Pell Frischmann

excellence through innovation

Centre of Research for Rare Diseases in Children (CRRDC)

Report relating to Condition 12 of the Planning Consent – Sustainable Urban Drainage Systems

Doc. Ref. No: PF-12692-RP-013
Revision: 02
Issue Date: 15.05.15

REVISION RECORD Report Ref: P:\126--\A12692-VAA Great Ormond Street\Reports\Approval in Principle					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
-	Initial Issue	24/04/15	PL	MN	EJ
01	Minor revisions	15/05/15	PL	MN	EJ
02	MEP comments incorporated	16/05/15	TMD	MN	EJ

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CONTENTS

1. INTRODUCTION

1.1 Condition 12

Prior to commencement of development details of a sustainable urban drainage system shall be submitted to and approved in writing by the local planning authority. Such system shall be based on demonstrating 50% Attenuation of all runoff. The system shall be implemented as part of the development and thereafter retained and maintained.'
The reason for the imposition of this condition is to reduce the rate of surface water run-off from the buildings and limit the impact on the storm water drainage system in accordance with policies CS13 and CS16, DP22, DP23 and DP32 of the London Borough of Camden.

The purpose of this document is to explain and describe the sustainable drainage measures that are to be incorporated into the development.

P

2. SUSTAINABLE DRAINAGE SYSTEMS

2.1 PRINCIPLES OF SUDS

The term Sustainable Drainage Systems relates to the sustainable disposal and use of surface water arising from precipitation events. The purpose of sustainable drainage systems (or as referred to in Planning Condition 12 'sustainable urban drainage systems) are to promote biodiversity gains, reduce pollution and to reduce the risk of flooding, particularly that caused by overloading the public sewerage system. The SUDs hierarchy which is quoted in the National Planning Policy Framework is a list of SUDs techniques and strategies placed in order of preference as follows:

Living Roofs

Basins and Ponds

Filter Strips and Swales

Infiltration Devices

Permeable surfaces and Filter drains

Tank Systems

2.2 CENTRE FOR RESEARCH INTO RARE IN CHILDREN – RUN-OFF SCHEME

As with many developments of relatively confined city centre sites, the CRRDC poses challenges to the provision and implementation of SUDs. The footprint of the building takes up most of the site area and therefore there is very limited space outside of the footprint to locate SUDs devices. As a result SUDs devices such as basins, ponds and swales cannot be accommodated. Also the use of infiltration devices such as soakaways, infiltration trenches and basins and permeable paving are deemed not to be viable on this site because of the following:

- nature of the immediate underlying sub grade
- because of the space they would require within the site
- close proximity to the building (noting the recommendation in the Building Regulations for a distance of 5m between building and soakaway)

2.3 COMPLIANCE

Despite the site constraints, a sustainable drainage system has been developed for this project that will achieve the objectives listed in Condition 12, namely to reduce the rate of surface water run-off from the development and thereby limit the impact on the storm water drainage system (the public sewerage network) and help to reduce the risk of flooding in the vicinity of the development site. The strategy is as follows:

- Provision of Living Roofs over 26.5% of the building roof area which equates to 21% of the development site.
- Attenuation of surface water run-off from the development by the provision of an underground storage tank
- Limiting the peak surface water discharge to the public sewerage system to 50% of the pre-development discharge rate by means of a flow control device used in conjunction with the underground storage tank.

3. DESCRIPTION OF PROPOSED SUSTAINABLE DRAINAGE SYSTEM

3.1 DESCRIPTION OF PROPOSED SUSTAINABLE DRAINAGE SYSTEM

Significant available areas of the buildings roofs will be constructed as green/brown roofs thus providing bio diversity, helping to reduce the surface water run-off to the sewerage system and assisting in preventing pollution of the receivers such as the public sewer and watercourses. The area of roof that will be set over as 'living' roof is 584m^2. This will be made up of 450m^2 of 'Brown' roof and 134m^2 of 'Green' roof.

3.2 ATTENUATION OF SURFACE WATER RUN-OFF AND REDUCTION OF SURFACE WATER DISCHARGE RATE TO THE PUBLIC SEWERAGE SYSTEM

3.2.1 DESCRIPTION OF SURFACE WATER DRAINAGE SYSTEM

The main area of the development contributing surface water run-off is the roof of the new building. The overall development presents a total catchment area of 2791m^2.

The roof run–off will be collected in rainwater pipes, some from areas of living roof and be taken down into the basement level where they will be collected and run at high level. In the north east area of the building the collected rainwater pipes will emerge from the basement

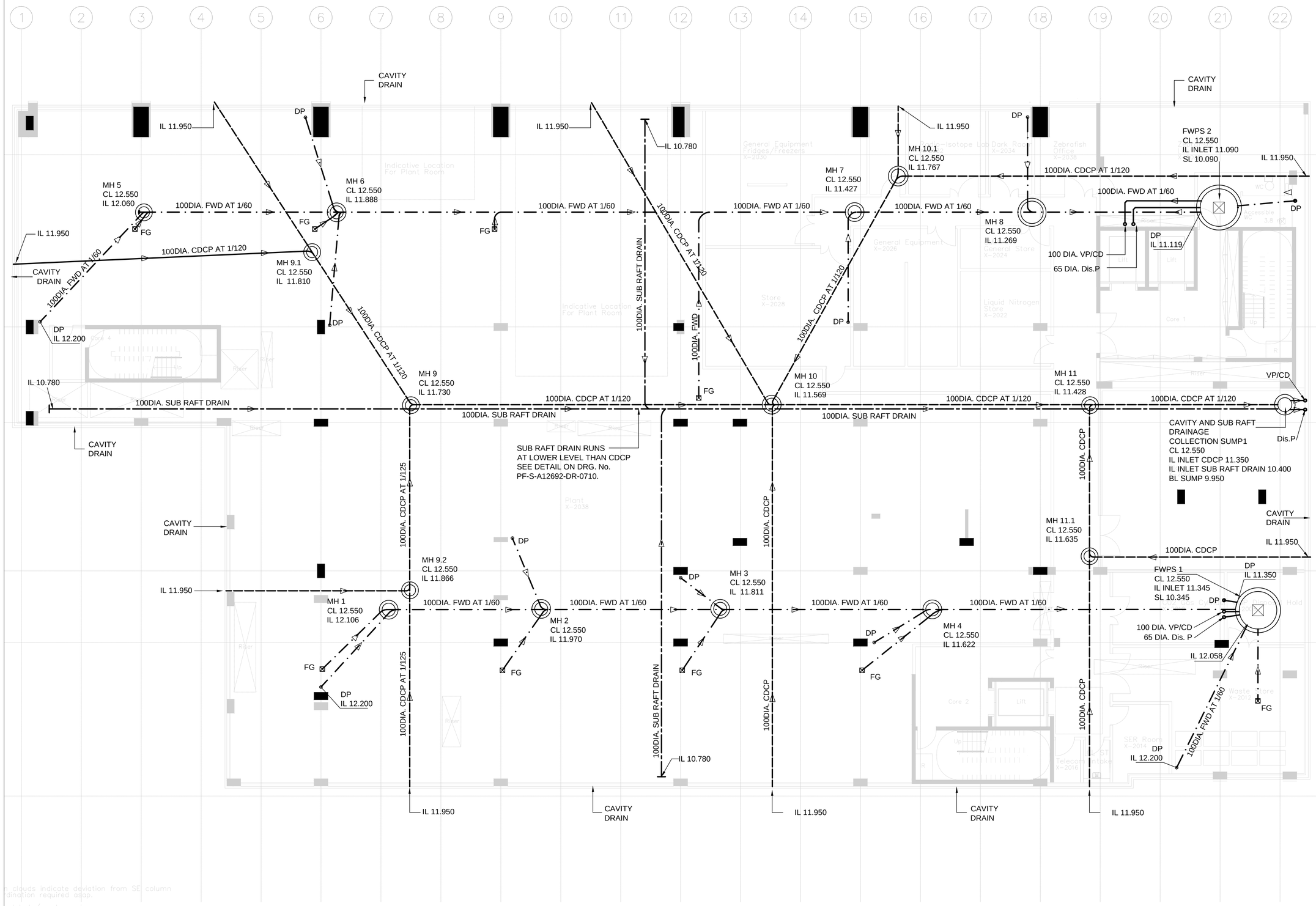
at high level and discharge direct, un-attenuated, into the public combined sewer located in Guildford Street. This discharge represents the run-off from 21 % of the total site area.
The remainder of the surface water drainage system running at high level in the basement will run to the south west corner of the building where it will discharge via a silt trap into an underground attenuation storage tank. The capacity of the attenuation tank will be 87m^3. The outlet from the attenuation tank will be controlled by means of a vortex flow control located in a chamber immediately downstream of the tank and eventually discharge into public sewer in Millman Mews. The flow control will be designed to limit the discharge to the sewer to 12.75 litres/second.

