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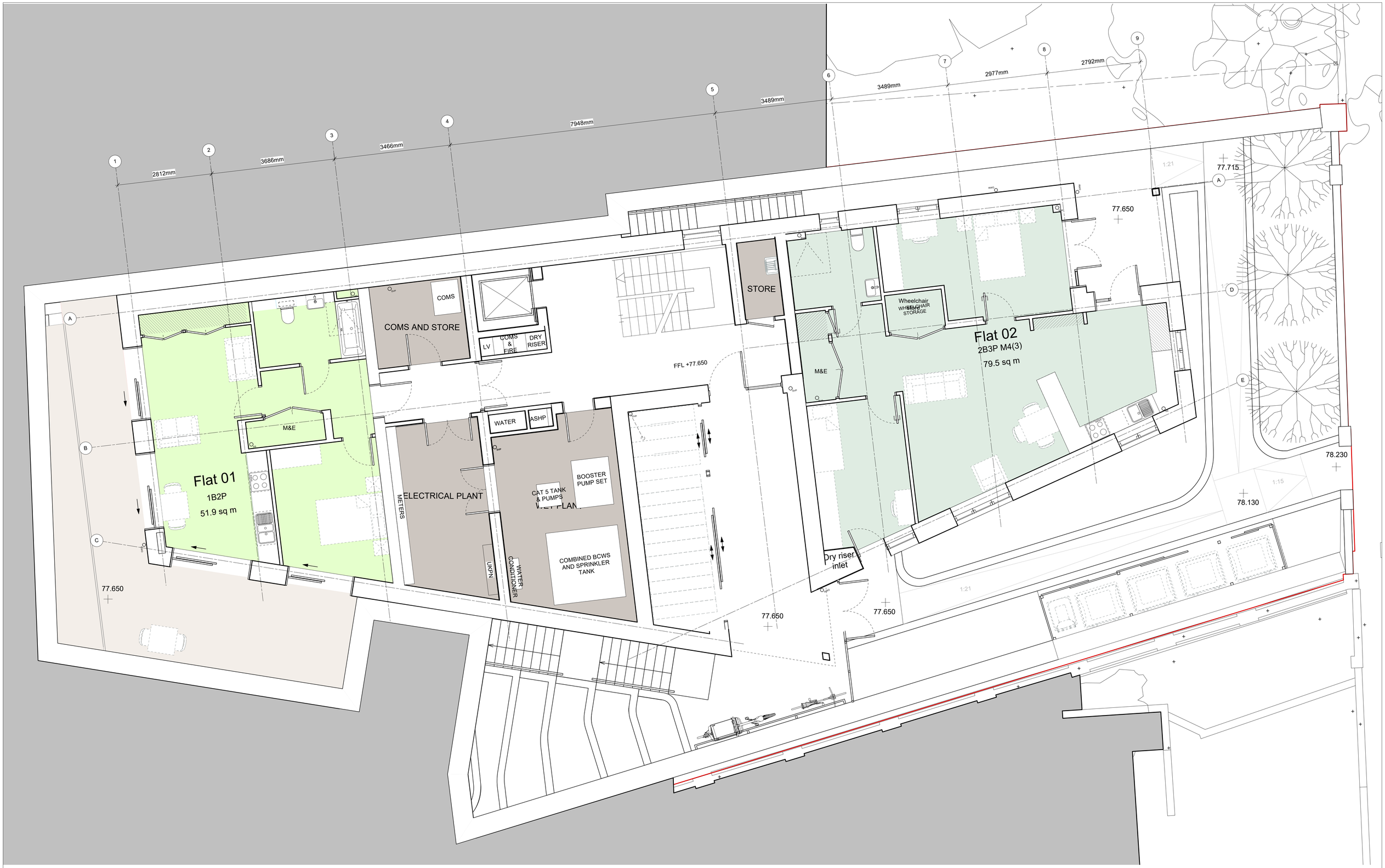
APPENDIX C – PROPOSED DEVELOPMENT PLANS



P12 21/04/2023 Preliminary issue - for coordination
P11 04/04/2023 Preliminary issue - for coordination
P10 31/03/2023 Preliminary - for coordination
P09 28/02/2023 Preliminary issue - for coordination
P08 24/01/2023 Preliminary Issue - for coordination
P07 07/12/2022 Preliminary issue
P06 05/10/2022 Preliminary issue - Stage 3a
P05 23/09/2022 Preliminary issue - flipped core

N

0 2.5 M

Daleham Gardens
Daleham Gardens, London
NW3DLT

Job no. 2102
dwg.No A_999
Title: Proposed Lower Ground Floor Plan
Status: PRELIMINARY
Rev: P12
Scale: 1:50@A1/1@100@A3
Date: 20/06/2022

Mole
Mole Architects
Floor 2, 52 Burleigh Street
Cambridge
CB1 1DJ
Tel: 01223 913012
www.molearchitects.co.uk

P12	21/04/2023	Preliminary issue - for coordination
P11	04/04/2023	Preliminary issue - for coordination
P10	31/03/2023	Preliminary - for coordination
P09	28/02/2023	Preliminary issue - for coordination
P08	24/01/2023	Preliminary issue - for coordination
P07	07/12/2022	Preliminary issue
P06	05/10/2022	Preliminary issue - Stage 3a
P05	23/09/2022	Preliminary issue - flipped core

N

0 1 2 3 4 5 M

Daleham Gardens
Daleham Gardens, London
NW3 5LT

Job no. 2102
dwg.No A_1000
Title
Proposed Ground Floor Plan
Status PRELIMINARY
Rev P12
Scale 1:50@A1/1@100@A3
Date 20/06/2022

Mole

Mole Architects
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Cambridge
CB1 1DJ
Tel: 01223 913012
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N

ASHP
ASHP
ASHP
ASHP
Lift overrun
Riser
Roof access hatch
PV PV PV PV PV PV
PV PV PV PV PV PV PV
private terrace
TV/Sat Equipment
80725
77.650
77.650
78.57
78.42
78.230
78.130
78.08
77.98
77.88
77.85
77.39
77.31
77.47
78.21
78.20
78.49
79.14
79.04
77.75
78.57
GUTTER LEVEL
ROOF LEVEL
GUTTER LEVEL
GUTTER LEVEL
GUTTER LEVEL
1:21
1:15

P04	21/04/2023	Preliminary issue - for coordination
PP2	20/06/2022	- Revisions to plans
PP1	19/05/2022	QS Issue
P03	11/05/2022	For client issue
P02	10/09/2021	- Revision to ground plan and elevations
P01	20/08/2021	- Cost Plan Issue

0 1 2 3 4 5 M

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Daleham Gardens
Daleham Gardens, London
MWOLT

Job no.	2102
dwg.No	A_100
Title	Proposed Site Plan
Status	PRELIMINARY
Scale	1:100@ A3
Date	20/06/2022
Rev	P04

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APPENDIX D – PROPOSED DRAINAGE DRAWINGS

LEGEND

- PROPOSED PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE FOUL SEWER
- PROPOSED PRIVATE COMBINED SEWER
- PROPOSED SURFACE WATER MANHOLE BACKDROP
- PROPOSED FOUL WATER MANHOLE BACKDROP
- EXISTING PRIVATE SURFACE WATER SEWER
- EXISTING PRIVATE COMBINED SEWER
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED SURFACE WATER CHANNEL
- G — PROPOSED SURFACE WATER GULLY
- O/F — PROPOSED RAIN GARDEN OVERFLOW GULLY
- G — PROPOSED PLANT ROOM GULLY (TO M&E DETAILS)
- RE — RODDING EYE
- SU — SUMP UNIT
- SVP — SOIL VENT PIPE
- SS — STUB STACK
- RWP — RAINWATER DOWNPIPE
- PROPOSED ATTENUATION TANK
- RAIN GARDEN / BLUE ROOF (SEE PLAN)
- 25.300 + — PROPOSED LEVEL (TAKEN FROM ARCHITECT DRAWINGS AND SECTIONS)
- INDICATIVE SITE BOUNDARY (REFER TO ARCHITECT DRAWINGS)

DRAINAGE NOTES.

1. ALL PRECAST CONCRETE UNITS ARE TO BE TO BS 5911 (CLASS 3 SULPHATE RESISTANT CEMENT).
2. ALL PROPOSED MANHOLE COVERS AND FRAMES ARE TO BE DUCTILE IRON COMPLYING WITH BS EN 124.
3. ALL PRIVATE DRAINAGE WORKS TO BE IN ACCORDANCE WITH PART H OF THE BUILDING REGULATIONS AND BS EN 752
4. ALL MANHOLE COVER LEVELS ARE APPROXIMATE AND TO BE ADJUSTED TO SUIT THE ARCHITECT'S PROPOSED LEVELS
5. THE CONTRACTOR IS TO ALLOW FOR ALL ABANDONED DRAINAGE RUNS TO BE REMOVED OR GROUTED UP AS NECESSARY
6. THE CONTRACTOR IS TO ALLOW FOR JET WASHING OF ALL LENGTHS OF EXISTING SEWERS WHICH ARE TO BE RETAINED.
7. THE CONTRACTOR IS TO ALLOW FOR JET WASHING OF THE ENTIRE DRAINAGE SYSTEM ON COMPLETION OF WORKS.
8. THE CONTRACTOR MUST CHECK THE LEVELS AND CONDITION OF ALL EXISTING DRAINAGE OUTFALLS PRIOR TO CONSTRUCTION OF ANY DRAINAGE, UNLESS OTHERWISE AGREED, TO ENSURE THE PROPOSED DESIGN MAY BE ACHIEVED. ANY DISCREPANCIES MUST BE REPORTED TO SIMPLE WORKS IMMEDIATELY.
9. ALL RWP, SVP AND FOUL DRAINAGE POSITIONS, INCLUDING UNDERSLAB GULLIES, ARE TO BE CONFIRMED BY THE ARCHITECT.
10. WHERE RWP'S STUB STACKS AND SVP'S ARE CONNECTED DIRECT TO THE DRAIN, RODDING ACCESS PLATES ARE TO BE PROVIDED.
11. ALL FOUL WATER DRAINS ARE TO BE 100Ø @ 1:40 U.N.O.
12. ALL SURFACE WATER DRAINS ARE TO BE 100Ø @ 1:60 U.N.O

DESIGN NOTES

1. THE BELOW GROUND SURFACE WATER SYSTEM HAS BEEN DESIGNED TO THE FOLLOWING CONDITIONS:
   1 YEAR - PIPE FULL
   30 YEAR - SURCHARGING ALLOWED WITH NO FLOODING.
   100 YEAR + 40% C/C - SURCHARGING ALLOWED WITH NO FLOODING
2. THIS DRAWING IS BASED ON ARCHITECT DRAWING REF 2102_A_999_PROPOSED_LOWER GROUND FLOOR PLAN, 2102_A_1000_PROPOSED_GROUND FLOOR PLAN, AND TOPOGRAPHICAL SURVEY REF 21-010-1-EXISTING TOPOGAPHICAL SURVEY (SEC).
3. CONNECTIONS TO THE PUBLIC SEWER ARE SUBJECT TO FORMAL S106 APPLICATIONS WITH THAMES WATER. NO WORK ON THE PUBLIC SEWER IS TO TAKE PLACE WITHOUT PRIOR PERMISSION.
4. THE DRAINAGE DESIGN IS SUBJECT TO APPROVAL WITH THE LOCAL PLANNING AUTHORITY AND THE SUBSEQUENT DISCHARGE OF RELEVANT PLANNING CONDITIONS, AND IS THEREFORE SUBJECT TO CHANGE TO SUIT LLFA COMMENTS.
5. THE DRAINAGE DESIGN IS SUBJECT TO CONFIRMATION OF NETWORK RAIL ASSET PROTECTION REQUIREMENTS.
6. FULL DETAILS OF THE BLUE ROOF INCLUDING FLOW RATES IS TO BE CONFIRMED TO COORDINATE WITH BELOW-GROUND DRAINAGE DESIGN.

DESIGN — CAVITY DRAINAGE
BASEMENT CAVITY DRAINAGE DETAILS ARE TBC. CONNECTION LOCATIONS TBC.

DESIGN — INTERNAL FOUL DRAINAGE
DUE TO SPATIAL CONSTRAINTS AT THE REAR OF THE BUILDING, INTERNAL FOUL DRAINAGE CHAMBERS ARE REQUIRED. CHAMBERS ARE TO BE FITTED WITH ODOUR PROOF, RECESSED DOUBLE SEALED SCREW DOWN COVERS. ALL CHAMBERS TO BE LOCATED IN CORRIDORS/SHARED SPACES. NONE PERMITTED WITHIN APARTMENT SPACES.
NO FOUL DRAINAGE IS TO SIT BELOW THE RAFT. PIPEWORK TO SIT IN 'RAFT TRENCHES' WITH RAFT TO BE THICKENED ALONG PIPEWORK ROUTES AS REQUIRED.

DESIGN — PROPOSED AND EXISTING LEVELS
THE TOPOGRAPHICAL SURVEY SHOWN WAS UNDERTAKEN TO A LOCAL DATUM. DRAINAGE LEVELS ON THIS DRAWING ARE TO mAOD (LOCAL DATUM +28.68m, AS CONFIRMED BY ARCHITECT) TO COORDINATE WITH THE ARCHITECTURAL DRAWINGS

CDM — EXISTING SERVICES
EXISTING SERVICES ARE TO BE LOCATED PRIOR TO DRAINAGE EXCAVATION WORKS.

DESIGN — THAMES WATER SEWER CONNECTION
CONNECTIONS TO THE PUBLIC SEWER ARE SUBJECT TO FORMAL S106 APPLICATIONS WITH THAMES WATER. NO WORK ON THE PUBLIC SEWER IS TO TAKE PLACE WITHOUT PRIOR PERMISSION.

DESIGN — PROPOSED DRAINAGE
THE DRAINAGE DESIGN IS SUBJECT TO APPROVAL WITH THE LOCAL PLANNING AUTHORITY AND THE SUBSEQUENT DISCHARGE OF RELEVANT PLANNING CONDITIONS, AND IS THEREFORE SUBJECT TO CHANGE TO SUIT LLFA COMMENTS.

DESIGN — BLUE ROOF
FULL DETAILS OF THE BLUE ROOF INCLUDING FLOW RATES IS TO BE PROVIDED TO COORDINATE WITH BELOW-GROUND DRAINAGE

DESIGN — NETWORK RAIL TUNNEL
THE DRAINAGE DESIGN IS SUBJECT TO CONFIRMATION OF NETWORK RAIL ASSET PROTECTION REQUIREMENTS.

