation.

2 **LIMITATIONS OF THE REPORT**
2.1 It should be noted that the exact layout of the system cannot be confirmed without the exposure of inaccessible branches, connections and all other inaccessible sections.
2.2 A CCTV survey alone should not be a guarantee of water tightness.
2.3 The Report is not a structural survey and must not be construed as such.
2.4 The views expressed in this report are based entirely upon a visual examination of the drainage, supported by information obtained from a drainage CCTV inspection and or a water pressure test.
2.5 The drawing contained within or accompanying the report is not a scaled drawing and is for reference purposes only.
3 **RIGHTS OF ORIGINATOR**
3.1 This report is for the sole use of the customer.
3.1.1 It must not be reproduced or transferred to any other third party without the express written consent of supplier.
3.2 This is a condition report of the drain/sewer at the time and date of the survey being carried out only.
3.3 We reserve the right to amend our opinions in the event of additional information being made available at some future date.
4 **CUSTOMER'S OBLIGATIONS**
4.1 It is the Customer's responsibility to provide the Supplier, in sufficient time, with any information and instructions relating to the Work that is, or are, necessary to enable the Supplier to provide the Work in accordance with the Contract.
4.2 The Customer shall inform the Supplier in writing in good time of any dangerous materials or hazards that may be present on the premises and which could constitute a danger to any person.
4.3 If the Customer fails to provide the information required in clause 4.2 above, or provides the Supplier with incomplete, incorrect or inaccurate information or instructions, the Supplier may:
4.3.1 make an additional charge of a reasonable sum to cover any extra work that is required; or
4.3.2 cancel the Contract by giving written notice to the Customer.
5 **ACCESS**
5.1 The Customer shall provide clear access to all drains, sewers, inspection covers and manholes to enable the Supplier to carry out the Work.
5.2 Where the Customer's drains are shared with third parties, the Supplier will request written permission from the relevant third party(ies). In the event that permission cannot be obtained, the Supplier will have the right to cancel the Contract and shall have no liability to the Customer in respect of any such cancellation.
5.3 The Customer shall obtain permission for the Supplier to proceed over property belonging to third parties and/or to carry out work on property belonging to third parties where this is necessary for the proper execution of the Work.
6 **WATER AND POWER**
6.1 The Customer shall provide all necessary power and a clean water supply from the mains or fire hydrant.
6.2 Where it is necessary for the Supplier to use a metered hydrant and supply controlled by the water authorities, the Supplier will invoice all charges made by that authority to the Customer and the Customer shall pay such charges within 7 days of receipt of the Supplier's invoice.
7 **WORK GUARANTEE**
7.1 Subject to the following provisions of this Condition 7, the Supplier guarantees completed unblock and survey Work for a period of 28 days from the date of completion.
7.2 The Customer shall inspect the Work as far as it is reasonably possible immediately on completion of it and shall as far as reasonably practicable notify the Supplier of any reason for believing that the work carried out by the Supplier is not in accordance with the Contract within seven days of completion.
7.3 If the Customer fails to give such notice the Work shall conclusively be presumed free from any defects which would be apparent on reasonable examination of the Work.
7.4 The Supplier reserves the right not to carry out work requested under the guarantee until the Supplier has been paid. The Supplier also reserves the right to delay or withhold performance of the guarantee where the Supplier has advised the Customer that, although clear, the drains need further work or have a possible fault.
8 **LIMITATION OF LIABILITY - THE CUSTOMER'S ATTENTION IS PARTICULARLY DRAWN TO THE PROVISIONS OF THIS CONDITION**
8.1 The Supplier warrants to the Customer that the Work will be provided using reasonable care and skill and, unless the Supplier is prevented by circumstances beyond its reasonable control, in accordance with the Confirmation.
8.2 The Supplier shall have no liability to the Customer for any loss, damage, costs, expenses or other claims for compensation arising from:
8.2.1 any information or instructions supplied by the Customer which is or are incomplete, incorrect or inaccurate; or
8.2.2 any failure by the Customer to obtain proper access over any property of any third party required in accordance with clause 5; or
8.2.3 any damage or defect caused by any third party.
8.3 The Supplier shall have no liability to the Customer for any loss, damage, costs,expenses or other claims for compensation arising from any indirect or consequential loss, damage or expenses.
8.4 The Supplier's liability in respect of any other loss or damage shall be limited to the price paid by the Customer.
8.5 The Supplier shall not be liable to the Customer by reason of any delay in performing,or any failure to perform, any of its obligations in relation to the Work, if the delay or failure was due to:
8.5.1 any act of God, war, terrorism, power failure, or any other cause beyond the Supplier's reasonable control; or
8.5.2 any risk to health and safety or the environment, however, the Supplier will try to minimise any such problems where reasonably practicable.
8.6 The Supplier will not be liable for any fractured or frozen pipes and cannot guarantee to clear blockages occurring in a frozen pipe or drain.
8.7 Nothing in these Conditions affects any liability for death or personal injury caused by the Supplier's negligence or for fraudulent misrepresentation, or the Customer's statutory rights as a consumer.
9 **DATA PROTECTION**
9.1 The Supplier will use personal information provided by the Customer for the purposes of:
9.1.1 providing the Work;
9.1.2 carrying out marketing and statistical analysis and we may disclose your information to our service providers for these purposes;
9.1.3 informing the Customer by post or telephone about similar products and services provided by the Supplier and/or its related companies.
9.2 The Customer acknowledges and agrees that details of the Customer's name, address and payment record may be submitted to a credit reference agency.
9.3 The Customer can correct any information, or ask for information about the Customer to be deleted, or opt-out of receiving any marketing information by post or by telephone by giving written notice to the Supplier at the address, fax number or email address shown on the Confirmation and/or any customer satisfaction questionnaire provided.
10 **GENERAL**
10.1 If any provision (or part of a provision) of this Contract is found by any court or administrative body of competent jurisdiction to be invalid, unenforceable or illegal, the other provisions will remain in force.
10.2 If any invalid, unenforceable or illegal provision of this Contract would be valid, enforceable or legal if some part of it were changed deleted, that provision will apply with whatever changes are necessary to make the relevant provision valid, enforceable and legal.
10.3 A delay by either party in acting on a breach of this Contract will not prevent the other party from taking action in respect of that breach or any subsequent breach of this contract.
10.4 Nothing in the Contract gives any right to any third party to enforce any provision under the Contract (Rights of Third Parties) Act 1999 or otherwise.
10.5 These Conditions and the Contract will be subject to English law, and the English courts will have jurisdiction in respect of any dispute arising from the Contract.