Calculations have been carried out to:

- Assess the peak run-off of surface water from the total area of the site pre-development
- Assess the peak run-off from the site post development applying a 50% reduction to the pre-development rate
- Based on an un-attenuated peak discharge of 7.62 litres/second in the north east corner of the site and 584m^2 of living roof, the attenuation tank has been sized based on a 100 year rainfall event with an additional allowance of 30% for climate change.

APPENDIX A

DRAWINGS



NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES ABOVE O.D.
3. DO NOT SCALE FROM THIS DRAWING OR THE COMPUTER DIGITAL DATA. ONLY WRITTEN DIMENSIONS ARE TO BE USED.

KEY:

- NEW FOUL WATER DRAIN
- SUB RAFT DRAIN
- CAVITY DRAIN COLLECTION PIPE

LEGEND:

CDCP	CAVITY DRAIN COLLECTION PIPE
CD	CABLE DUCT
CL	COVER LEVEL
DP	DRAIN POINT
EX	EXISTING
FWD	FOUL WATER DRAIN
FWPS	FOUL WATER PUMPING STATION
G	GULLEY WITH DETAIL REFERENCE NUMBER
IL	INVERT LEVEL
PD	PUMP DISCHARGE
SRD	SUB RAFT DRAIN
TBC	TO BE CONFIRMED
CD	CAVITY DRAIN

REV	DESCRIPTION	DRN	CHK	APP	DATE
A	STAGE E – ISSUE	KK	PL	MN	05.02.15
–	ISSUED FOR STAGE D	PDL	RK	RK	28.08.14

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Architect

STANTON WILLIAMS

Project

CENTRE FOR RESEARCH INTO RARE DESEASE IN CHILDREN

Drawing Title

PROPOSED DRAINAGE LAYOUT BASEMENT

	Name	Date
Drawn	SW	SEPT 2014
Designed	PDL	SEPT 2014
Checked	PDL	SEPT 2014
Approved	PDL	SEPT 2014

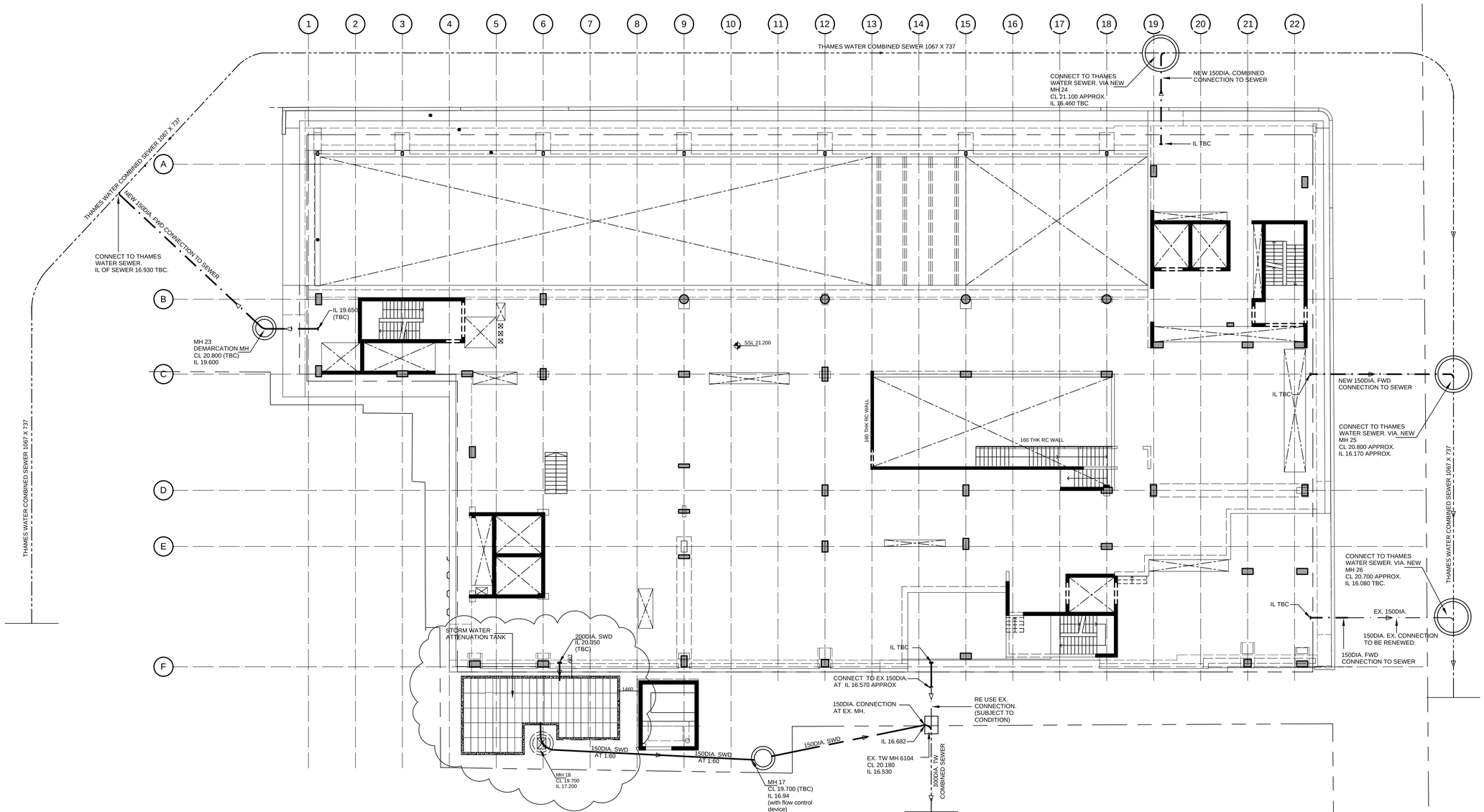
Scale 1:100 @ A1

File No. PF-S-A12692-DR-00-0700.dwg

Drawing Status STAGE E

Drawing No. PF-S-A12692-DR-00-0700

Revision A



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KEY:

- NEW SURFACE WATER DRAIN
- NEW FOUL WATER DRAIN
- EXISTING COMBINED TW SEWER

LEGEND:

CL	COVER LEVEL
EX	EXISTING
FWD	FOUL WATER DRAIN
IL	INVERT LEVEL
SWD	SURFACE WATER DRAIN
TBC	TO BE CONFIRMED

REV	DESCRIPTION	DRN	CHK	APP	DATE
B	REVISED ATTENUATION TANK	KK	PL	MN	14.05.15
A	STAGA E – ISSUE	KK	PL	MN	05.02.15
–	ISSUED FOR STAGE D	PDL	RK	RK	28.08.14

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CENTRE FOR RESEARCH INTO RARE DESEASE IN CHILDREN

Drawing Title

PROPOSED DRAINAGE LAYOUT GROUND FLOOR

	Name	Date
Drawn	SW	SEPT 2014
Designed	PDL	SEPT 2014
Checked	PDL	SEPT 2014
Approved	PDL	SEPT 2014

Scale 1:150 @ A1

File No. PF-S-A12692-DR-00-0701.dwg

Drawing Status STAGE E

Drawing No. PF-S-A12692-DR-00-0701

Revision B

CORAM'S FIELD

PAVING

FOOTPATH (PAVING)

FOOTPATH (PAVING)

1219x813 BK

GUILFORD STREET

EXISTING LATERAL DRAIN TO BE CUT & CAPPED TO THE APPROVAL OF THAMES WATER. LOCATION & LEVEL OF CAPPING TO BE SURVEYED & RECORDED FOR POSSIBLE FUTURE CONNECTION

1143x762 BK

MECKLENBURGH PLACE

FOOTPATH (PAVING)

NUFFIELD HEALTH

FOOTPATH (PAVING)

TW SEWER 1753x914 BK

1473x914 BK

TW SEWER 1067x737 BK

EXISTING RETAINING WALL

TW SEWER 1067x737 BK

FOOTPATH (PAVING)

STATUE

FOOTPATH (PAVING)

RETAINING WALL

FOOTPATH (PAVING)

RETAINING WALL

STEP

150ø VC

STEPS

S/p

STEPS

150ø VC

150ø VC

150ø VC

STEPS

150ø VC

150ø VC

150ø VC

MH CW
CL 19.11
IL 18.45

MH CW
CL 19.17
IL 18.39

MH CW
CL 19.11
UTL

MH CW
CL 19.16
IL 18.07

INTERNAL WALL OF BASEMENT

MH CW
CL 19.09
IL 17.81

MH CW
CL 19.14
IL 17.69

MH CW
CL 19.08
IL 17.80

MH CW
CL 19.09
IL 17.96

MH CW
CL 19.11
IL 18.00

MH CW
CL 19.15
IL 18.09

STEPS

MH CW
CL 19.68
IL 18.44

EXISTING BASEMENT WALL

MH CW
CL 19.67
IL 18.74

FUTURE SHEET PILE WALL
(BY MAIN CONTRACTOR)

CONCRETE RETAINING WALL

EXISTING BASEMENT WALL

FUTURE SHEET PILE WALL
(BY MAIN CONTRACTOR)

BK R/WALL

BK WALL

No 3

BASEMENT WELL

STEPS

BK WALL

MH CW
CL 18.67
IL 18.14

CONCRETE RETAINING WALL

FOOTPATH (PAVING)

MH CW
CL 18.65
IL 17.90

MH SW
CL 19.65
IL 18.55

MH CW
CL 19.76
IL 17.66 (x,a)
IL 17.81 (b)
IL 17.84 (c)
BD 19.38 (d)

MH UNKNOWN
CL 19.91
CAPPED

MH CW
CL 20.21
IL 16.61 (x,b,e)
BD 18.02 (a)
BD 17.48 (c)
BD 17.17 (d)

MH SW
CL 20.29
IL 17.27 (k)
IL 17.37 (a,b)

MH CW
CL 18.62
IL 17.52 (x,b)
IL 17.52 (a,c,d,e)
BD 17.99 (f)

150ø VC

BK WALL

150ø VC

150ø VC

150ø VC

CONCRETE

150ø VC

MH 6104
CL 20.18
IL 16.53

MH CW
CL 20.48
IL 18.78

MH CW
CL 20.64
C/FAST

FOOTPATH (PAVING)

150ø VC

SIZE UNKNOWN

C/B FENCE Ht 1.8m

BK WALL

BRICK WALL Ht 1.8m

MILLMAN MEWS

CONCRETE

PAVING

MH CW
CL 20.53
C/FAST

BK WALL

RAMP

150ø VC

150ø VC

MH SW
CL 20.38
IL 19.58

PAVIORS

MH CW
CL 20.47
IL 19.41 (x,e)
IL 19.57 (a,b,c,d,f)

STEPS

MH CW
CL 20.65
IL 18.92 (x,d)
IL 19.05 (a,b,c,e)

300ø CO

MILLMAN COURT

MH 6103
CL 20.41
BL 16.48
SIDE ENTRY

991x711 BK

FOOTPATH

MILLMAN STREET

FOOTPATH (PAVING)

TW SEWER 1067x737 BK

FOOTPATH (PAVING)

EXISTING LATERAL DRAIN TO BE CUT & CAPPED TO THE APPROVAL OF THAMES WATER. LOCATION & LEVEL OF CAPPING TO BE SURVEYED & RECORDED FOR POSSIBLE FUTURE CONNECTION

RAILING

CONCRETE WALL

FOOTPATH (PAVING)

1245x787 BK

GUILFORD PLACE

FOOTPATH (PAVING)

NOTE:
ALIGNMENT OF SEWER FROM RECORD INFORMATION. UNABLE TO CONFIRM POSITION DUE TO DEPTH OF SEWER.

NOTE:
BRICK SETTS INDICATE FORMER ACCESS HATCH INTO SUB STATION BELOW.

