Construction Design Solutions
Consulting Civil, Structural, Highway & Drainage Engineers

Drainage Strategy Assessment and Calculations

Development :

Proposed Extension to Marling Court Care Home,
2 Bramble Lane, Hampton, London, TW12 3XB.

Client :
Country Court Care.

CDS Project Reference : 2020 . 8436

Rev A September 2023

Prepared By:

Construction Design Solutions, 78 Wollaton Road, Beeston, Nottinghamshire, NG9 2NZ
Tel 0115 922 9491 Fax 0115 922 7451

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Drainage Strategy Report for the Proposed Extension / Basement to Marling Court Care Home, 2 Bramble Lane, Hampton, London. TW12 3XB.

1.0 Summary

This Drainage Strategy Report is to be read in conjunction with CDS drawing ref : 2020. 8436. 50, 51 and 52A, – Please see Appendix D for a copy of the same.

The development will see an existing care home infill a courtyard area with a couple of extensions and a single basement.

The whole site area is 2488 m2 or 0.249 Ha.

The part of the site to be infilled is only 417 m2 or 0.042 ha.

This site to be changed is already mostly hard paved so the new impervious area will only increase by a small amount.

Appendix A –	Topographical Site Survey including Existing Drainage
Appendix B -	MicroDrainage Analysis & Simulations for the new drainage
Appendix C -	Proposed CDS Dwg 2020 8436 51 and 52A, Dwg 51 Proposed Impact on Existing Drainage drawing Dwg 52A Proposed Drainage Amendments