CDM — EXISTING RAIL TUNNEL
EXISTING NETWORK RAIL TUNNEL (BELSIZE TUNNEL) BENEATH NEIGHBOURING PROPERTY

S1 CL 81.150 IL 80.50 300Ø / A15
S2 CL 80.650 IL 77.650 600Ø / A15 INC BD IL = 79.505
S3 CL 77.650 IL 77.100 300Ø / A15
S4 CL 77.715 IL 76.998 300Ø / A15
S5 CL 77.650 IL 76.400 1000Ø / D400 CATCHPIT MH 500mm SUMP
S6 W/ FLOW CONTROL CL 78.130 IL 76.307 1200Ø / D400 CATCHPIT MH 500mm SUMP INC BD IL 76.896
S6 HYDRO-BRAKE FLOW CONTROL RESTRICTING DISCHARGE TO 1.0L/S. PRODUCT REF CTL-SHE-0047-1000-1000-1000
C1 CL 78.130 IL 76.267 1000Ø / D400 INC BD IL 76.659
F1 FFL 77.650 SSL 77.203 IL 77.000 300Ø
F2 FFL 77.650 SSL 77.203 IL 76.965 300Ø
F3 FFL 77.650 SSL 77.203 IL 76.923 300Ø
F4 FFL 77.650 SSL 77.203 IL 76.881 300Ø
F5 FFL 77.650 SSL 77.203 IL 76.862 300Ø / A15
F6 CL 77.650 IL 76.756 300Ø / A15
F7 CL 77.715 IL 76.720 300Ø / A15
F8 CL 78.144 IL 76.678 300Ø / A15

GF FFL 80.725mAOD
LGF FFL 77.650mAOD
LGF SSL 77.203mAOD

LEVELS ALONG REAR TBC AND RETAINING WALL REQUIREMENTS CONFIRMED
ALL RWP AND SVP POSITIONS ARE TBC BY ARCHITECT / M&E
INTERNAL FOUL INSPECTION CHAMBERS ARE TO BE FITTED WITH RECESSED DOUBLE SEALED SCREW DOWN COVERS
EXISTING 100Ø OUTFALL DRAIN TO BE ABANDONED DUE TO INVERT LEVEL, CONDITION AND INSUFFICIENT CAPACITY FOR NEW DESIGN FLOWS.
EXISTING THAMES WATER RB5K635 COMBINED SEWER
RAINGARDEN OUTLET PIPE (PERFORATED UNDER GARDEN) WITH OVERFLOW GULLY/ ACCESS AND TOPHAT SEAL ON OUTLET.
RAIN GARDEN RECEIVING PARTIAL ROOF RUN-OFF WITH OUTLET INTO DRAINAGE SYSTEM. DRAINAGE LAYER TO BE IMPERMEABLE WRAPPED TO PREVENT INFILTRATION ADJACENT TO THE BUILDING FOUNDATIONS
RWP AND DRAINAGE CHANNELS TO DISCHARGE INTO RAIN-GARDEN WITH DIFFUSER UNIT, INTO GRANULAR DRAINAGE LAYER OF RAINGARDEN
BLUE ROOF WITH 150mm SUBSTRATE STORAGE. SPECIALIST DESIGN BY OTHERS. (APPROX 70m²)
DRAINAGE FROM LIGHTWELL IS TO SLEEVE THROUGH SHEET PILING AND DISCHARGE INTO S5 WITH A NON-RETURN FLAP VALVE ON S5 INLET. DEEP PIPE WILL REQUIRE CONCRETE ENCASEMENT.
INLET FROM LIGHT WELL IS TO BE FITTED WITH NON-RETURN FLAP VALVE TO PREVENT BACKFLOWS.
ACO CHANNEL AND GULLY TO DISCHARGE INTO RAIN GARDENS WITH TOPHAT SEAL THROUGH WALL AND PERFORATED PIPEWORK.
CASCADING RAIN GARDENS RECEIVING RUN-OFF FROM ADJACENT PAVEMENT VIA WEEP HOLES THROUGH WALL.
WEIR WALLS WITH DRAINAGE OUTLETS TO LOWER GARDENS.
RAINGARDEN OUTLET PIPE (PERFORATED UNDER GARDEN) WITH OVERFLOW GULLY/ ACCESS AND TOPHAT SEAL.
PEDESTRIAN HARDSTANDING TO BE LAID TO FALLS AND DRAINED INTO TOP TIER OF RAIN GARDENS.
BELOW-GROUND ATTENUATION TANK TYPE SDS GEOLIGHT 400. 2x13.5x0.75mDP @ 95% VOIDS = 19.24m³ STORAGE FULLY WRAPPED IN IMPERMEABLE MEMBRANE.
THRESHOLD DRAINAGE CHANNEL
CONNECTION DETAIL TO BE AGREED WITH THAMES WATER DURING STAGE 4 DESIGN. INVERT LEVEL OF CONNECTION TBC.
COMBINED SEWER OUTFALL TO EXISTING TW COMBINED SEWER
C1 INLETS ARE TO BE FITTED WITH NON-RETURN VALVES TO PREVENT BACK-FLOW OF WATER/SEWAGE.
100Ø PERFORATED UNDER-DRAIN
Flat 01 1B2P 51.9 sq m
Flat 02 2B3P M4(3) 79.5 sq
Dry riser inlet
COMMS
LV
COMMS & FIRE
DRY RISER
WHEELCHAIR STORAGE
COMBINED BOOSTER AND SPRINKLER TANK
SPRINKLER PUMP SET
SW TANK & PUMP
PLANT

NOTES:

1. NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH THE RELEVANT SPECIFICATION AND GENERAL NOTES
3. ANY NON STRUCTURAL ITEMS SUCH AS WATERPROOFING, CLADDING, FINISHES, FIRE STOPPING ARE TO BE THE ARCHITECTS SPECIFICATIONS.
4. ALL PROPRIETARY PRODUCTS ARE TO BE USED AND INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS DETAILS AND REQUIREMENTS.
5. THE STRUCTURE IS DESIGNED AND DETAILED FOR THE PERMANANT CONDITION ONLY. THE CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURE IN ITS TEMPORARY CONDITION, ANY TEMPORARY WORKS REQUIRED DURING CONSTRUCTION AND ANY TEMPORARY LOADS ONTO THE EXISTING AND NEW STRUCTURE WHICH SHALL BE LESS THAN THOSE FOR WHICH IT HAS BEEN CONFIRMED OR DESIGNED RESPECTIVELY
6. ALL WORKS UNDERTAKEN BY CONTRACTOR TO BE COMPLIANT WITH RELEVANT AND CURRENT BUILDING CODES, REGULATIONS AND GOOD PRACTICES.

simple works

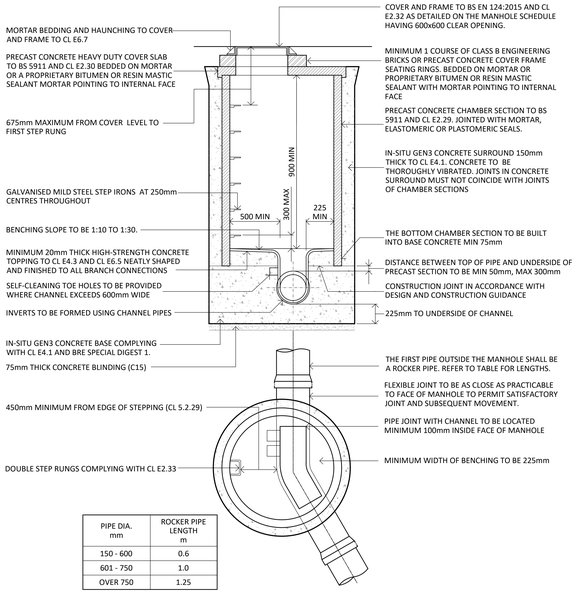
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION
P4	24.04.23	REVISED SITE PLAN
P3	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE
P2	28.03.23	STAGE 3 ISSUE
P1	29.01.23	STAGE 2 ISSUE

PROJECT NAME:	DALEHAM GARDENS
CLIENT NAME:	NW3 CLT COMMUNITY LAND TRUST
PROJECT No.:	1803
SCALE @ A0:	1 : 50
DRAWN / CHECKED:	NR AJD
STATUS:	STAGE 3
TITLE:	PROPOSED DRAINAGE LAYOUT
Project / Org. / Zone / Level / Type / Disc / Sheet / Rev.	1803-SMW-XX-XX-DR-C-0001-P4
DATE:	24.04.23

PRECAST MANHOLE CONSTRUCTION NOTES

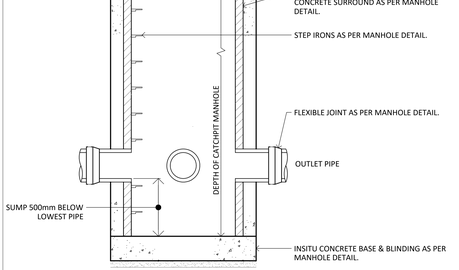
1. REFER TO SEWERAGE SECTOR GUIDANCE APPENDIX C - DESIGN AND CONSTRUCTION GUIDANCE FOR RELEVANT CLAUSES REFERENCED.
2. OUTGOING PIPES GREATER THAN 600mm DIAMETER ARE TO BE FITTED WITH SAFETY CHAINS
3. WHERE SPECIFIED ON MANHOLE SCHEDULES, PROVIDE A 65mm DIAMETER PIPE 600mm LONG. BUILT INTO MANHOLE AT PIPE SOFFIT LEVEL TO DRAIN PIPE BED AND SURROUND.
4. SULPHATE RESISTING PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETES AND MORTARS HAVING EQUIVALENT COMPRESSIVE STRENGTH OF 20N/mm² OR GREATER (INCLUDING PRECAST CONCRETE PRODUCTS).
5. REFER TO MANHOLE SCHEDULES FOR DETAILS OF COVERS, PIPE SIZES, INVERT LEVELS, MANHOLE DIAMETER ETC.
6. STEP IRONS ARE TO BE A MINIMUM OF 200mm FROM THE END OF THE WALL OF THE MANHOLE AND AT 250 OR 300 CTRS. STEP IRONS ARE TO BE TO BS 13101:2002 AND GALVANISED.
7. CHAMBER WIDTH MAY VARY. WIDTH SHALL BE INCREASED FOR PIPES LARGER THAN 225mm TO GIVE A MINIMUM BEARING WIDTH OF 225mm ON EACH SIDE, AND WHERE BRANCHES AND CHANGES IN DIRECTION OCCUR. BRICKWORK SHALL BE CORBELLED TO SUIT THE FRAME SIZE.



PIPE DIA. mm	ROCKER PIPE LENGTH m
150 - 600	0.6
601 - 750	1.0
OVER 750	1.25

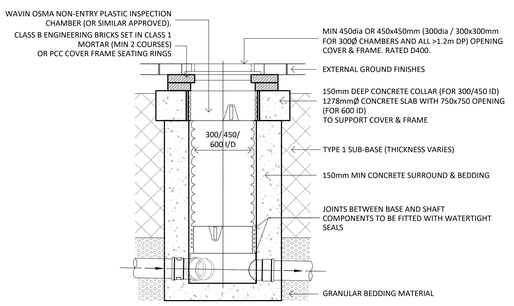
TYPICAL PRECAST RING MANHOLE (DCG TYPE B)

DEPTH TO SOFFIT = 3.0m MAX



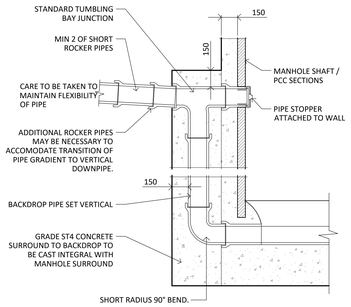
CATCHPIT MANHOLE DETAILS

FOR CONSTRUCTION DETAILS REFER TO TYPICAL *PRECAST RING MANHOLE DETAIL*

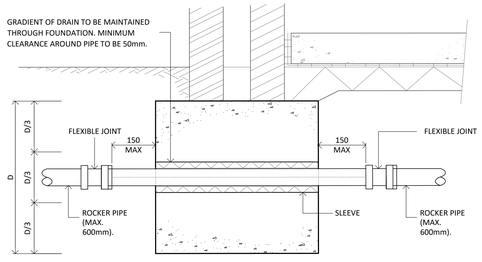


TYPICAL PLASTIC INSPECTION CHAMBER

DEPTH TO SOFFIT = MAXIMUM DEPTH TO INVERT 3.0m (NON-ENTRY)
D400 LOADING (MAX 40t VEHICLE LOADING)



TYPICAL MANHOLE BACKDROP DETAIL.



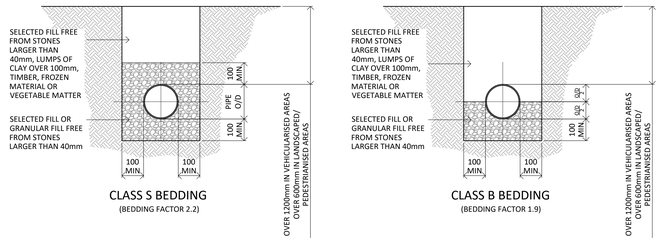
NOTES:

1. DRAIN SLEEVE / DUCT TO BE LOCATED WHOLLY WITHIN THE MIDDLE THIRD OF THE FOUNDATION DEPTH (D). THE ENGINEER IS TO BE ADVISED IF THIS IS NOT POSSIBLE.
2. IN NORMAL SOIL CONDITIONS THE SLEEVE/DUCT IS TO GIVE A 50mm CLEARANCE ALL ROUND THE OUTSIDE OF THE DRAIN PIPE (THIS MAY BE ACHIEVED BY LIGHTLY PACKING THE SPACE WITH COMPRESSIBLE FILLER MATERIAL)
3. MAXIMUM SLEEVE SIZE TO BE 300mm.

DRAINS THROUGH STRIP FOUNDATIONS

NOTES:

1. BEDDING BENEATH AND OVER THE PIPE TO BE LIGHTLY COMPACTED.
2. BEDDING TO THE SIDES TO BE WELL COMPACTED.
3. CARE IS TO BE TAKEN AS TO NOT DISPLACE THE PIPE FROM ITS INTENDED POSITION.
4. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER IN CERTAIN SOILS EG RUNNING SAND IN VERY WET CONDITIONS.
5. IN VERY WET CONDITIONS, WHERE DIRECTED OR APPROVED BY THE ENGINEER A TEMPORARY LAND DRAIN MAY BE LAID WITHIN THE GRANULAR BED.
6. CLASS S BEDDING IS TO BE USED WITH ALL FLEXIBLE PIPES.
7. FIRST 300mm ABOVE CROWN OF PIPE IS TO BE LIGHTLY TAMPED BY HAND



GRANULAR PIPE BEDDING DETAILS

NOTES:

1. IMPORTED GRANULAR MATERIALS TO INCLUDE AGGREGATES TO BS 12620:2002, AIR-COOLED BLAST FURNACE SLAG TO BS EN 12620:2002 & SINTERED PULVERIZED FUEL ASH TO BS EN 13055-1:2002.
2. ANGULAR MATERIALS SHOULD BE CHOSEN TO ENSURE SUFFICIENT SUPPORT IS PROVIDED TO HEAVIER PIPES.
3. CLASS S BEDDING SHALL BE USED WITH ALL FLEXIBLE PIPES

PIPE DIAMETER	CLASS OF BEDDING	IMPORTED GRANULAR MATERIAL (NOTE 1)
100MM	S B	10MM NOMINAL SIZE
OVER 100MM TO 150MM	S B	10MM OR 14MM NOM. SINGLE SIZE OR 14MM TO 5MM GRADED.
OVER 150MM TO 500MM	S B	10, 14 OR 20MM NOM. SINGLE SIZE OR 14MM TO 5MM GRADED OR 20MM TO 5MM GRADED
OVER 500MM (NOTE 2)	S B	10, 14 OR 20MM NOM. SINGLE SIZE OR 14MM TO 5MM GRADED OR 20MM TO 5MM GRADED OR 40MM TO 5MM GRADED

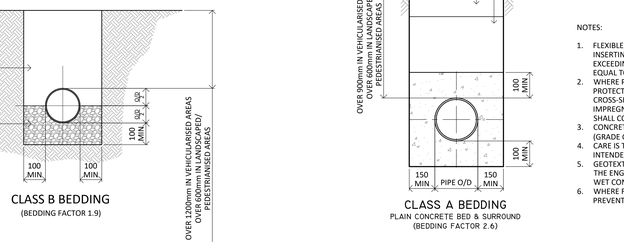
GRANULAR BEDDING AND SIDE FILL MATERIAL FOR RIGID AND FLEXIBLE PIPES

NOTES:

1. DIMENSION Y1 SHALL BE USED UNLESS Y2 IS SPECIFIED OR DIRECTED BY THE ENGINEER.
2. DIMENSION Y2 SHALL BE USED IN PLACE OF Y1 WHERE THE EXCAVATION IS IN ROCK OR IN MIXED SOILS CONTAINING ROCK BEDS, BOULDERS, LARGE FLINTS OR OTHER IRREGULAR HARD SPOTS.
3. DIMENSION Y2 SHALL BE INCREASED BY 40mm FOR EACH ADDITIONAL 1.0m OF COVER IN EXCESS OF 5.0m.
4. DIMENSION L IS THE WIDTH OF THE COMPRESSIBLE FILLER REQUIRED AT JOINTS IN CONCRETE PROTECTION TO PIPES (CLASS A)

PIPE DIAMETER	Y MINIMUM		MAXIMUM TRENCH WIDTH	L
	Y1 MIN.	Y2 MIN.		
100	100	200	700	I8
150	100	200	750	I8
200	100	200	800	I8
225	100	200	825	I8
250	100	200	850	I8
300	100	200	925	I8
350	100	200	1000	I8
375	100	200	1090	I8
400	150	200	1025	I8
450	150	200	1175	36

DIMENSIONS FOR PIPE BEDDING



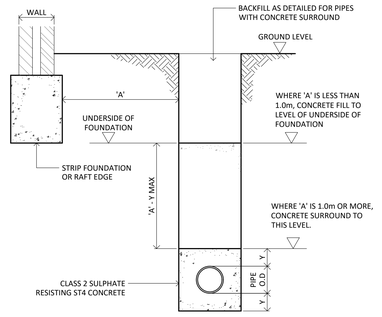
CLASS A BEDDING

PLAIN CONCRETE BED & SURROUND
(BEDDING FACTOR 2.6)

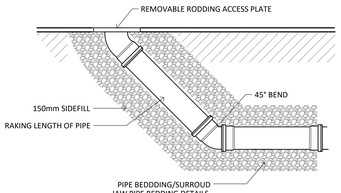
NOTES:

1. FLEXIBLE JOINTS SHALL BE PROVIDED IN CONCRETE, BY INSERTING COMPRESSIBLE BOARD AT INTERVALS NOT EXCEEDING 5m. PRECUT TO DIAMETER, HEIGHT AND WIDTH EQUAL TO THE CONCRETE CROSS SECTION.
2. WHERE PIPES WITH FLEXIBLE JOINTS ARE USED, THE CONCRETE PROTECTION IS TO BE INTERRUPTED OVER ITS FULL CROSS-SECTION BY A SHAPED FORMER OF BITUMEN IMPREGNATED COMPRESSIBLE FILLER. THESE INTERRUPTIONS SHALL COINCIDE WITH PIPE JOINTS AND MUST NOT EXCEED 5m.
3. CONCRETE TO BE CLASS 2 SULPHATE RESISTING CONCRETE (GRADE GEN3)
4. CARE IS TO BE TAKEN AS TO NOT DISPLACE THE PIPE FROM ITS INTENDED POSITION.
5. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER IN CERTAIN SOILS EG RUNNING SAND IN VERY WET CONDITIONS.
6. WHERE FLEXIBLE PIPES ARE USED, CARE MUST BE TAKEN TO PREVENT THE PIPES FROM FLOATING.