EXISTING LATERAL DRAIN TO BE CUT & CAPPED READY FOR FUTURE USE. LOCATION & LEVEL OF CAPPING TO BE SURVEYED & RECORDED FOR POSSIBLE FUTURE CONNECTION

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LEGEND:

- EXISTING DRAINAGE
- EXISTING PUBLIC SEWERS
- EXISTING DRAINAGE TO BE ABANDONED AND BROKEN OUT

CID	CAST IRON DRAIN
C/O	CLEAR OPENING
CL	COVER LEVEL
FFL	FINISHED FLOOR LEVEL
IL	INVERT LEVEL
SSL	STRUCTURAL SLAB LEVEL
TW	THAMES WATER

REV	DESCRIPTION	DRN	CHK	APP	DATE
-	FIRST ISSUE	SW	PDL	MN	18.09.14

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Project

CENTRE FOR RESEARCH INTO RARE DESEASE IN CHILDREN

Drawing Title

EXISTING DRAINAGE LAYOUT SHOWING DRAINS/SEWERS TO BE ABANDONED AND BROKEN OUT

	Name	Date
Drawn	SW	SEPT 2014
Designed	PDL	SEPT 2014
Checked	PDL	SEPT 2014
Approved	MN	SEPT 2014

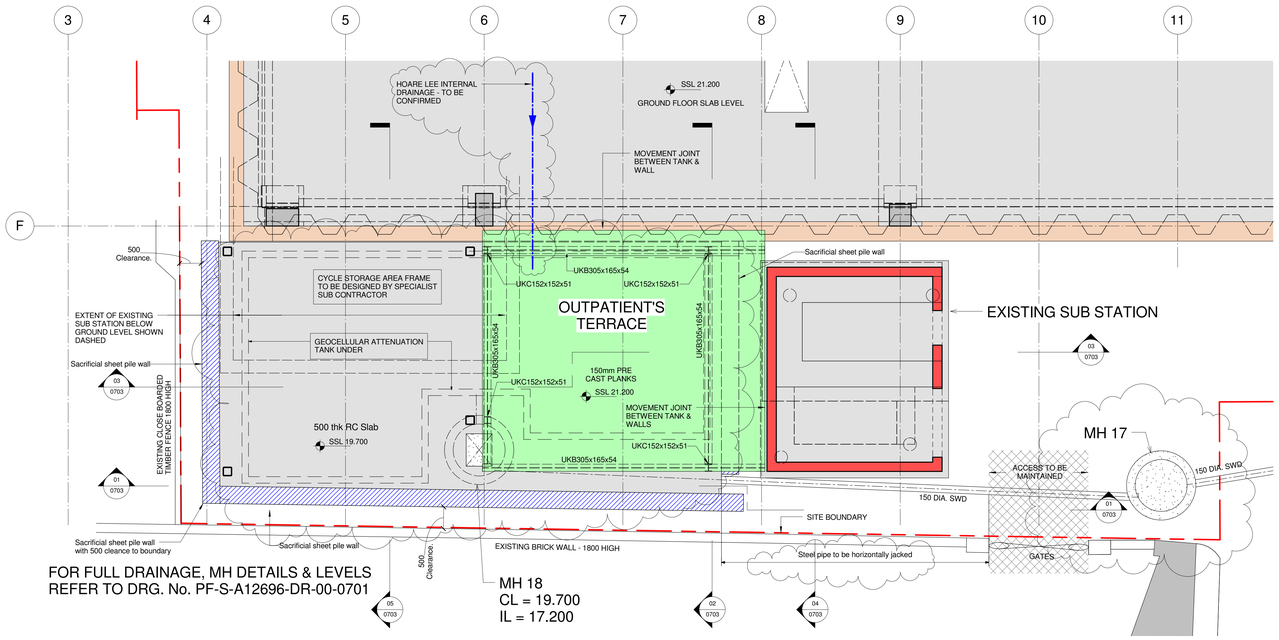
Scale 1:200 @ A1

File No. PF-S-A12692-DR-00-0702.dwg

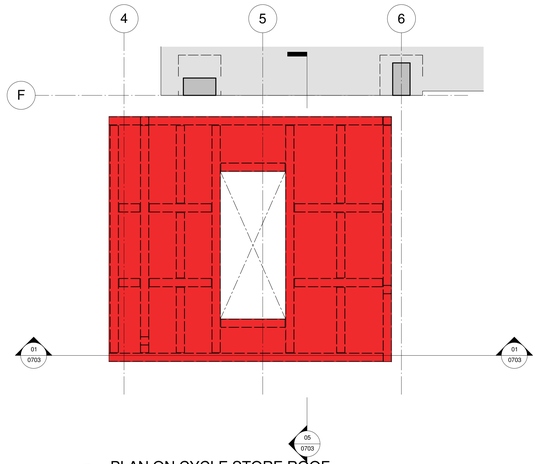
Drawing Status STAGE D

Drawing No. PF-S-A12692-DR-00-0702

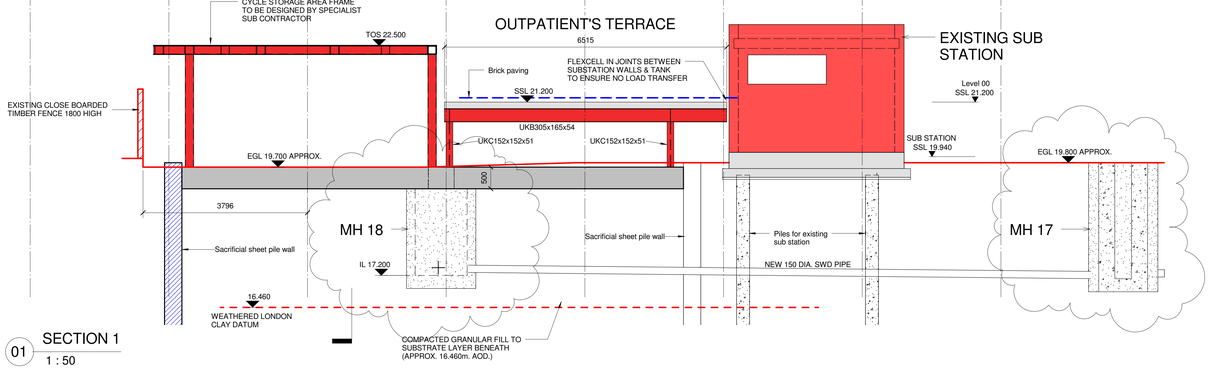
Revision -



- PLAN ON ATTENUATION TANK ZONE
1 : 50



-- PLAN ON CYCLE STORE ROOF
1 : 50



01 SECTION 1
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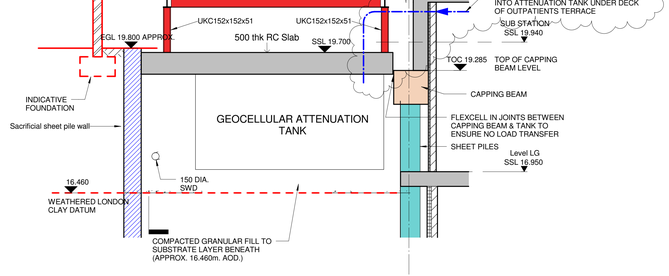

02 SECTION 2
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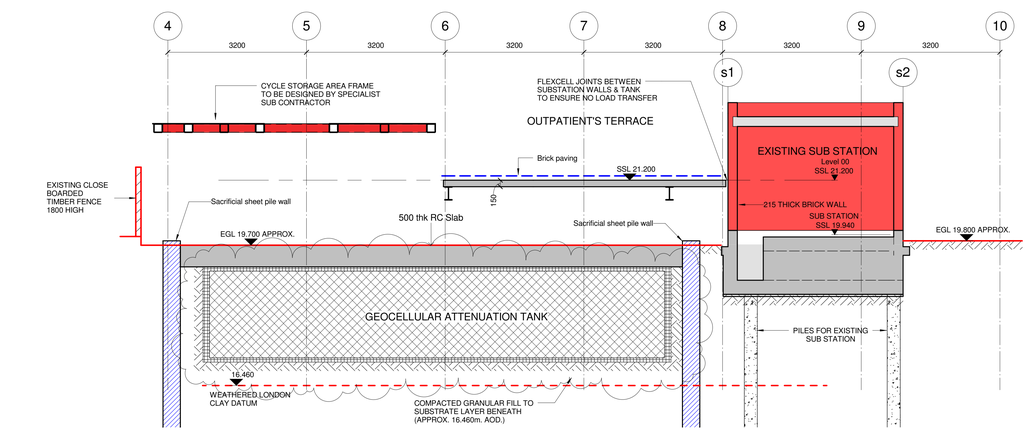

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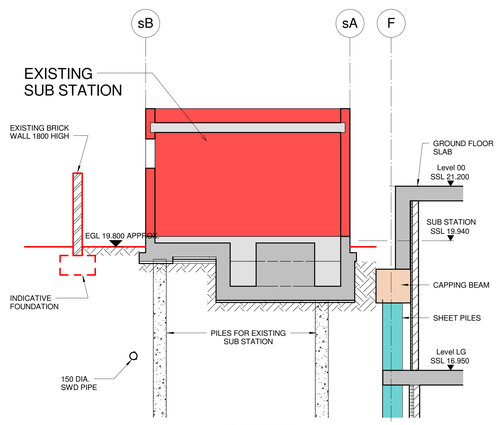