2.0 Existing Site aerial View

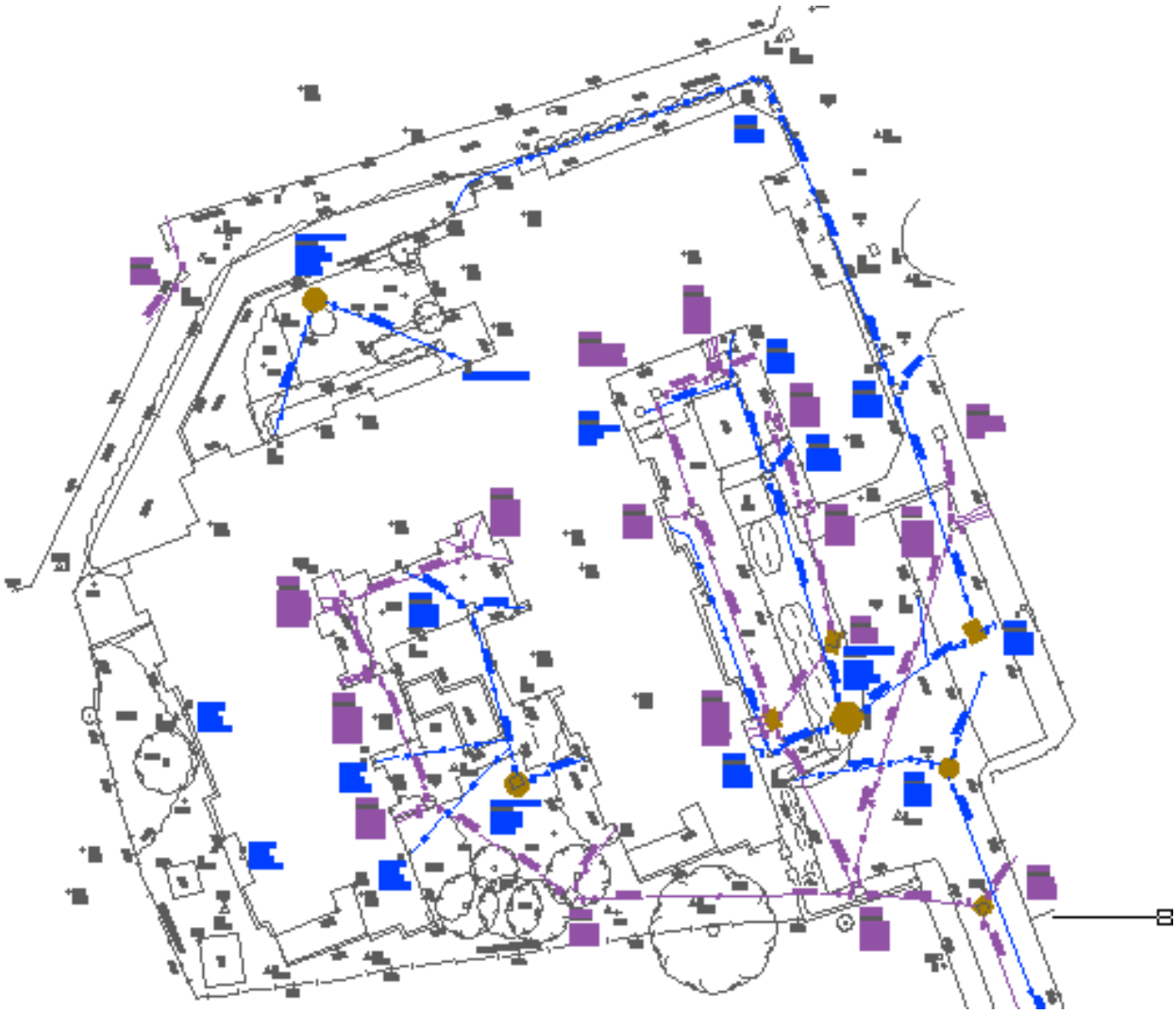
3.0 Proposed Site Alternations

Proposed Ground Floor Layout
1 : 100

4.0 Existing Site Levels and Drainage

Site topography shows the site to be generally very flat at circa 18.100m (Ave) but with the care home mainly covering the site at a finished floor level of 18.250m.

The existing site private drainage system comprises of a private gravity Foul drainage system discharging offsite to the main sewer and private Storm drainage system by private gravity sewers to private soakaway points dotted around the site.



5.0 The Storm Drainage Hierarchy

1. A SUDs percolation system should be considered as the primary solution for the management of storm water runoff.

On sites such as this, a full GI should be undertaken for the development and a series of infiltration tests completed in accordance with BRE365 If the ground IS shown to be suitable for infiltration, SUDs systems should be implemented to manage all surface water runoff for the development.

CDS Reply : from the BGS records shows a historic bore hole some 23m from site. This is shown that the ground should typically be a SAND and GRAVEL to circa 5.2m in depth, and as such typically should have good ground infiltration rates. The records also show that the ground wate level is 1.8m down in November 1979 but the borehole ground level is lower than site where taken.

The existing site utilises Soakaways so we will adopt this continued approach for the Strom.

As we do not have any ground infiltration testing yet for the site, so we have assumed, for initial design purposes, a conservative 3 x 10(-5) M/Sec for the Ground Infiltration and this should be confirmed by actual testing on site prior to any construction.

Due to the 5m offset rule from a building and 2.5m offset from a boundary then only gives a small area to construct a Soakaway. We have therefore opted for a 1.5m dia Concrete MH perforated ring 2m deep. We once again assume that top water levels in the ground are less than 2m, TBC onsite once again.

Through MicroDrainage simulations under a 1 in 100 year storm with 40% climate change this soakaway fails by 20.6m3 of flooding above ground.

We have therefore introduced a supporting underground attenuation crate to hold this additional flood water underground and to feed the soakaway until empty.

This crate is 4m x 4.5m x 1.2m deep and together with the 600mm dia PPIC connection chamber gives all the storage required underground, however should exact ground Infiltration testing prove a better on-site Infiltration rate then of course this attenuation crate will reduce in size accordingly.

Fig 1 : BGS Historic Borehole Data

GROUND EXPLORATIONS LTD.

BOREHOLE NO. 13

Contract Name: Hampton Nursery Lands
Report No.: 6867/SJB/RD
Client: London Borough of Richmond Upon Thames,
Address: Department of Technical Services, Regal House, London Road, Twickenham TW1 3QB
Site Address: Hampton Nurseries

Standing Water Level: 1·8 m
Water Struck: -
Ground Level: -
Perforated Casing: -
Method of Boring: Shell and auger
Diameter: 150 mm
Start: 5/11/76 Finish: 5/11/76
Remarks: —

JARS m			CORES m		BULK m	
3351 0·3			3359 5·6		3353 1·4	
3352 0·6			3361 7·2		3355 2·9	
3354 2·1			3363 8·7		3357 4·4	
3356 3·7			3364 9·4			
3358 5·2						
3360 6·7						
3362 8·2						
3366 water						

Description	Thickness	Depth
	m	m
MADE GROUND (tarmac and brick)	0·6	0·6
Sandy GRAVEL	4·6	5·2
Firm brown CLAY	0·3	5·5
Stiff blue fissured CLAY	4·4	9·9
TOTALS	9·9	9·9

Notes 1. Descriptions are in accordance with B.S. Code of Practice C.P. 2001 Clients are requested to compare with samples submitted.
2. Core samples are nominally 102mm (4 ins.) diameter and 460mm (18 ins.) long. Depths shown are to top of sample.

PR8203

2. If, and only if ground conditions render SUDs non-viable:

The storm drainage for the site should be collected and discharge to the nearest watercourse.

CDS Reply : NOT REQUIRED – Assumes Item 1 works.

3. If options 1 & 2 are deemed non-viable:

The storm water should be connected to the wider Yorkshire Water sewer network with a controlled peak flow.

CDS Reply : NOT REQUIRED – Assumes Item 1 works.

6.0 CDS Storm Water Design Statement.

Due to this confined site topography and large amount of existing buildings and drainage, there are limited options to ensure compliance.

The existing site utilises Soakaways so we will adopt this continued approach for the Strom.

From the BGS records shows a historic bore hole some 23m from site. This is shown that the ground should typically be a SAND and GRAVEL to circa 5.2m in depth, and as such typically should have good ground infiltration rates. The records also show that the ground wate level is 1.8m down in November 1979 but the borehole ground level is lower than site where taken.