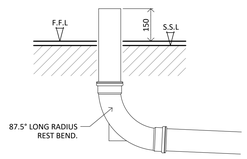
CONCRETE PIPE BEDDING DETAILS



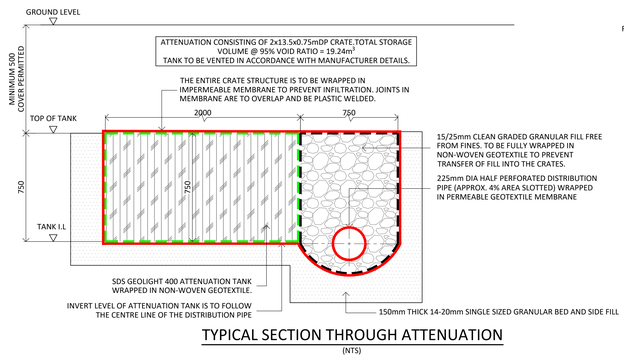
PIPE RUNS NEAR BUILDINGS



TYPICAL RODDING EYE DETAIL

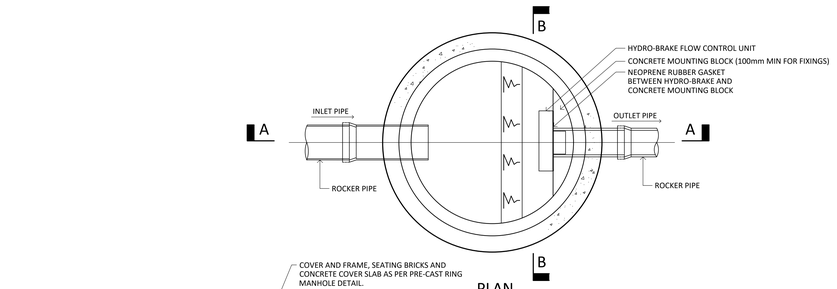


TYPICAL DRAINAGE POP UP DETAIL

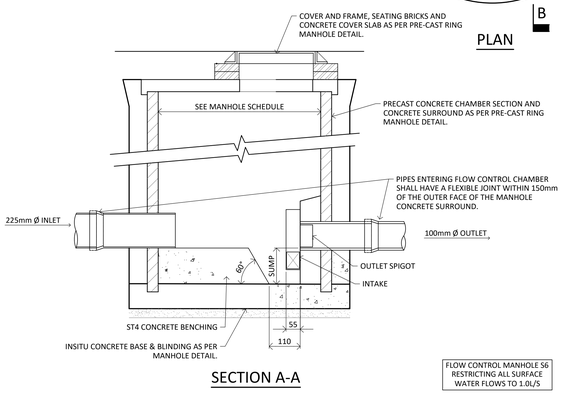


TYPICAL SECTION THROUGH ATTENUATION

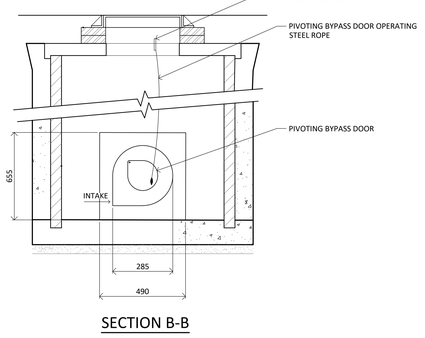
(NTS)



PLAN



SECTION A-A

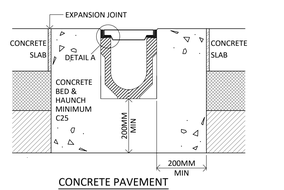


SECTION B-B

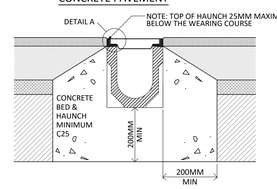
FLOW CONTROL MANHOLE S6 RESTRICTING ALL SURFACE WATER FLOWS TO 1.0L/S

FLOW CONTROL MANHOLE DETAILS

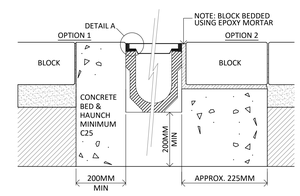
FOR CONSTRUCTION DETAILS REFER TO TYPICAL *PRECAST RING MANHOLE DETAIL*



CONCRETE PAVEMENT

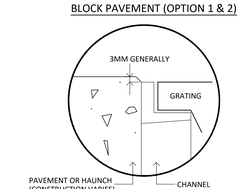


ASPHALT PAVEMENT

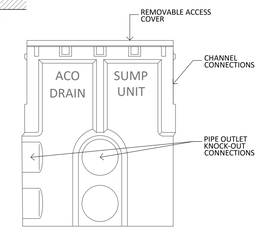


BLOCK PAVEMENT (OPTION 1 & 2)

CHANNELS TO BE ACO M1000 UNLESS NOTED OTHERWISE ON THE DRAINAGE PLAN



DETAIL A



ACO DRAIN SUMP UNIT

ACO DRAINAGE CHANNEL DETAILS.

simple works

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6. ALL WORKS UNDERTAKEN BY CONTRACTOR TO BE COMPLIANT WITH RELEVANT AND CURRENT BUILDING CODES, REGULATIONS AND GOOD PRACTICES.

NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY
P3	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE	NR
P2	24.01.23	STAGE 3 ISSUE	NR
P1	20.01.23	STAGE 2 ISSUE	NR

PROJECT NAME: DALEHAM GARDENS

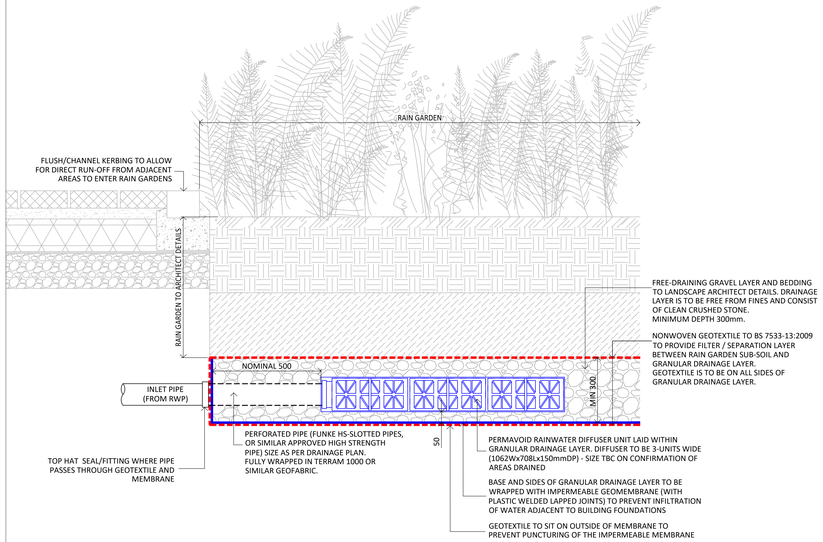
CLIENT NAME: NW3 CLT COMMUNITY LAND TRUST

PROJECT No.: 1803 SCALE @ A0: NTS

DRAWN / CHECKED: NR AJD STATUS: STAGE 3

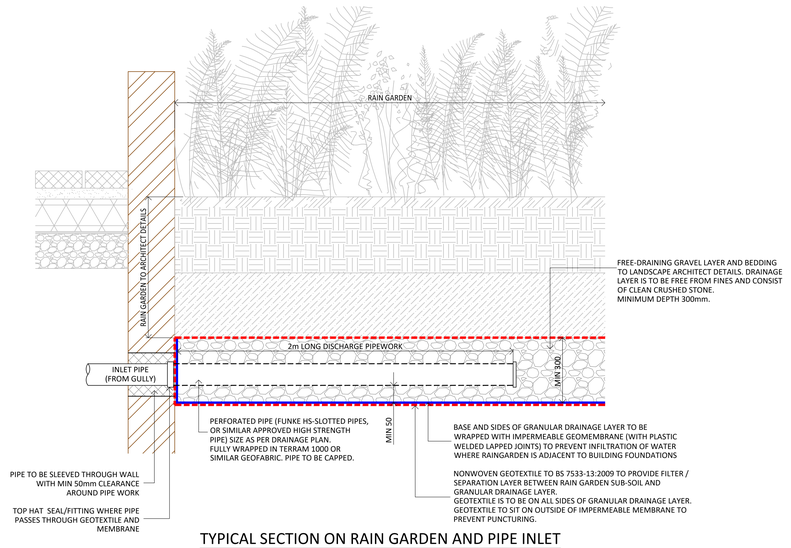
TITLE: DRAINAGE DETAILS SHEET 1

Project	Org	Zone	Level	Type	Disc	Sheet	Rev	DATE
1803-SMW-XX-XX-DR-C-0002-P3								17.04.23



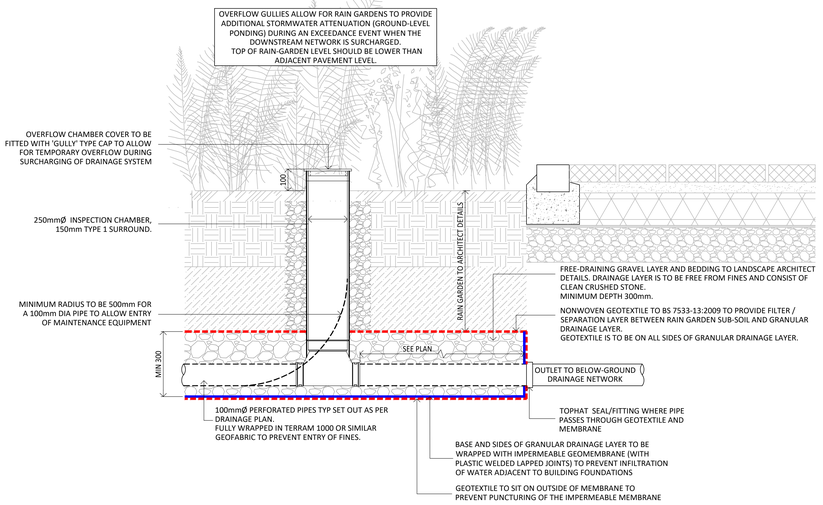
TYPICAL SECTION ON RAIN GARDEN AND DIFFUSER INLET

(NTS)



TYPICAL SECTION ON RAIN GARDEN AND PIPE INLET

(NTS)

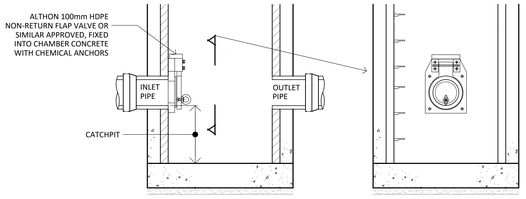


TYPICAL SECTION ON RAIN GARDEN OVERFLOW AND OUTLET

(NTS)

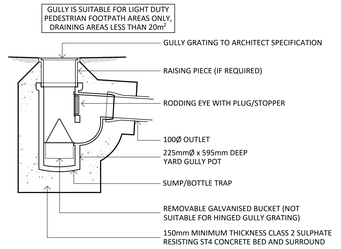
TYPICAL SECTION ON CASCADING RAIN-GARDENS

(NTS)

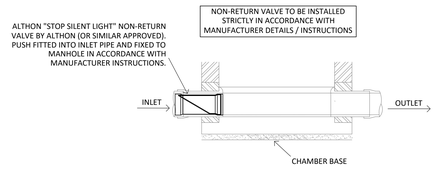


CATCHPIT MANHOLE W/ FLAP VALVE

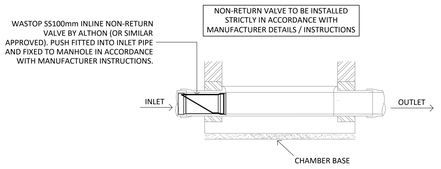
FOR CONSTRUCTION DETAILS REFER TO TYPICAL *PRECAST RING MANHOLE DETAIL*



TRAPPED GULLY



FOUL DRAINAGE NON-RETURN VALVE



STORM DRAINAGE NON-RETURN VALVE

simple works

NOTES:

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NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY
P3	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE	NR
P2	28.03.23	STAGE 3 ISSUE (CATCHPIT DETAILS MOVED TO DRG C-0004)	NR
P1	25.01.23	STAGE 2 ISSUE	NR

PROJECT NAME: DALEHAM GARDENS

CLIENT NAME: NW3 CLT COMMUNITY LAND TRUST

PROJECT No.: 1803

SCALE @ A0: NTS

DRAWN / CHECKED: NR AJD

STATUS: STAGE 3

TITLE: DRAINAGE DETAILS SHEET 2

Project	Org.	Zone	Level	Type	Disc	Sheet	Rev.	DATE:
1803-SMW-XX-XX-DR-C-0003-P3								17.04.23

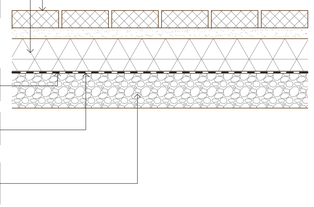
CONCRETE BLOCK PAVING
200x100x60 PRECAST CONCRETE BLOCK PAVIOURS TO BS EN 1338:2003. LAID ON 50mm THICK LAYING COURSE. ALL TO BS 7533:3:2005+1:2009

TYPE 1 SUB-BASE 150mm THICK
GRANULAR MATERIAL TYPE 1 OR TYPE 1G TO CL. 801 AND 803 OF THE SPECIFICATION FOR HIGHWAY WORKS LAID AND COMPACTED TO CL. 802. ALL TO CLAUSE 702.

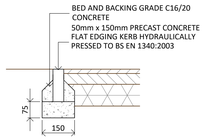
GEOMEMBRANE
TERRAM 1000 OR SIMILAR TO BE LAID UNDER THE SUB-BASE, AS A SEPERATION BARRIER TO CL. 609.

FORMATION
FORMATION TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS CL. 601, 616 AND 617.

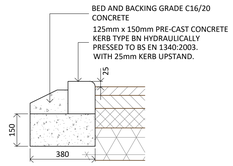
BULK FILL (WHERE REQUIRED)
GRANULAR MATERIAL CLASS 1A, 1B OR 1C TO THE SPECIFICATION FOR HIGHWAY WORKS CL. 601 AND 602. LAID AND COMPACTED TO CL. 608 AND 612.



BLOCK PAVED FOOTPATH CONSTRUCTION



KERB TYPE FE
(1:10)



KERB TYPE BN
(1:10)

SURFACE COURSE 20mm THICK
20mm THICK AC 6 DENSE SURF 100/150 TO BS EN 13108-1:2016 AND CL. 912 OF THE SPECIFICATION FOR HIGHWAY WORKS.

BINDER COURSE 50mm THICK
50mm AC 20 DENSE BIN 100/150 TO BS EN 13108-1:2016 AND CL. 929 OF THE SPECIFICATION FOR HIGHWAY WORKS.

TYPE 1 SUB-BASE 150mm THICK
GRANULAR MATERIAL TYPE 1 TO CL. 801 AND 803 OF THE SPECIFICATION FOR HIGHWAY WORKS LAID AND COMPACTED TO CL. 802. ALL TO CLAUSE 702.

GEOMEMBRANE
NON-WOVEN GEOTEXTILE TERRAM 1000 OR SIMILAR TO BE LAID UNDER THE SUB-BASE, AS A SEPERATION BARRIER TO CL. 609

FORMATION
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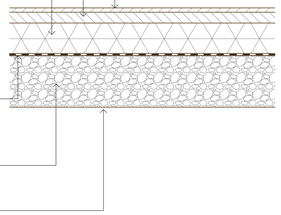
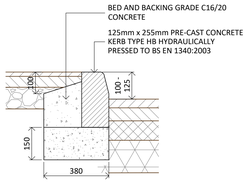
BULK FILL (WHERE REQUIRED)
GRANULAR MATERIAL CLASS 1A, 1B OR 1C TO THE SPECIFICATION FOR HIGHWAY WORKS CL. 601 AND 602. LAID AND COMPACTED TO CL. 608 AND 612.

SUB-FORMATION
SUB-FORMATION TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS CL. 601, 602, 603, 613 AND 617.