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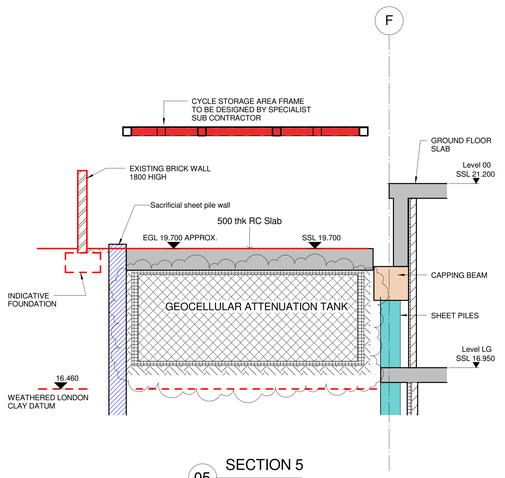

05 SECTION 5
1 : 50

NOTES

1. This drawing is to be read in conjunction with all relevant engineers & architects drawings & specifications.
2. All dimensions are in millimetres & levels in metres above O.D.
3. Do not scale from this drawing or the computer digital data, only written dimensions are to be used.
4. For general notes refer to drawing PF-S-A12692-GA-AL-0001.
5. Slab penetrations are to be coordinated with the architects & MEP engineers.
6. Dimensions to the boundary wall to be confirmed on site by the contractor.

NOTE

For details of existing sub station refer to Drgs. No. PF-S-A12692-GA-AL-0161

NOTE

Temporary works are the responsibility of the contractor undertaking the works.

Rev	Description	Chk/App	Date
B	ATTENUATION TANK & MANHOLE LAYOUT REVISED.	TD/MN	13.05.15
A	REVISED STAGE E +F.E.	TD/MN	24.04.15
-	STAGE E ISSUE	TD/MN	06.02.15

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Architect/Client/Contractor

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Project

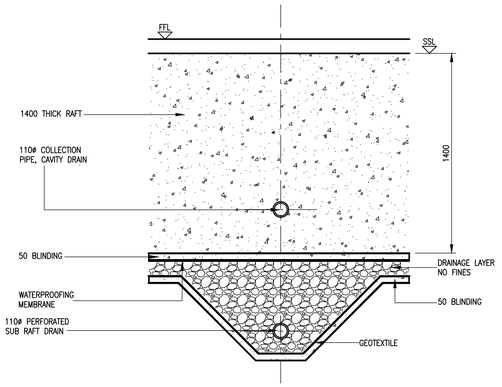
CENTRE FOR RESEARCH INTO RARE DISEASE IN CHILDREN

Drawing Title

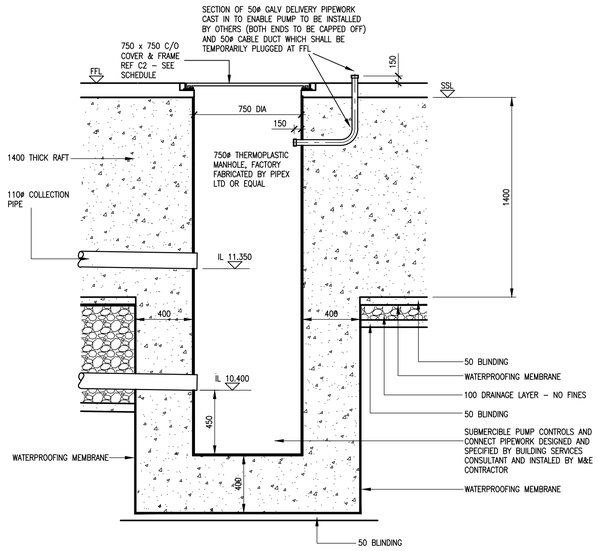
ATTENUATION TANK DETAIL

	Name	Date
Drawn	SW	11/12/14
Design	MN	11/12/14
Checked	MN	11/12/14
Approved	MN	11/12/14

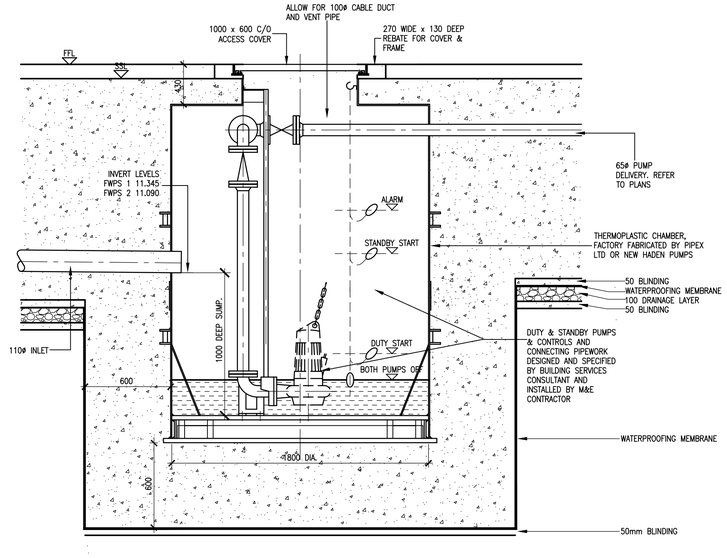
Scale: As indicated @ A0
File No.
Drawing Status: STAGE E
Drawing No.: PF-S- A12692-DR-00-0703
Revision: B