As we do not have any ground infiltration testing yet for the site, so we have assumed, for initial design purposes, a conservative 3 x 10(-5) M/Sec for the Ground Infiltration and this should be confirmed by actual testing on site prior to any construction.

For the Proposed Extension A, due to the 5m offset rule from a building and 2.5m offset from a boundary then only gives a small area to construct a Soakaway. We have therefore opted for a 1.5m dia Concrete MH perforated ring 2m deep. We once again assume that top water levels in the ground are less than 2m, TBC onsite once again.

This new Soakaway for Extension A will accommodate both existing roofs and new roofs area so a new impervious area of 391m2 or 0.039 Ha has been used.

Through MicroDrainage simulations under a 1 in 100 year storm with 40% climate change this soakaway fails by 20.6m3 of flooding above ground.

We have therefore introduced a supporting underground attenuation crate to hold this additional flood water underground and to feed the soakaway until empty.

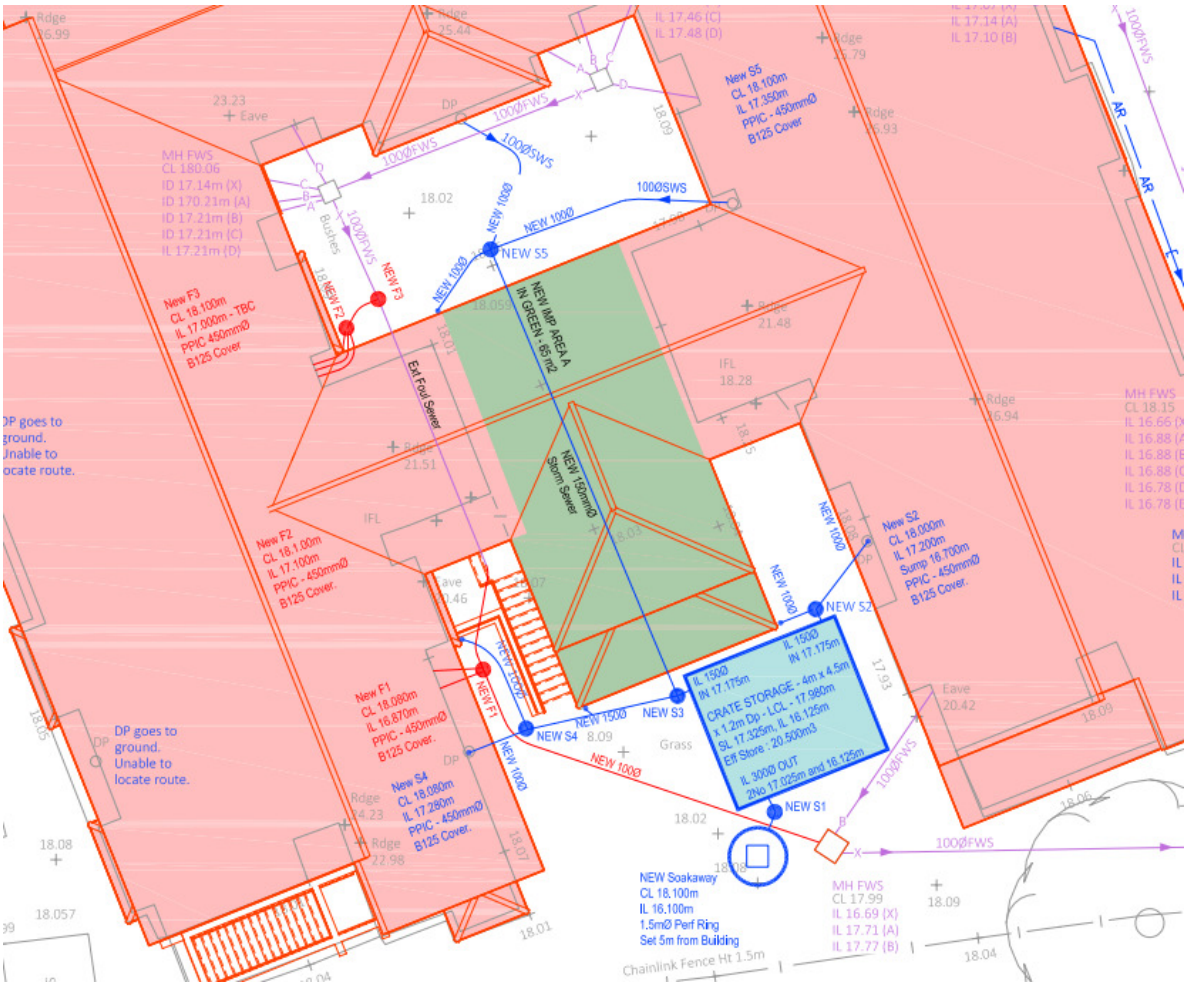
This crate is 4m x 4.5m x 1.2m deep and together with the 600mm dia PPIC connection chamber gives all the storage required underground, however should exact ground Infiltration testing prove a better on-site Infiltration rate then of course this attenuation crate will reduce in size accordingly.