ASPHALT FOOTPATH CONSTRUCTION



KERB TYPE HB
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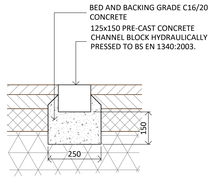

KERB TYPE FC
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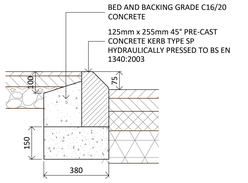

KERB TYPE SP
(1:10)

FOR LOCATION AND EXTENT OF TYPES OF CONSTRUCTION AND KERBING REFER TO ARCHITECTS DRAWINGS

CONCRETE SLAB 150mm THICK
150mm THICK JOINTED REINFORCED CONCRETE SLAB TO THE SPECIFICATION FOR HIGHWAY WORKS CL. 1001 TO 1039 INCLUSIVE.

TOP REINFORCEMENT
1 LAYER A252 MESH, 50mm COVER

SEPARATION MEMBRANE
POLYETHYLENE SHEET TO CL. 1007 OF THE SPECIFICATION FOR HIGHWAY WORKS. TO FORM A WATERPROOF SEPARATION MEMBRANE.

TYPE 1 SUB-BASE 150mm THICK
GRANULAR MATERIAL TYPE 1 TO CL. 801 AND 803 OF THE SPECIFICATION FOR HIGHWAY WORKS LAID AND COMPACTED TO CL. 802. ALL TO CLAUSE 702.

GEOMEMBRANE
NON-WOVEN GEOTEXTILE TERRAM 1000 OR SIMILAR TO BE LAID UNDER THE SUB-BASE, AS A SEPERATION BARRIER TO CL. 609

FORMATION
FORMATION TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS CL. 601, 616 AND 617.

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GRANULAR MATERIAL CLASS 1A, 1B OR 1C TO THE SPECIFICATION FOR HIGHWAY WORKS CL. 601 AND 602. LAID AND COMPACTED TO CL. 608 AND 612.

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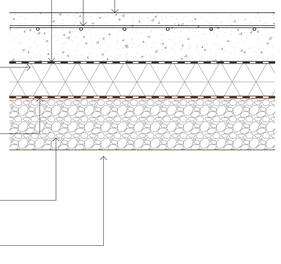
SUB-FORMATION TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS CL. 601, 602, 603, 613 AND 617.



BIN STORE CONSTRUCTION
(NON-VEHICULAR LOADING)

simple works

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NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY
P2	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE	NR
P1	28.03.23	STAGE 3 ISSUE	NR

PROJECT NAME:
DALEHAM GARDENS

CLIENT NAME:
NW3 CLT
COMMUNITY LAND TRUST

PROJECT No.: 1803
SCALE @ A0: NTS

DRAWN / CHECKED: NR AJD
STATUS: STAGE 3

TITLE:
EXTERNAL WORKS
CONSTRUCTION DETAILS

Project	Org.	Zone:	Level:	Type:	Doc:	Sheet:	Rev:	DATE:
1803	SMW	XX	XX	DR	C	0004	P2	17.04.23

Tel +44 (0)1508 500922
Email solutions@subteno.co.uk
Registered in England 10891962.
www.subteno.co.uk

APPENDIX E – DRAINAGE CALCULATIONS

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.013	5.00	81.150	300	-14.123	281.460	0.650
2	0.006	5.00	80.650	600	-2.715	282.816	3.000
3	0.013	5.00	77.650	300	5.505	283.341	0.550
4	0.004	5.00	77.690	300	15.482	284.142	0.692
5	0.011	5.00	77.650	1000	1.477	269.338	1.250
6	0.005	5.00	78.144	1200	16.728	274.022	1.837
6_OUT			78.150	1000	19.050	274.568	1.883

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	11.488	0.600	80.500	79.505	0.995	11.5	100	5.08	50.0
1.001	2	3	8.237	0.600	77.650	77.100	0.550	15.0	150	5.14	50.0
1.002	3	4	10.009	0.600	77.100	76.998	0.102	98.1	150	5.30	50.0
1.003	4	6	10.196	0.600	76.998	76.896	0.102	100.0	150	5.47	50.0
2.000	5	6	15.954	0.600	76.400	76.307	0.093	171.5	225	5.27	50.0
1.004	6	6_OUT	2.385	0.600	76.420	76.267	0.153	15.6	100	5.49	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.287	18.0	1.7	0.550	1.045	0.013	0.0	21	1.433
1.001	2.616	46.2	2.6	2.850	0.400	0.019	0.0	24	1.403
1.002	1.014	17.9	4.3	0.400	0.542	0.032	0.0	50	0.836
1.003	1.005	17.8	4.8	0.542	1.098	0.036	0.0	54	0.858
2.000	0.995	39.6	1.5	1.025	1.612	0.011	0.0	30	0.484
1.004	1.966	15.4	7.1	1.624	1.783	0.052	0.0	47	1.919

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	20.0
M5-60 (mm)	20.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	1 year (l/s)	1.0
Summer CV	0.750	30 year (l/s)	1.0
Winter CV	0.840	100 year (l/s)	1.0
Analysis Speed	Normal	Check Discharge Volume	x
Skip Steady State	x		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.074	Betterment (%)	0
SAAR (mm)	650	QBar	0.3
Soil Index	4	Q 1 year (l/s)	0.3
SPR	0.47	Q 30 year (l/s)	0.6
Region	6	Q 100 year (l/s)	0.8
Growth Factor 1 year	0.85		

Node 5 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	18	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node 6 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	13	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node 5 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	80	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node 6 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	76.420	Product Number	CTL-SHE-0047-1000-1000-1000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node 6 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	76.307	Slope (1:X)	165.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.750
Safety Factor	2.0	Width (m)	2.000	Inf Depth (m)	
Porosity	0.95	Length (m)	13.500		

Node 6 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	2.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	76.307	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)		Diameter (mm)	750

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	80.522	0.022	1.8	0.0100	0.0000	OK
15 minute winter	2	10	77.675	0.025	2.7	0.0080	0.0000	OK
15 minute winter	3	10	77.153	0.053	4.5	0.0277	0.0000	OK
15 minute winter	4	11	77.055	0.057	5.0	0.0106	0.0000	OK
240 minute winter	5	168	76.493	0.093	0.3	0.0897	0.0000	OK
240 minute winter	6	168	76.493	0.186	1.5	4.3353	0.0000	OK
15 minute summer	6_OUT	1	76.267	0.000	0.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	1.8	1.441	0.099	0.0142	
15 minute winter	2	1.001	3	2.7	0.742	0.058	0.0305	
15 minute winter	3	1.002	4	4.4	0.759	0.245	0.0578	
15 minute winter	4	1.003	6	4.9	0.838	0.278	0.0599	
30 minute winter	5	2.000	6	1.0	0.105	0.026	0.2897	
240 minute winter	6	Hydro-Brake®	6_OUT	0.7				5.3

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	80.535	0.035	4.4	0.0160	0.0000	OK
15 minute winter	2	10	77.688	0.038	6.6	0.0124	0.0000	OK
15 minute winter	3	10	77.191	0.091	10.8	0.0480	0.0000	OK
15 minute winter	4	11	77.096	0.098	12.1	0.0183	0.0000	OK
180 minute winter	5	172	76.733	0.333	0.9	0.3208	0.0000	SURCHARGED
180 minute winter	6	172	76.733	0.426	3.9	11.5648	0.0000	SURCHARGED
15 minute summer	6_OUT	1	76.267	0.000	0.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	4.4	1.845	0.243	0.0271	
15 minute winter	2	1.001	3	6.5	0.896	0.141	0.0608	
15 minute winter	3	1.002	4	10.7	0.916	0.596	0.1167	
15 minute winter	4	1.003	6	12.0	1.036	0.676	0.1180	
15 minute winter	5	2.000	6	3.7	0.258	0.094	0.5761	
30 minute winter	6	Hydro-Brake®	6_OUT	0.8				7.5

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	80.549	0.049	8.0	0.0226	0.0000	OK
15 minute winter	2	10	77.702	0.052	11.9	0.0169	0.0000	OK
240 minute winter	3	224	77.405	0.305	3.7	0.1601	0.0000	FLOOD RISK
240 minute winter	4	224	77.405	0.407	4.2	0.0765	0.0000	FLOOD RISK
240 minute winter	5	224	77.405	1.005	1.3	0.9675	0.0000	FLOOD RISK
240 minute winter	6	224	77.405	1.098	5.9	23.0934	0.0000	SURCHARGED
15 minute summer	6_OUT	1	76.267	0.000	0.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	7.9	2.151	0.442	0.0424	
15 minute winter	2	1.001	3	11.9	0.944	0.257	0.0948	
15 minute winter	3	1.002	4	18.8	1.071	1.052	0.1762	
15 minute winter	4	1.003	6	21.2	1.208	1.196	0.1736	
15 minute winter	5	2.000	6	6.1	0.344	0.155	0.6345	
240 minute winter	6	Hydro-Brake®	6_OUT	1.0				20.0

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CLIENT / PROJECT	SHEET NO.	REVISION	PROJECT REF.
NW3 CLT / DALEHAM GARDENS	1	STAGE 3	S221215
TITLE	PREPARED	CHECKED	DATE
FOUL WATER SEWER DESIGN FLOW RATES	NR	-	23.03.23

Calculations for foul water underground pipe design based on BS EN 12056-2:2000 System II

		WHB	WC	Shower	Kitchen Sink	Dishwasher	Bath	Washing Machine
	Discharge Units (l/s)	0.3	1.8	0.4	0.6	0.6	0.6	0.6
FLAT 1	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 2	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 3	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 4	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 5	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
FLAT 6	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 7	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 8	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
FLAT 9	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 10	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 11	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
FLAT 12	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 13	Total Appliances	3	3	1	1	1	1	1
	Discharge Units	0.9	5.4	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	9.1						
FLAT 14	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
	K VALUE	**0.5**						
	Qww=K(DU)0.5 (l/s)	**4.159**						

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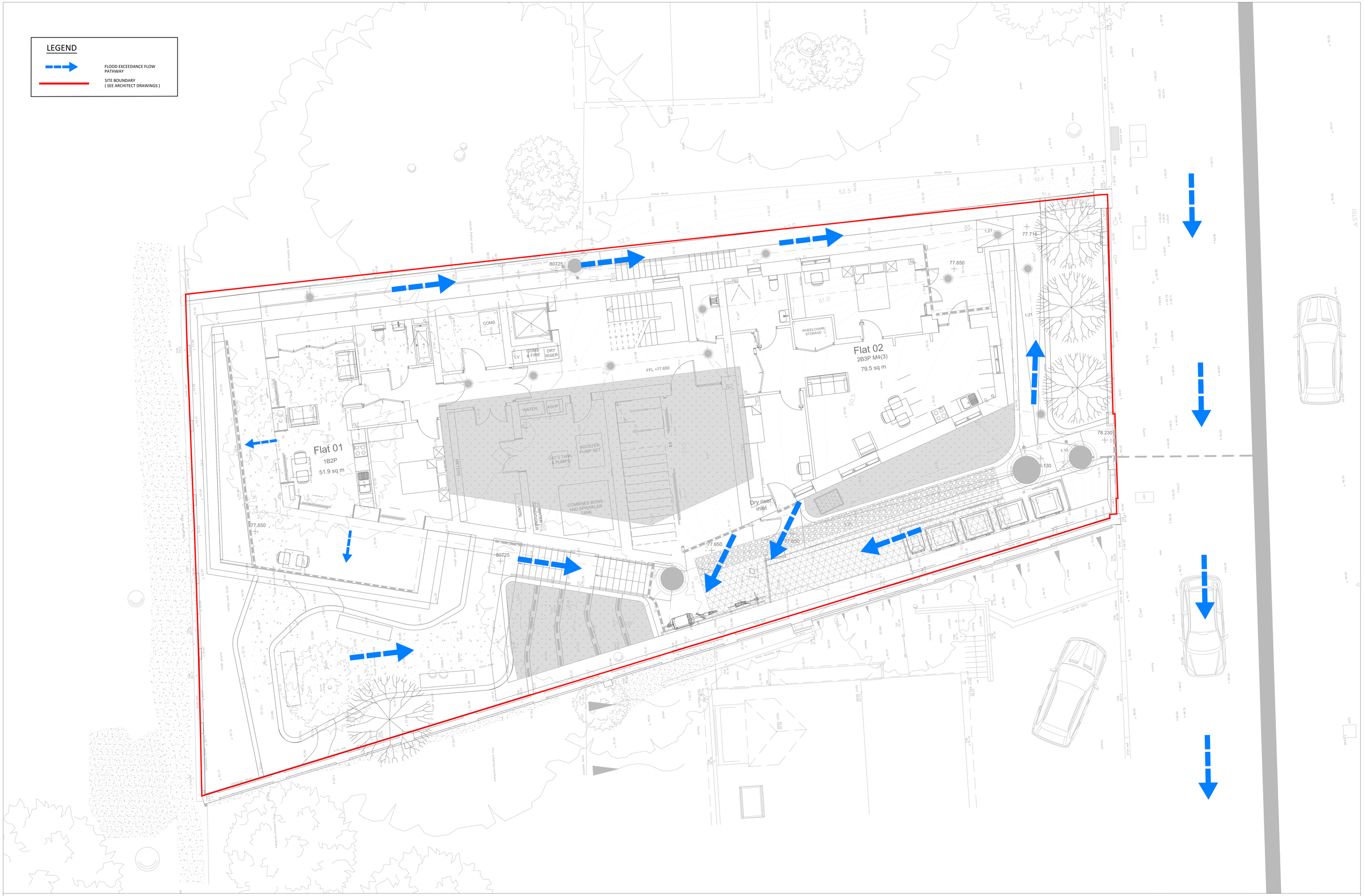
APPENDIX F – FLOOD EXCEEDANCE FLOWS



simple works

NOTES:

1. NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH THE RELEVANT SPECIFICATION AND GENERAL NOTES
3. ANY NON STRUCTURAL ITEMS SUCH AS WATERPROOFING, CLADDING, FINISHES, FIRE STOPPING ARE TO BE THE ARCHITECTS SPECIFICATIONS.
4. ALL PROPRIETARY PRODUCTS ARE TO BE USED AND INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS DETAILS AND REQUIREMENTS.
5. THE STRUCTURE IS DESIGNED AND DETAILED FOR THE PERMANANT CONDITION ONLY THE CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURE IN ITS TEMPORARY CONDITION, ANY TEMPORARY WORKS REQUIRED DURING CONSTRUCTION AND ANY TEMPORARY LOADS ONTO THE EXISTING AND NEW STRUCTURE WHICH SHALL BE LESS THAN THOSE FOR WHICH IT HAS BEEN CONFIRMED OR DESIGNED RESPECTIVELY
6. ALL WORKS UNDERTAKEN BY CONTRACTOR TO BE COMPLIANT WITH RELEVANT AND CURRENT BUILDING CODES, REGULATIONS AND GOOD PRACTICES.

NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	
P3	27.04.23	UPDATED SITE PLAN	NR
P2	17.04.23	STAGE 3 FRA ISSUE	NR
P1	25.01.23	FRA ISSUE	NR

PROJECT NAME: DALEHAM GARDENS

CLIENT NAME: NW3 CLT COMMUNITY LAND TRUST

PROJECT No.: 1803

SCALE @ A0: 1 : 50

DRAWN / CHECKED: NR AJD

STATUS: STAGE 3

TITLE: FLOOD EXCEEDANCE FLOWS

Project	Org	Zone	Level	Type	Doc	Sheet	Rev	DATE
1803-SMW-XX-XX-DR-C-0010-P3								17.04.23

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APPENDIX G – THAMES WATER PRE-PLANNING ENQUIRY

Mr Nathan Rowe

Subteno Ltd
Rosebery Business Park
Mentmore Way
Poringland
Norwich
Norfolk
NR14 7XP

Wastewater pre-planning
Our ref DS6103713

10 April 2023

Pre-planning enquiry: Confirmation of sufficient capacity

Site: 31, DALEHAM GARDENS, LONDON, NW3 5BU.

Dear Mr Rowe,

Thank you for providing information on your development

Proposed development: Flat x 14 Proposed FW point(s) of connection: To the existing combined sewer via a lateral sewer. (Gravity) Proposed SW point(s) of connection: To the existing combined sewer via a lateral sewer. (Gravity) 1.0l/s.

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent combined sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

When developing a site, policy SI 13 of the London Plan states “Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:”.

The disposal hierarchy being:

1) rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2) rainwater infiltration to ground at or close to source
3) rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
4) rainwater discharge direct to a watercourse (unless not appropriate)
5) controlled rainwater discharge to a surface water sewer or drain
6) controlled rainwater discharge to a combined sewer.

Where connection to the public sewerage network is required to manage surface water flows we will accept these flows at a discharge rate in line with CIRIA’s best practice guide on SuDS or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and if the flows are restricted to a total of 1.0 l/s then Thames Water would not have any objections to the proposal.