TYPICAL SECTION THROUGH CAVITY DRAIN COLLECTION PIPE AND SUB RAFT DRAIN



DETAIL OF CAVITY DRAINAGE AND SUB RAFT DRAIN COLLECTION SUMP



DETAIL OF FOUL WATER PUMPING STATION

NOTES:

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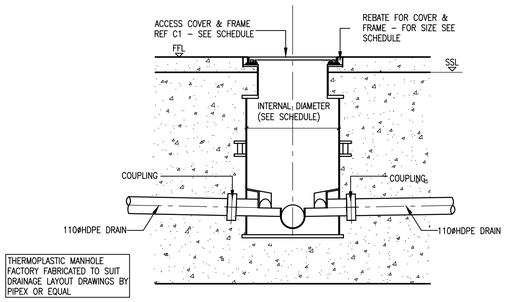
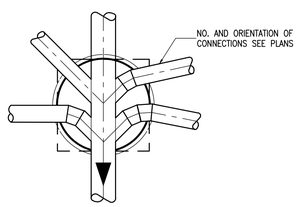
LEGEND:

CID	CAST IRON DRAIN
C/O	CLEAR OPENING
CL	COVER LEVEL
FFL	FINISHED FLOOR LEVEL
IL	INVERT LEVEL
SSL	STRUCTURAL SLAB LEVEL

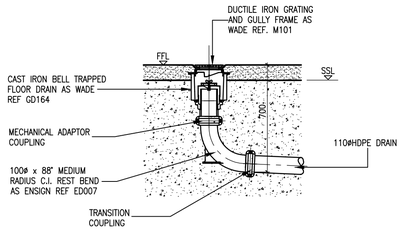


MANHOLE DETAIL M1 - SECTION

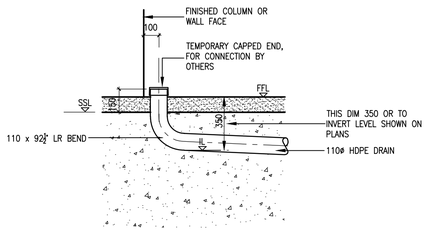
(UP TO 1.2m DEEP TO INVERT LEVEL)



MANHOLE DETAIL M1 - PLAN



FLOOR GULLY (FG)



DETAIL OF DRAIN POINT DP1

SCHEDULE OF INTERNAL MANHOLES

Schedule of New Manholes

Manhole Ref	Cover Level (m)	Invert Level (m)	Depth to Invert Level (mm)	Internal Diameter (mm)	Manhole Detail Ref.	Access Cover Ref.
MH1	12.550	12.106	444	700	M1	C8
MH2	12.550	11.970	580	600	M1	C8
MH3	12.550	11.811	739	600	M1	C8
MH4	12.550	11.622	928	700	M1	C8
MH5	12.550	12.060	490	600	M1	C8
MH6	12.550	11.888	662	700	M1	C8
MH7	12.550	11.427	1123	600	M1	C8
MH8	12.550	11.269	1281	1200	M1	C5
MH9	12.550	11.730	820	600	M1	C8
MH10	12.550	11.569	981	700	M1	C8
MH11	12.550	11.428	1122	600	M1	C8
MH9.1	12.550	11.810	740	600	M1	C8
MH9.2	12.550	11.866	684	600	M1	C8
MH10.1	12.550	11.767	783	600	M1	C8
MH11.1	12.550	11.635	915	600	M1	C8

SCHEDULE OF TYPICAL PUMPING STATION

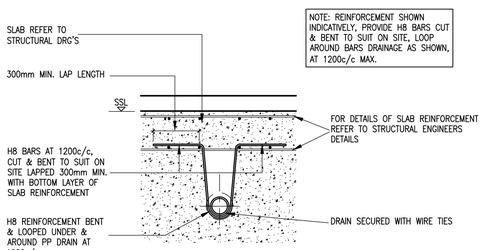
SCHEDULE OF PUMPING STATION DEPTHS

PUMP STATION REF	DEPTH (mm)	INT. DIAMETER. (mm)	COVER REF.
FWPS1	2300 APPROX.	1800	C7
FWPS2	2550 APPROX.	1800	C7

SCHEDULE OF EXTERNAL MANHOLES

Schedule of New Manholes

Manhole Ref	Cover Level (m)	Invert Level (m)	Depth to Invert Level (mm)	Internal Diameter (mm)	Manhole Detail Ref.	Access Cover Ref.	Comments
MH17	19.700 TBC	16.878	2822	1200	M4	C3	demarcation MH
MH19	19.700 TBC	17.150	2550	600	M4	C4	reduced access
MH18	19.700 TBC	16.930	2770	1350	M3	C1	fitted with Hydro-Brake needs 750x600 cover
MH20	19.700 TBC	19.100	600	600	M5	C4	silt trap, base 450mm below inlet
MH22A	20.390 TBC	17.420	2970	1000	M4	C3	RWH chamber, without branches
MH22	20.390 TBC	17.420	2970	1000	M4	C3	RWH chamber, without branches
MH23	20.800 TBC	19.600	1200	1200	M4	C9	demarcation MH
MH24	21.100 TBC	16.460	4640	1200	M2	C9	
MH25	20.800 TBC	16.170	4630	1200	M2	C9	
MH26	20.700 TBC	16.080	4620	1200	M2	C9	



TYPICAL DETAIL OF DRAIN ATTACHED TO STRUCTURAL SLAB

Schedule of Access Covers

Ref	Load class	c/o dims	Specification	Manufacturer and type	Manufacturer's ref
C1	D400	750x600	Single seal, lockable, recessed for paving, galvanized steel	Steelway Brickhouse 'Bripave'	LX6333D
C3	B	600x600	Single seal, lockable, recessed for paving, galvanized steel	Steelway Brickhouse 'Bripave'	LX6333C
C4	B	450x450	Single seal, lockable, recessed for paving, galvanized steel	Steelway Brickhouse 'Bripave'	LX6333A
C5	B	600x600	Double seal, lockable, recessed for floor finishes	Steelway Brickhouse 'Broadstel'	X7369C/SE
C7	B	1000x600	Single cover, spring assisted, with safety grid&nitrile steel, for pump stations	Steelway Brickhouse 'Broadstel' PAM Defender	XOA/10060/B/G
C8	B	450x450	Double seal, lockable, solid top, galvanized steel	Steelway Brickhouse 'Bristeel'	LX6233A
C9	D400	600x600	Heavy duty, double triangular non rack. Cover and frame conforming to 'Sewer for Adoption' Edition 7	Saint Gobain PAM'	BF061