Due to Area A Extension creating a courtyard, all existing Foul and Storm drainage with discharge from this area be via existing or new gravity systems under the new floor area.

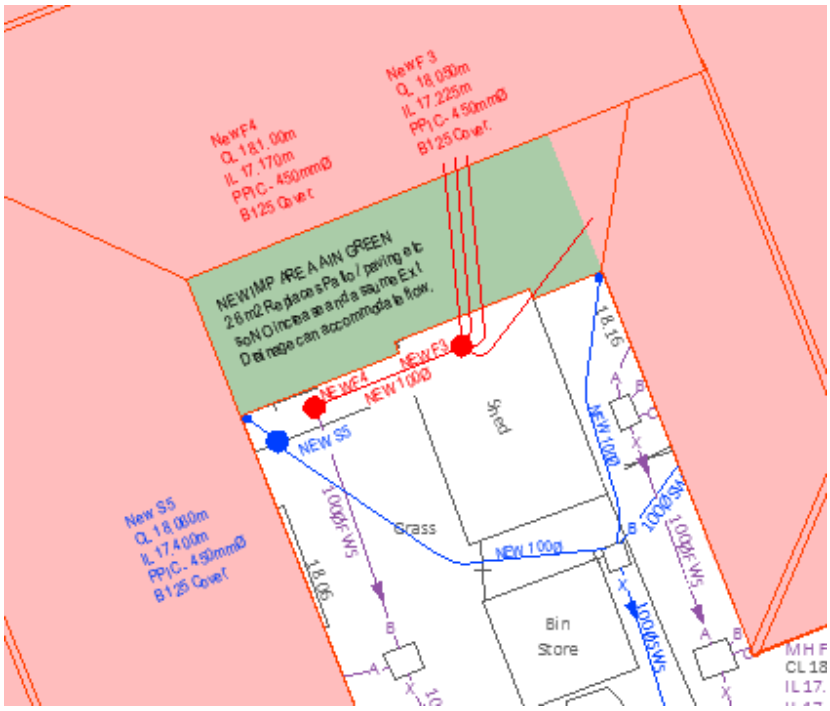
Extension B area is only minor at 26m2 and replaces existing hard standing, so we assume the existing Storm drainage network can still accommodate this new infill on a like for like basis discharging to an existing Soakaway on site.

All drainage systems within the site will be separate storm or foul systems.

Area A Extension



Area B Extension



For further details and clarification please see :

Appendix A – Topographical Site Survey including Existing Drainage

Appendix B - MicroDrainage Analysis & Simulations for the new drainage

Appendix C - Proposed CDS Dwg 2020 8436 51 and 52A,

Dwg 51 Proposed Impact on Existing Drainage drawing
Dwg 52A Proposed Drainage Amendments

7.0 Foul Drainage

The additional private foul drainage from each extension will collect in a new positive private foul gravity system and then discharge into the existing foul network under gravity.

This existing foul sewer is deemed to have sufficient capacity for the existing and new foul flows as the increase is minimal.

The new foul connection to the public sewer is to be made under an 'indirect' Section 106 application to Thames Water, as we are connecting on site to the private drainage network.

All drainage works are understood to be private up until the points of demarcation or were shown on Thames Water Asset maps.

8.0 Maintenance of the systems

The attenuation crate is protected with a 500mm deep sump prior to any inlet to control and collect silt and debris. These sumps to be inspected every 6 months and cleaned out annually with a suction tanker unit.

The existing and new Soakaways also require inspection every 6 months to ensure suitable operation and cleaned out annually with a suction tanker.

All gutters to have leaf guards and guttering to be checked and cleaned out annually of all debris.

All gully and linear drainage sumps to be checked annually and cleaned out accordingly.

All other maintenance Country Court Care's onsite maintenance team with specialist support as required.

Assessment Prepared By

N J White
Director
Construction Design Solutions

September 2023

Construction Design Solutions

Consulting Civil, Structural, Highway & Drainage Engineers

Appendix A

CDS Drawings Ref :

2020 8436 50

Existing Topographical Survey

UNDERGROUND SURVEY DRAWING KEY

Abbreviations and Symbols

EOT - END OF TRACE
UTT - UNABLE TO TRACE
EB - EMPTY DUCT
OD - TAKEN FROM RECORDS
ASS - ASSUMED ROUTES
CVD - VERBAL INFORMATION
UTL - UNABLE TO LIFT
ø - DIAMETER
CRL - CROWN LEVEL
d - DEPTH
CD - DEPTH TO CROWN
ID - DEPTH TO INVERT
SD - DEPTH TO SILT
GPR - GROUND PENETRATING RADAR
CWS - COMBINED WATER SEWER
UTR - UNABLE TO ROD
UTS - UNABLE TO SURVEY
FWS - FOUL WATER SEWER
SWS - SURFACE WATER SEWER
RB - REST BOYS
CLW - CAMERA UNDER WATER
UTC - UNABLE TO CAMERA