Please see the attached ‘Planning your wastewater’ leaflet for additional information.

What happens next?
Please make sure you submit your connection application, giving us at least 21 days’ notice of the date you wish to make your new connection/s.

If you’ve any further questions, please contact me on 0800 009 3921.

Yours Sincerely

Christopher Allen
Project Engineer
Developer Services – Sewer Connections Team
Tel: 0800 009 3921
@: Developer.services@thameswater.co.uk

Get advice on making your connection correctly at connectright.org.uk

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APPENDIX H – LLFA PROFORMA

Pro-forma for any schemes in flood risk areas & all major development - Camden LLFA

All yellow boxes **must** be completed on this and all relevant tabs
Complete peach cells with source document and section/page references, required to support/justify responses
Do not edit grey cells
Please note guidelines / notes in column M
Complete all relevant tabs

Introduction: This Proforma is intended to help you understand the Sustainable Drainage and Flood Risk considerations that the Lead Local Flood Authority (LLFA) and Local Planning Authority (LPA) will take into account when considering an application in Camden, as well as helping us to consider the application. This does not replace the need also to provide where required a Drainage Statement, Flood Risk Assessment, and GLA-Camden SuDS Pro-forma, and observe the detailed guidance in ' Camden Planning Guidance (CPG) Water & Flooding'. Any information provided should be referenced to the relevant section of submitted supporting documents. This summary page will help provide key details on the application. Note that certain cells on this and other tabs will be populated automatically from previous answers given.

A. Application details

					Guidelines / notes
Planning reference (if known)	-				
Scheme name	DALEHAM GARDENS				*Any known intended name for the development*
Scheme address	31 DALEHAM GARDENS, LONDON				
Postcode	NW3 5BU				
Scale of development as registered	TBC				
Scale - policy subcategory		Residential parts		Non-residential parts	*Consult 'Reference data' tab for subcategory definitions*
Type(s) of development	Residential				*First cell: Residential / Non-residential / Mixed; Second cell: Newbuild / Refurbishment or change of use / Both*
Site area, hectares	0.075	*100%*			
Of which total permeable area, to nearest 0.0001 ha	0.024	32%			
Of which total impermeable area, to nearest 0.0001 ha	0.051	68%			

	Existing	Proposed				
	TOTAL pre-development	For demolition	New-build incl. infills, re-build, extensions	Retained (refurbished or change of use)	TOTAL post-development	Net UPLIFT post-development
Total floor area of development (GIA)	200	200	365		365	165
of which residential	200	200	365		365	165
of which non- residential		0	0		0	0
Number of residential units						
List all use class(es)						

Drainage Statement document details	S221215-SUB-99-XX-FRA-C-00001 Subteno FRA & Drainage Statement, April 2023 Version 2	*Full title, author, date and version*
Flood Risk Assessment document details	S221215-SUB-99-XX-FRA-C-00001 Subteno FRA & Drainage Statement, April 2023 Version 2	*Full title, author, date and version*

B. Flood Risk and SuDS - Policy & Documents Filter

Recommendation (Council to complete)				
	Site area 1 hectare or greater?	*No*		If yes, Local Plan Policy CC3 requires a Flood Risk Assessment with coping & mitigation proposals
	Major application?	*CHECK SITE DETAILS*		If yes, Local Plan Policy CC3 requires Flood Risk Assessment if in area at risk to flooding; Drainage Statement; SuDS proposals; Greenfield run-off rates.
	In Critical Drainage Area?	Yes		*Refer to Updated Map of Local Flood Risk Zones (Sept 2014)*
	In or bordering (<50m) Local Flood Risk Zone(s)?	No		*Refer to Updated Map of Local Flood Risk Zones (Sept 2014)*
	Name of LFRZ(s):	-		*Select 'Border' if any part of site lies less than 50m from a LFRZ boundary*
	On Historically Flooded Street 1975 or 2002?	No		*Refer to Figs. 3.i.-v. in Appendix to Strategic Flood Risk Assessment (July 2014)*
	Name of HFS(s):			*Select 'Goldhurst-Hillfield' if site is in Goldhurst Terrace NW6 or Hillfield Road NW6 (1-2 flooded properties per year)*
	Area at risk of flooding (surface water)?	*No*		As defined in Local Plan Policy CC3. If yes, FRA required (major scheme or new basement)
	Elevated groundwater susceptibility or <50m of GW incident?	No		*Refer to Fig. 4.e. in Appendix to Strategic Flood Risk Assessment (July 2014)*
	In area with recorded sewer flooding incident?	Yes		*Refer to Fig. 5.a.-b. in Appendix to Strategic Flood Risk Assessment (July 2014)*
	In street with historical underground watercourse?	No		*Refer to §2.8.1.-7. in Strategic Flood Risk Assessment (July 2014)*
	Area at risk of flooding (other relevant types)?	*Yes*		As defined in Local Plan Policy CC3. If yes, DS required (basement or other vulnerable proposals)
	Basement proposed - new, enlarged or change of use?	Yes - lower ground floor		
	IF YES, list proposed basement uses (all spaces):	1B2P apartment, Plant room		Policy CC3 precludes basement proposals that include vulnerable uses in areas at risk of flooding
Approve/Condition/Refuse	*IF YES, are habitable or vulnerable use(s) included?*	Yes - 1B2P apartment		*Includes but not restricted to: self-contained flats; bedrooms / living areas; critical plant & infrastructure; spaces for young, elderly, reduced-mobility or medically vulnerable persons.*
Approve/Condition/Refuse	*IF NO, is other (non-basement) vulnerable development prop*	-		*Includes but not restricted to: critical plant & infrastructure; spaces for young, elderly, reduced-mobility or medically vulnerable persons.*
	Vulnerable development in flood-prone area?	*CHECK SITE DETAILS*		Policy CC3 precludes vulnerable development in flood-prone areas
	Site-specific Flood Risk Assessment (FRA) required?	*CHECK SITE DETAILS*		Policy CC3 requires a FRA for sites >1ha; major schemes or basements in area at risk of SW flooding; basements in area at risk of other types of flooding
Approve/Condition/Refuse	Site-specific FRA submitted?	Yes	**If Yes, go to Flood Risk Proposals tab**	
	Drainage Statement (DS) required?	*CHECK SITE DETAILS*		Policy CC3 requires a DS for major schemes; basement or other vulnerable schemes in area at risk of flooding.
Approve/Condition/Refuse	DS submitted?	Yes	**If Yes, go to Flood Risk Proposals tab**	
	Sustainable drainage (SuDS) proposals required?	*CHECK SITE DETAILS*		Policy CC3 requirement for schemes in areas at risk of flooding; National Planning Policy Framework requirement for all major schemes
Approve/Condition/Refuse	SuDS proposals submitted?	Yes	**If Yes, go to SuDS Proposals tab**	
	FRA/DS/SuDS supporting evidence required?	*CHECK SITE DETAILS*		*Standard documentation should be submitted alongside or within FRA, Drainage Statement or SuDS proposals*
Approve/Condition/Refuse	Supporting evidence submitted?	Yes	**If Yes, go to Flood Risk Proposals &/or SuDS Proposals tabs**	

Flood Risk Assessment, Proposals & Evidence

Recommendation (Council to complete)	**Assessments**	Required?	Document submitted?	Document title	Page/ section reference
	Site-specific Flood Risk Assessment	*CHECK SITE DETAILS*	*Yes*	S221215-SUB-99-XX-FRA-C-00001	SECTION 4
	Drainage Statement	*CHECK SITE DETAILS*	*Yes*		
	SuDS Proposals tab completed	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	SECTION 6
	SuDS Proposals	*CHECK SITE DETAILS*	*Yes*		
	SuDS Proposals tab completed	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	SECTION 6

Recommendation (Council to complete)	**Policy compliance**	Required?	Requirement met?	Document title	Page/ section reference
	Assessments address local, regional & national policies	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	
	include suitable research & quantification of site flood risks	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	SECTION 4
	address cumulative impact of developments	*CHECK SITE DETAILS*	No		
	propose suitable flood ingress internal coping measures	*CHECK SITE DETAILS*	No - details tbc by others		
	propose suitable flood risk mitigation measures	*CHECK SITE DETAILS*	No - details tbc by others		
	Internal water consumption target 105 l/p/d (residential)	*Yes*	TBC		
	External water consumption target 5 l/p/d (residential)	*Yes*	TBC		
	BREEAM Excellent water consumption target (non-resi >500m2)	*No*	TBC		
	Will not locate vulnerable development in flood-prone area	*Yes*	*No*		
	Scheme does not increase flood risk on & off site	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	SECTION 6
	Scheme reduces on&off-site flood risk where possible	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	SECTION 6

Recommendation (Council to complete)	**Evidence supporting Assessments & Proposals**	Required?	Evidence submitted?	Document title	Page/ section reference
	Drawings showing site-specific flood risk up to 100yr+40%	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	SECTION 6, APP D & E
	Drawings showing proposed internal coping measures	*CHECK SITE DETAILS*	No - tbc by others		
	Drawings showing proposed flood mitigation measures	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	SECTION 6, APP D & E
	Drawings showing proposed basement/ground floor uses	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	APP C
	Building flood risk emergency evacuation plan		No		
	Drawings showing on&off-site overland exceedance flows	*CHECK SITE DETAILS*	Yes	S221215-SUB-99-XX-FRA-C-00001	APP F
	Internal water calculations & proposals (resi)	*Yes*	tbc by others		
	External water calculations & proposals (resi)	*Yes*	tbc by others		
	BREEAM water calculations & proposals (non-resi >500m2)	*No*	tbc by others		

Sustainable Drainage (SuDS) Assessment, Evidence and Proposals

Recommendation (Council to complete)	**Assessments**	Document submitted?	Document title	Page/ section reference
	Drainage Statement (DS)	*Yes*	S221215-SUB-99-XX-FRA-C-00001	SECTION 6
	GLA-Camden SuDS Pro-forma (fully completed)	Yes		

Recommendation (Council to complete)	**Policy compliance**	Requirement met?	Document title	Page/ section reference
	DS must include identification of flood risk	Yes	S2212150-SUB-99-XX-FRA-C-0001	Section 4
	DS must include assessment of existing, greenfield & proposed runoff rates	Yes	S2212150-SUB-99-XX-FRA-C-0001	Section 6
	DS must include identification of measures, in line with the drainage hierarchy, to reduce runoff rates	Yes	S2212150-SUB-99-XX-FRA-C-0001	Section 6
	Achieve greenfield runoff rates wherever feasible, or as close as possible	1.0l/s	S2212150-SUB-99-XX-FRA-C-0001	Section 6
	Constrain runoff volumes to greenfield for 100yr 6hr event where feasible	25m3	S2212150-SUB-99-XX-FRA-C-0001	Section 6
	Backstop target for unaltered buildings: >50% reduction in existing run-off	n/a		
	Developments must include SuDS unless inappropriate	Yes	S2212150-SUB-99-XX-FRA-C-0001	Section 6
	Development should follow the detailed London Plan drainage hierarchy	Yes	S2212150-SUB-99-XX-FRA-C-0001	Section 6
	EA climate change factor applied: 2080s upper rainfall intensity allowance (40%)	Yes	S2212150-SUB-99-XX-FRA-C-0001	Section 6

Recommendation (Council to complete)	**Evidence supporting Assessments & Proposals**	Evidence submitted?	Document title	Page/ section reference
	Drawings detailing SuDS extent & position (incl. outfalls, control points, levels)	Yes	S2212150-SUB-99-XX-FRA-C-0001	Appendix D
	Blue-green roof details with area & minimum 150mm substrate for storage	Yes	S2212150-SUB-99-XX-FRA-C-0001	Appendix D
	Results of cross-site infiltration rate or similar tests to show soil (in)compatibility	No - site unsuitable		
	Professional run-off calculations supporting rates & volumes reported in DS	Yes	S2212150-SUB-99-XX-FRA-C-0001	Appendix E
	Drawings showing on&off-site overland exceedance flows	Yes	S2212150-SUB-99-XX-FRA-C-0001	Appendix F
	Evidence of site surveys and investigations relating to drainage	Yes	S2212150-SUB-99-XX-FRA-C-0001	Appendix B
	Lifetime maintenance and adoption arrangements (and maintenance owner)	Yes	S2212150-SUB-99-XX-FRA-C-0001	Section 7
	Management of health & safety risks related to SuDS design	TBC during detailed design		
	Confirmation of discharge capacity (or correspondence) from relevant body eg TW	Yes	S2212150-SUB-99-XX-FRA-C-0001	Appendix G

LEGEND

- PROPOSED PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE FOUL SEWER
- PROPOSED PRIVATE COMBINED SEWER
- PROPOSED SURFACE WATER MANHOLE BACKDROP
- PROPOSED FOUL WATER MANHOLE BACKDROP
- EXISTING PRIVATE SURFACE WATER SEWER
- EXISTING PRIVATE COMBINED SEWER
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED SURFACE WATER CHANNEL
- G — PROPOSED SURFACE WATER GULLY
- O/F — PROPOSED RAIN GARDEN OVERFLOW GULLY
- G — PROPOSED PLANT ROOM GULLY (TO M&E DETAILS)
- RE — RODDING EYE
- SU — SUMP UNIT
- SVP — SOIL VENT PIPE
- SS — STUB STACK
- RWP — RAINWATER DOWNPIPE
- PROPOSED ATTENUATION TANK
- RAIN GARDEN / BLUE ROOF (SEE PLAN)
- 25.300 + — PROPOSED LEVEL (TAKEN FROM ARCHITECT DRAWINGS AND SECTIONS)
- INDICATIVE SITE BOUNDARY (REFER TO ARCHITECT DRAWINGS)

DRAINAGE NOTES.

1. ALL PRECAST CONCRETE UNITS ARE TO BE TO BS 5911 (CLASS 3 SULPHATE RESISTANT CEMENT).
2. ALL PROPOSED MANHOLE COVERS AND FRAMES ARE TO BE DUCTILE IRON COMPLYING WITH BS EN 124.
3. ALL PRIVATE DRAINAGE WORKS TO BE IN ACCORDANCE WITH PART H OF THE BUILDING REGULATIONS AND BS EN 752
4. ALL MANHOLE COVER LEVELS ARE APPROXIMATE AND TO BE ADJUSTED TO SUIT THE ARCHITECT'S PROPOSED LEVELS
5. THE CONTRACTOR IS TO ALLOW FOR ALL ABANDONED DRAINAGE RUNS TO BE REMOVED OR GROUTED UP AS NECESSARY
6. THE CONTRACTOR IS TO ALLOW FOR JET WASHING OF ALL LENGTHS OF EXISTING SEWERS WHICH ARE TO BE RETAINED.
7. THE CONTRACTOR IS TO ALLOW FOR JET WASHING OF THE ENTIRE DRAINAGE SYSTEM ON COMPLETION OF WORKS.
8. THE CONTRACTOR MUST CHECK THE LEVELS AND CONDITION OF ALL EXISTING DRAINAGE OUTFALLS PRIOR TO CONSTRUCTION OF ANY DRAINAGE, UNLESS OTHERWISE AGREED, TO ENSURE THE PROPOSED DESIGN MAY BE ACHIEVED. ANY DISCREPANCIES MUST BE REPORTED TO SIMPLE WORKS IMMEDIATELY.
9. ALL RWP, SVP AND FOUL DRAINAGE POSITIONS, INCLUDING UNDERSLAB GULLIES, ARE TO BE CONFIRMED BY THE ARCHITECT.
10. WHERE RWP'S STUB STACKS AND SVP'S ARE CONNECTED DIRECT TO THE DRAIN, RODDING ACCESS PLATES ARE TO BE PROVIDED.
11. ALL FOUL WATER DRAINS ARE TO BE 100Ø @ 1:40 U.N.O.
12. ALL SURFACE WATER DRAINS ARE TO BE 100Ø @ 1:60 U.N.O

DESIGN NOTES

1. THE BELOW GROUND SURFACE WATER SYSTEM HAS BEEN DESIGNED TO THE FOLLOWING CONDITIONS:
   1 YEAR - PIPE FULL
   30 YEAR - SURCHARGING ALLOWED WITH NO FLOODING.
   100 YEAR + 40% C/C - SURCHARGING ALLOWED WITH NO FLOODING
2. THIS DRAWING IS BASED ON ARCHITECT DRAWING REF 2102_A_999_PROPOSED_LOWER GROUND FLOOR PLAN, 2102_A_1000_PROPOSED_GROUND FLOOR PLAN, AND TOPOGRAPHICAL SURVEY REF 21-010-1-EXISTING TOPOGAPHICAL SURVEY (SEC).
3. CONNECTIONS TO THE PUBLIC SEWER ARE SUBJECT TO FORMAL S106 APPLICATIONS WITH THAMES WATER. NO WORK ON THE PUBLIC SEWER IS TO TAKE PLACE WITHOUT PRIOR PERMISSION.
4. THE DRAINAGE DESIGN IS SUBJECT TO APPROVAL WITH THE LOCAL PLANNING AUTHORITY AND THE SUBSEQUENT DISCHARGE OF RELEVANT PLANNING CONDITIONS, AND IS THEREFORE SUBJECT TO CHANGE TO SUIT LLFA COMMENTS.
5. THE DRAINAGE DESIGN IS SUBJECT TO CONFIRMATION OF NETWORK RAIL ASSET PROTECTION REQUIREMENTS.
6. FULL DETAILS OF THE BLUE ROOF INCLUDING FLOW RATES IS TO BE CONFIRMED TO COORDINATE WITH BELOW-GROUND DRAINAGE DESIGN.