CAVITY AND SUB RAFT DRAINAGE PCOLLECTION PUMP

SCHEDULE OF SUMP DEPTHS

PUMP STATION REF	DEPTH (mm)	INT. DIAMETER. (mm)	COVER REF.
SUMP1	2600 APPROX.	700	C5

REV	DESCRIPTION	DRN	CHK	APP	DATE
A	STAGE E – ISSUE	KK	PL	MN	05.02.15
–	ISSUED FOR STAGE D	PDL	RK	RK	28.08.14

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Architect

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Project

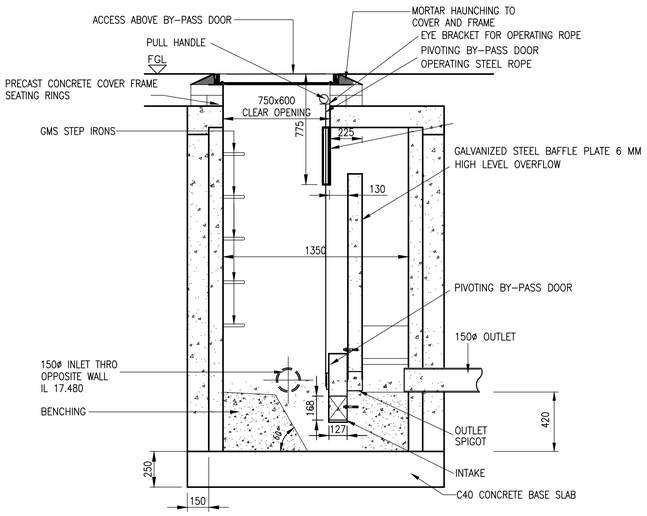
CENTRE FOR RESEARCH INTO RARE DESEASE IN CHILDREN

Drawing Title

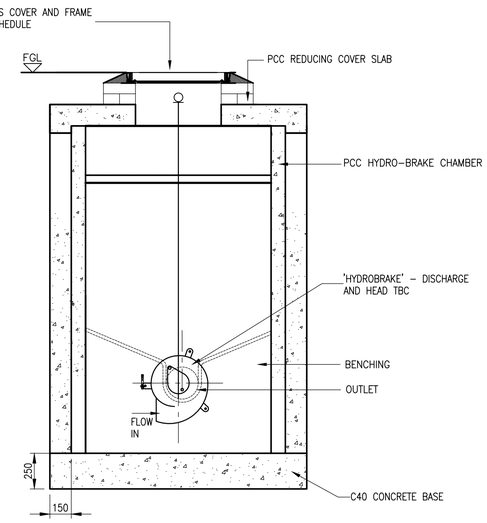
DRAINAGE DETAILS SHEET 1

	Name	Date
Drawn	PDL	JUNE 2014
Designed	RK	JUNE 2014
Checked	RK	JUNE 2014
Approved	RK	JUNE 2014

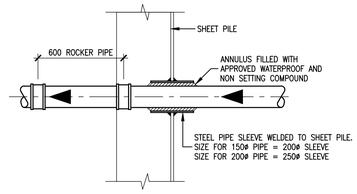
Scale: NTS UNLESS SHOWN
File No.: PF-S-A12692-DR-0710.dwg
Drawing Status: STAGE E
Drawing No.: PF-S-A12692-DR-0710
Revision: A



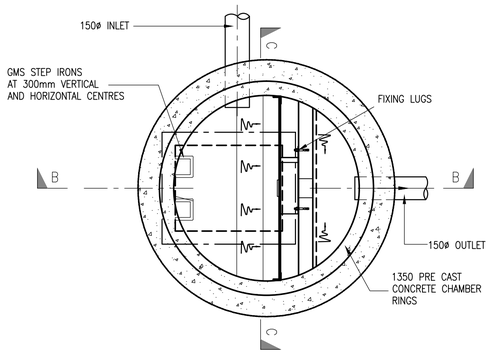
MANHOLE DETAIL M3
SECTION B-B



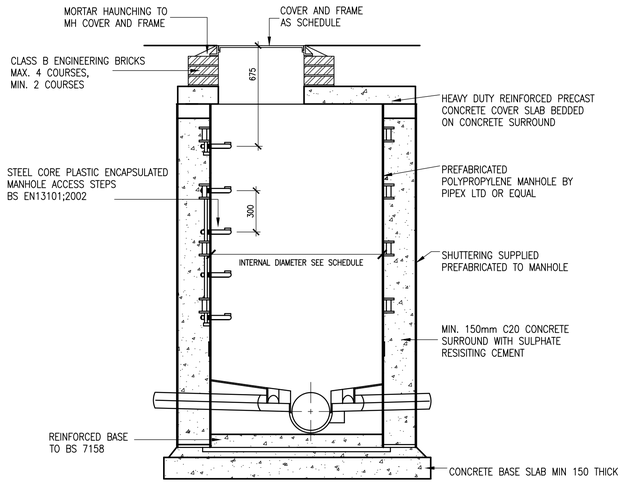
MANHOLE DETAIL M3
SECTION C-C



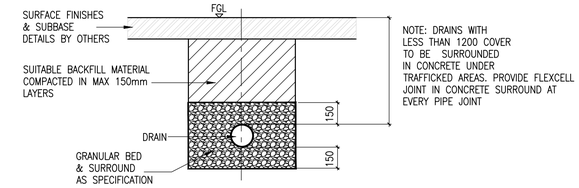
DETAIL OF PIPE PENETRATION
THROUGH SHEET PILE WALL



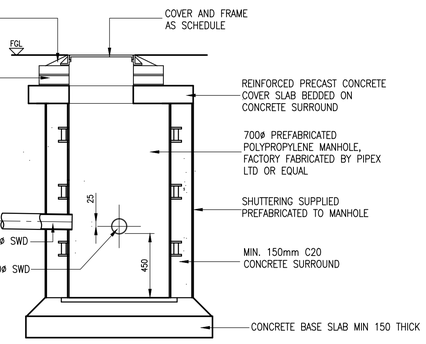
MANHOLE DETAIL M3 - PLAN



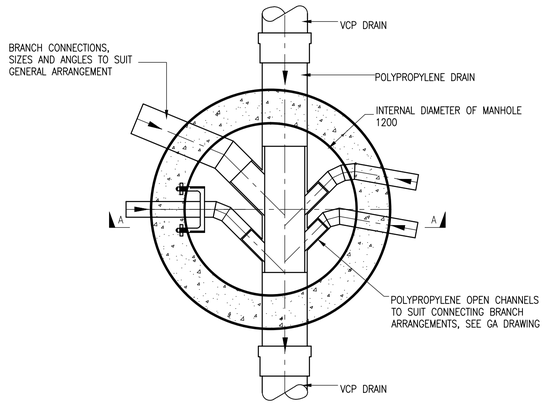
SECTION A-A



EXTERNAL DRAIN BEDDING DETAIL

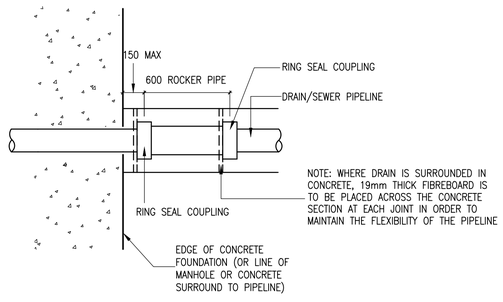


MANHOLE DETAIL M5
SILT PIT



PLAN

MANHOLE DETAIL M4



ROCKER PIPE DETAIL

NOTES:

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2. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES ABOVE O.D.
3. DO NOT SCALE FROM THIS DRAWING OR THE COMPUTER DIGITAL DATA. ONLY WRITTEN DIMENSIONS ARE TO BE USED.