WD - DEPTH TO WATER
STD - DEPTH TO SILT
IBD - INTERNAL BACK DROP
EBD - EXTERNAL BACK DROP
IL - INVERT LEVEL
PT - POOR TRACE
SL - SILT LEVEL
SAL - SURCHARGE LEVEL
WL - WATER LEVEL
BD - BCD DEPTH

TV - CABLE TV/FIBRE
HV - HIGH VOLTAGE
LV - LOW VOLTAGE
ELECTRICITY
CCTV - SECURITY/CCTV FEED
COMMS
F - FUEL LINE
D - EMPTY DUCT
TL - TRAFFIC LIGHT SIGNALS
G - GAS
O - OIL
T - TELECOMMS (BT)
U - UNKNOWN TRACE
W - WATER
FOUL WATER SEWER
COMBINED WATER SEWER
SURFACE WATER SEWER
SURVEY EXTENTS
OTHER
END OF TRACE

CHAMBER EXTENTS
CHAMBER EXTENTS

MH FWS
CL 17.99
IL 17.53 (X)
IL 17.54 (A)

MH SWS Soakaway
CL 18.16
IL 17.04 (A)
Pipe offset (B)
SD 1.68m
WD_1.47m

MH SWS
CL 18.20
IL 17.66 (X)
IL 17.68 (A)

MH FWS
CL 18.08
UTL, lifting causes damage to earth around the frame.

MH FWS
CL 18.05
IL 17.25 (X)
IL 17.34 (A)
IL 17.34 (B)
IL 17.34 (C)
IL 17.31 (D)

MH SWS
CL 18.05
IL 17.41 (X)
IL 17.60 (A)
IL 17.42 (B)

MH SWS
CL 18.06
UTL, obstructed at time of survey.

MH FWS
CL 18.25
IL 17.38 (X)
IL 17.40 (A)
IL 17.45 (B)
IL 17.45 (C)

MH SWS
CL 18.22
IL 17.35 (X)
IL 17.40 (A)
IL 17.43 (B)

MH FWS
CL XX.XX
UTL, Manhole cover seized to frame.

MH SWS
CL XX.XX
ID 0.95m (X)
ID 0.94m (A)
ID 0.94m (B)

MH FWS
CL 18.16
IL 17.38 (X)
IL 17.66 (A)
IL 17.66 (B)
IL 17.46 (C)
IL 17.48 (D)

MH FWS
CL 18.12
IL 17.07 (X)
IL 17.14 (A)
IL 17.10 (B)

MH FWS
CL 18.18
IL 17.28 (X)
IL 17.30 (A)
IL 17.36 (B)
IL 17.37 (C)

MH FWS
CL XX.XX
ID 1.04m (X)
ID 0.99m (A)
ID 0.90m (B)
ID 0.90m (C)
ID 0.93m (D)

MH FWS
CL XX.XX
ID 0.92m (X)
ID 0.85m (A)
ID 0.85m (B)
ID 0.85m (C)
IL 0.85m (D)

MH SWS
CL 18.08
IL 17.53 (X)
IL 17.65 (A)
IL 17.65 (B)

MH FWS
CL 18.10
IL 17.22 (X)
IL 17.18 (A)
IL 17.18 (B)
IL 17.18 (C)
IL 17.09 (D)

MH FWS
CL 18.08
IL 16.87 (X)
IL 16.99 (A)
IL 16.99 (B)
IL 16.91 (C)

MH SWS Soakaway
CL XX.XX
ID 0.95m (A)
ID 0.89m (B)
BD 1.99m

MH FWS
CL 17.99
IL 16.69 (X)
IL 17.71 (A)
IL 17.77 (B)

MH FWS
CL 18.10
IL 17.01 (X)
IL 17.03 (A)

MH SWS Soakaway
CL 18.07
IL 17.40 (A)
IL 17.32 (B)
Pipe offset (C)
BD 2.84m

MH FWS
CL 18.15
IL 16.66 (X)
IL 16.88 (A)
IL 16.88 (B)
IL 16.88 (C)
IL 16.78 (D)
IL 16.78 (E)

MH SWS
CL 18.10
IL 17.42 (X)
IL 17.43 (A)
IL 17.43 (B)

MH SWS
CL 17.97
IL 16.92 (X)
IL 16.94 (A)
IL 16.97 (B)

MH SWS
CL 18.05
IL 16.59 (X)
IL 16.71 (A)
IL 16.71 (B)

MH FWS
CL 18.10
IL 16.19 (X)
IL 16.35 (A)
IL 16.21 (B)

MH FWS
CL 18.13
IL 16.47 (X)
IL 16.49 (A)
IL 16.51 (B)
IL 16.51 (C)

DP goes to ground. Unable to locate route.