DESIGN — CAVITY DRAINAGE
BASEMENT CAVITY DRAINAGE DETAILS ARE TBC. CONNECTION LOCATIONS TBC.

DESIGN — INTERNAL FOUL DRAINAGE
DUE TO SPATIAL CONSTRAINTS AT THE REAR OF THE BUILDING, INTERNAL FOUL DRAINAGE CHAMBERS ARE REQUIRED. CHAMBERS ARE TO BE FITTED WITH ODOUR PROOF, RECESSED DOUBLE SEALED SCREW DOWN COVERS. ALL CHAMBERS TO BE LOCATED IN CORRIDORS/SHARED SPACES. NONE PERMITTED WITHIN APARTMENT SPACES.
NO FOUL DRAINAGE IS TO SIT BELOW THE RAFT. PIPEWORK TO SIT IN 'RAFT TRENCHES' WITH RAFT TO BE THICKENED ALONG PIPEWORK ROUTES AS REQUIRED.

DESIGN — PROPOSED AND EXISTING LEVELS
THE TOPOGRAPHICAL SURVEY SHOWN WAS UNDERTAKEN TO A LOCAL DATUM. DRAINAGE LEVELS ON THIS DRAWING ARE TO mAOD (LOCAL DATUM +28.68m, AS CONFIRMED BY ARCHITECT) TO COORDINATE WITH THE ARCHITECTURAL DRAWINGS

CDM — EXISTING SERVICES
EXISTING SERVICES ARE TO BE LOCATED PRIOR TO DRAINAGE EXCAVATION WORKS.

DESIGN — THAMES WATER SEWER CONNECTION
CONNECTIONS TO THE PUBLIC SEWER ARE SUBJECT TO FORMAL S106 APPLICATIONS WITH THAMES WATER. NO WORK ON THE PUBLIC SEWER IS TO TAKE PLACE WITHOUT PRIOR PERMISSION.

DESIGN — PROPOSED DRAINAGE
THE DRAINAGE DESIGN IS SUBJECT TO APPROVAL WITH THE LOCAL PLANNING AUTHORITY AND THE SUBSEQUENT DISCHARGE OF RELEVANT PLANNING CONDITIONS, AND IS THEREFORE SUBJECT TO CHANGE TO SUIT LLFA COMMENTS.

DESIGN — BLUE ROOF
FULL DETAILS OF THE BLUE ROOF INCLUDING FLOW RATES IS TO BE PROVIDED TO COORDINATE WITH BELOW-GROUND DRAINAGE

DESIGN — NETWORK RAIL TUNNEL
THE DRAINAGE DESIGN IS SUBJECT TO CONFIRMATION OF NETWORK RAIL ASSET PROTECTION REQUIREMENTS.

CDM — EXISTING RAIL TUNNEL
EXISTING NETWORK RAIL TUNNEL (BELSIZE TUNNEL) BENEATH NEIGHBOURING PROPERTY

S1 CL 81.150 IL 80.50 300Ø / A15
S2 CL 80.650 IL 77.650 600Ø / A15 INC BD IL = 79.505
S3 CL 77.650 IL 77.100 300Ø / A15
S4 CL 77.715 IL 76.998 300Ø / A15
S5 CL 77.650 IL 76.400 1000Ø / D400 CATCHPIT MH 500mm SUMP
S6 W/ FLOW CONTROL CL 78.130 IL 76.307 1200Ø / D400 CATCHPIT MH 500mm SUMP INC BD IL 76.896
S6 HYDRO-BRAKE FLOW CONTROL RESTRICTING DISCHARGE TO 1.0L/S. PRODUCT REF CTL-SHE-0047-1000-1000-1000
C1 CL 78.130 IL 76.267 1000Ø / D400 INC BD IL 76.659
F1 FFL 77.650 SSL 77.203 IL 77.000 300Ø
F2 FFL 77.650 SSL 77.203 IL 76.965 300Ø
F3 FFL 77.650 SSL 77.203 IL 76.923 300Ø
F4 FFL 77.650 SSL 77.203 IL 76.881 300Ø
F5 FFL 77.650 SSL 77.203 IL 76.862 300Ø / A15
F6 CL 77.650 IL 76.756 300Ø / A15
F7 CL 77.715 IL 76.720 300Ø / A15
F8 CL 78.144 IL 76.678 300Ø / A15

GF FFL 80.725mAOD
LGF FFL 77.650mAOD
LGF SSL 77.203mAOD

LEVELS ALONG REAR TBC AND RETAINING WALL REQUIREMENTS CONFIRMED
ALL RWP AND SVP POSITIONS ARE TBC BY ARCHITECT / M&E
INTERNAL FOUL INSPECTION CHAMBERS ARE TO BE FITTED WITH RECESSED DOUBLE SEALED SCREW DOWN COVERS
EXISTING 100Ø OUTFALL DRAIN TO BE ABANDONED DUE TO INVERT LEVEL, CONDITION AND INSUFFICIENT CAPACITY FOR NEW DESIGN FLOWS.
EXISTING THAMES WATER RB5K635 COMBINED SEWER
RAINGARDEN OUTLET PIPE (PERFORATED UNDER GARDEN) WITH OVERFLOW GULLY/ ACCESS AND TOPHAT SEAL ON OUTLET.
RAIN GARDEN RECEIVING PARTIAL ROOF RUN-OFF WITH OUTLET INTO DRAINAGE SYSTEM. DRAINAGE LAYER TO BE IMPERMEABLE WRAPPED TO PREVENT INFILTRATION ADJACENT TO THE BUILDING FOUNDATIONS
RWP AND DRAINAGE CHANNELS TO DISCHARGE INTO RAIN-GARDEN WITH DIFFUSER UNIT, INTO GRANULAR DRAINAGE LAYER OF RAINGARDEN
BLUE ROOF WITH 150mm SUBSTRATE STORAGE. SPECIALIST DESIGN BY OTHERS. (APPROX 70m²)
DRAINAGE FROM LIGHTWELL IS TO SLEEVE THROUGH SHEET PILING AND DISCHARGE INTO S5 WITH A NON-RETURN FLAP VALVE ON S5 INLET. DEEP PIPE WILL REQUIRE CONCRETE ENCASEMENT.
INLET FROM LIGHT WELL IS TO BE FITTED WITH NON-RETURN FLAP VALVE TO PREVENT BACKFLOWS.
ACO CHANNEL AND GULLY TO DISCHARGE INTO RAIN GARDENS WITH TOPHAT SEAL THROUGH WALL AND PERFORATED PIPEWORK.
CASCADING RAIN GARDENS RECEIVING RUN-OFF FROM ADJACENT PAVEMENT VIA WEEP HOLES THROUGH WALL.
WEIR WALLS WITH DRAINAGE OUTLETS TO LOWER GARDENS.
RAINGARDEN OUTLET PIPE (PERFORATED UNDER GARDEN) WITH OVERFLOW GULLY/ ACCESS AND TOPHAT SEAL.
PEDESTRIAN HARDSTANDING TO BE LAID TO FALLS AND DRAINED INTO TOP TIER OF RAIN GARDENS.
BELOW-GROUND ATTENUATION TANK TYPE SDS GEOLIGHT 400. 2x13.5x0.75mDP @ 95% VOIDS = 19.24m³ STORAGE FULLY WRAPPED IN IMPERMEABLE MEMBRANE.
THRESHOLD DRAINAGE CHANNEL
CONNECTION DETAIL TO BE AGREED WITH THAMES WATER DURING STAGE 4 DESIGN. INVERT LEVEL OF CONNECTION TBC.
COMBINED SEWER OUTFALL TO EXISTING TW COMBINED SEWER
C1 INLETS ARE TO BE FITTED WITH NON-RETURN VALVES TO PREVENT BACK-FLOW OF WATER/SEWAGE.
100Ø PERFORATED UNDER-DRAIN
Flat 01 1B2P 51.9 sq m
Flat 02 2B3P M4(3) 79.5 sq
Dry riser inlet
COMMS
LV
COMMS & FIRE
DRY RISER
WHEELCHAIR STORAGE
COMBINED BOOSTER AND SPRINKLER TANK
SPRINKLER PUMP SET
SW TANK & PUMP
PLANT

NOTES:

1. NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH THE RELEVANT SPECIFICATION AND GENERAL NOTES
3. ANY NON STRUCTURAL ITEMS SUCH AS WATERPROOFING, CLADDING, FINISHES, FIRE STOPPING ARE TO BE THE ARCHITECTS SPECIFICATIONS.
4. ALL PROPRIETARY PRODUCTS ARE TO BE USED AND INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS DETAILS AND REQUIREMENTS.
5. THE STRUCTURE IS DESIGNED AND DETAILED FOR THE PERMANANT CONDITION ONLY. THE CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURE IN ITS TEMPORARY CONDITION, ANY TEMPORARY WORKS REQUIRED DURING CONSTRUCTION AND ANY TEMPORARY LOADS ONTO THE EXISTING AND NEW STRUCTURE WHICH SHALL BE LESS THAN THOSE FOR WHICH IT HAS BEEN CONFIRMED OR DESIGNED RESPECTIVELY
6. ALL WORKS UNDERTAKEN BY CONTRACTOR TO BE COMPLIANT WITH RELEVANT AND CURRENT BUILDING CODES, REGULATIONS AND GOOD PRACTICES.

simple works

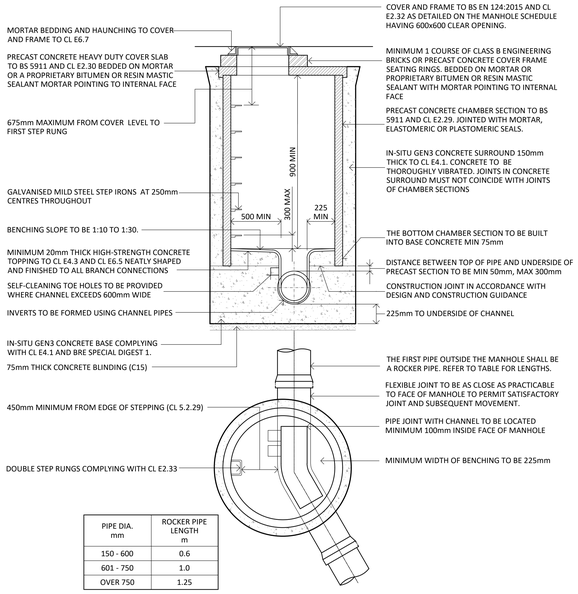
NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION
P4	24.04.23	REVISED SITE PLAN
P3	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE
P2	28.03.23	STAGE 3 ISSUE
P1	29.01.23	STAGE 2 ISSUE

PROJECT NAME:	DALEHAM GARDENS
CLIENT NAME:	NW3 CLT COMMUNITY LAND TRUST
PROJECT No.:	1803
SCALE @ A0:	1 : 50
DRAWN / CHECKED:	NR AJD
STATUS:	STAGE 3
TITLE:	PROPOSED DRAINAGE LAYOUT
Project / Org. / Zone / Level / Type / Disc / Sheet / Rev.	1803-SMW-XX-XX-DR-C-0001-P4
DATE:	24.04.23

PRECAST MANHOLE CONSTRUCTION NOTES

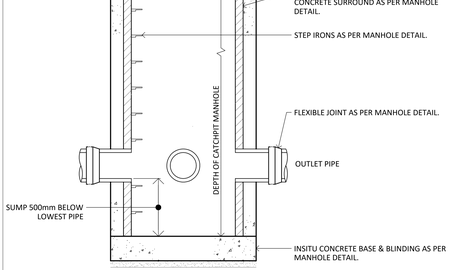
1. REFER TO SEWERAGE SECTOR GUIDANCE APPENDIX C - DESIGN AND CONSTRUCTION GUIDANCE FOR RELEVANT CLAUSES REFERENCED.
2. OUTGOING PIPES GREATER THAN 600mm DIAMETER ARE TO BE FITTED WITH SAFETY CHAINS
3. WHERE SPECIFIED ON MANHOLE SCHEDULES, PROVIDE A 65mm DIAMETER PIPE 600mm LONG. BUILT INTO MANHOLE AT PIPE SOFFIT LEVEL TO DRAIN PIPE BED AND SURROUND.
4. SULPHATE RESISTING PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETES AND MORTARS HAVING EQUIVALENT COMPRESSIVE STRENGTH OF 20N/mm² OR GREATER (INCLUDING PRECAST CONCRETE PRODUCTS).
5. REFER TO MANHOLE SCHEDULES FOR DETAILS OF COVERS, PIPE SIZES, INVERT LEVELS, MANHOLE DIAMETER ETC.
6. STEP IRONS ARE TO BE A MINIMUM OF 200mm FROM THE END OF THE WALL OF THE MANHOLE AND AT 250 OR 300 CTRS. STEP IRONS ARE TO BE TO BS 13101:2002 AND GALVANISED.
7. CHAMBER WIDTH MAY VARY. WIDTH SHALL BE INCREASED FOR PIPES LARGER THAN 225mm TO GIVE A MINIMUM BEARING WIDTH OF 225mm ON EACH SIDE, AND WHERE BRANCHES AND CHANGES IN DIRECTION OCCUR. BRICKWORK SHALL BE CORBELLED TO SUIT THE FRAME SIZE.



PIPE DIA. mm	ROCKER PIPE LENGTH m
150 - 600	0.6
601 - 750	1.0
OVER 750	1.25

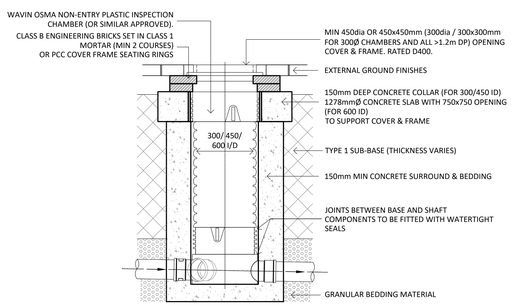
TYPICAL PRECAST RING MANHOLE (DCG TYPE B)

DEPTH TO SOFFIT = 3.0m MAX



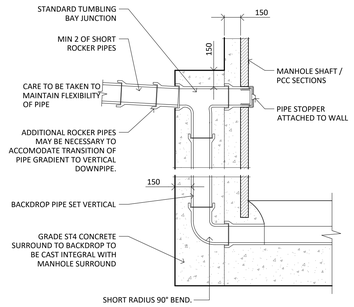
CATCHPIT MANHOLE DETAILS

FOR CONSTRUCTION DETAILS REFER TO TYPICAL *PRECAST RING MANHOLE DETAIL*

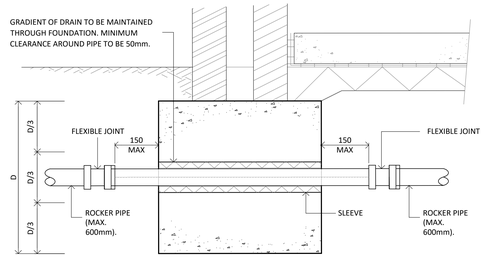


TYPICAL PLASTIC INSPECTION CHAMBER

DEPTH TO SOFFIT = MAXIMUM DEPTH TO INVERT 3.0m (NON-ENTRY)
D400 LOADING (MAX 40t VEHICLE LOADING)



TYPICAL MANHOLE BACKDROP DETAIL.



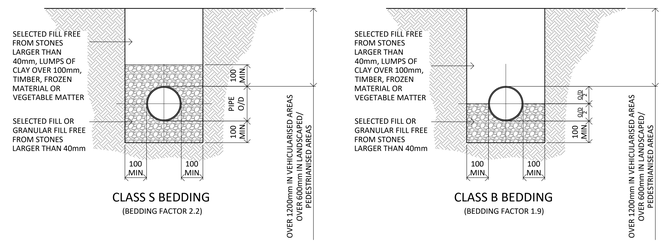
NOTES:

1. DRAIN SLEEVE / DUCT TO BE LOCATED WHOLLY WITHIN THE MIDDLE THIRD OF THE FOUNDATION DEPTH (D). THE ENGINEER IS TO BE ADVISED IF THIS IS NOT POSSIBLE.
2. IN NORMAL SOIL CONDITIONS THE SLEEVE/DUCT IS TO GIVE A 50mm CLEARANCE ALL ROUND THE OUTSIDE OF THE DRAIN PIPE (THIS MAY BE ACHIEVED BY LIGHTLY PACKING THE SPACE WITH COMPRESSIBLE FILLER MATERIAL)
3. MAXIMUM SLEEVE SIZE TO BE 300mm.