LEGEND:

CID	CAST IRON DRAIN
C/O	CLEAR OPENING
CL	COVER LEVEL
FFL	FINISHED FLOOR LEVEL
IL	INVERT LEVEL
SSL	STRUCTURAL SLAB LEVEL

REV	DESCRIPTION	DRN	CHK	APP	DATE
A	STAGE E – ISSUE	KK	PL	MN	05.02.15
–	ISSUED FOR STAGE D	PDL	RK	RK	28.08.14

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CENTRE FOR RESEARCH INTO RARE DISEASES IN CHILDREN

Drawing Title

DRAINAGE DETAILS SHEET 2

	Name	Date
Drawn	PDL	JULY 2014
Designed	RK	JULY 2014
Checked	RK	JULY 2014
Approved	RK	JULY 2014

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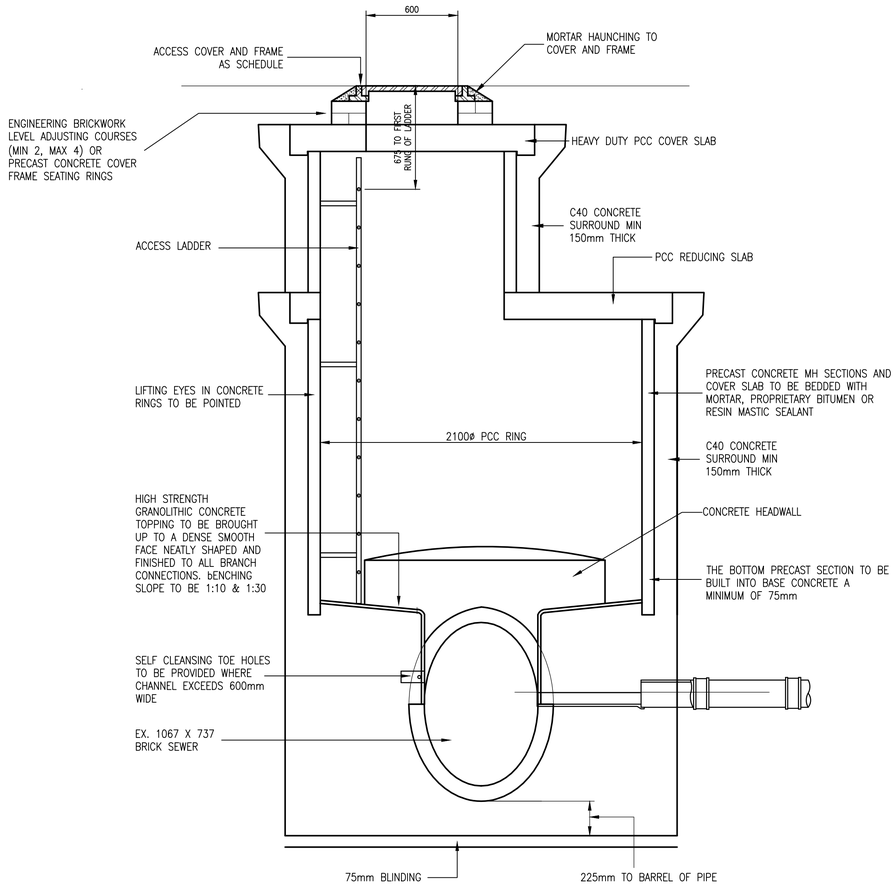

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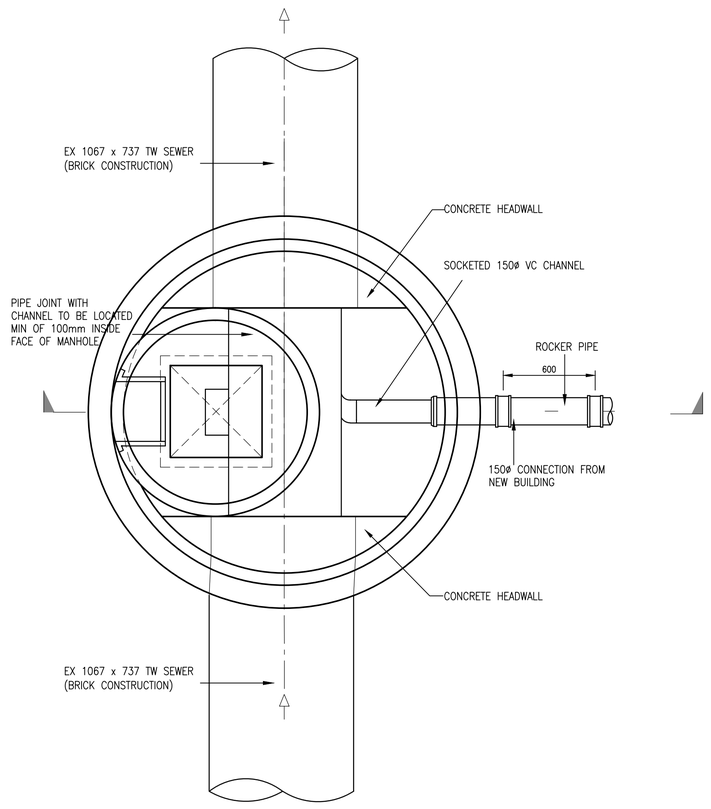

PLAN

DETAILS OF MANHOLE TYPE 2 TO BE CONSTRUCTED ON EXISTING THAMES WATER SEWER

SCALE 1:20

NOTE:
THESE MANHOLES TO CONFORM TO THE REQUIREMENTS OF THAMES WATER AND SEWER FOR ADAPTION EDITION 7

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES ABOVE O.D.
3. DO NOT SCALE FROM THIS DRAWING OR THE COMPUTER DIGITAL DATA. ONLY WRITTEN DIMENSIONS ARE TO BE USED.

LEGEND:

CID	CAST IRON DRAIN
C/O	CLEAR OPENING
CL	COVER LEVEL
FFL	FINISHED FLOOR LEVEL
FGL	FINISHED GROUND LEVEL
IL	INVERT LEVEL
SSL	STRUCTURAL SLAB LEVEL
TW	THAMES WATER

REV	DESCRIPTION	DRN	CHK	APP	DATE
A	STAGE E – ISSUE	KK	PL	MN	05.02.15
–	ISSUED FOR STAGE D	PDL	RK	RK	28.08.14

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CENTRE FOR RESEARCH INTO RARE DISEASE IN CHILDREN

Drawing Title
DRAINAGE DETAILS - SHEET 3
SEWER CONNECTIONS

	Name	Date
Drawn	PDL	JULY .'14'
Designed	RK	JULY. '14
Checked	RK	JULY. '14
Approved	RK	JULY. '14

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