APPROXIMATE POSITION

Rev. | By | Date | Details | Chkd

Drawing Status: Information

Construction Design Solutions
Consulting Civil, Structural, Highway & Drainage Engineers
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Fax: 0115 922 7451
General E-mail : design @ cdsconsulting . co . uk
Web Site: www . cdsconsulting . co . uk

Client: Country Court Care limited

Project: Proposed Extensions to Marling Court
2 Bramble Lane, Hampton, London.

Title: Initial Drainage Amendments for Information only.

Scale (A0)	Drawn by.	Drg. No.
1 to 100	NJ White	2020. 8436. 50
Date.	Checked by.	
January 2023		

Construction Design Solutions

Consulting Civil, Structural, Highway & Drainage Engineers

Appendix B

MicroDrainage Analysis and Simulations

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 983 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	18.106	2.006	0.2	10.6	FLOOD
30 min Summer	18.109	2.009	0.2	13.6	FLOOD
60 min Summer	18.112	2.012	0.2	16.5	FLOOD
120 min Summer	18.115	2.015	0.2	19.1	FLOOD
180 min Summer	18.116	2.016	0.2	20.3	FLOOD
240 min Summer	18.116	2.016	0.2	21.0	FLOOD
360 min Summer	18.117	2.017	0.2	21.6	FLOOD
480 min Summer	18.117	2.017	0.2	21.8	FLOOD
600 min Summer	18.117	2.017	0.2	21.8	FLOOD
720 min Summer	18.117	2.017	0.2	21.5	FLOOD
960 min Summer	18.116	2.016	0.2	20.9	FLOOD
1440 min Summer	18.115	2.015	0.2	19.7	FLOOD
2160 min Summer	18.113	2.013	0.2	18.0	FLOOD
2880 min Summer	18.112	2.012	0.2	16.4	FLOOD
4320 min Summer	18.109	2.009	0.2	13.4	FLOOD
5760 min Summer	18.106	2.006	0.2	10.9	FLOOD
7200 min Summer	18.104	2.004	0.2	8.9	FLOOD
8640 min Summer	18.103	2.003	0.2	7.2	FLOOD
10080 min Summer	18.101	2.001	0.2	5.9	FLOOD
15 min Winter	18.107	2.007	0.2	11.9	FLOOD

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	147.288	6.1	19
30 min Summer	95.147	9.1	34
60 min Summer	58.456	12.0	64
120 min Summer	34.696	14.6	124
180 min Summer	25.247	15.8	182
240 min Summer	20.040	16.5	242
360 min Summer	14.437	17.1	362
480 min Summer	11.439	17.3	482
600 min Summer	9.544	17.3	600
720 min Summer	8.227	17.0	720
960 min Summer	6.505	16.4	818
1440 min Summer	4.665	15.2	1054
2160 min Summer	3.341	13.5	1452
2880 min Summer	2.635	11.9	1848
4320 min Summer	1.883	8.9	2640
5760 min Summer	1.482	6.4	3400
7200 min Summer	1.230	4.4	4112
8640 min Summer	1.057	2.7	4832
10080 min Summer	0.929	1.4	5448
15 min Winter	147.288	7.4	19

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	18.111	2.011	0.2	15.3	FLOOD
60 min Winter	18.114	2.014	0.2	18.5	FLOOD
120 min Winter	18.117	2.017	0.2	21.5	FLOOD
180 min Winter	18.118	2.018	0.2	22.9	FLOOD
240 min Winter	18.119	2.019	0.2	23.8	FLOOD
360 min Winter	18.120	2.020	0.2	24.6	FLOOD
480 min Winter	18.121	2.021	0.2	25.0	FLOOD
600 min Winter	18.121	2.021	0.2	25.1	FLOOD
720 min Winter	18.120	2.020	0.2	24.9	FLOOD
960 min Winter	18.120	2.020	0.2	24.3	FLOOD
1440 min Winter	18.118	2.018	0.2	22.7	FLOOD
2160 min Winter	18.116	2.016	0.2	20.4	FLOOD
2880 min Winter	18.114	2.014	0.2	18.1	FLOOD
4320 min Winter	18.109	2.009	0.2	13.7	FLOOD
5760 min Winter	18.106	2.006	0.2	10.0	FLOOD
7200 min Winter	18.103	2.003	0.2	7.1	FLOOD
8640 min Winter	18.101	2.001	0.2	5.1	FLOOD
10080 min Winter	17.972	1.872	0.2	4.2	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	95.147	10.8	33
60 min Winter	58.456	14.0	62
120 min Winter	34.696	17.0	122
180 min Winter	25.247	18.4	180
240 min Winter	20.040	19.3	238
360 min Winter	14.437	20.1	356
480 min Winter	11.439	20.5	470
600 min Winter	9.544	20.6	584
720 min Winter	8.227	20.4	694
960 min Winter	6.505	19.8	912
1440 min Winter	4.665	18.2	1138
2160 min Winter	3.341	15.9	1584
2880 min Winter	2.635	13.6	2020
4320 min Winter	1.883	9.2	2852
5760 min Winter	1.482	5.5	3584
7200 min Winter	1.230	2.6	4256
8640 min Winter	1.057	0.6	4840
10080 min Winter	0.929	0.0	5352