DRAINS THROUGH STRIP FOUNDATIONS

NOTES:

1. BEDDING BENEATH AND OVER THE PIPE TO BE LIGHTLY COMPACTED.
2. BEDDING TO THE SIDES TO BE WELL COMPACTED.
3. CARE IS TO BE TAKEN AS TO NOT DISPLACE THE PIPE FROM ITS INTENDED POSITION.
4. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER IN CERTAIN SOILS EG RUNNING SAND IN VERY WET CONDITIONS.
5. IN VERY WET CONDITIONS, WHERE DIRECTED OR APPROVED BY THE ENGINEER A TEMPORARY LAND DRAIN MAY BE LAID WITHIN THE GRANULAR BED.
6. CLASS S BEDDING IS TO BE USED WITH ALL FLEXIBLE PIPES.
7. FIRST 300mm ABOVE CROWN OF PIPE IS TO BE LIGHTLY TAMPED BY HAND



GRANULAR PIPE BEDDING DETAILS

NOTES:

1. IMPORTED GRANULAR MATERIALS TO INCLUDE AGGREGATES TO BS 12620:2002, AIR-COOLED BLAST FURNACE SLAG TO BS EN 12620:2002 & SINTERED PULVERIZED FUEL ASH TO BS EN 13055-1:2002.
2. ANGULAR MATERIALS SHOULD BE CHOSEN TO ENSURE SUFFICIENT SUPPORT IS PROVIDED TO HEAVIER PIPES.
3. CLASS S BEDDING SHALL BE USED WITH ALL FLEXIBLE PIPES

PIPE DIAMETER	CLASS OF BEDDING	IMPORTED GRANULAR MATERIAL (NOTE 1)
100MM	S B	10MM NOMINAL SIZE
OVER 100MM TO 150MM	S B	10MM OR 14MM NOM. SINGLE SIZE OR 14MM TO 5MM GRADED.
OVER 150MM TO 500MM	S B	10, 14 OR 20MM NOM. SINGLE SIZE OR 14MM TO 5MM GRADED OR 20MM TO 5MM GRADED
OVER 500MM (NOTE 2)	S B	10, 14 OR 20MM NOM. SINGLE SIZE OR 14MM TO 5MM GRADED OR 20MM TO 5MM GRADED OR 40MM TO 5MM GRADED

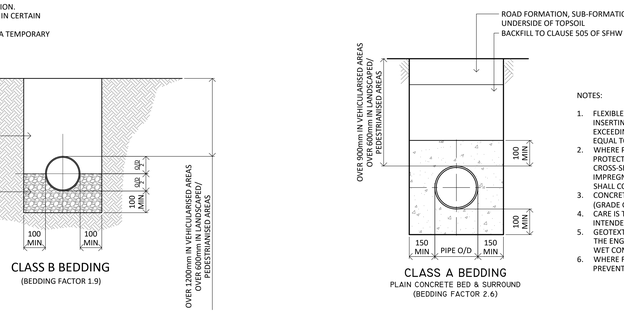
GRANULAR BEDDING AND SIDE FILL MATERIAL FOR RIGID AND FLEXIBLE PIPES

NOTES:

1. DIMENSION Y1 SHALL BE USED UNLESS Y2 IS SPECIFIED OR DIRECTED BY THE ENGINEER.
2. DIMENSION Y2 SHALL BE USED IN PLACE OF Y1 WHERE THE EXCAVATION IS IN ROCK OR IN MIXED SOILS CONTAINING ROCK BEDS, BOULDERS, LARGE FLINTS OR OTHER IRREGULAR HARD SPOTS.
3. DIMENSION Y2 SHALL BE INCREASED BY 40mm FOR EACH ADDITIONAL 1.0m OF COVER IN EXCESS OF 5.0m.
4. DIMENSION L IS THE WIDTH OF THE COMPRESSIBLE FILLER REQUIRED AT JOINTS IN CONCRETE PROTECTION TO PIPES (CLASS A)

PIPE DIAMETER	Y MINIMUM		MAXIMUM TRENCH WIDTH	L
	Y1 MIN.	Y2 MIN.		
100	100	200	700	I8
150	100	200	750	I8
200	100	200	800	I8
225	100	200	825	I8
250	100	200	850	I8
300	100	200	925	I8
350	100	200	1000	I8
375	100	200	1090	I8
400	150	200	1025	I8
450	150	200	1175	36

DIMENSIONS FOR PIPE BEDDING



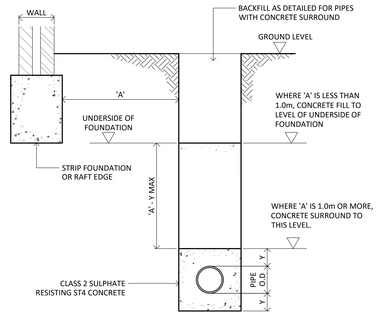
CLASS A BEDDING

PLAIN CONCRETE BED & SURROUND
(BEDDING FACTOR 2.6)

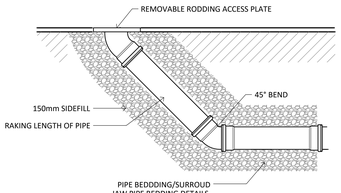
NOTES:

1. FLEXIBLE JOINTS SHALL BE PROVIDED IN CONCRETE, BY INSERTING COMPRESSIBLE BOARD AT INTERVALS NOT EXCEEDING 5m. PRECUT TO DIAMETER, HEIGHT AND WIDTH EQUAL TO THE CONCRETE CROSS SECTION.
2. WHERE PIPES WITH FLEXIBLE JOINTS ARE USED, THE CONCRETE PROTECTION IS TO BE INTERRUPTED OVER ITS FULL CROSS-SECTION BY A SHAPED FORMER OF BITUMEN IMPREGNATED COMPRESSIBLE FILLER. THESE INTERRUPTIONS SHALL COINCIDE WITH PIPE JOINTS AND MUST NOT EXCEED 5m.
3. CONCRETE TO BE CLASS 2 SULPHATE RESISTING CONCRETE (GRADE GEN3)
4. CARE IS TO BE TAKEN AS TO NOT DISPLACE THE PIPE FROM ITS INTENDED POSITION.
5. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER IN CERTAIN SOILS EG RUNNING SAND IN VERY WET CONDITIONS.
6. WHERE FLEXIBLE PIPES ARE USED, CARE MUST BE TAKEN TO PREVENT THE PIPES FROM FLOATING.

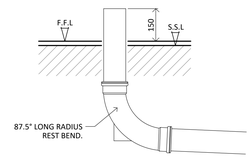
CONCRETE PIPE BEDDING DETAILS



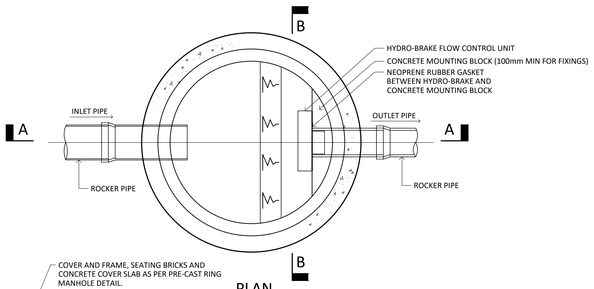
PIPE RUNS NEAR BUILDINGS



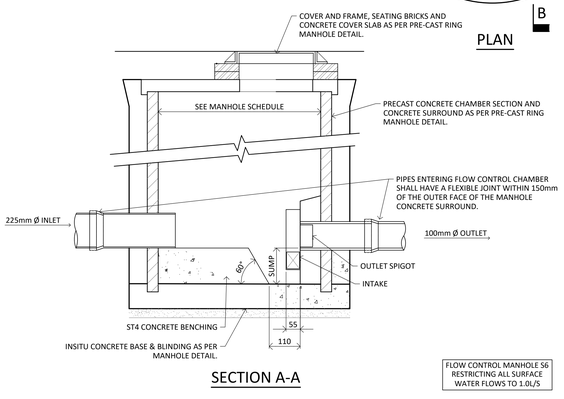
TYPICAL RODDING EYE DETAIL



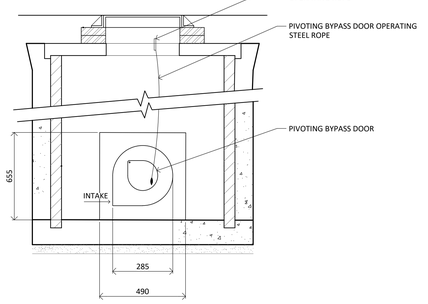
TYPICAL DRAINAGE POP UP DETAIL



PLAN



SECTION A-A

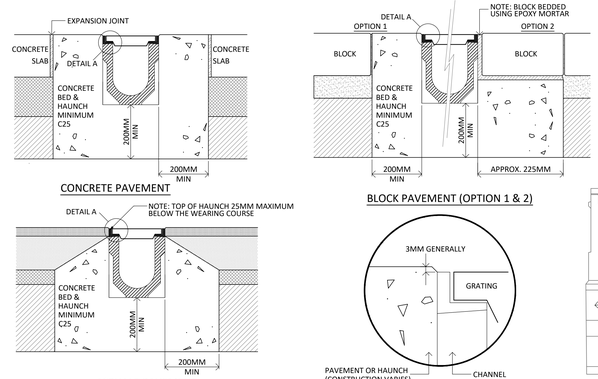


SECTION B-B

FLOW CONTROL MANHOLE S6 RESTRICTING ALL SURFACE WATER FLOWS TO 1.0L/S

FLOW CONTROL MANHOLE DETAILS

FOR CONSTRUCTION DETAILS REFER TO TYPICAL *PRECAST RING MANHOLE DETAIL*



CONCRETE PAVEMENT

BLOCK PAVEMENT (OPTION 1 & 2)

ASPHALT PAVEMENT

DETAIL A

ACO DRAIN SUMP UNIT

ACO DRAINAGE CHANNEL DETAILS.

TYPICAL SECTION THROUGH ATTENUATION

(NTS)

NOTES:

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6. ALL WORKS UNDERTAKEN BY CONTRACTOR TO BE COMPLIANT WITH RELEVANT AND CURRENT BUILDING CODES, REGULATIONS AND GOOD PRACTICES.

NOT FOR CONSTRUCTION

P3	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE
P2	21.03.23	STAGE 3 ISSUE
P1	20.01.23	STAGE 2 ISSUE
REV.	DATE	DESCRIPTION

NR	
NR	
NR	
BY	

PROJECT NAME: DALEHAM GARDENS

CLIENT NAME: NW3 CLT COMMUNITY LAND TRUST

PROJECT No.: 1803

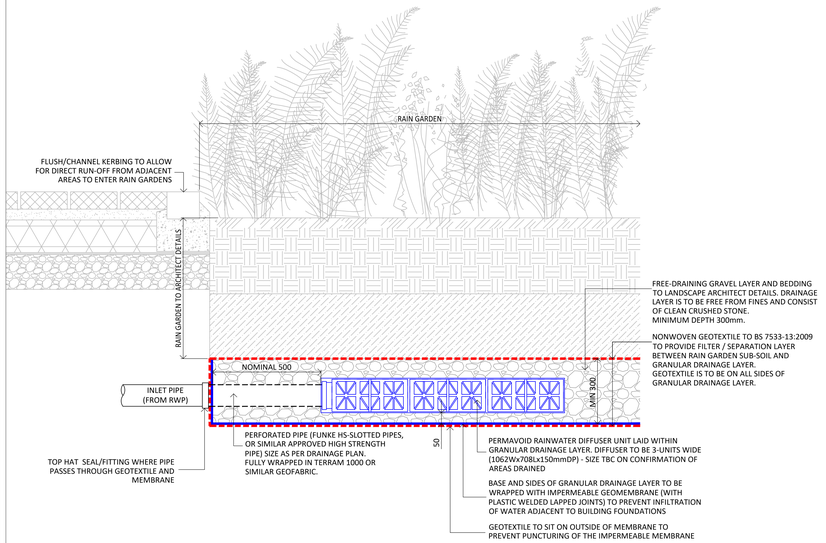
SCALE @ A0: NTS

DRAWN / CHECKED: NR AJD

STATUS: STAGE 3

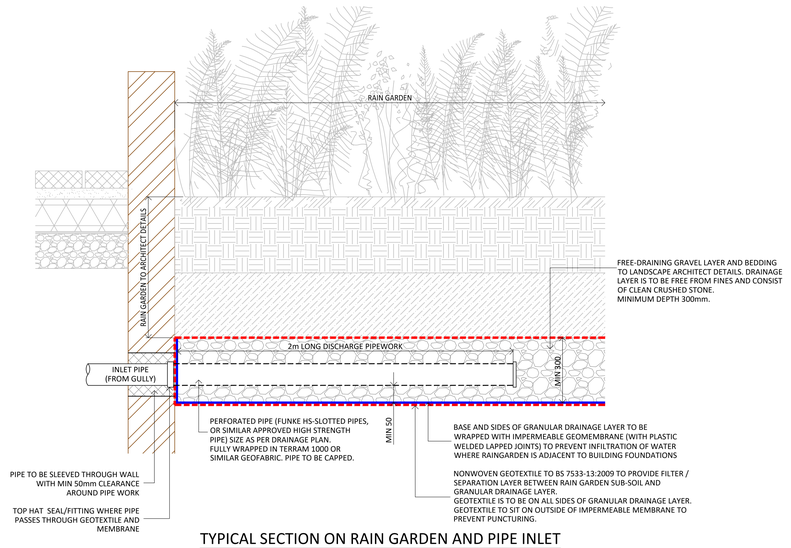
TITLE: DRAINAGE DETAILS SHEET 1

Project	Org	Zone	Level	Type	Disc	Sheet	Rev	DATE
1803-SMW-XX-XX-DR-C-0002-P3								17.04.23



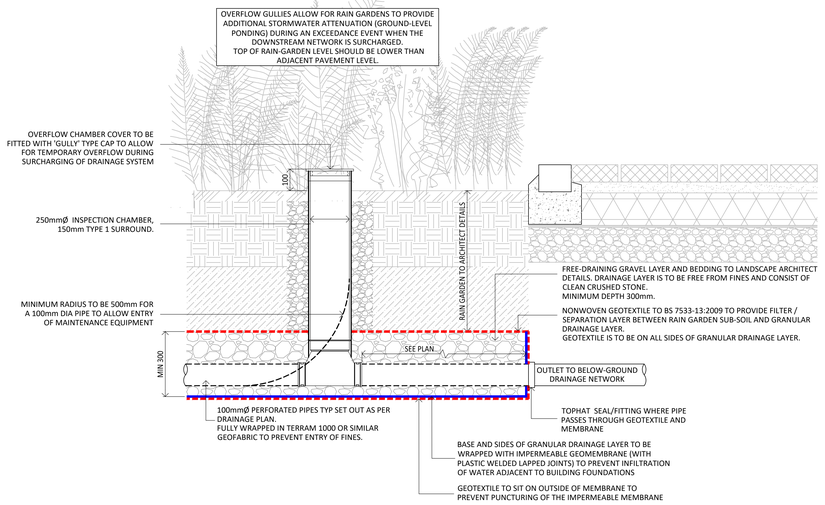
TYPICAL SECTION ON RAIN GARDEN AND DIFFUSER INLET

(NTS)