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.600	Shortest Storm (mins)	15
Ratio R	0.438	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.039

Time (mins) From:	To:	Area (ha)
0	4	0.039

Model Details

Storage is Online Cover Level (m) 18.100

Lined Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.10800	Ring Diameter (m)	1.50
Infiltration Coefficient Side (m/hr)	0.10800	Pit Multiplier	1.0
Safety Factor	2.0	Number Required	1
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	16.100	Cap Infiltration Depth (m)	0.000

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Appendix C

CDS Drawings Ref :

2020 8436 51

Proposed Impact on Ext Drainage

2020 8436 52A

Proposed Initial Drainage Amendments

UNDERGROUND SURVEY DRAWING KEY

Abbreviations and Symbols

EOT - END OF TRACE
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RB - RCD DEPTH

TV - CABLE TV/FIBRE
HV - HIGH VOLTAGE
LV - LOW VOLTAGE
ELECTRICITY
CCTV - SECURITY/CCTV FEED
COM - COMMS
F - FUEL LINE
D - EMPTY DUCT
TL - TRAFFIC LIGHT SIGNALS
G - GAS
O - OIL
T - TELECOMMS (BT)
U - UNKNOWN TRACE
W - WATER
FOUL WATER SEWER
COMBINED WATER SEWER
SURFACE WATER SEWER
SURVEY EXTENTS
OTHER
END OF TRACE

CHAMBER EXTENTS
CHAMBER EXTENTS

MH FWS
CL 17.99
IL 17.53 (X)
IL 17.54 (A)

MH SWS Soakaway
CL 18.16
IL 17.04 (A)
Pipe offset (B)
SD 1.68m
WD_1.47m

APPROXIMATE POSITION

MH FWS
CL 18.08
UTL, lifting causes damage to earth around the frame.

MH SWS
CL 18.08
UTL, obstructed at time of survey.

MH FWS
CL 18.05
IL 17.25 (X)
IL 17.34 (A)
IL 17.34 (B)
IL 17.34 (C)
IL 17.31 (D)

MH SWS
CL 18.05
IL 17.41 (X)
IL 17.60 (A)
IL 17.42 (B)

MH FWS
CL 18.25
IL 17.38 (X)
IL 17.40 (A)
IL 17.45 (B)
IL 17.45 (C)

MH SWS
CL 18.22
IL 17.35 (X)
IL 17.40 (A)
IL 17.43 (B)

MH FWS
CL XX.XX
UTL, Manhole cover seized to frame.

MH SWS
CL XX.XX
ID 0.95m (X)
ID 0.94m (A)
ID 0.94m (B)

MH FWS
CL 18.16
IL 17.38 (X)
IL 17.66 (A)
IL 17.66 (B)
IL 17.46 (C)
IL 17.48 (D)

MH FWS
CL 18.12
IL 17.07 (X)
IL 17.14 (A)
IL 17.10 (B)

MH FWS
CL 18.18
IL 17.28 (X)
IL 17.30 (A)
IL 17.36 (B)
IL 17.37 (C)

MH FWS
CL XX.XX
ID 1.04m (X)
ID 0.99m (A)
ID 0.90m (B)
ID 0.90m (C)
ID 0.93m (D)

MH SWS
CL 18.05
IL 17.53 (X)
IL 17.65 (A)
IL 17.65 (B)

MH FWS
CL XX.XX
ID 0.92m (X)
ID 0.85m (A)
ID 0.85m (B)
ID 0.85m (C)
IL 0.85m (D)

MH FWS
CL 18.10
IL 17.22 (X)
IL 17.18 (A)
IL 17.18 (B)
IL 17.09 (D)

MH FWS
CL 18.08
IL 16.87 (X)
IL 16.99 (A)
IL 16.99 (B)
IL 16.91 (C)

MH SWS Soakaway
CL XX.XX
ID 0.95m (A)
ID 0.89m (B)
BD 1.99m

MH FWS
CL 17.99
IL 16.69 (X)
IL 17.71 (A)
IL 17.77 (B)

MH FWS
CL 18.15
IL 16.66 (X)
IL 16.88 (A)
IL 16.88 (B)
IL 16.88 (C)
IL 16.78 (D)
IL 16.78 (E)

MH SWS
CL 18.10
IL 17.42 (X)
IL 17.43 (A)
IL 17.43 (B)

MH SWS Soakaway
CL 18.07
IL 17.40 (A)
IL 17.32 (B)
Pipe offset (C)
BD 2.84m

MH FWS
CL 18.10
IL 17.01 (X)
IL 17.03 (A)

MH SWS
CL 18.05
IL 16.59 (X)
IL 16.71 (A)
IL 16.71 (B)

MH FWS
CL 18.13
IL 16.47 (X)
IL 16.49 (A)
IL 16.51 (B)
IL 16.51 (C)

MH FWS
CL 17.97
IL 16.92 (X)
IL 16.94 (A)
IL 16.97 (B)

MH FWS
CL 18.10
IL 16.19 (X)
IL 16.35 (A)
IL 16.21 (B)

DP goes to ground. Unable to locate route.

Rev.	By	Date	Details	Chkd
Drawing Status	Information			

Construction Design Solutions
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Client: Country Court Care limited

Project: Proposed Extensions to Marling Court 2 Bramble Lane, Hampton, London.

Title: Proposed Extensions Impact on the Existing Drainage System.

Scale (A0)	Drawn by.	Dwg. No.
1 to 100	NJ White	2020. 8436. 51
Date. January 2023	Checked by.	

Site Drainage Strategy

Area A

Area of New Imperious Roof is 65m2 but replaces a lot of paved or shed areas for the impervious area increase is minimal.

Total area of Roofs to discharge to New 1.5m Ø Conc Ring MH Soakaway is 391 m2

The new Soakaway needs to be a 1.5m Dia Concrete MH Soakaway due to limited space on site being 5m away from buildings and 2.5m away from boundaries. the new soakaway is 2m deep to match the existing soakaway and we assumed topo Ground Water level is at least 2m down from ground level.

A local historic BGS bore hole shows the ground to be typically Sands and Gravels and as such should have excellent Ground Infiltration Rates. For this exercise we have assumed a conservative rate of only 3 x 10(-5) M/Sec or 0.180 M/Hr for analysis purposes. Testing on site should be done prior to construction to ascertain the actual Ground Infiltration rate however we hope this to be much better thereby reducing the need for such a large supporting crate attenuation storage area to assist the soakaway.

Using WinDes Simulations the assumed new soakaway fails at 1 in 100 year with 40% climate change on the basis of 1.08 m/Hr Ground Infiltration and floods the ground by 20.6m3. by using an attenuation crate stroage area of 4m x 4.5m x 1.2m dp together with the connecting 600mm dia PPIC this then accommodates this flood area underground until the soakaway allows the water away. Hopefully Ground Infiltration testing on site will highlight a better value than used for this assessment an allow the attenuation crate to reduce in size.

The new roof area creates an enclosed courtyard and drainage from this area now passes under the new build and out to a new bespoke private drainage systems.

Area B

Area B is a much smaller extension of only 26 m2. This replaces existing paved areas so there is no increase in impervious area. As such we assume the existing storm water drainage can accommodate this change in area without the need for any increase in the capacity of the network or system.

All existing drainage effect by the works are replaced to outside the area in new pipe work and PPIC's..

UNDERGROUND
SURVEY DRAWING KEY

Abbreviations and Symbols

EOT - END OF TRACE
UTT - UNABLE TO TRACE
EB - EMPTY DUCT
OD - TAKEN FROM RECORDS
ASD - ASSUMED ROUTES
OVD - VERBAL INFORMATION
UTL - UNABLE TO LIFT
Ø - DIAMETER
CRL - CROWN LEVEL
d - DEPTH
CD - DEPTH TO CROWN
ID - DEPTH TO INVERT
SD - DEPTH TO SILT
GPR - GROUND PENETRATING RADAR
CWS - COMBINED WATER SEWER
UTR - UNABLE TO ROD
UTS - UNABLE TO SURVEY
FWS - FOUL WATER SEWER
SWS - SURFACE WATER SEWER
RB - RODT BOND
CUW - CAMERA UNDER WATER
UTC - UNABLE TO CAMERA

WD - DEPTH TO WATER
STE - DEPTH TO SILT
IBD - INTERNAL BACK DROP
EBD - EXTERNAL BACK DROP
IL - INVERT LEVEL
PT - POOR TRACE
SL - SILT LEVEL
SuL - SURCHARGE LEVEL
WL - WATER LEVEL
BB - RED DEPTH

TV - CABLE TV/FIBRE
HV - HIGH VOLTAGE
LV - LOW VOLTAGE
ELECTRICITY
CCTV - SECURITY/CCTV FEED
COM - COMMS
F - FUEL LINE
D - EMPTY DUCT
TL - TRAFFIC LIGHT SIGNALS
G - GAS
P - OIL
TELECOMMS (BT)
U - UNKNOWN TRACE
W - WATER
FOUL WATER SEWER
COMBINED WATER SEWER
SURFACE WATER SEWER
SURVEY EXTENTS
OTHER
END OF TRACE
CHAMBER EXTENTS
CHAMBER EXTENTS

Rev.	By	Date	Details	Chkd

Drawing Status: Information

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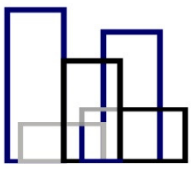
Scale (A0)	Drawn by:	Dng. No.
1 to 100	NJ White	2020, 8436, 52A
Date: January 2023	Checked by:	



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