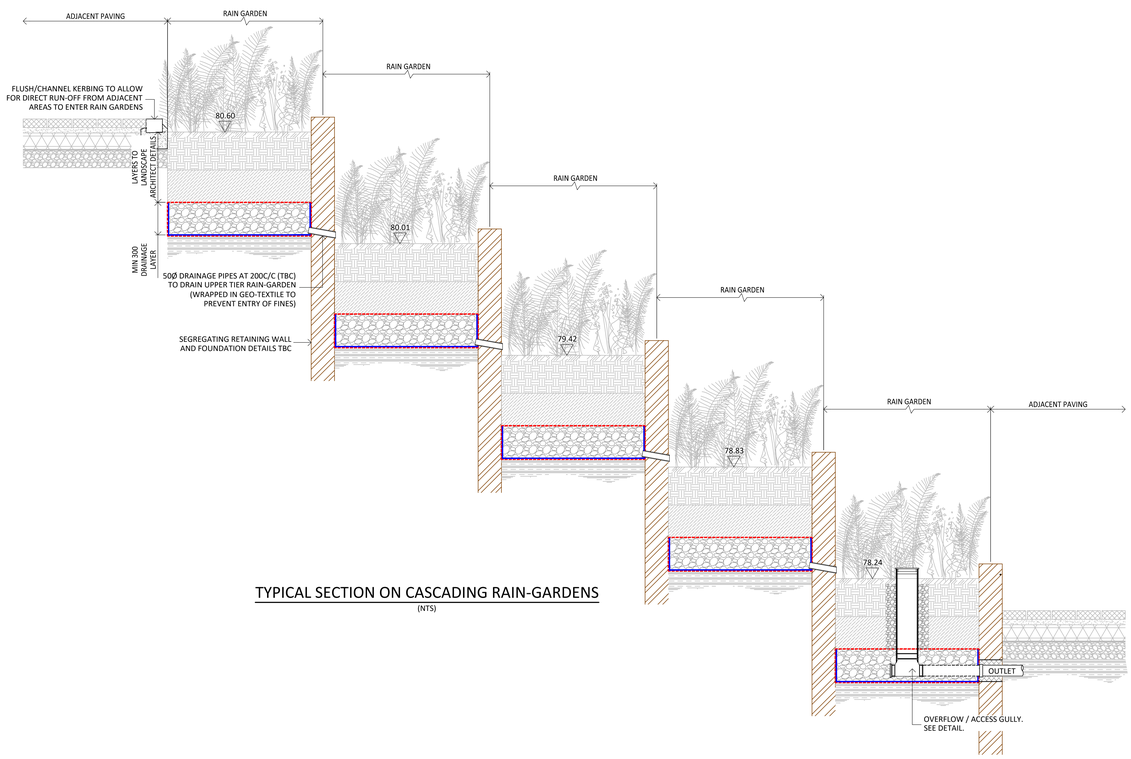
TYPICAL SECTION ON RAIN GARDEN AND PIPE INLET

(NTS)



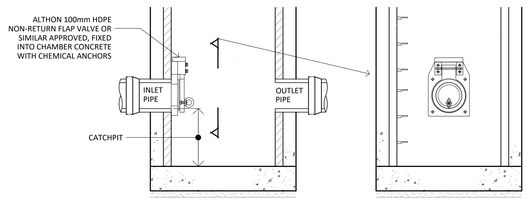
TYPICAL SECTION ON RAIN GARDEN OVERFLOW AND OUTLET

(NTS)



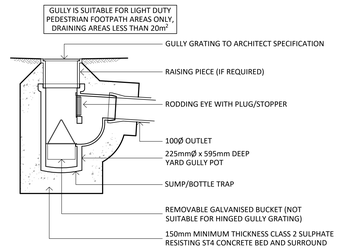
TYPICAL SECTION ON CASCADING RAIN-GARDENS

(NTS)

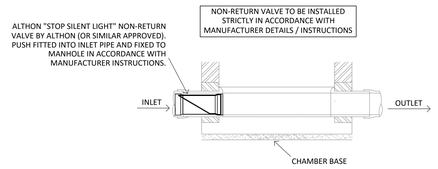


CATCHPIT MANHOLE W/ FLAP VALVE

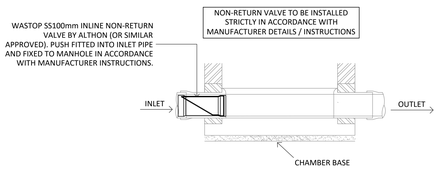
FOR CONSTRUCTION DETAILS REFER TO TYPICAL *PRECAST RING MANHOLE DETAIL*



TRAPPED GULLY



FOUL DRAINAGE NON-RETURN VALVE



STORM DRAINAGE NON-RETURN VALVE

simple works

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NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	
P3	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE	NR
P2	28.03.23	STAGE 3 ISSUE (CONSTRUCTION DETAILS MOVED TO DRG C-0004)	NR
P1	25.01.23	STAGE 2 ISSUE	NR

PROJECT NAME: DALEHAM GARDENS

CLIENT NAME: NW3 CLT COMMUNITY LAND TRUST

PROJECT No.: 1803

SCALE @ A0: NTS

DRAWN / CHECKED: NR AJD

STATUS: STAGE 3

TITLE: DRAINAGE DETAILS SHEET 2

Project	Org	Zone	Level	Type	Disc	Sheet	Rev	DATE:
1803-SMW-XX-XX-DR-C-0003-P3								17.04.23

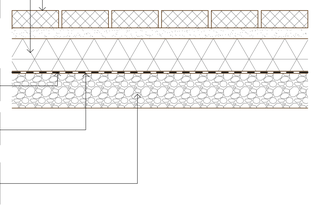
CONCRETE BLOCK PAVING
200x100x60 PRECAST CONCRETE BLOCK PAVIOURS TO BS EN 1338:2003. LAID ON 50mm THICK LAYING COURSE. ALL TO BS 7533:3:2005+1:2009

TYPE 1 SUB-BASE 150mm THICK
GRANULAR MATERIAL TYPE 1 OR TYPE 1G TO CL. 801 AND 803 OF THE SPECIFICATION FOR HIGHWAY WORKS LAID AND COMPACTED TO CL. 802. ALL TO CLAUSE 702.

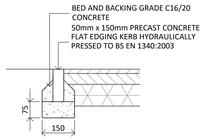
GEOMEMBRANE
TERRAM 1000 OR SIMILAR TO BE LAID UNDER THE SUB-BASE, AS A SEPERATION BARRIER TO CL. 609.

FORMATION
FORMATION TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS CL. 601, 616 AND 617.

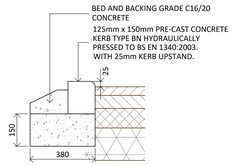
BULK FILL (WHERE REQUIRED)
GRANULAR MATERIAL CLASS 1A, 1B OR 1C TO THE SPECIFICATION FOR HIGHWAY WORKS CL. 601 AND 602. LAID AND COMPACTED TO CL. 608 AND 612.



BLOCK PAVED FOOTPATH CONSTRUCTION



KERB TYPE FE
(1:10)



KERB TYPE BN
(1:10)

SURFACE COURSE 20mm THICK
20mm THICK AC 6 DENSE SURF 100/150 TO BS EN 13108-1:2016 AND CL. 912 OF THE SPECIFICATION FOR HIGHWAY WORKS.

BINDER COURSE 50mm THICK
50mm AC 20 DENSE BIN 100/150 TO BS EN 13108-1:2016 AND CL. 929 OF THE SPECIFICATION FOR HIGHWAY WORKS.

TYPE 1 SUB-BASE 150mm THICK
GRANULAR MATERIAL TYPE 1 TO CL. 801 AND 803 OF THE SPECIFICATION FOR HIGHWAY WORKS LAID AND COMPACTED TO CL. 802. ALL TO CLAUSE 702.

GEOMEMBRANE
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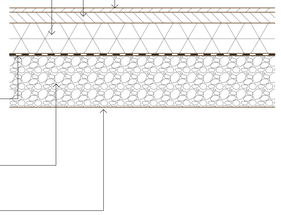
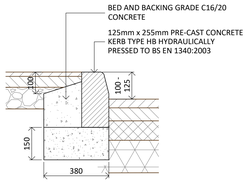
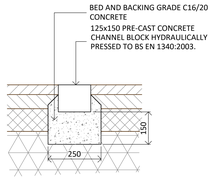
SUB-FORMATION
SUB-FORMATION TO BE IN ACCORDANCE WITH THE SPECIFICATION FOR HIGHWAY WORKS CL. 601, 602, 603, 613 AND 617.



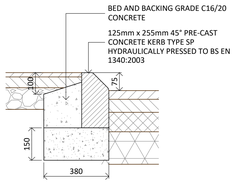
ASPHALT FOOTPATH CONSTRUCTION



KERB TYPE HB
(1:10)



KERB TYPE FC
(1:10)



KERB TYPE SP
(1:10)

FOR LOCATION AND EXTENT OF TYPES OF CONSTRUCTION AND KERBING REFER TO ARCHITECTS DRAWINGS

CONCRETE SLAB 150mm THICK
150mm THICK JOINTED REINFORCED CONCRETE SLAB TO THE SPECIFICATION FOR HIGHWAY WORKS CL. 1001 TO 1039 INCLUSIVE.

TOP REINFORCEMENT
1 LAYER A252 MESH, 50mm COVER

SEPARATION MEMBRANE
POLYETHYLENE SHEET TO CL. 1007 OF THE SPECIFICATION FOR HIGHWAY WORKS. TO FORM A WATERPROOF SEPARATION MEMBRANE.

TYPE 1 SUB-BASE 150mm THICK
GRANULAR MATERIAL TYPE 1 TO CL. 801 AND 803 OF THE SPECIFICATION FOR HIGHWAY WORKS LAID AND COMPACTED TO CL. 802. ALL TO CLAUSE 702.

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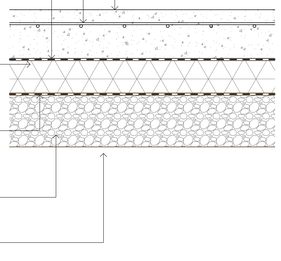

BIN STORE CONSTRUCTION
(NON-VEHICULAR LOADING)

simple works

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REV.	DATE	DESCRIPTION	BY
P2	17.04.23	STAGE 3 UPDATED/COORDINATED ISSUE	NR
P1	28.03.23	STAGE 3 ISSUE	NR

PROJECT NAME:
DALEHAM GARDENS

CLIENT NAME:
NW3 CLT
COMMUNITY LAND TRUST

PROJECT No.: 1803
SCALE @ A0: NTS

DRAWN / CHECKED: NR AJD
STATUS: STAGE 3

TITLE:
EXTERNAL WORKS
CONSTRUCTION DETAILS

Project	Org.	Zone:	Level:	Type:	Doc:	Sheet:	Rev:	DATE:
1803	SMW	XX	XX	DR	C	0004	P2	17.04.23

Subteno
Engineering Consultants

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Tel: +44 (0)1508 500922
Registered in England 10891962. www.subteno.co.uk

CLIENT / PROJECT	SHEET NO.	REVISION	PROJECT REF.
NW3 CLT / DALEHAM GARDENS	1	STAGE 3	S221215
TITLE	PREPARED	CHECKED	DATE
FOUL WATER SEWER DESIGN FLOW RATES	NR	-	23.03.23

Calculations for foul water underground pipe design based on BS EN 12056-2:2000 System II

		WHB	WC	Shower	Kitchen Sink	Dishwasher	Bath	Washing Machine
	Discharge Units (l/s)	0.3	1.8	0.4	0.6	0.6	0.6	0.6
FLAT 1	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 2	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 3	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 4	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 5	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
FLAT 6	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 7	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 8	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
FLAT 9	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 10	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 11	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
FLAT 12	Total Appliances	1	1	0	1	1	1	1
	Discharge Units	0.3	1.8	0	0.6	0.6	0.6	0.6
	Total Discharge Units	4.5						
FLAT 13	Total Appliances	3	3	1	1	1	1	1
	Discharge Units	0.9	5.4	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	9.1						
FLAT 14	Total Appliances	1	1	1	1	1	1	1
	Discharge Units	0.3	1.8	0.4	0.6	0.6	0.6	0.6
	Total Discharge Units	4.9						
	K VALUE	**0.5**						
	Qww=K(DU)0.5 (l/s)	**4.159**						

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.013	5.00	81.150	300	-14.123	281.460	0.650
2	0.006	5.00	80.650	600	-2.715	282.816	3.000
3	0.013	5.00	77.650	300	5.505	283.341	0.550
4	0.004	5.00	77.690	300	15.482	284.142	0.692
5	0.011	5.00	77.650	1000	1.477	269.338	1.250
6	0.005	5.00	78.144	1200	16.728	274.022	1.837
6_OUT			78.150	1000	19.050	274.568	1.883

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	11.488	0.600	80.500	79.505	0.995	11.5	100	5.08	50.0
1.001	2	3	8.237	0.600	77.650	77.100	0.550	15.0	150	5.14	50.0
1.002	3	4	10.009	0.600	77.100	76.998	0.102	98.1	150	5.30	50.0
1.003	4	6	10.196	0.600	76.998	76.896	0.102	100.0	150	5.47	50.0
2.000	5	6	15.954	0.600	76.400	76.307	0.093	171.5	225	5.27	50.0
1.004	6	6_OUT	2.385	0.600	76.420	76.267	0.153	15.6	100	5.49	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.287	18.0	1.7	0.550	1.045	0.013	0.0	21	1.433
1.001	2.616	46.2	2.6	2.850	0.400	0.019	0.0	24	1.403
1.002	1.014	17.9	4.3	0.400	0.542	0.032	0.0	50	0.836
1.003	1.005	17.8	4.8	0.542	1.098	0.036	0.0	54	0.858
2.000	0.995	39.6	1.5	1.025	1.612	0.011	0.0	30	0.484
1.004	1.966	15.4	7.1	1.624	1.783	0.052	0.0	47	1.919

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	20.0
M5-60 (mm)	20.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	1 year (l/s)	1.0
Summer CV	0.750	30 year (l/s)	1.0
Winter CV	0.840	100 year (l/s)	1.0
Analysis Speed	Normal	Check Discharge Volume	x
Skip Steady State	x		

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.074	Betterment (%)	0
SAAR (mm)	650	QBar	0.3
Soil Index	4	Q 1 year (l/s)	0.3
SPR	0.47	Q 30 year (l/s)	0.6
Region	6	Q 100 year (l/s)	0.8
Growth Factor 1 year	0.85		

Node 5 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	18	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node 6 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	13	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node 5 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	80	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node 6 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	76.420	Product Number	CTL-SHE-0047-1000-1000-1000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node 6 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	76.307	Slope (1:X)	165.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.750
Safety Factor	2.0	Width (m)	2.000	Inf Depth (m)	
Porosity	0.95	Length (m)	13.500		

Node 6 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	2.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	76.307	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)		Diameter (mm)	750

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	80.522	0.022	1.8	0.0100	0.0000	OK
15 minute winter	2	10	77.675	0.025	2.7	0.0080	0.0000	OK
15 minute winter	3	10	77.153	0.053	4.5	0.0277	0.0000	OK
15 minute winter	4	11	77.055	0.057	5.0	0.0106	0.0000	OK
240 minute winter	5	168	76.493	0.093	0.3	0.0897	0.0000	OK
240 minute winter	6	168	76.493	0.186	1.5	4.3353	0.0000	OK
15 minute summer	6_OUT	1	76.267	0.000	0.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	1.8	1.441	0.099	0.0142	
15 minute winter	2	1.001	3	2.7	0.742	0.058	0.0305	
15 minute winter	3	1.002	4	4.4	0.759	0.245	0.0578	
15 minute winter	4	1.003	6	4.9	0.838	0.278	0.0599	
30 minute winter	5	2.000	6	1.0	0.105	0.026	0.2897	
240 minute winter	6	Hydro-Brake®	6_OUT	0.7				5.3

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	80.535	0.035	4.4	0.0160	0.0000	OK
15 minute winter	2	10	77.688	0.038	6.6	0.0124	0.0000	OK
15 minute winter	3	10	77.191	0.091	10.8	0.0480	0.0000	OK
15 minute winter	4	11	77.096	0.098	12.1	0.0183	0.0000	OK
180 minute winter	5	172	76.733	0.333	0.9	0.3208	0.0000	SURCHARGED
180 minute winter	6	172	76.733	0.426	3.9	11.5648	0.0000	SURCHARGED
15 minute summer	6_OUT	1	76.267	0.000	0.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	4.4	1.845	0.243	0.0271	
15 minute winter	2	1.001	3	6.5	0.896	0.141	0.0608	
15 minute winter	3	1.002	4	10.7	0.916	0.596	0.1167	
15 minute winter	4	1.003	6	12.0	1.036	0.676	0.1180	
15 minute winter	5	2.000	6	3.7	0.258	0.094	0.5761	
30 minute winter	6	Hydro-Brake®	6_OUT	0.8				7.5

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	80.549	0.049	8.0	0.0226	0.0000	OK
15 minute winter	2	10	77.702	0.052	11.9	0.0169	0.0000	OK
240 minute winter	3	224	77.405	0.305	3.7	0.1601	0.0000	FLOOD RISK
240 minute winter	4	224	77.405	0.407	4.2	0.0765	0.0000	FLOOD RISK
240 minute winter	5	224	77.405	1.005	1.3	0.9675	0.0000	FLOOD RISK
240 minute winter	6	224	77.405	1.098	5.9	23.0934	0.0000	SURCHARGED
15 minute summer	6_OUT	1	76.267	0.000	0.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	7.9	2.151	0.442	0.0424	
15 minute winter	2	1.001	3	11.9	0.944	0.257	0.0948	
15 minute winter	3	1.002	4	18.8	1.071	1.052	0.1762	
15 minute winter	4	1.003	6	21.2	1.208	1.196	0.1736	
15 minute winter	5	2.000	6	6.1	0.344	0.155	0.6345	
240 minute winter	6	Hydro-Brake®	6_OUT	1.0				20.0

APPENDIX 5 – GROUND MOVEMENT AND DAMAGE IMPACT ASSESSMENT